

A STUDY ON THE PRESENT STATUS OF PHYSICAL FACILITIES IN GOVERNMENT ELEMENTARY SCHOOLS, IMPHAL WEST, MANIPUR

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ABSTRACT

The study was focused on the present status of the physical facilities fulfilled by the government elementary schools. The objectives of the study were to find out whether each of the government elementary schools under study was able to fulfil the basic requirements in terms of physical facilities; to study whether the basic requirements in terms of the physical facilities fulfilled by the government elementary schools under study different or not. The method of study was descriptive survey method. Information schedule, observation, interview, were used as tools. Eighteen government elementary schools of Imphal West, Manipur were randomly selected as sample. The sample government elementary schools of different levels fulfilled the facilities like ramp, safe drinking water facility, SUPW materials, sports materials, free uniforms and text books, composite grant, Midday Meal, kitchen, health services. However, these sample schools lacked the facilities of library, support system (gymnasium, auditorium, cafeteria), water harvesting facility, Information and Communication Technology (ICT), students' common room, electricity (24 X 7), solar panel, parking. There were common toilets in the primary schools (67%), the upper primary schools (43%), and separate toilets in the upper primary schools (57%), the junior high schools, high schools under study; and no separate toilets for male and female teachers in all the sample primary schools, upper primary schools, the junior high schools (67%), 60% of the high schools; and no uninterrupted water supply in the toilets of junior high schools, upper primary schools, the primary schools, 60% of the high schools; no safety measures (fencing and fire extinguisher) in 33% of the primary schools. There was low classroom student density; no ceiling fan in the classrooms of the sample schools; no roof ceiling in the sample primary schools (67%), the upper primary schools (71%), the junior high schools (67%), the high schools (60%). To conclude, 72% of the sample government elementary schools was not able to fulfilled all the basic requirements of physical facilities. 28% of the sample schools achieved the most of the basic requirements. The physical facilities achieved by each of the sample school were different in quality, number, size, frequency etc.

Keywords: *physical facility, support system, safety measures, student density.*

Introduction

Background of the study: To provide quality education, a series of quality programmes and teaching-learning activities will have to be conducted in school. So, the success of these programmes and activities depends mainly upon the availability of proper infrastructure of the school. The basic requirements of elementary schools include plenty of space, calm and quit atmosphere, adequate light in the classrooms, comfortable seating, good library, multipurpose rooms, functional playground, storage space, staff room, head master or mistress's room, assembly ground, gymnasium, transport, adequate toilet, safe drinking water, water harvesting facility etc. different plans and programmes were implemented to improve school education. Sarva Shiksha Abhiyan (SSA) is also one of the main flagship programme implemented by the Government of India to achieve the goal of Universalization of Elementary Education (UEE) in a time-bound manner, as mandated by 86th

Amendment to the Constitution of India making free and compulsory education to the children of 6-14 years of age, a Fundamental Right. Since 2001-2002, SSA has been implemented in India and it has been implemented since 2004-2005 in Manipur. In relation with physical facilities, the main components of SSA consist of transport/escort facility; uniforms; curriculum & textbooks; teaching learning equipment (TLE) for new primary and upper primary schools; teacher grant; school grant; libraries; additional class rooms; residential schools; toilet and drinking water; furniture; repairs to school buildings; maintenance of grant for schools; management of costs.

According to Section 3(d) of the RTE Act, 2009, the Government has to provide infrastructure including school building, teaching staff and learning equipment. According to Schedule of RTE act, 2009, under Section 19 and 25, the Government has to construct all-weather building considering of: -

At least one class-room for every teacher and an office-cum-store-cum-head teacher's room, barrier free access, separate toilets for boys and girls, safe and adequate drinking water facility to all children, a kitchen where mid-day meal is cooked in the school, playground, arrangements for securing the school building by boundary wall or fencing. Not only the aforesaid infrastructural facilities, the government has to provide teaching learning equipment, library, play material, games and sports equipment, (ref. item 5 to 7 of the schedule).

Infrastructures of the school influence on the holistic development of students. It is the school where the students spend maximum time and it is also an important environment where they can see, know, understand about their surroundings by spending maximum time. The infrastructure facilities indirectly give effect on the students' thinking, feeling, doing etc. In fact, it creates a favorable environment in the student's growth. Thus, physical facilities of the school have impact on the development of physical, social, mental, emotional and moral of child. In fact, to fulfil the basic requirements of the physical facilities is very necessary for quality elementary schools.

Rationale of the study: The study examined the physical facilities of government elementary schools which were under the Imphal West District, Manipur. It tried to explore the existing condition of the physical facilities and gave answers of important questions i.e., Did each of the government elementary schools under study achieved the basic requirements of physical facilities? Were there differences in the physical facilities among the schools under study? The questions resolved in the previous reports of research studies. Annual Status of Educational Report (ASER) 2018 showed that the state needs serious attention on water provision, usable toilet and library and above all Midday Meal is almost half national average. A study which was conducted in 122 government elementary schools in Greater Imphal explored dilapidated infrastructure; average 6 (six) pupils per class I-VIII; library available in 14 (11.50%) schools with no proper books; too poor teaching-learning process; once in a blue moon inspection and

supervision; too low internal efficiency with huge dropout rates, inter alia, (Babita, 2009). The previous studies found out the improper condition of infrastructure facility of government schools in Manipur.

Thus, the findings of the previous studies might be benefitted to the educational planners and researchers. Such research studies might help to find out the ways of solving educational problems for the concerned departments. Likewise, further research studies are needed from time to time to identify the gaps and means to solve the educational problems.

Statement of the Problem: The problem was stated as 'A Study on the Present Status of Physical Facilities in Government Elementary Schools, Imphal west, Manipur'. In this study, the extent of availability of physical facilities taken place were examined. Further attempt was made to suggest the appropriate measures for improvement by way of providing feedback to the physical facilities. The analyzed components of physical facilities were land and building types, toilet, residential facility, playground, classroom, acoustic quality, ceiling materials, internal and external wall paint, furniture, air quality, visual quality, Library facilities, free uniform and text book, sports material, SUPW materials, computer, ICTs, students' rooms and teachers' room, kitchen, storage, safety measure like fire, fencing, etc., safe drinking water, water harvesting, solar panel, parking, composite grant, repairing work, transport etc.

Research Questions

Depending on the above components, research questions were arising as follows:

- Q1. Whether each of the government elementary schools under study achieved the basic requirements of physical facilities?
- Q2. Whether the basic requirements in terms of the physical facilities fulfilled by the government elementary schools under study different or not?

Objective of the study

1. To find out whether each of the government elementary school under study was able to fulfil the basic requirements in terms of physical facilities (Q.no. 1).

2. To study whether the basic requirements in terms of physical facilities achieved by the government schools under study different or not (Q. no. 2).

Scope of the study

The scope of the study was covered to examine physical facilities in terms of

- Building: It covered Government land or rented, type of the building
- Toilet Facilities included separate or common, separate toilet for male and female teachers, uninterrupted water supply in the toilet, frequency of maintaining the toilet.
- Classroom facilities included number and size of classroom, classroom student density, number of door and window per classroom, classroom lighting, air quality, acoustic quality in and around the classroom, visual quality in the classroom, color of interior and exterior, classroom furniture (almirah), number of desk and bench in a classroom, classroom ceiling material, ceiling fan, type of flooring, blackboard or whiteboard, kinds of teaching aids.
- Library: Library was available or not available (yes or no) in the school.
- Support System like gymnasium, auditorium, cafeteria.
- Other facilities were free books and uniforms, Ramp, Playground, Computer, ICT facilities, Power Supply (24X7), Solar Panel, Students' common room, Teacher's common room, Residential facility for students, Teachers' quarter, Transport, storage, safe drinking water, water harvesting, SUPW materials, sports materials, composite grant, Midday Meal, Kitchen, parking, school beautification activities, health services.
- The sample of the study was 18 (eighteen) government elementary schools (classes I-VIII) located in Imphal West District, Manipur, India, as study setting.

Review and Related Literature

The studies conducted in India and abroad were reviewed in terms of components of Physical facility such as building, library,

classroom, support system, safety measures, toilet, other facilities etc.

Studies Conducted in India

School Infrastructures: Schools with unusable toilets were found in more than a third of the schools surveyed. It was in worst and unhygienic condition not meant for school children (Aswathi 2013). Primary schools were usually facing lack of basic facilities like Toilets, Electricity, Play-ground, libraries, Furniture and even school buildings (Kumar and Raj; 2015). Padder (2017) reported that in rural block no school were having more than 10 classrooms and more than 60 per cent were not having computers, the remaining schools have averagely two computers for official purpose only. Boruah (2017) reported that most of the primary schools are lacking of physical or educational facilities like boundary, head masters' room, student common room, proper playground etc. The Annual Status of Education Reports (ASER) 2018 showed that the condition of the elementary government schools of Manipur do not reach the mark provided under the Right to Education (RTE). All schools were using tap water for cooking and washing utensils except one government-aided school. The latter used stored water for washing utensils. Almost all schools had adequate water for cooking and washing. Water storage tanks were not regularly cleaned in any of the schools, and none of them ever tested water for chemical and microbiological contamination (Dasgupta et al., 2019).

Studies Conducted Abroad

Edwards & Torcelli, (2002); Tanner, (2008) reported that students exposed to more natural light (i.e., daylight) in their classrooms perform better than students exposed to less natural light. The U.S. General Accounting Office has found that fifteen thousand schools suffer from poor IAQ (Indoor Air Quality), affecting more than eight million children or one in five children in America's schools (General Accounting Office 1995). The IAQ symptoms identified—irritated eyes, nose and throat, upper respiratory infections, nausea, dizziness, headaches and fatigue, or sleepiness—have collectively been referred to as “sick building

syndrome” (Environmental Protection Agency 2000). The United States (U.S.) Architectural and Transportation Barriers Compliance Board, 1999 revealed that the specific criteria for maximum background noise of the classroom was recommended to be 35 decibels (dB). The U.S. Architectural and Transport Barriers Compliance Board, 2002 also expressed that classroom noise is an even more serious concern for students with hearing loss or attention deficit. In the guideline values of World Health Organization (WHO), for schools, the critical effects of noise are on speech interference, disturbance of information extraction (e.g., comprehension and reading acquisition), message communication and annoyance. To be able to hear and understand spoken messages in classrooms, the background sound pressure level should not exceed 35 dB LAeq (the equivalent Continuous Sound Pressure Level) during teaching sessions. About color applications for schools, studies reported that the introduction of color into the environment drops accident frequency from 6.4 to 4.6 or 28% and that white and off-white business environments resulted in a 25% or more drop in human efficiency (Birren, 1997); schools that received improved lighting and color showed the largest improvements in academic performance and IQ scores (Hathaway, 1987); children’s rejection or acceptance of certain colors is a mirror of their development into adulthood; once students transition into adolescence, the cooler colors and more subdued hues provided enough stimulation to them without proving distracting or stress-inducing (Mahnke & Mahnke, 1996); In Canada (Bouchamma et al., 2013) and the UK (Clark, 2010) correlations were found between the amount of fiction, informative texts and books provided by the school library and reading attainment. Earthman, Glen, I.; Lemasters, Linda (October, 1998) explored the relationship between selected support facilities (Gymnasium, Cafeteria, Auditorium) and student achievement; the findings do not support a positive relationship between support facilities and student achievement and behavior. Ginsburg et al., (2007) reported that children should spend at least 60 minutes each day in open-ended play, as recommended by the

American Academy of Paediatrics. Gleave, 2009; revealed that play has been ignored for many years, cities are building new schools in housing apartment without playgrounds and any play scopes, many people believe play is a waste of time in school rather a place for learning; Pellegrini et al., (1995) child psychologists and educators have considered the school playground as an important venue for children’s social and cognitive development.

The studies which conducted in India and Abroad were reviewed in terms of different components of Physical facilities.

1. The conditions of school building, library, toilet, playground, electricity, furniture was studied. (Awasthi, 2013; Kant, 2014; Kumar and Raj, 2015; Neihisial, 2016; ASER, 2018).
2. Computer facility in schools was studied (Padder, 2017)
3. School boundary, Head teacher’s room, students’ common room, proper playground was examined. (Boruah, 2017).
4. Water reservoir and its cleanliness was examined. (Dasgupta et al. 2019).
5. Importance of appropriate classroom light was also studied. (Edward & Torcelli, 2002)
6. Air quality of classroom and its’ effect on health was revealed. (Environmental Protection Agency, 2000)
7. Acoustic quality i.e., background noise of the classroom and its effects were examined and recommended sound pressure level. (The U.S. Agricultural and Transportation Barriers Compliance Board, 1999; World Health Organisation, 1999).
8. Color and its’ relationship with academic performance were studied. (Hathaway, 1987; Mahnke & Mahnke, 1996).

It is observed from the above research studies that most of them explored the conditions of infrastructure facilities in schools. Health related facilities were also examined and analyzed by several studies. The present study tried to explore deep information of the physical facilities by including more relevant items in the components. The present study was conducted to bridge the gaps resulting from the lack of coverage of the basic

requirements of the government elementary schools in terms of physical facilities.

Methodology

Method of study: Descriptive survey method was adopted in the study.

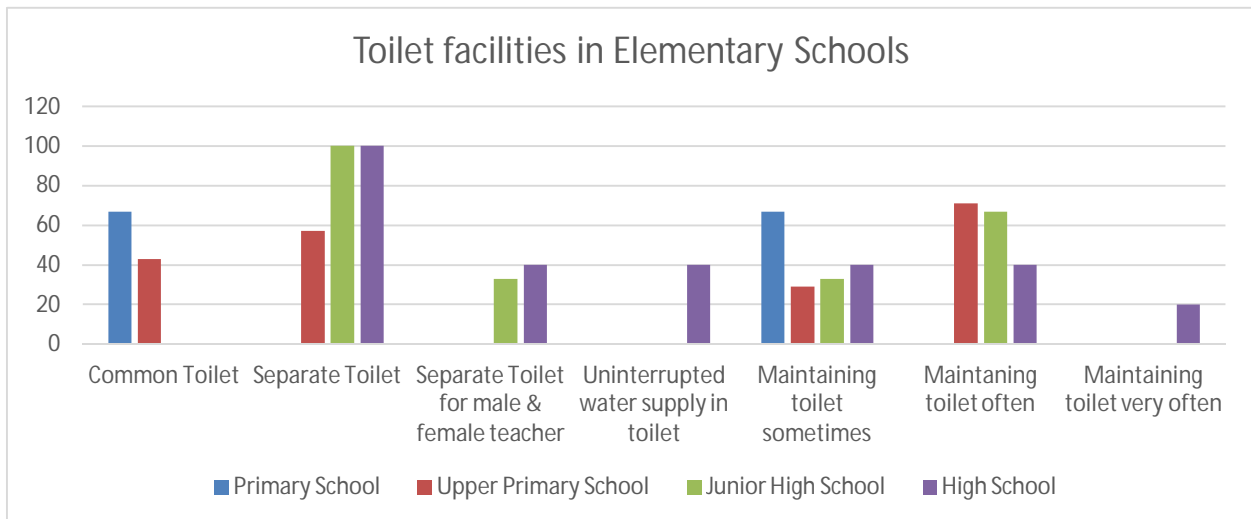
Tools and Techniques: Different tools and techniques were used in data collection such as information schedule, direct observation. The information schedule which included 30 (thirty) main components of the physical facilities of elementary schools were used in data collection. The data were collected through direct observing the physical condition of the sample schools, recording and interviewing with school heads.

Sample size: The eighteen (18) government elementary schools which were 6 schools from Imphal Municipal Council Block, 6 schools

from Haorang block and 6 from Wangoi block, Imphal west were selected randomly. The eighteen (18) government schools under study were three (3) primary schools (I-V), Seven (7) Upper Primary Schools (I-VIII), three (3) Junior High Schools (I-VIII), Five (5) High Schools. For high schools, data related with class I to VIII were observed and collected.

Analysis and Interpretation: The basic requirements of the government elementary schools in terms of physical facilities were analyzed and interpreted in qualitative and quantitative ways as follows:

- Building: The land of the school were government land and all the schools under study were semi pucca building.
- Toilet facility: Figure 1. Toilet Facilities of government elementary school



The figure no. 1. indicates that all the sample junior schools, high schools and the upper primary schools (57%) were having separate toilet. The upper primary schools (43%) and the sample primary schools (67%) have common toilets. All the sample primary schools, upper primary schools, the junior high schools (67%) and the high schools (60%) did not have separate toilet for male and female teachers. The junior schools (33%) and the high schools (49%) did have separate toilet facilities for male and female teachers. The primary schools (67%), all the sample upper

primary schools and junior high schools, the high schools (60%) did not have uninterrupted water supply in the toilet. Regarding maintaining of toilet, the primary schools (67%), the upper primary schools (29%), the junior high schools (33%) and the high schools (40%), maintained toilets sometimes. The upper primary schools (71%), the junior high schools (67%), the high schools (40%), maintained toilet often. The high schools (20%), maintained toilet very often.

- Classroom

Table no. 1.: Classroom facilities of government elementary schools

Sl. no.	Particular	3Primary schools (I-V)	7Upper-Primary Schools (I-VIII)	3 Junior High Schools (I-VIII)	5HighSchools (I-X)
1.	No. of classroom	3-4	3-7	6-8	8-17
2.	Size of classroom in sq.m.	15/15(1), 18/20(1), 15/17(1)	13/15(2),15/15(4), 25/16 (1)	15/18 (2), 12/16(1)	15/17(1),18/20(2), 15/25(1),15/20(1)
3.	Classroom Student Density	a) 6.9, b) 9.5, c) 4.7	a) 5.3, b) 4.9, c) 4.2, d) 5.6, e) 8.2, f) 5.2, g) 7.5	a) 5.2, b) 6.6, c) 5.4	a) 5.2, b)5.4(2 schools), c) 7.1,
4.	No. of doors & Windows per class	Window 3-4 Door 1-2	Window 3-4 Door 1-2	Window 2-4 Door 1-2	Window 3-4 Door 1-2
5.	Classroom Lighting (Natural or Artificial)	Natural (100)	Natural (100)	Natural (67) Both natural and artificial (33)	Natural (20) Both Natural and Artificial (60)
6.	Air Quality	Fair (100)	Fair (100)	Fair (100)	Fair (100)
7.	Acoustic Quality	Not noisy (100)	Not noisy (85.7) Moderate (14.3)	Not noisy (100)	Not noisy (80) Moderate (20)
8.	Visual Quality	Clear (100)	Clear (100)	Clear (100)	Clear (100)
9.	Color of interior and exterior of the classroom	Both-white	Both white	Both white	Both white
10.	No. of desk & bench in classroom	Pair 4-10 per class	Pair 4-7 per class	Pair 3-7 per class	Pair 6-15 per class
11.	Classroom ceiling material	No ceiling (67) Plywoodceiling (33)	Plywood (14.3) Bamboo (14.3) No ceiling (71.4)	Plywood(33) No ceiling (67)	Plywood (40) No ceiling (60)
12.	Ceiling fan	No ceiling fan	No ceiling fan	No ceiling fan	No ceiling fan
13.	Type of flooring	cemented	cemented	cemented	cemented
14.	Blackboard & Whiteboard	whiteboard	whiteboard	whiteboard	whiteboard

(Figures in the parentheses indicate percentage of the total population)

The table no. 2. shows the condition of classroom facilities which were analyzed in number range, percentage. The number range of classroom according to the level of schools were 3-4 classrooms for primary schools, 3-7 classroom for upper primary schools, 6-8 for junior schools, and 8-17 for high schools. The classroom student density per school was calculated with number and size of classroom, total enrolment of the school.

The formula used in classroom student density was: Classroom Student Density = $\sqrt{\text{size} + \text{number of the classroom}/\text{total enrolment}}$.

Regarding the classroom lighting, all the sample primary schools and Upper primary schools, the junior high schools (67%) did have natural light, 33% of them did have both

natural and artificial light i.e., electric bulb in the classroom. The high schools (80%) did have both natural and artificial light i.e., electric bulb in the classroom. The air quality of the classroom of all the sample schools was fair in quality. Regarding the acoustic quality, the classrooms of all the sample primary schools and junior high schools under study, the upper primary schools (86%), and 80% of the high schools were not noisy. The classrooms of the sample upper primary schools (14%) and the high schools (20%) were moderate acoustic quality. All the sample schools did have clear vision in the classroom. The color of the interior and exterior of the schools building under study were white. The number range of desks and benches per

classroom 4-10 pair per classroom for primary schools, 4-7 pair per classroom for upper primary schools, 3-7 pair per class for junior high schools, and 6-15 pairs per classroom for high schools. The primary schools (67%) under study did not have ceiling in the classrooms, and 33% of them did have ceiling made up of plywood. The upper primary schools (14.4%) did have plywood ceiling and 14.4% of them did have bamboo ceiling, and 67% of them did have plywood ceiling. The high schools (40%) did have plywood ceiling and 60% of them did not have ceiling. All the sample schools used whiteboard in the classroom.

Library, safety measures and support service:

All the sample primary schools, upper primary

schools, junior primary schools, and the sample high schools (60%) did not have library facilities. But the sample high schools (40%) did have library facilities. Regarding the safety measures, all the sample primary schools and the upper primary schools (43%) did not have fencing and fire extinguishers. The sample upper primary schools (57%) and the junior high schools (67%) did have fencing and fire extinguishers. The junior high schools (33%) did not have fire extinguishers. the junior high schools (33%) needed major repair in fencing. All the sample schools did not have support systems like gymnasium, auditorium and cafeteria.

Other facilities:

Table no. 2.: Other facilities of government elementary schools

Sl. no.	Particulars	Primary school	Upper Primary school	Junior H/S	High School
1.	Ramp	Yes (100)	Yes (100)	Yes (100)	Yes (100)
2.	Playground	Yes (67), No (33)	Yes (100)	Yes (100)	Yes (100)
3.	Computer	No (100)	No (100)	No (100)	Yes(20)No(80)
4.	ICT	No (100)	No (100)	No (100)	No (100)
5.	Students' room	No (100)	No (100)	No (100)	No (100)
6.	Power supply(24X 7)	No power supply (100)	No(86)Yes(14)	No (100)	No(20)Yes (80)
7.	Solar panel	No (100)	No (100)	No (100)	No (100)
8.	Teachers' common room	Yes, (100)	Yes (100)	Yes (100)	Yes (100)
9.	Residential facility for students	No (100)	No (100)	No (100)	No (100)
10.	Teachers' quare	No (100)	No (100)	No (100)	No (100)
11.	Transport facility	No (100)	No (100)	No (100)	No (100)
12.	Storage	No (100)	No (100)	No (100)	No (20)Yes (80)
13.	Water Harvesting facility	No (100)	No (100)	No (100)	No (80)Yes (20), but need major repair)
14.	Safe drinking water	Yes (100)	Yes (100)	Yes (100)	Yes (100)
15.	Socially Useful Productive work (SUPW) materials	Yes (100)	Yes (100)	Yes (100)	Yes (100)
16.	Sport materials	Yes (100)	Yes (100)	Yes (100)	Yes (100)
17.	Free Uniforms and Text books	Yes (100)	Yes (100)	Yes (100)	Yes (100)
18.	Composite Grant	Yes (100)	Yes (100)	Yes (100)	Yes (100)
19.	Frequency of Midday Meal (MDM)	Daily	Daily	Daily	Daily
20.	Frequency of Repairment	Sometimes (100)	Sometimes(43) Often (28.5)As andwhennecessary (28.5)	Often (100)	As and when necessary (60) Very often (20) Sometimes (20)
21.	Kitchen	Yes (100)	Yes (100)	Yes (100)	Yes (100)
22.	Parking	No (100)	No (100)	No (100)	No (100)
23.	School Beautification Activities	No (100)	No (43)Yes (57)	Yes (100)	No (20)Yes (60)
24.	Health Services	Yes (100)	Yes (100)	Yes (100)	Yes (100)

(Figures in the parentheses indicate percentage of the total population)

The table no. 4 indicates the other necessary facilities of elementary schools. The collected data were analyzed and interpreted in percentage. All the sample primary schools, upper primary schools, junior high schools did have ramp. The sample primary schools (33%) did not have playground and 67% of them did have playground in the school campus. The sample upper primary schools, junior high schools, high schools did have playground in their campus. All the sample primary schools, upper primary schools, junior high schools, and the high schools (80%) did have computer but the high schools (20%) did not have computer. All the sample schools did not have facilities like Information and Communication Technology (ICT), students' common rooms, solar panel, teachers' quarters, transport, parking, residential for students. The sample primary schools, 86% of the upper primary schools, all the sample junior high schools and 20% of the high schools did not have power supply connection. 14% of the upper primary schools, the high schools (80%) did have 24 X 7 power supply regularly. The sample primary schools, upper primary schools, junior high schools, and the high schools (20%) did not have storage facilities. But the high schools (80%) did have storage facility. Regarding water harvesting facility, the high school (20%) did have it but needed major repair and all the sample primary, upper-primary, junior high schools and 80% of the high schools did not have water harvesting facility. All the sample schools did have safe drinking water facility, socially useful productive work (SUPW) materials, sports materials, free uniforms and text books, composite grant, kitchen, health services. All the schools under study provided Midday Meal daily. Regarding the repairment, the sample primary schools, the upper primary schools (43%), the high schools (20%) repaired sometimes, the sample junior high schools repaired often, the high schools (20%) repaired as and when necessary and the high schools (20%) repaired very often. Regarding the school beautification activities, the sample upper primary schools (57%), the high schools (80%) did perform the activities. All the sample primary schools, 43% of the upper primary schools and the high schools (20%) did not perform the activities in the schools.

Results and Discussion

The schools under study were at government's land and the type of buildings were semi pucca. Regarding toilet facilities, among the sample schools, the toilet condition of the sample primary schools was very poor i.e., 33% of them did not have toilet and 67% of them common toilet. Regarding classroom facility, the study reported that the classroom student density of the sample schools was low and the classroom density under the norms prescribed by the Sarva Shiksha Abhiyan (SSA), Framework for Implementation (2011), p.108) were 1.11 sq. meter per child (with furniture) and 0.74 sq. meters per child (with squatting). There was natural light, not noisy, clear vision in all the sample schools. Each of the sample schools used whiteboards in the classroom. Regarding the ceiling of the classrooms, 67% of the primary schools, 71% of the upper primary schools, 67% of the junior high schools, 60% of the high schools did not have ceiling in the classroom. In all the sample schools, there were no ceiling fans in the classrooms. There were no library facilities in all the sample schools except 40% of the sample high schools. Regarding the safety measures, 57% of the upper primary schools, 67% of the junior high schools, 60% of the high schools were found having fencing and fire extinguishers. All the sample primary schools did not have fencing and fire extinguishers. Regarding support system, all the sample schools lacked of support systems like gymnasium, auditorium, cafeteria. In all the sample schools, there were ramp, safe drinking water, socially useful productive work materials, sports material, teachers' common room, free uniform and text books, composite grant, kitchen, health services. There was no ICT facility, students' common room, solar panel, residential facility for students, teachers' quarters, transport, parking in all the sample schools. The sample primary schools, junior high schools, high schools and the primary schools (67%) did have playground in the school campus. There was computer in the high schools (20%). There were no water harvesting facility in all the sample primary

schools, the upper primary schools (86%), junior high schools, the high schools (80%). The high schools (20%) did have water harvesting facility but need major repair. In all the sample schools, Midday meals were provided daily. The sample upper primary schools (43%), the high schools (20%) were repaired sometimes. The high schools (20%) were repaired very often and all the sample junior high schools were repaired often.

Out of 18 schools, 13 the sample government elementary schools (72%) were not able to fulfil all the basic requirements in terms of physical facilities and minimum number (18%) of sample schools fulfilled most of the basic requirements of physical facilities. Other facilities fulfilled by the sample schools faced problems of quality and quantity. Library facilities, support system like gymnasium, auditorium, cafeteria, power supply (24 X7), solar panel, water harvesting facilities, ICT facility, students' common room etc., of the schools were required serious attention of the

authorities. The physical facilities fulfilled by each of the sample school were different in quality, number, size, frequency etc.

Conclusion

The result and discussion sections have clearly indicated that each of the government schools under study did not achieved all the basic requirements in term of physical facilities in equal manner. Only few sample schools have achieved the basic physical facilities. The condition of the physical facilities of the sample schools is not in satisfactory stage. It was expected that the findings emerging from the study would help the educational planners and policy makers in ascertaining the gravity of the problems of physical facilities in schools. The findings would be able to develop an understanding of the present condition of physical facilities in government elementary schools. Thus, it would enable educational authorities to provide the necessary basic requirements of the physical facilities for the further improvement of the schools.

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IMPACT OF REPETITIVE CORRUGATION AND STRAIGHTENING ON MICROSTRUCTURE, MECHANICAL AND WEAR PROPERTIES OF DUPLEX STAINLESS STEEL

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ABSTRACT

The experiment's goal is to see how repeated corrugation and straightening affect the microstructure and mechanical properties of duplex stainless steel. After N passes, the ultra-fine grain structure can be obtained using the repetitive corrugation and straightening (RCS) method. During RCS, strain homogeneity has a significant impact on microstructural and mechanical properties. Strain inhomogeneity is caused by a variety of factors, such as die profile and pressing velocity. The working temperature also affects the strain inhomogeneity. The objective material for this study is duplex stainless steel, which will be processed by repeated corrugation and straightening. Furthermore, various conditions can be studied to see how microstructure affects mechanical. Severe plastic deformation (SPD) is a catch-all term for a class of metal working techniques that involve strains extremely large, usually in the presence of a higher shear or complex stress state, as a result of which the defect density is high, and the ultrafine grain is equiaxed. RCS (repetitive corrugation and straightening) is a processing technique of sheet metal that involves extreme plastic deformation. A layer is pressed between two dies for corrugation and then between two flattening dies. RCS process has been well-known for producing fine-grained sheet metals. The Brinell testing machine was used for hardness testing, the Universal testing machine for tensile testing, the pin on disc tester for wear testing, and the optical microscope for microstructure characterization. The hardness test and traction test showed that the hardness value and traction strength are increased following the RCS procedure. Due to repetitive bending and flattening of Duplex stainless steel, the grain size has decreased with the increase in the number of grains.

Keywords-Repetitive Corrugation and Straightening, Severe Plastic Deformation, Duplex Stainless Steel, DSS Properties.

1. Introduction

The stainless steel is a category of iron-based alloys with a minimum chromium content of 11 percent, a composition which prevents iron from rusting and provides heat resistance. Stainless steel contains carbon (from 0.03 percent to more than 1.00 percent), nickel, nitrogen, titanium, copper, silicon, aluminium, niobium, sulphur, selenium, and molybdenum. A three-digit number, such as 304 stainless steels, is sometimes used to identify stainless steel. Duplex stainless steels belong to the duplex family and are a type of stainless steel. Their metalwork consists of approximately equal amounts of austenite (face-centered cubic lattice) and ferrite and is known to be duplex (or austenitic-ferritic) grades (body-centered cubic lattice). Duplex stainless steel is a work hardenable alloy that is highly corrosion resistant. A mixture of austenite and

ferrite phases make up their microstructures. As a consequence, properties of both austenitic and ferritic stainless steels can be found in duplex stainless steels.

2. Materials and Methodology

2.1 Material Selected

Duplex stainless steel grade 2205 is the material used for this experiment. 2205 Duplex stainless steel is a two-stage austenitic and ferritic alloy with 22% chromium, 5% nickel and 3% molybdenum alloy steel. It is the most often used grade of duplex which has double the output strength of conventional stainless steel of austenitic grade. It is also resistant to stress corrosion, crevice, pitting, erosion, and general corrosion in harsh conditions, and has a strong fatigue strength.

Table 1: Chemical composition Duplex stainless steel 2205

Grade	C	Si	Mn	S	P	Cr	Mo	Ni
2205	0.03 max	1.0 max	2.0 max	0.03 max	0.02 max	min: 21.0 max: 23.0	min: 2.5 max: 3.5	min: 2.5 max: 23.0

Table 2: Duplex stainless steel's Mechanical properties

SI No.	Grade	2205	UR52N+
1	Tensile Strength (MPa)	620	770
2	Proof Stress 0.2% (MPa)	450	550
3	Elongation A5 (Pa)	25	25

Table 3: Duplex stainless steel's Physical properties

SI No.	Property	2205	UR52N+
1	Density(g.cm ³)	7.805	7.810
2	Modulus of Elasticity (GPa)	200	205
3	Electrical Resistivity(Ω m)	0.85×10^{-6}	0.85×10^{-6}
4	Thermal Conductivity (W/m K)	19 to 100° C	19 to 100° C
5	Thermal Expansion (m/m K)	13.7×10^{-6} to 100°	13.7×10^{-6} to 200°

2.2 Properties of Duplex stainless steel

Strength: Stainless steel of duplex grade is about twice the strength of normal ferritic or austenitic grade.

Corrosion resistance: The resistance to corrosion depends, like all stainless steels, mainly on the stainless-steel composition. Duplex grades of stainless steel have a range of resistance to corrosion similar to the range of austenitic stainless steels.

Heat Resistance: Duplex stainless steel, which is high in chromium and protects against corrosion, causes fragility in temperatures above 300°C. Duplex steels have better ductility than ferritic and martensitic grades at low temperatures. It is readily possible to use Duplex grades down to -50°C or less.

Toughness and ductility: Duplex stainless steels are much tougher and more ductile than the ferritic grades, but they do not attain the excellent austenitic grade values.

Stress corrosion cracking resistance:

Duplex stainless steels display a strong resistance to stress corrosion (SCC), which is an inherited property on the ferritic side.

Heat Treatment: Unable to heat treatment, stainless steel duplex is not hardened. However, they can be hard worked. After heating to about 1100°C, quick cooling or cleaning can be done.

Fabrication: Only tools dedicated to stainless steel material should be used to manufacture all stainless steel. Before use, surfaces for tools and work shall be thoroughly cleaned. These precautions are necessary to ensure that the surface of the fabricated product is not cross contaminated by stainless steel by easily corroded metals.

Cost: Stainless steel of duplex grade has a lower content of molybdenum or nickel than its austenitic grade with resistance similar to corrosion. Dual alloy stainless steels can be less expensive, especially in high alloy surcharges due to their lower alloy content.

2.3 Methodology

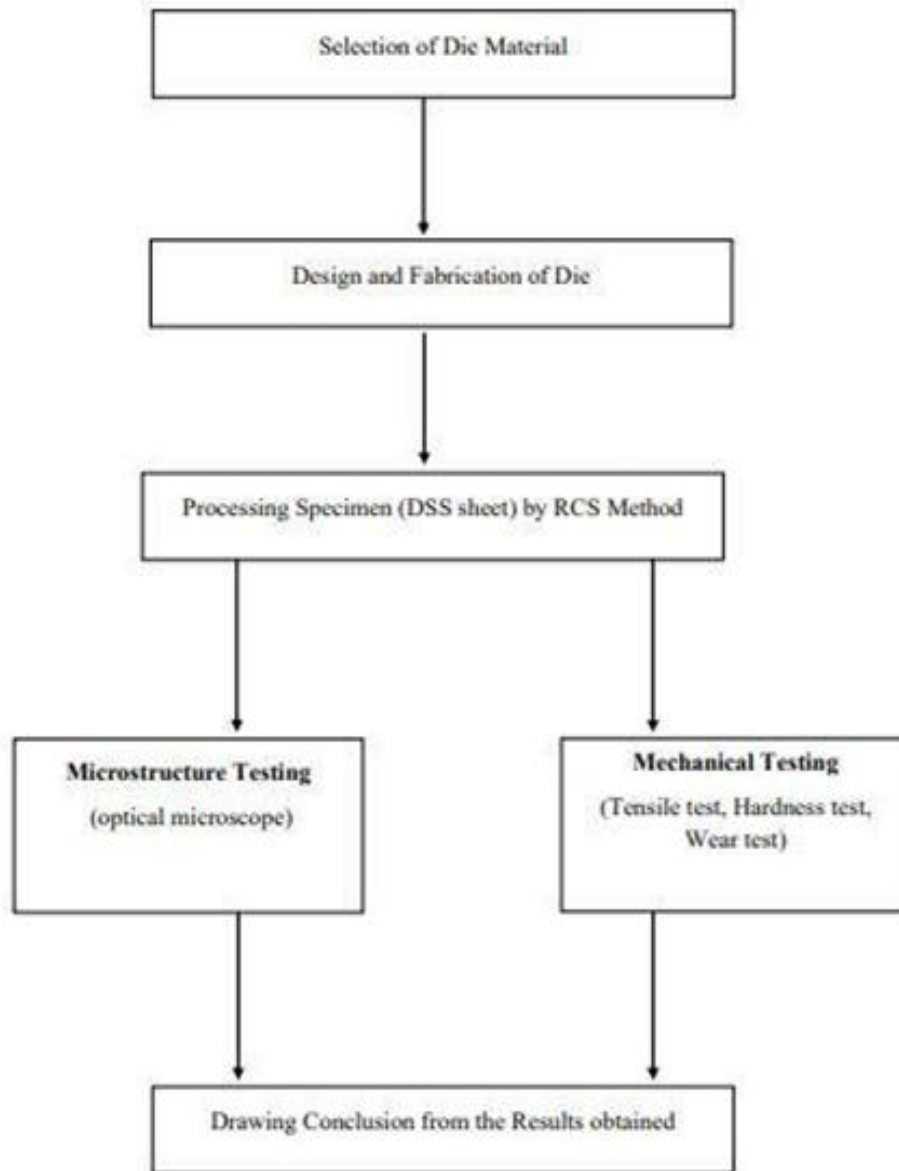


Figure 1: Flow Chart of Experimental Work

2.4 Material Processing

The process of Repetitive Corrugation and Straightening includes the uses of dies. This method is commonly used because it is an easy and inexpensive way to increase the number of grains while also reducing grain sizes. The properties of the materials are taken into consideration when selecting materials. The properties of the die material must be superior to those of the test material. The substance under consideration is sandwiched between the dyes. The UTM's load is used to bend the sheet of the material that is being taken. The bending and flattening of the material in use are also part of this method. There are a number of other parameters and instruments that are used in this operation.

2.5 Die Design

The Hot Dye Steel is the material that we are considering for the die. H13, also known as hot die steel, is a hardening tool steel that has excellent hardness and toughness and can be used in a wide range of applications. We looked at four different dye blocks. - one is 150mm*90mm*40mm in size. Two of the dyes are grooved, while the other two are defined as smooth. The grooved dye has a semi-circular dye that measures 6mm in diameter. This allows us to bend the material with the grooved dye and flatten it for several passes with the flat dye. The dye was machined using both a grinding machine and a milling machine.

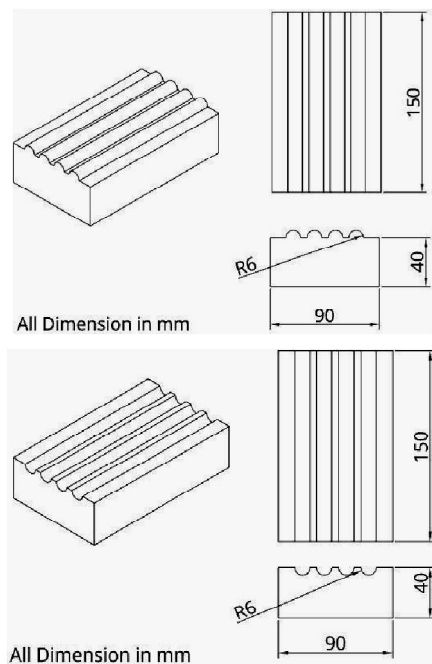


Figure 2: CAD Design of Die

The mechanism that we are going through is depicted in figure. We'll start with the semi-circular grooved die. The DSS layer is then placed between the two dyes and the incremental load is applied using a universal testing machine. The deformation of the DSS sheet occurs, resulting in changes in the grain sizes and grain number. The sheet is then flattened by repeating the process but replacing the semi-circular dye with flat dye. After that, we go through a series of cycles before we reach saturation. The grinding machine is depicted in figure. Grinding is a type of surface finishing that involves removing a very thin layer of material in the form of fine dust particles. (Thickness ranges from 0.25 to 0.5mm). Grinding is a material removal procedure that uses an abrasive motion between a spinning abrasive wheel and the work piece to remove material. A grinding machine is a power-driven machine tool that removes a thin layer of material from a work piece by feeding it against a continuously spinning grinding wheel.

3. Experiments

3.1 Hardness Test

The hardness test was performed using the Microhardness Tester / Hardness Tester Vickers. ASTM E-384 Micro hardness tests are used to produce indentations measured and converted in hardness by a diamond

indenter, covering a range of low stresses. It is beneficial for evaluating a wide range of materials, but it is important to polish test samples extremely well to measure the size of the imprints. The Vickers scale uses a square base diamond and a pyramid form for testing. Charges are usually in the range of 10gm to 1kgf although "Macro" loads of Vickers can weigh as much as 30 kg or more.

3.2 Tensile Test

Tensile tests were performed using the UTM. Tensile tests are one of mechanical testing's most basic and commonly utilized kinds. Tensile tests include the application of the tensile force on a material and measurement of the reaction of the specimen to stress. Tensile tests show how powerful a material is and how far it can be stretched.

3.3 Wear Test

Wear is the gradual decrease in relative movement of material from the solid surface. Wear is the name of the material distortion or progressive loss from solid surfaces. The test of wear was carried out by means of a pin on a disc wear tester, load 10, 20 and 30N were given to the test.

3.4 Microstructure Test

Duplex stainless steel microstructural characterization with optical microscope. The samples have been produced according to normal methods and the results have been photographed using optical microscope.

4. Discussions and Results

4.1 Hardness results of Duplex Stainless Steel (DSS)

Table 4: Shows hardness test values of DSS

Point	Distance	Hardness	Diagonal X	Diagonal Y
1	0.100mm	155.5 HV	0.101mm	0.177mm
2	0.200mm	151.6 HV	0.113mm	0.109mm
3	0.300mm	143.1 HV	0.144mm	0.144mm

Table 5: Mean hardness results

Mean	Minimum	Maximum	Range	Std. deviation
150.1	143.1	155.5	12.4	6.3

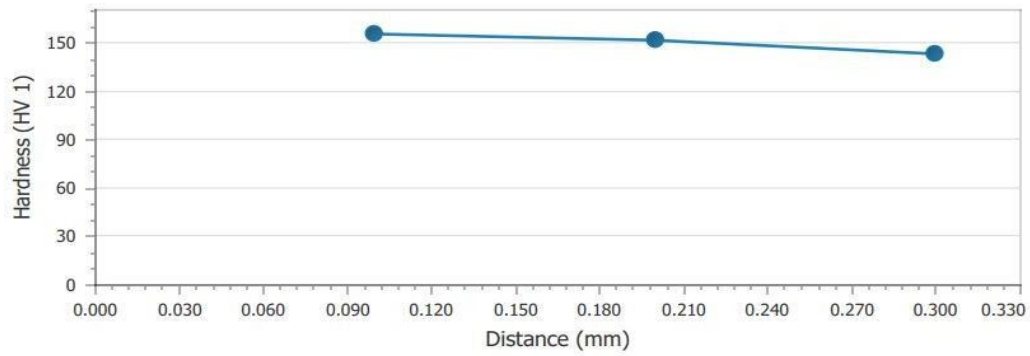


Figure 2: Hardness test values graph

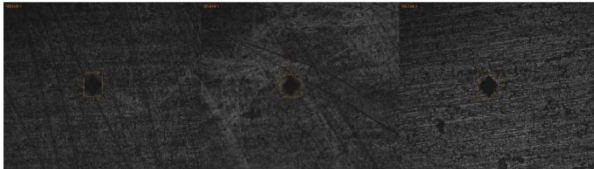


Figure 3: Hardness trace

Table 4 shows the results of hardness test values of duplex stainless steel after repetitive corrugation and straightening process. Three indentations were carried out three different locations. Figure 2 shows the hardness test values graph. The average result of hardness value is 150.1 HV, with the maximum of 155.5 HV and minimum of 143.1 HV.

4.2 Tensile test results of Duplex Stainless Steel

Table 6: Tensile test values

Peak stress	184.755 MPa
Peak Load	7.39 kN
Modulus	12.118 GPa
Limit of Proportionality	69.095 MPa
Elongation at Break	12.075%
Yield Stress	111.749 MPa
Yield Strain	0.95%
Yield Load	3.909 kN
Yield Point Extension	0.95 mm
Strain Hardness Coefficient	327.629 MPa
Stiffness	4.847 kN/mm

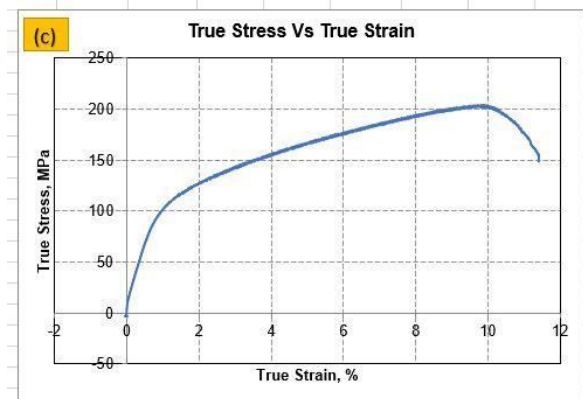
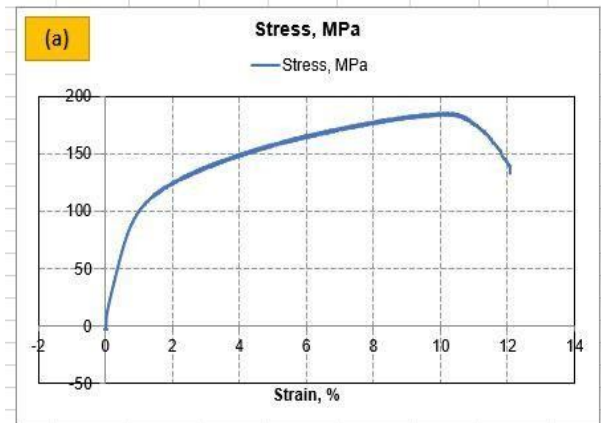
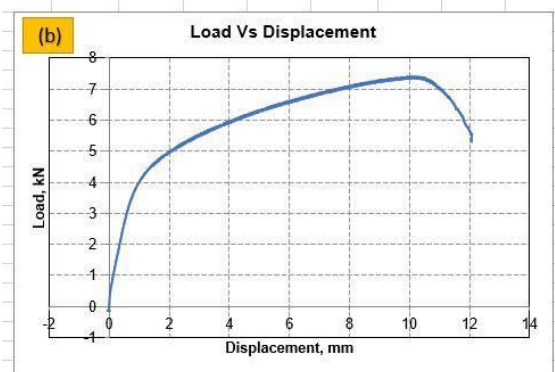
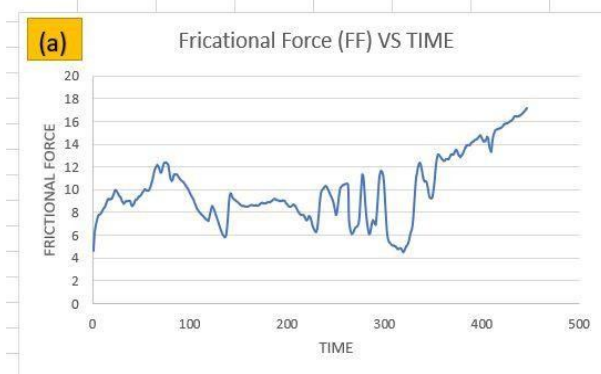


Figure 4: Tensile Test Values (a) Stress vs Strain (b) Load vs Displacement

(c) True stress vs True strain

4.3 Wear test of duplex stainless steel



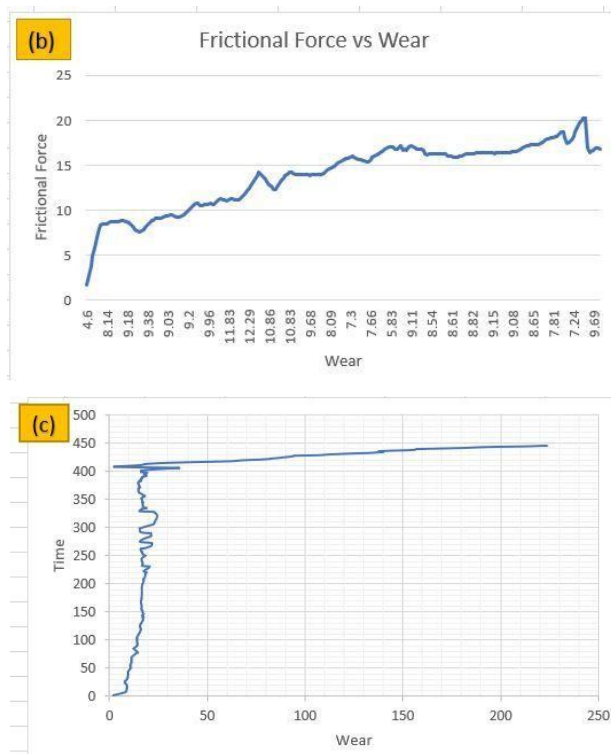


Figure 5: Wear test values of duplex stainless steel using pin on disc wear tester, where graph (a) frictional force vs time, (b) frictional force vs wear, (c) time vs wear.

Figure 5 shows the results of wear test of duplex stainless steel using pin on disc wear tester. The wear rate increases with the increase of load. The coefficient of wear is calculated using $V*H/F*S$, where V is the volume of material, H is the hardness of material, F is the frictional force acting on the material. The calculated wear coefficient of duplex stainless steel is 0.017×10^{-3} .

4.4 Microstructure Characterization using Optical microscope.

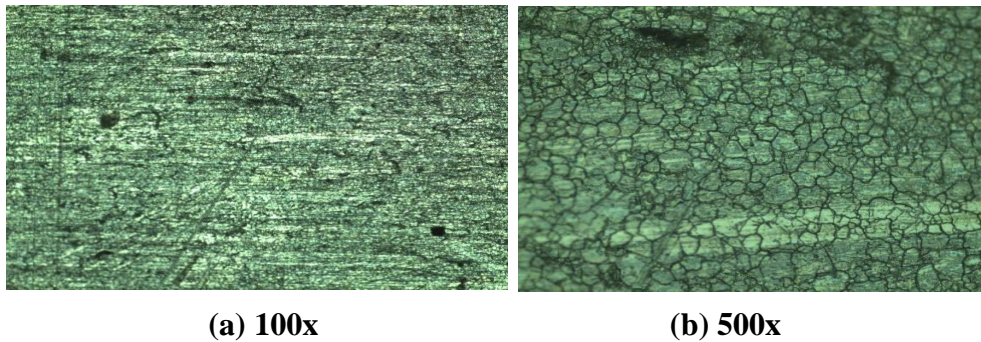


Figure 6: Microstructure Characterization of duplex stainless steel after repetitive corrugation and straightening where (a) at 100x and (b) at 500x

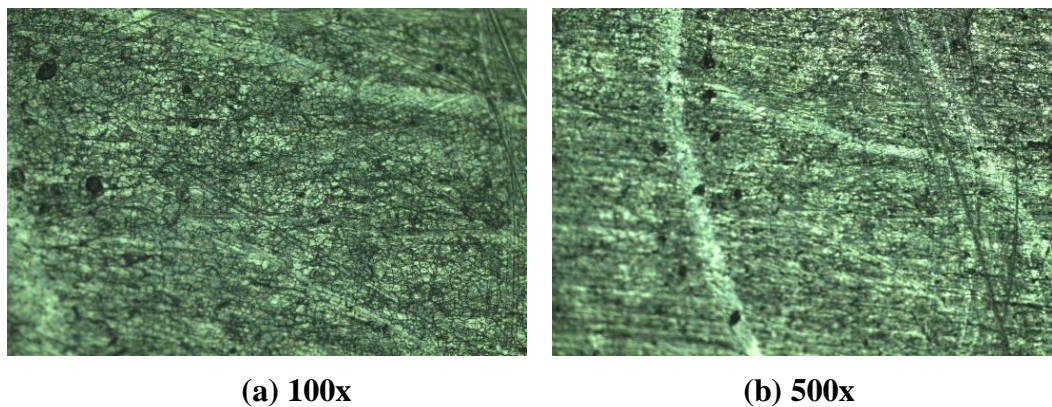


Figure 7: Microstructure Characterization of duplex stainless steel after repetitive corrugation and straightening where (a) at 100x and (b) at 500x

Figure 6 shows optical micrographs of duplex stainless steel before repetitive corrugation and straightening process and Figure 7 shows after process which shows fine grains in the

microstructure. It is observed the flattened and elongated grains due to repetitive corrugation and straightening process. The lighter part of the picture is austenite seed,

while the darker part is the ferritic matrix.

5 Conclusions

After the process we see that there are a number of changes that is being taking place in the material. We conduct this process for a number of passes till we reach a saturation point till no much variation is seen in the properties.

The tensile property of the material increases with the number a passes. Ductile nature of the material is seen to increase. The hardness value of the material also increases. While this process is being carried out, we notice that due to repetitive bending and flattening of the Duplex Stainless Steel the gran size decreases with the increase in the number of grains.

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STUDY ON DIVERSITY OF AQUATIC PLANTS AND THEIR ETHNOMEDICINAL USES IN SOME PONDS OF BILASPUR CHHATTISGARH

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ABSTRACT

Aquatic angiosperms are very remarkable forms of plant-life and they find a more or less precious footing in pond ecosystem. Paradoxically enough, it is not Easy to define aquatic plants, at least in a manner that they may be applied without fear of contradiction; the difficulty comes from the existence of numerous species. Muenscher (1944) considered aquatic plants as those species. Which normally stand in water and grow for at least a part of their life cycle in water .Similar view has been explained by Reid (1961) who defined water plants as there seeds germinate in either the water phase or the substrate of a body of water and which must spend part of their cycle in water. This biological grouping includes plants which grow completely submerged (except when flowering) as well as variety of emergent types.

Keywords: Aquatic Angiosperm, Nutraceuticals, Ophthalmic, Unrepairable,

Introduction

The earlier record use of medicinal plants for prevention of disease and use of ointment can be traced Rig-Veda perhaps the oldest repository of human knowledge have been written between 4500 & 1600 BC. Each ethnic community has their own health care system, their ancient knowledge, sometimes referred to as ethno therapeutics. They are utilized their plant part like rhizome, stem, roots, fruits, leaves, in various ways for the treatment of various ailments since ancient time. In spite of the impressive work done on the aquatic plants of India viz. Biswas and Calder (1955), Subramanyam⁷ (1962), Vyas⁸ (1965), Jha (1965), Kaul and Zutshi⁹ (1967), Hogeweg and Brenkert 1011(1969 a, b) Kaul (1971), Ramchandran, aquatic angiosperms have not been adequately studied in Chhattisgarh. Some workers, like Hains (1961), Singh (1998) have made survey of angiospermic flora of Bilaspur but their findings are mainly based on terrestrial plants. Aquatic plants are generally considered as menace as they are often result of eutrophication. But this is also a myth as a large number of aquatic plants are useful for human being and their medicinal uses are worth mentioning. Keeping these facts in mind present investigation was formulated to study aquatic plants of Bilaspur district and to document their medicinal properties prevalent among local people.

Material & Methods

Bilaspur district is a district of the Chhattisgarh state of India. Bilaspur city is the headquarters of the district. As of 2011 it is the second most populous district of Chhattisgarh Bilaspur district is situated between 21°47' and 23°8' north latitudes and 81°14' and 83°15' east latitudes. The district is bounded by Korba on the north, Anuppur and Dindori District of Madhya Pradesh state on the west, Kawardha on the southwest, Durg and Raipur on the south and Korba and Janjgir-Champa on the east. The area of the district is 6377 km². Bilaspur is also known as the cultural capital of the state and also boosts various cultural and social events. Bilaspur district consists of 8 tehsils. These tehsils are Bilaspur, Pendra Road, Lormi, Kota, Mungeli, Takhatpur, Bilha and Masturi. The total number of villages in the district is 1635. The headquarters of the district is Bilaspur. It is the second largest city in the state and the seat of the High Court of Chhattisgarh. It is called *Nyaydhani* (legal capital) of Chhattisgarh. Bilaspur has Kanan Pendari Zoo Park. Arpa is a river passing through the district, it very shallow in depth but does creates havoc during rains. . In present study, 12 ponds of study area was taken into consideration (Table-1). The ponds were visited every month and aquatic plants were collected and their herbaria were prepared. Pahan, the wisest man among tribal, medicine

men and local herbal healers were consulted for preliminary identification of plants. Botanical identification was made with help of Heins Flora and Flora of Chhattisgarh, published by Botanical Survey of India. Botanical names, common names, properties, parts used and their curative uses were recorded

Results and Discussion

Result of present investigation is enumerated in Table-2. Altogether 24 hydrophytes of medicinal importance have been recorded from water bodies of Bilaspur. These plants belong to 20 families. A remarkable feature of the study outcome is restriction of number of species belonging to one family. Out of the total plants recorded 9 were found to possess diuretic properties and 6 have astringent properties. 4 plants were found to possess astringent properties whereas 2 were useful in ophthalmic ailments. *Aponnagaton natans* is a multiuse plants collected from study area and tribal use starch rich seeds in roasted form which has high nutritive value. Dried flowers

of this plant are utilized to impart flavor to meal. *Eicchornia crassipes* the notorious weed of water body is a good source of antioxidant agents (Lata et.al.2010)⁵. Tribal of Bilaspur area have been using this plant as food item from time immemorial. Remarkably, local people use various aquatic plants for treatment of common diseases like, cold, fever scorpion ting, liver trouble etc. A good number of plants are used as nutraceuticals as well. It is however a matter of concern that land use pattern in Bilaspur is changing fast and water bodies are soft target of this change. Needless to mention this is causing unrepairable harm to aquatic plant diversity both species wise and population wise. Almost same concern has been expressed by other authors as well like, Pandey and Pandey2009² and Bhunia and Mandal(2009)³. It is therefore urgently suggested by the authors to take contingency of the situation and save highly useful aquatic plants. It is also important to note that most of the traditional uses of aquatic plants are novel and they need both popularization and preservation.

Enumeration of Aquatic Plants of Medicinal Uses Found in Bilaspur

SI NO	BOTANICAL NAME	LOCAL NAME	FAMILY	PROPERTIES	PARTS USED	AILMENT /USES
1	<i>Astercantha longifolia</i> L	Gokhuljanum	Acanthaceae	Astringent, diuretic, stomachic	Leaves Roots	The leaf, roots & seeds are used as diuretic & employed in jaundice, dropsy, rheumatism & diseases of urinogenital tracts. tribal people made decoction of leaves, cool them over night & administered one cup empty bowel in the morning for 7 to 10 days. Cure urinogenital disorder. Paste of roots is applied in rheumatism.
2	<i>Alternanthera sessilis</i> L,	Garundi garoo mullabanthi	Amaranthaceae	Ophthalmic, detergent	Stem, leaves	Leaf extract is useful in various types of eyes trouble. Decoction of stem & leaf is taken half cup daily for 4 to 7 days to check blood vomiting. Poultice of leaf is applied on boils.
3	<i>Aponnegeton natans</i> L	Ghechu	Aponagetonaceae	Antidote, Antiphlogistic, Depurative, Diuretic, Febrifuge	Leaves seed	The starchy seed is roasted & taken as food supplement in different areas of Chhattisgarh. The flowering spike & young shoot is used as vegetables. Tribals use flower of this plant as flavoring agent. Regular use of this plant is helpful in curing stomach disorder & reviving digestive system.

4	Cerretophyllum demersum L	Jhanjhi	ceratophyllaceae	cardiotonic	Leaves	Paste of leaf is externally applied in cases of scorpion. Decoction of leaf is used for 10 to 15 days to regulate biles secretion.
5	Eichhornia crassipes (mart) solms	Jalkhumbi	Pontideriaceae	astringent	Leaves, petiole	The plants are used as manure young leaves and petioles cooked virtually tasteless said to be used as a carotene rich table vegetable, antioxidant.
6	Hydrolea zeylanica L vahl	Kassachara	Hydrophyllaceae	Diuretic, febrifuge	leaves	The leaves have antiseptic properties & its Decoction is useful in healing ulcer young shoot are eaten as vegetable.
7	Hydrilla verticillata (L.F) Royle	Jhangi,kureli	Hydrochartaceae	Detergent miscellary	Leaves	Decoction of leaf is used in the treatment of abscesses boil and wounds. Leaves are dried powdered and applied on cuts and wounds. To help accelerate healing.
8	Jussieva repens Lnn	Allamonda	Oenotheraceae	Depurative diuretic, febrifuge	Root, leaves, fruit, seeds	Powdered of dried plant is applied on ulcer and skin diseases.
9	Lemna minor Lnn	Patseola pancha	Lamnaceae	Antiscorbutic, astringent, depurative, febrifuge, diuretic, ophthalmic sedative	Leaves	Leaves are boiled in water and used in treatment of cold. Decoction of leaf and continuously 15 days cure problem in urination. Decoction of leaf is also used for as ophthalmic wash. Application of paste of leaf is useful in skin diseases.
10	Marsilea quardifolia L	Panitengesi sunusunia	Marsileaceae	Antidote, antiphlogistic, depurative, diuretic, febrifuge	Leaves, seed	Juice of leaf is administered one teaspoon for 4 times day in diarrhea. Paste of leaf is also applied on snakebite & abscesses
11	Nelumbo nucifera Gaertn	kamal	Nymphaeaceae	Astringen, Cardiotonic, febrifuge, hypotensive, tonic, vasodilator	Flowers, leaves, root, seed, stem	One table spoon of decoction of flower mixed with a glass of water in regularly used as cardio tonic & liver tonic. Paste of seeds is applied in cure of skin disease. Powdered rhizome is used externally to cure piles.
12	Nymphoides indicum L	Kumudni, panchuli	Menyanthaceae	diuretic	Leaves	One table spoon of paste of leaves is mixed in one glass of water & is used once a day in fever & jaundice.
13	Nymphaea nauchali Burm	Nilotpalam, upila kamal	Nymphaeaceae	Tonic	Leaves	Leaves are soaked in water overnight & one glass of this preparation is taken in the morning for 4 to 6 days in dysentery & other intestinal disorder. The decoction of leaf is also used in irregular mensuration.
14	Ludwigia adscendena L	Labangi, hikota	Onagraceae	Astringent		Whole plant is boiled in water, the water after cooling is administer one cup twice a day for 4 to 6 days in fever cold & cough. Decoction of plant also used in dysentery.

15	Polygonum glabrum Wild	Gulabi, sauriarak, bsirjaush	Polygonaceae	Anthelmintic, astringent, cardiotoxic,	Leaves, seed	Half cup decoction of whole plant is used twice daily in fever infusion of leaf relief patient from colic pain
16	Ranunculus scularatus L	Jaldhinia	Ranunculaceae	Anodyne, Antirheumatic Antispasmodic, diaphoretic, emmenagogue	leaves	One tea spoon of dried & powdered rhizome is used in diarrhoea & dysentery. One table spoon juice of leaf is mixed in one cup of water & administered daily for 10 days to remove ringworm. Tribal of Chhattisgarh are of fresh plant as tonic and dietary supplement.
17	Sagittaria sagittifolia Leucopetala	Muyamuya, hartog	Alismataceae	Diuretic antiscorbutic	Leaves, root	Paste of leaf is externally applied in different types of skin problems. Decoction of tuber is used by tribal as mean of birth control as it induces premature terminations.
18	Spirodela polyrhiza L schleid	Panivaragu	Lamnaceae	Antipyretic antipyreticcardiotonic, carminative diaphoretic	leaves	2 table spoon of decoction of leaf is used thrice daily for 3 days in cold & cough. Decoction is useful in regulating urination. Paste of leaf is applied externally on measeals.
19	Ipomoea aquatica Forsk	Kalmisag, ganthian	Convolvulaceae	Purgative	Leaves, shoot	Two tea spoon of young leaf juice is taken in the night as purgative. Decoction of leaf is also as blood purifier.
20	Pistia stratiotes L	Topapana	Araceae	Diuretic	root	One tea spoon of powdered root is taken in the night as laxative. Regular use of half cup of decoction of root is administered in eczema cold & cough. Decoction of root is also helpful in removing ring worm. Paste of root is useful in skin disease.
21	Urticularia australisL	Itka	Lentibulariaceae	Diuretic, vulnerary	Leaves, root	Paste of plant is applied on burns & a wound twice of plant is a good tonic & enrich in mineral content.
22	Vallisneria natans L	Sawala, syala, jallil	Hydrocharitaceae	Appetizer, demulcent, refrigerant, stomachic,	leaves	One cup decoction of leaf is given per day for 10 to 15 days in cases of leucorrhoea and other complains of uterus. Leaves are boiled with sesame seeds and one cup of this preparation is used as appetizer
23	Wolfia arrhiza (L) horkel ex wimm,	Thali	Lamnaceae	Nutritive appetizer	leaves	Leaves are cooked and used as vegetable. The leaves highly nutritious having good taste.
24	Trapa bispinosa Roxb	singhada	Trapaceae	Astringent, tonic, nutritive, refrigerant, stomachic	Stem, fruits	Fruit is non endospermic edible, it is sweet tasting, its most notable nutritive component is iron, it is used in sweets

Table 1:- List of ponds of Bilaspur studied

Marhi Mata Mandir Talab	Jatiya Talab Jarhabhata
Near Railway Crossing Talab	Near Vijayapuram Rode Side Talab
Jora Para Talab	Hir Para Talab
Chigraj para Talab	Karwala Talab Telipar
Shiv Mandir Torwa Talab	Sanji Talab Near shiv Mandir
Mama Bhanca Talab	Talapara Talab

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DECODING MENTAL HEALTH OF URBAN YOUTH DURING LOCKDOWN**A. Singh¹ and P. Tilak²**¹KES Shroff College of Arts and Commerce, Mumbai²Department of Management Studies, Tilak Maharashtra Vidyapeeth, Pune**ABSTRACT**

The world has witnessed unprecedented trauma in the past one and a half years. Lives of almost all have been impacted by the Covid-19 virus. Such a widespread catastrophe has not been seen by the living population till date. The air of uncertainty has specially swept the dreams of the young minds and the young have found themselves struggling to figure out the road ahead. The period of first lockdown in India gave some youngsters a chance to explore their priorities in life while some others struggled with arranging the basics of survival. The present study is aimed at seeking to find the ways in which the youngsters kept themselves occupied during the lockdown. There is also an attempt to figure out the shift in perception of youth towards life. The study was conducted after the first phase of lockdown and the subjects of study were students in the age group of 15 to 22 years residing in the city of Mumbai, India. Majority of the respondents agree to feel anxious and stressed during lockdown.

Keywords : Lockdown, Covid-19, youngsters, mental health, anxiety

Background

Youngsters are energetic and dread to stay inactive and confined. Recent times have made all to stay at the confinement of their homes or wherever they stayed before the series of pandemic induced lockdown began. As it is against the basic nature of young people to stay confined, the lockdown was seen as incarceration specially by school and college going young population.

Many students were able to continue with their classes as their schools or colleges could provide them with such facilities and they themselves also had access to the online tools and resources. There were many who had migrated to their native places and could not access the online classes or did not have the smart phone, computer or laptop to be able to access such resources.

The pandemic changed the lives of many. Some lost their near and dear ones, a few were required to migrate, many lost their jobs, many themselves got infected by the virus or had their family members infected and many were the front line workers tirelessly working for the noble cause of saving lives putting their own lives at risk.

Since 24th March 2020, various parts of the Indian subcontinent have been under lockdown. Initially there were series of nationwide lockdowns followed by lockdowns at the state and city levels as and when the situation demanded (**The Tribune, 2020**). The state of

Maharashtra and specially the city of Mumbai have been the hotspots for Covid-19 cases since the beginning of the pandemic. The first Covid-19 case in Maharashtra was confirmed on 9th March 2020; on 13th March epidemic was declared and restrictions were imposed on commercial establishments in five cities of Maharashtra including Mumbai; this was followed by a ban on public gatherings just the next day. On 24th nationwide lockdown was declared. The coming days saw an unprecedented increase in the cases of Covid-19 in Mumbai with continuous lockdown for a long time. The present study aims to find out the manner in which the lockdown and thus the inability to move, work and socialize has impacted the youngsters.

Review of Literature

In the past one and a half years there have been a number of studies related to the impact that the pandemic has had on the social, mental and physical well being of people. Studies range from finding the repercussions on various demographic sections of the population to the impact on business and economy. According to a study on the impact of pandemic on the life of youngsters, more than 25% of youngsters who were working previous to the pandemic have lost their jobs as the work they were engaged in cannot be done from home away from the field (**Aastha Kaul, 2020**). The study also states that majority of respondents claim to

be feeling lonely during the lockdown and more than 35% of the respondents also said that their mental health has been adversely affected by the impact of the pandemic.

As per a study conducted on the urban youngsters it was found that the family relationships improved as a result of the lockdown due to the possibility of spending more quality time with the family but the feeling of anxiety and stress saw a sharp increase specially among the urban youth (**Rahul Verma, 2021**). The desperate urge to go on a vacation and meeting their friends was found to be few of the most important factors leading to the feelings of depression among urban youth.

An exhaustive study providing a narrative perspective on the impact of Covid-19 pandemic on mental health of children and adolescents clearly states that quarantine and prolonged periods of lockdown have led to anxiety and stress among older adolescents (**Shweta Singh, 2020**). The study states that use of social media and internet has increased among adolescents due to inability to meet their friends and socialize. This has led to more instances of cyber bullying. The inability to seek help due to lockdown has been specially traumatic to those who have disturbed families. The anxiety among young adults is also due to cancellation of examinations and the uncertainty surrounding their career path. In case of younger children, quarantine schedules of parents have proved to be extremely traumatic for the small children.

According to another survey youth has expressed most concern during the pandemic about mental health, employment, disposable income, education and family and friendship relationships (**OECD Policy Responses to Coronavirus, 2020**). The report suggests that the trust in the governments has decreased among youth post pandemic.

A study shows that the repercussions of pandemic on small children have been immense. Although the virus did not initially impact children directly, the indirect influence has been tremendous and multi-faceted (**Marwaha, 2020**). The innumerable ways in which the children suffered are that they missed out on school and friends and could not freely move around. They felt trapped inside

their homes. They showed symptoms of anxiety and also gained weight due to restrictions in physical activity and high dependence on mobile and television screens. The present daily routine will be difficult to reschedule when lives will shift back to normalcy.

Another study reiterates that children and young adults experienced anxiety and depression during the period of lockdown (**Mental Health Foundation, 2020**). This is primarily associated with the feelings of loneliness and anxiety about future. The levels of anxiety are more in case of financially distressed families.

A study conducted in Assam attempts to find the effectiveness of online learning among students in lieu of the pandemic induced restrictions (**Rehman, 2021**). This has also been seen as one of the factors leading to anxiety among a number of students. There are educational institutions that have been able to shift to the online mode of conducting lectures but there are students who are not able to avail such facility and this has further led to stress.

The period saw a change in the delivery of education too to the youngsters both school and college going students. The change happened in how the lectures were delivered to how the assessment was conducted. In many cases adapting the new system was found to be taxing for the students (**Kalra, 2020**). On the other hand, in a study conducted in Pune (**Dr Pranati Tilak, 2020**), it was found that post graduate students of management discipline felt that conducting online exams by the educational institute was not found to be stressful for them and the pros of such a method outweigh the cons.

There are a number of studies conducted on the impact that the pandemic and the resulting lockdown had on various demographic sections. This study is primarily based on the influence of lockdown on the mental health of youngsters specially the college going students in urban settings.

Research Methodology

The present study is a descriptive research that attempts to find out how the pandemic and the resulting lockdown has influenced the mental health of youngsters in the urban area of

Mumbai city and suburbs. Data are collected through a questionnaire circulated online and the respondents are older adolescents and young adults in the age group of 15 to 25 years. Convenient sampling is used to select respondents with the sample size to 146. Data collection is from the period of October 2020 to March 2021.

Data Analysis and Discussion

As the study is based on the repercussions that lockdown had and is continuing to have on mental well-being of youngsters, the respondents were asked a few general questions to get a clear idea of the kind of situation they were in.

It was considered that the entire family not staying at one place may add to anxiety during these testing times. Of all the respondents around 9% had one or more family members away from home during the period when lockdown was imposed (Fig1). Among all respondents, 43% claimed to have experienced their residential area declared as containment zone with 100% lockdown (Fig2).

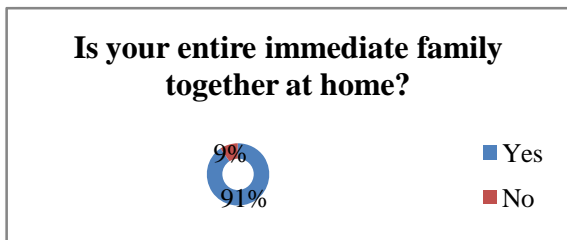


Fig1: Entire Family Together

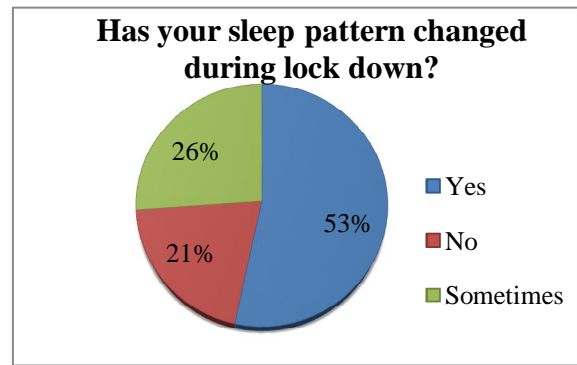


Fig3: Change in Sleep Pattern

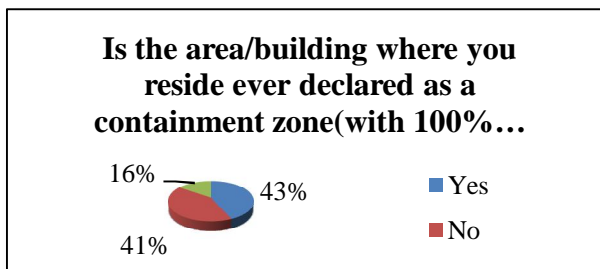


Fig2: Building under containment zone

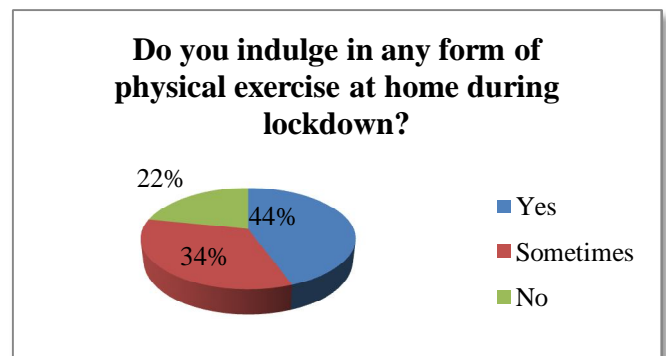


Fig4: Physical Activity

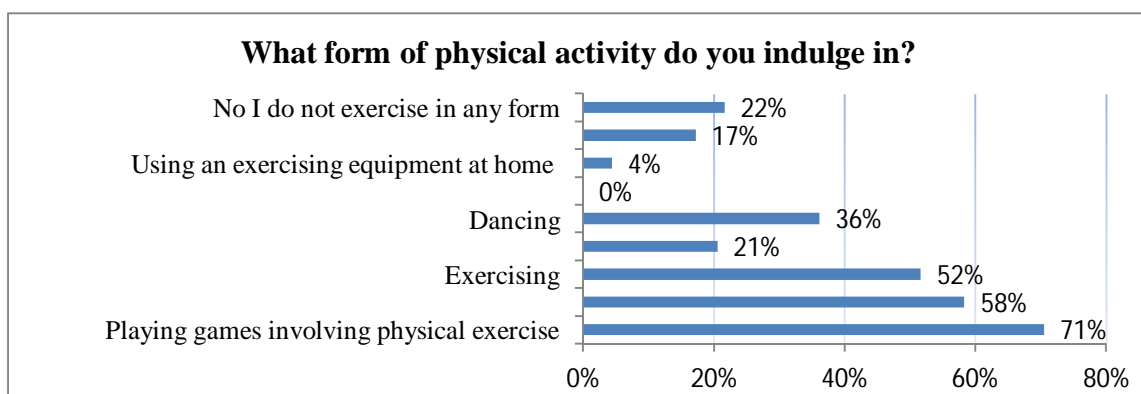


Fig5: Forms of physical exercise youngsters engage in during lockdown

When asked about any change the respondents experienced in their sleep pattern more than half (53%) claimed to have their sleep pattern altered (Fig3). Here, sleep pattern refers to timings of sleep eg. keeping awake till late

night and rising up late in the morning, or sleeping more during the day or change in the number of hours of sleep. Only 44% respondents remained regular with their exercise routine whereas 34% resorted to

exercise only sometimes (Fig4). 22% respondents admitted to not consciously engaging themselves in any form of physical activity. Among those who exercised the most preferred way was by playing games involving physical activity (Fig5).

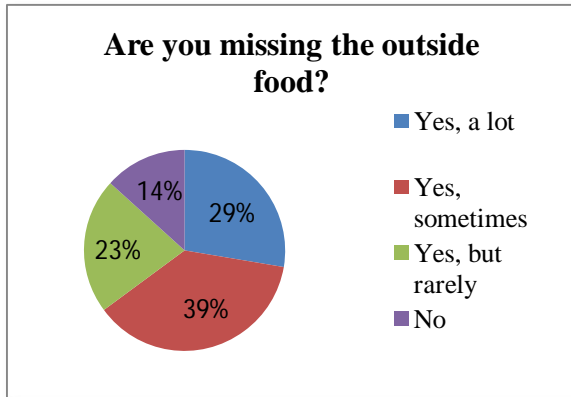


Fig6:Missing outside food

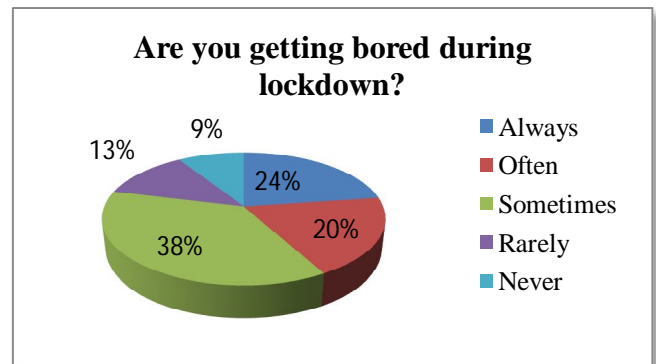


Fig7:Getting Bored

A major concern during the period was the inability to have food from outside – fast food joints and restaurants which is one of the ways of entertainment and socializing for youngsters. When asked whether they missed the outside food around 68% admitted to be missing food from outside sources (Fig6). Almost 44% youngsters experienced boredom to a great extent during the period of lockdown whereas only 22% felt that boredom was not an issue with them (Fig7).

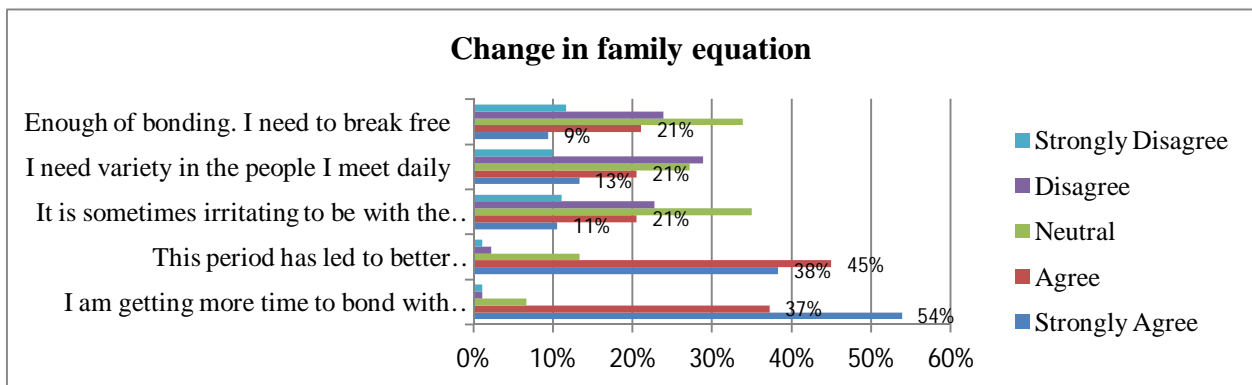


Fig8: Change in family equation

Majority of the respondents felt that they got more time to bond with their family members during this time and that the confinement at their homes led to better understanding among them(Fig8).At the same time, about 30% of respondents also felt that they found the confinement only with the family members difficult to deal with and wished to break free.

In the questions that follow respondents were made respond by giving their opinion in the Likert scale format in which 5 indicates Strongly agree and 1 indicates Strongly disagree. A weighted average(WA) of the responses is taken and the results are presented below in tabular format.

Various Activities youngsters engaged themselves in during lockdown	WA
My school/college has started with online lessons which I am following	4
I am spending time on self study	3
I have enrolled or am planning to enroll in online certificate courses	3
I am learning a new skill	4
I am able to give time to some creative activities/my hobbies	4
I am spending my time on infotainment on TV or Online	4
I watch shows such as Ramayan, Mahabharat etc. that are broadcast after many years	4

I am spending my time on TV/Online Entertainment channels/playing /online games	4
I am spending my time in reading books of my choice	3
I am playing indoor games like carom, chess, cards, antakshari, dumb charades with family members(Games played previously by my elders also)	4
I am spending my time connecting with my friends on phone or through social media platforms.	4

Table 1: Various Activities Students engaged themselves in during lockdown

Responding to the question on how they spent their time during the lockdown youngsters seemed to be inclined towards activities that were entertaining rather than in those activities that enhance their skills except for certain

mandatory activities such as attending online classes conducted by their school or college as is evident from the data in table 1.

Some pointers that indicate anxiety among youngsters	WA
I watch news related to the pandemic daily/regularly	4
I become tense due to the constant increase in the number of cases	4
I feel insecure thinking about when will the situation come back to normal	4
I feel insecure about the job scenario in the coming years	4
I become anxious about the future of our and the coming generations	4

Table 2: Pointers indicating anxiety among youngsters

A number of behaviours that indicate that youngsters suffered from anxiety and stress are quite evident from the responses(Table 2). For

most of the behaviours that point towards anxiety among youngsters, the values indicate that youngsters admit they are involved in.

Some pointers that indicate a change in thought process	WA
The pandemic has led me to reconsider my career options	3
The pandemic has made me rethink about my priorities and values	4
The period has made me introspect and has brought about a change in the way I view the others and the world	4

Table 3: Pointers indicating a change in the thought process

Questions were asked that were designed to know how the pandemic has brought about a change in the thought process of youngsters. The respondents agree that the seriousness of the situation has made them more aware about the shift in their life priorities (Table 3). They have started to think more often about humanity on the whole and seem to become more empathetic towards others. Some of the respondents admitted that for the first time in their life they felt so vulnerable and have started taking their health, relationships and life on the whole more seriously.

youth even more. The period spanning from the start of the Covid-19 pandemic till today and with all uncertainty for some more months, if not years to come has been and will be taking a toll on the mental health of all, youngsters being one of the most badly hit. There is a need to create opportunities for them and providing them community support to keep the optimism high. There needs to be a far sighted planning by the educational institutions to come up with economical short term employment oriented courses that will keep the youngsters positively and productively engaged. This is the time to showcase resilience, hopefulness and sanguinity and efforts must be made by the families, the community and the government to keep the spirits of this demographic dividend high

Conclusion and Recommendations

The study has brought to the fore the state of anxiety that the youngsters are engulfed in. Being in confinement is against the basic nature of humans who are by default social,

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TO STUDY THE EFFECTIVENESS OF INTEGRATED APPROACH TO EDUCATION FOR DEVELOPMENT OF AWARENESS ABOUT SUSTAINABLE DEVELOPMENT AMONG ELEMENTARY SCHOOLS STUDENTS

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ABSTRACT

Education for Sustainable Development aims to empower learners to take informed decisions and responsible actions for environmental integrity, economic viability and a just society, for present and future generations. It is about empowering learners to know how to play an active part in their local community, in shaping a more just and sustainable world. It helps children to learn how to balance the demands of the environment, society and economy. The main objective of this study was to find out the effectiveness of an integrated approach to education for sustainable development on knowledge, critical thinking, problem-solving communication skills and value preference on sustainable development among elementary school students. An experimental method with two group design was used. Test on Sustainable Development was used to collect data from 72 students. It was found that there is a difference on the post test measures of experimental and control group on knowledge, critical thinking and problem solving and communication skills on sustainable development as a result of experimental treatment of education for Sustainable Development. Also there was no difference in the post test measures of experimental and control group on value preference as a result of experimental treatment of education for Sustainable Development.

Keywords: *Education for Sustainable Development; knowledge; critical thinking; problem solving; value preference.*

Introduction

“Sustainable development is the development, which meets the needs of the present without compromising the needs of the future generations to meet their own needs (Brundtland Commission, 1987).

“Sustainability requires that human activities, at a minimum, uses nature’s resources at rate at which they can be replenished naturally. Education for sustainable development is educating the various stakeholders about sustainable development.”

“The main goal of Education for sustainable development is to provide everyone with opportunity to acquire knowledge, skills, attitudes and values necessary to shape a sustainable future. Education for sustainable development (ESD) means integrating key sustainable development issues into teaching and learning, applying participatory teaching and learning methods and promoting competencies like critical thinking, imagining future scenarios and making decision in a collaborative way.” (Source: The Global action plan for ESD by Julia Heiss, UNESCO).

“Sustainable development respond to the world in which we live. They aim to address current

looming global challenges that are affecting us all such as conflicts, tensions among populations, terrorism, radicalization, climate change, environmental degradation and equitable management of natural resources. Sustainable development aim to address the common urgent need to build peaceful and sustainable societies. Their goal is to trigger the necessary fundamental changes in how we coexist with each other and our planet. Thus it is imperative that we make our children aware about the concept of Sustainable development.”

“Education for Sustainable Development (ESD) aims to empower learners to take informed decisions and responsible actions for environmental integrity, economic viability and a just society, for present and future generations. It is about empowering learners to know how to play an active part in their local community, in shaping a more just and sustainable world. It helps children to learn how to balance the demands of the environment, society and economy.”

Methodology

In the present study experimental method with two group design was used. The total sample consisted of 72 students out of which 32

students were from controlled group and 32 in the experimental group. An integrated approach using sustainable pedagogies were used to teach science and mathematics subject to students of class VII of the experimental group. The data was collected using Test on Sustainable Development. The test consisted of five areas that are knowledge, critical thinking, problem-solving communication skills and value preference.

Research Objective

The main objective of this study is to find out the effectiveness of an integrated approach to education for sustainable development on knowledge, critical thinking, problem-solving communication skills and value preference on sustainable development among elementary school students

Data Analysis

The following null hypothesis were formulated to find the difference in the pre test performance of experimental and control group on knowledge, critical thinking, problem-solving communication skills and value preference on sustainable development

- **H₀₁ There is no significant difference in the post test performance of experimental and control group on knowledge on sustainable development.**

The mean scores from the Knowledge Test on Sustainable Development of the total sample (the maximum score was (72) in the experimental and control group (both pre-test and post test) are tabulated in Table 1

Table 1: Mean scores in Knowledge Test on Sustainable Development of experimental and control group

Group	N	Mean	Std. Deviation	t- value	Significans at.01 level
Experimental Group	36	40.12	11.21	2.766	0.007
Control Group	36	33.20	9.91		

From table 1 it is observed that the t-value of post-test on knowledge test is 2.766, which is significant at 0.01 level. Hence the null hypothesis stating that there is no significant difference in the post test performance of experimental and control group on knowledge on sustainable development is rejected. Hence there is a significant difference in the post test performance of experimental and control group on knowledge on sustainable development.

- **H₀₂ There is no significant difference in the post test performance of experimental and control group on critical thinking on sustainable development.**

The mean scores from the critical thinking Test on Sustainable Development of the total sample (the maximum score was 72) in the experimental and control group (both pre test and post test) are tabulated in Table 2

Table 2: Mean scores in critical thinking Test on Sustainable Development of experimental and control group

Group	N	Mean	Std. Deviation	t- value	Significans at.01 level
Experimental Group	36	41.66	12.67	5.574	0.002
Control Group	36	26.05	10.92		

Also the t-value of post test on critical thinking is 5.574, which is significant at 0.01 level. Hence the null hypothesis stating that there is no significant difference in the post test performance of experimental and control group on critical thinking on sustainable development is rejected. Hence there is a significant difference in the post test performance of

experimental and control group on critical thinking on sustainable development.

- **H₀₃ There is no significant difference in the post test performance of experimental and control group on problem-solving on sustainable development**

The mean scores from the problem-solving Test on Sustainable Development of the total sample (the maximum score was 72) in the

experimental and control group (both pre test and post test) are tabulated in Table 3

Table 3: Mean scores in problem-solving Test on Sustainable Development of experimental and control group

Group	N	Mean	Std. Deviation	t- value	Significans at.01 level
Experimental Group	36	18.63	4.97	4.197	0.004
Control Group	36	13.56	5.21		

The t-value of post test on problem-solving is 4.197, which is significant at 0.01 level. Hence the null hypothesis stating that there is no significant difference in the post test performance of experimental and control group on problem-solving on sustainable development is rejected. Hence there is a significant difference in the post test performance of experimental and control group on problem-solving on sustainable development.

- **H₀₄ There is no significant difference in the post test performance of experimental and control group on communication skills on sustainable development**

The mean scores from the communication skills Test on Sustainable Development of the total sample (the maximum score was 72) in the experimental and control group (both pre test and post test) are tabulated in Table 4

Table 4: Mean scores in communication skills Test on Sustainable Development of experimental and control group

Group	N	Mean	Std. Deviation	t- value	Significans at.01 level
Experimental Group	36	18.62	4.94	4.194	0.003
Control Group	36	13.52	5.20		

The t-value of post test on communication skills is 4.194, which is significant at 0.01 level. Hence the null hypothesis stating that there is no significant difference in the post test performance of experimental and control group on problem-solving on sustainable development is rejected. Hence there is a significant difference in the post test performance of experimental and control group on problem-solving on sustainable development.

- **H₀₅ There is no significant difference in the post test performance of experimental and control group on value preference on sustainable development**

The mean scores from the value preference Test on Sustainable Development (KTSD) of the total sample (the maximum score was 72) in the experimental and control group (both pre test and post test) are tabulated in Table 5

Table 5: Mean scores in problem-solving Test on Sustainable Development of experimental and control group

Group	N	Mean	Std. Deviation	t- value	Significans at.01 level
Experimental Group	36	85.92	7.60	0.937	0.34
Control Group	36	84.41	5.92		

The t-value of post test on value preference is 0.939, which is not significant at 0.01 level. Hence the null hypothesis stating that there is no significant difference in the post test

performance of experimental and control group on value preference on sustainable development is not rejected.

Conclusion

It is concluded that there is a difference on the post test measures of experimental and control group on knowledge, critical thinking and problem solving on sustainable development as

a result of experimental treatment of ESD. Also there was no difference in the post test measures of experimental and control group on value preference as a result of experimental treatment of ESD.

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THE CHURCH AND THE CHANGING FEMININE VOICE IN GOA

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ABSTRACT

In the pre-Portuguese period, the feminine voice was stifled with the then existing social norms of child marriage, sati, polygamy, dowry, patnidharma, enforcement of strict widowhood and other systemic denials: such as education, ownership of property, divorce and widow marriage. The Portuguese administration and the Church in particular did much to strengthen the tone and tenor of the feminine voice. Polygamy and sati was prohibited. (The Church Provincial Councils of 1575 and 1585 passed resolutions) and divorce was permitted. There was free movement of women in society, unlike their Hindu counterparts. Elite Christian women moved in palanquins and were educated at home. Helpless women took refuge in the charitable institutions of the church. However, the church proscribed what she should do or not do or what she should wear and so on. Women could now inherit property. The life of a Catholic widow however was more humane than that of her Hindu counterpart and as the missionaries got a share in the widow's property, re-marriage was encouraged. The Inquisition prohibited many Hindu customs and marriage ceremonies. An unwritten social code of conduct resulted in a more disciplined citizenry. Many freedom fighters however (including women) refused to be governed by the Church as it was considered an ally of the Portuguese State. In post-colonial Goa though the church is a powerful influencer, it is silent at times, on gender equality, educational and inheritance rights of women. This is in tandem with the existing patriarchal structure of the Goan society. Church today encourages Small Christian Communities whereby it gently enters into domain of family and community service. This study argues the need of a pro-active church in keeping with the changing times to help strengthen the feminine voices of today.

Keywords: Goa, Portuguese, Women, Church, laws

Introduction

Goa was ruled by the Portuguese for over 450 years from 1510 to 19th December 1961. The map of Goa changed down the ages and even the Portuguese captured different parts of Goa in different time frames. The Old Conquests or the areas that were conquered first were Bardez, Salcette and Ilhas. The New Conquests were the territories annexed in the seventeenth centuries like Ponda, Quepem, Canacona, Pernem, Bicholim, Sanguem and Sattari where there is much less Catholic influence as compared to the very dominant position of the Church and Christians in the Old Conquests.

Though India was free in 1947, it took Pandit Nehru as the Prime Minister of India almost fourteen long years to send the Indian army to liberate Goa because of his own policy of Non-alignment and *Panchasheela* and the fact that he advocated the settlement of disputes through peaceful negotiations. On the other hand, the Portuguese dictator António Oliveira Salazar maintained his rigid stance that Goa was an overseas province of Portugal, though thousands of miles away from it. It was international pressure as well as the proactive initiative taken by the then Defence Minister,

Krishna Menon, that 'Operation Vijay' of the Indian army liberated Goa from the Portuguese rule on 19th December 1961.

Within this historical context, we must understand that the Goan women are no different from their counterparts in the rest of the country. The media of course portrays a different picture of sun, frolic and fun filled Goa with sea and beaches and where women are more western in their dress habits and are less conservative than the women in the rest of the country. This viewpoint is even depicted in a caricature by Goa's famous cartoonist Mario Miranda's, titled "Observers from the North", ogling at a girl in a bikini on a Goan beach.

In Goa today we have our own share of Women's Collectives and Non-Government Organisations fighting that the feminine voice be heard. As a student activist, a group of us were founder members of a Women's Collective named *Bailancho Saad*. ('Saad' is a Konkani term which refers to a cock's crow, used here as the 'Voice of Women') *Bailancho Ekvott* (translates as 'Women's unity') is another NGO which protects the rights of women in Goa.

This paper is based on archival sources from the Archives of the Bishop's palace or the Church Archives and the Historical Archives of Goa. It is also based on Oral interviews and a few secondary sources –one of which is the work of a Catholic nun, Sr. Emma Maria A.C. and other books on the social history of Goa, wherein women form an intrinsic part of the social narrative.

For greater clarity this paper is divided into three parts. First is the discussion on the pre-Portuguese period, second is the colonial space of the Portuguese period and third are the concluding remarks which include the post-colonial period.

Pre-Colonial Period: Status of Women

In pre-Portuguese Goa, the feminine voice was stifled with the then existing social norms of what was essentially a non-Christian or a Hindu/Muslim society, as Catholicism was largely introduced in Goa by the Portuguese. Child marriage, polygamy, dowry, Sati, enforcement of strict widowhood, complete economic dependence on the male, added with many other denials like e.g. the right of a girl to education, ownership of property, divorce, or a widow's right to remarry. The life of a woman was confined to the four walls of her hearth and home.

This was the Hindu and Muslim period of the Bhojas, Chalukyas, Shilharas, Adil Shah of Bijapur. The map of Goa, of course, changed faces during the rule by the various dynasties.

The higher castes among the Hindus and the Muslims had more restrictions on the very movement of women as compared to the lower castes/classes. This is a universal observation of the medieval period across India as in the case of Rajput and Mughal women, Goa was no different. The late Wendell Rodrigues, author and fashion designer, speaks about the position of women in traditional Goan society before the Portuguese arrived, when women were considered inferior to men by Hindus and placed even lower by Muslims. The powerful system of Patriarchy had taken firm roots on the Goan society due to the influence of religions that legitimised and sanctioned gender discrimination and subjugation.

D.D. Kosambi, in his study of pre-Portuguese history of Goa, examines how tribal worship

was reflected in the occasional gifts offered to the tribal Chiefs. He further adds that with the coming of Aryanisation, local cults were assimilated and temples were constructed, dedicated to the Hindu Gods as well as Goddesses like Vetal, Devchar. Bhumika and Santeri. The petroglyphs of the Mother Goddess in Usgali Mal and Kurdi, (two villages in Goa) and the female Goddess idols found in the rest of Goa show the existence of this worship in the pre- Portuguese period.

The Portuguese Colonial period (1510-1961)

The coming of the Portuguese in 1510, introduced conversions (both voluntary or as a result of incentives and sometimes also forced) and thus began the process of lusitanization. The long history of Portuguese colonialism only further deepened the roots of patriarchy in the social and ecclesiastical set up. This was a complex process which cannot be reduced to simplistic arguments of contemporary political debate and yet the fact remains that in this instance religion was used as a supportive arm of the empire. It is my argument that during the colonial period the State or the Portuguese administration and the Church, in particular as the hand-maid of the State did much to strengthen the tone and tenor of the feminine voice. Various religious orders and congregations came to Goa to facilitate this process. The first to come were the Franciscans in 1517 mainly in Bardez. The next were the Jesuits (1542), the Dominicans (1548) and the Augustinians who came and tried to convert Tiswadi. The dominant order in Salcette and in the islands of Chorão and Diwar were the Jesuits.

The missionaries had no understanding of Hinduism, its principle of the Trinity, transmigration of soul, the caste system and other factors and therefore the work of conversion was more difficult here. Goa is interesting, as a part of the sub-continent that experienced a different history because of the tiny area and a small population, 'it is a history in a hothouse' as it were, all the hotter because of the white hot zeal of the early conquests and the determined resistance by those who felt the heat. The solution to this was that they impressed upon the civil authorities to pass laws against the religious practices of the

converts. The religious orders sometimes were more powerful than their civil counterparts, especially the Jesuits and the Franciscans.

The *Foral* of 1526, was an important Decree called Charter of the Usages and Customs – *Foral dos Usos e Costumes* prepared by Afonso Mexia, the General Superintendent of the budget. An attempt was made to codify the existing customs with a view to evolve a comprehensive administrative machinery with which it would be easy to govern the islands of Goa, Albuquerque did not interfere with the working of the *gãuncaria* (Village Community) or *comunidade*. This Charter sanctioned and legalised the social system of the Goan Hindus for which they had to pay taxes in return. The inheritance procedures and rights were also fixed. The woman had a right termed *patnibhaga* or the property that was divided into as many parts as the number of wives. Bigamy was banned among the Christians.

Christianity was the State religion in Portuguese India. It maintained status quo as far as the Hindu woman was concerned. To attract more women towards Christianity a law was passed on 22 March 1559 stating that the wife and the daughters of a man who had died without a male child could be entitled to his property provided they accepted Christianity, failing which the property would go to the King. The next of the kin would also be the heir to the said property provided the person accepted Christianity. On July 27, 1559 another law was passed that the daughters who embraced Christianity would gain inheritance from their parents in case they had no brothers and in such a case the other relatives had no share. If a woman converted and her husband did not and he rejected her then she could acquire the right of possession to all ornaments, wardrobe and fifty percent of the movable and the immovable property received at the time of her marriage.

Albuquerque prohibited the custom of Sati in 1510. Viceroy Dom Constantino Bragança tried to put an end to this practice on June 30, 1560. Sati was prohibited by the constant requests of the Church Provincial Councils of 1575 and 1585 to the King of Portugal. Legislations like *Alvarás*, (Orders/Permits) *Portarias* (Municipal Ordinances/ Bye-laws) and Edicts

and Promulgations or Resolutions of the above Church Provincial Councils denounced *sati*; and also passed decrees permitting young widows to marry again, if they wished to. A Decree was issued to ban Sati in Bardez, Salcette and the islands of Goa. The penalty was the forfeiture of property of the guilty person who was sentenced to life imprisonment. Fifty percent of the forfeited property went to the church and the remaining half went to the person who provided the information. On June 27, Viceroy Francisco de Tavora, legalised widow remarriage and it was finally approved when the King passed the law on March 17, 1687.

Governor Ferreira Pestanha issued an Order to abolish *sati* on December 7, 1844 in the Old Conquests. It was common for a widow to be badly treated in the household by their relatives and made to work like servants. Unlike the Hindus, the Christian women could also freely remarry, develop their talents, own property as well as servants and slaves. Harsh laws were promulgated to prohibit this practice with severe punishments of confiscation of property and enslavement for life of the person forcing directly or by agents like relatives. Half of this confiscated property would go to the informer and the other half to the Church. This was the objective of the law and the Church in putting down a 'pagan' practice. Perhaps Albuquerque must have abolished *Sati* with the aim of saving the widows for his men. The very Church which helped in the prohibition of *Sati* and promoting widow re-marriage did not hesitate to torture, burn or skin alive those converts including women, who in the eyes of the Inquisition did not follow the principles of the catholic religion.

It must be understood that once legislation is passed by the State especially in partnership with the Church it continues for posterity unless it is abrogated by it or by the post-colonial government that succeeds it as ultra vires of the existing laws in force. The position and status of a woman does not change overnight with successive governments whether foreign or local. The Portuguese Civil Code is a heritage that has been passed on and is still in practice in Goa today – however the Code itself has negative as well as positive provisions with regard to the position of

women. It allows women to inherit property irrespective of the religion. And the Civil registration of marriage is mandatory in Goa. Many a time laws are subverted by just crossing the border to Maharashtra or Karnataka, where the Uniform Civil Code is not practised.

The family laws also permit divorce but only Hindus are allowed to adopt. But in the case of divorce for Christians, permission of the Church is mandatory till today. With the introduction of Catholicism, free movement of women in society was also introduced, like dancing for social functions unlike their Hindu and Muslim counterparts. Elite women moved in palanquins and were educated at home. Helpless women, like orphans, divorced women, deserted wives and unwed mothers took refuge in the charitable institutions of the Church, like the House of Mercy or the *Santa Casa de Misericordia*. This holy house even brought slaves to work for it. B.S. Shastry, argues that in a male dominated world the weaker sex had to take more often refuge in God by means of worship, prayer, going to Church, fasting etc. or sometimes even join the religious orders or work in charitable institutions organised by the Church.

These were the *Santa Casa de Misericordia* (Holy House of Mercy), *Senado de Camara or Senado de Goa* (The Municipal Council of Goa), *Confrarias* (Confraternities), *Pai dos Cristãos* (Father of Christians) Orfãos d'El Rei (Orphans of the King) and *Obras Pias* (Pious Works). Financial assistance was provided by the Church to needy widows, deserted wives, orphans, female converts who were abandoned by their relatives and arrangements were also made to provide employment to some of the more educated women. However, though these institutions were discriminatory in accepting members and in rendering help they did transgress boundaries of colour, race, religion and gender. In the absence of other institutions to assist the orphans, female slaves and widows, these institutions provided immense service.

The Institution of the *Casados*

The institution of the *Casados* was the first organised institution that affected the status of women, started by the first Viceroy Afonso de

Albuquerque, wherein local Muslim Goan women married Portuguese *fidalgos*. These men were given a whole lot of incentives such as plots of land and houses and encouraged to learn skills required in the Portuguese colonies. Women were thus 'used' to create and sustain the Portuguese empire and Christendom. Very few Portuguese women came all the way to Goa but the more important aim was to ensure a local progeny that would remain loyal to the Portuguese administration. With this in mind, he introduced a policy of miscegenation..

Hence, the Portuguese developed a concept of womanhood to which they added colonial designs of the Christian notion of woman. Goan women were helpless, as in the early years of foreign rule, they were converted and married irrespective of their will in the face of slavery or death. Initially, the widows of the Muslim soldiers who were killed in the fighting with the Portuguese were taken as wives for the Portuguese. The Goan women preferred getting converted and married to the Portuguese men as they could then lead a peaceful life, own property and be treated with respect.. With the inclusion of local women into the Portuguese colonial world through marriage, the strength of the Portuguese colonies increased, and thereby, the demographic factors supporting the colonial plans for the crown.

The Church however proscribed what women should do or not do what they should wear or not wear. The First Provincial Council did not want the non-Christians to practice polygamy and recommended that the King pass severe laws against those who did not practice monogamy. Christian women could not obtain assistance from a Hindu mid-wife (*dai*) or even a wet nurse at the time of the delivery – the reason was that no Hindu rituals would be performed by the *dai*. The Edict prohibited the plastering of walls with cow dung before or after the confinement of the woman as it was a Hindu custom.

The Portuguese Inquisition which began in 1560 and lasted for over 200 years forbade the use of certain traditional clothes within the precincts of the church. Earlier on 8th July 1644, an Episcopal Decree had ordered the newly converted Christian women not to wear a nose stud, or nose ring. In the book 'Goa

Rare Portraits', Wendell Rodricks has written that the Portuguese Inquisition forbade the display of a naked midriff in Church (Episcopal Order of April 14, 1736), so the *Ole* was used to cover their entire bodies by the Catholic women, so as to satisfy the Portuguese dictates.

Converted women could not wear fresh flowers in their hair. The reason given for this by a Catholic priest was to subvert [another of] the Hindu religious practice (which is still in practice in the temples of Goa): that of using flower petals by which the Hindus used to invoke blessings from their temple deities before starting a business venture or even take the decision for a marriage, in the form of the oracle performed by the temple priests wherein the deity's answers are determined by the falling down of flower petals from the idol. Correspondingly, the newly converted women would use their saliva to stick flower petals from their hair to the Catholic idols of the saints in the Churches, as a continuation of a cultural practice that they had been used to over the generations and could not stop abruptly because of a change in religion. A lot of the elite women made gold jewellery representing local flowers to adorn their hair instead of fresh flowers. So people found innovative ways to register their disapproval in the "approved manner" as per the law.

The same Edict of 1736 stopped the festivity on the first menstruation of a married girl. There could be no feasts or celebrations and no exchange of presents. The said Edict also banned the ceremony of the *Sotti* or *Shestippujan*, wherein the Hindus would remain awake on the 6th night of the birth of the child and celebrate with banquets so as to drive the evil spirit away, as per the prevalent superstition.

The Catholic widow lived a much more humane existence than the *bodki*. The *Alvará* of June 27, 1684 allowed widows to remarry irrespective of the caste to which she belonged. A Jesuit, writing around 1560, affirms that "the Hindu wives since the time they were forbidden to burn themselves alive with their husbands adopted the custom.....of renouncing all coloured dress and going about with head shaved. The practice of the *bodki* was unfortunately a cruel custom that was

practised behind closed doors. Not only was the head of the widow shaved and she was not permitted to wear ornaments or colourful clothes but she was even forbidden from putting of the *tilak* on her forehead. Even food with ingredients like garlic and onion were forbidden with the belief that they would ignite sexual passion in the woman. She could also not remarry or inherit the family property.

The law of June 15, 1557 empowered Hindu wives, daughters and widows to demand their entire inheritance from their parents and grandparents upon conversion to Christianity, failing which the property would go to the Crown. A law dated December 4, 1567 granted Hindu women who had converted to Christianity the right to moiety of her husband's estate. The *Alvará* of June 27, 1644 also had a punishment to the parents or close relatives who forbade a widow from remarrying, by confiscating their property.

There was a scramble in the early years of "Christianization" to convert the Hindu widows, as once converted the Church—symbolised by the Catholic missionary—secured a share in the widow's property. Remarriage was therefore encouraged. The Inquisition also prohibited many other Hindu customs and ceremonies because of which there were large scale migrations of families to neighbouring Karnataka. The *Alvará* passed by Viceroy Conde de Alvor on June 27, 1684 made it mandatory for the women to learn Portuguese within three months failing which they would be severely punished. This was a necessary qualification for the Christian women to get married.

Decrees were passed by which the church directly regulated a woman's life – the Provincial Council of 1567, Decree number 12 regulated that no non-Christian within the jurisdiction should be permitted to keep a mistress. As a result of this law the temple girls or the *bailaderias* were deprived of their benefactors. The same decree ordered that a Hindu widow below the age of 40 years could re-marry after a period of one year or choose to remain a celibate or she had to live in the house of a Portuguese national or a good native Christian. This was to prevent young widows from following the traditional custom of not remarrying. Remarriage was condemned by

parents and relatives who regarded it as dishonour, virtually condemning a second marriage. Many Episcopal decrees were passed because of the customs of child-marriage and arranged marriage. Archbishop Santa Catarina (1784-1812) condemned the practice of getting twelve year old girls married "before they were capable of evaluating the duties of marriage". The Edict of April 14, 1736, did away with the Hindu custom of sending *fulas* or flowers (of whatever quality they may be) to the bride house by the bridegroom's family before the marriage. This custom however is still practised by the Catholics of Salcette till today. Converted Christians retained many Hindu customs so the Church authorities decreed several measures to modify or abolish them. Thus it was decreed that the bridal couple had to declare under oath, before the Parish priests that they knew each other and were happy with the marriage. The Parish priest was required by the Episcopal Edict April 27, 1780 to uncover the face of the bride and not follow the Hindu rite of washing the feet of his daughter and son-in-law on the day of the wedding. This ensured that the bride be identified and could answer all the customary questions clearly. The priest who failed to fulfil this requirement was liable to be suspended. The Decrees disapproved the custom of parents getting their daughters married when hardly twelve years old and coercing their sons to marry against their will (January 1782 and October 15, 1787). Female education on a mass scale was relatively unknown. Srinivasan discusses three reasons for this: (1) The Hindu texts advocated the dependency of women throughout their lives. The practice of Purdah also restricted the movement of women. (2) The girls' education was ended after the primary stage. (3) It was considered a disgrace to a reputed woman to learn to read, or even acknowledge the same. This lack of education kept the Goan women subjugated in the pre-Portuguese and the early centuries of the Portuguese rule. The only education required or considered essential was the necessity to learn the household duties. In Goa, only the dancing girls were said to have received formal education. Girls were not sent to school but were generally instructed at home. Later in 1606, they were educated at the Royal Convent of Santa Monica and in the

homes of Nossa Senhora de Serra and that of Santa Maria Magdalena.

Factors like child marriages, which resulted in early motherhood, purdah system and the various superstitions, resulted in the fact that female education in Goa was neglected during the pre-Portuguese period. In fact with the coming of the Portuguese, one would have expected liberal changes; however, the new colonial masters did not do much to provide facilities for the education of both Hindu and native Christian women. The *Alvará* of 1684 of Conde de Alvor recommended that girls be taught to read and write in convents or by private tutors at home. Menezes Bragança, in his thesis on education in Portuguese Goa, reiterates that not much was done for the cause of women's education in Goa. The first primary school (*Escolar Primaria*) for girls saw the light of the day in Panjim and 8 years later, two more schools were opened in Margao and Mapusa. Varsha Kamat emphasizes the importance of education as an important factor responsible for the empowerment of Goan women in the twentieth century.

It was therefore the influence of the Church that made the Catholic women more independent and prosperous as compared to their Hindu counterpart. The Hindu women did not have much opportunity to socialise except for the temple fairs, weddings, rituals and ceremonies. Christian girls could get married after puberty unlike the child marriages practiced among the Hindu girls.

The policies of the Church did amount to infusing in the Goan society some elements of modernity where nationalism, humanism, liberalism and secularism were important principles of life irrespective of whether the Church actually intended or not. Positive stands like the prohibition of *Sati*, the right of the women to inherit and own property, permitting widow re-marriage did help in improving the socio-economic position of women even after the Portuguese left Goa as the Portuguese Civil Code continues to be in force in Goa even today.

In post-colonial Goa, the church encourages small Christian communities, as well as Youth groups in each Parish; also the Society of Vincent de Paul (a charitable organisation) and

the Legion of Mary gently make their entry into the domains of family and community service. The Church, though vocal in some areas, is also silent on gender equality, educational and inheritance rights. Though the law allows Goan women equal rights to inheritance, cultural values and norms—both among the Goan Hindus and the Catholics—do not encourage the implementation of this right. Today a girl who seeks the help of the courts to ask for her fair share in her parents' property is looked upon by society as greedy. The laws are therefore subverted by cultural norms and social pressures. There is a need of a pro-active church in keeping with the changing times to help strengthen the feminine voice of today.

Conclusion

The national media portrays Goan women as “forward”— This perception is more related to the inherited Portuguese lifestyle and dress which makes a Goan woman different from her Indian counterpart. We, in Goa, have a different colonial history. The Church and the State were co-partners then. The influence of the Catholic Church is very dominant and visible today only in the Old Conquests of Bardez, Salcette and Ilhas. A large part of the hinterland of the New Conquests is relatively untouched by the Christian influence and the majority of the people of Goa are Hindus and not Catholics as is commonly perceived. Today we have a Church comprising of local Goans, unlike in the colonial period. The Portuguese were also replaced with a popularly elected government by the people of Goa. Post-colonial politics however has taken a different turn and today the Church and the government

are at logger heads with each other more often than not. The Church in Goa has a department which has under its purview a social justice programme. It supports or backs anti-government or so called people's programmes, like in the recent past: environmental issues like the mining and the coal transportation, issue against the need to build a double track in the hinterland villages of Goa and the destruction of forest land in the name of development like that of building highways, and the installation of high tension wires or the construction of an Institute of Technology – although Plateau land is available as alternative sites.

In present times, therefore, the Church is with the people and openly criticizes the anti-people's stand taken by the government. The Church is a very powerful influencing agency in changing the patriarchal mind-set of society or in bringing about gender equality, however it has done precious little in this direction; a participatory Church supposes a differentiation and mutuality of roles. The Church needs to include pro-life education, issues of female infanticide, sex education, shared parenting as against stereotyping gender roles, gender sensitivity, exclusive language, dowry, battered wives in family education programmes and marriage preparation courses. My argument is that while the colonial church did take strong stands and passed decrees to ban social evils even though its motives for doing so were highly questionable, the present Church seems to be playing a neutral role and is silent on issues related to women. The emancipation of women does not seem to be on the agenda of the Roman Catholic church of Goa today.

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EMERGENCE OF MOBILE WALLETS IN INDIA**C. Upadhyaya, S. Khan, S. Gautam and L. Gadkari**

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ABSTRACT

The study is undertaken to understand the individual's behavior towards the online payment. The study analyses the factors that motivate the individuals to use online payment system, their security concern, potential growth they see in online payment and other factors which restrict them to do online payment. For the purpose of the study data was collected by a structured questionnaire to study the individual's perception for online payment. It is observed in the study that although the consumers are aware of the digital payment system available, majority of them face security challenges while using these platforms and even the respondents are hesitant to share their debit/credit card details.

Keywords: Digital payment, Individual's behavior, E-wallet, Paytm, Google pay, Fintech.

Introduction

An online payment system is an Internet-based method of processing economic transactions. It allows a vendor to accept payments over the web or over other Internet connections, such as direct database connections between retail stores and their suppliers--a common method of maintaining just-in-time inventories. Online payment systems greatly expand the reach of a business and its ability to make sales. The way people pay for goods and services is changing dramatically. Evidence—including new results from a Boston Fed survey reported in this paper—is accumulating that consumers are making substantially different choices among payment methods to settle their transactions than in the past. Apparently, consumers are shifting away from paper checks and currency and turning instead to “electronics,” an expanding array of methods that leverage advances in information technology and financial markets to offer

low-cost transactions and improved convenience.

Wallets started with basic services such as telecom recharge and bill payments but are now available as payment options on most popular online merchants. The next focus area for wallet companies is creating a physical acceptance infrastructure at brick-and-mortar retailers for wallet payments. Wallet's providers have simplified the transaction experience and combined it with multiple promotional offers to gain traction. Due to a sizeable customer base, wallets can potentially drive transaction volumes at merchants and, as a result, major e-commerce merchants in India have partnered with leading wallet players. Digital prepaid wallet operators have gained widespread adoption in recent times and have built a substantial consumer base. It is estimated that the two leading digital wallet operators in the country together have over 117m stored value wallet accounts.

Table 1: Popular Digital Payment Platforms

Sl.No.	Wallet Name	Key Features
1	Paytm	Transferring money instantly to the bank from Paytm account Safe to store customer's CVV number. Paytm has launched an app password feature for Paytm Wallet in order to ensure the money is safe even if the customer lose or misplace his/her phone. A customer can use Paytm even without a Smartphone.
2	Mobikwik	Introduction of M-Wallet for easy storing and transaction of money. Instant recharge without sign-up. Encrypted and highly secured transactions. User friendly mobile application.
3	Google pay	Auto read of OTP. Picking up the transaction where it dropped. Risk monitoring
4	BHIM	Fastest among all the digital wallets. Wallet offers and discounts

Five themes are driving change in payments today. Individually they have a significant impact on the way we pay. Combined, these

effects are amplified, creating a powerful force on the payments

Faster Payments Accelerate Growth of Open Payments

Currently, several countries have or continue to modernize payment infrastructure and adopt faster payments. In addition to bringing settlement efficiencies, at the consumer facing front, the growth in faster payments networks would be instrumental in banks opening payment ecosystems to attract third party developers to create and deliver innovative credit transfers services.

Payment Infrastructure for Omni-Channel Commerce

The way we pay is changing. As shopping habits evolve, e-commerce and m-commerce methods such as in-app and one-click commerce are becoming increasingly popular. In addition, the exponential growth of IoT is introducing a wealth of new payment use-cases.

Data Takes Centre Stage

With growing competition from non-banks, financial institutions would put considerable financial and strategic muscle into analytics to boost P&L levers. For banks the top use cases include optimized customer journeys, real-time business moments, personalized offers, predictive analytics for optimizing channel efficiency and predictive fraud modelling.

Rise of Digital ID and Security

Digital identity is the new passport to access a range of products and services. The growth in the number of use cases compounds the threat potential. Banks would need to balance need for a frictionless service experience at checkout and regulatory mandates to maintain high levels of security.

Virtual Experience Economy Continues to Create Buzz

Augmented Reality/ and Bots would continue to delight with many tantalizing possibilities but adoption especially in emerging markets would remain basic in terms of use cases. Customers may still not be speaking to a bot to initiate a payment, the use of text bots for routine transactional queries would continue to gain in sophistication.

Objectives

- To understand the awareness level of individuals wrt various digital payment platforms.
- To study the security challenges while making payments via e wallets
- To determine the estimate of growth of virtual payment system (E payment apps) from future perspective.
- To analyze the parameters that motivate individuals to use e wallets as compared to traditional means of payment.

Literature Review

Olalekan S. Akinola (2012) this paper investigates the achievability of presenting cashless methods for business exchanges into our general public, and the security dangers related with it. The paper clarifies the possibilities of applying information mining procedures to successfully control the security dangers lastly introduces a model for learning extraction in a cashless domain. They additionally represent various difficulties and dangers identified with, in any event, specialized measures, information security, lawful issues and purchaser conduct Braga and Mazzon (2013) "Do Digital Wallets as a Payment Method Influence Consumer in Their Buying Behavior?" proposed an exhaustive 'Installment Mode Influencing Consumer Purchase Model', considering the fleeting partition, worldly introduction, discretion and agony of installment develops, and including the computerized wallet as another installment mode.

Doan (2014) outlined the appropriation of versatile wallet among buyers in Finland as just toward the starting phases of the Innovation-Decision Process: The hypothetical parts of electronic trade were basically analyzed to comprehend the substructure of conduct towards aim to utilization of cashless exchange. The writing audit determines the purchaser conduct towards the selection of cashless exchange by thinking about different elements propelling reception of innovation. Diverse components have become an integral factor which influence the selection of cashless exchange as an installment medium, for example, put stock in, expressiveness and saw

usability, assuming a critical part in encouraging reception of advanced installment arrangements. Safety, and security of installment when contrasted with conventional strategies goes about as one of the other main thrust.

Dr. Stitch ShewtaRathore (2016) investigations disclose to us computerized wallets are rapidly getting to be standard method of online installment. Customers are embracing advanced wallets at end unfathomably quick pace, to a great extent because of comfort and convenience. Furthermore, additionally prescribe advertising and advancements projects should be directed to make mindfulness among non-clients. Rebate offers and reward focuses on making installments through cashless transactional increment its notoriety and appropriation also. To expand the utilization of advanced wallet, it is required to instruct shoppers about the advantages of a cashless transactional rearranging and streamlining their buying encounters.

RoopaliBatra, NehaKalra (2016) investigations let us know in a period of digitalization, the examination intends to contemplate the client recognition, utilization design inclinations and fulfillment level with respect to advanced wallets in view of an investigation of 52 respondents. It additionally recognizes the hindrances and difficulties to the selection of the same. The outcomes demonstrate that there exists a tremendous undiscovered market for computerized wallets both regarding expanding mindfulness and also its use. Likewise, the recurrence and estimation of every exchange utilizing advanced wallets stays restricted. Web based shopping risen as the prime reason for use of advanced wallets. The investigation watched that respondents lean toward utilizing wallets since they spare time and are anything but difficult to utilize and get to. In any case, security of cash executed remains their real concern. Security issues as far as dread of money misfortune and absence of ease of use for worldwide exchanges are the prime obstructions to its reception. While the time of respondent had some huge effect on sorts, sum and heaps of computerized wallets, sex simply affected the heap of advanced wallets. Additionally, research could investigate in more noteworthy profundity the relationship

between other statistic factors like salary level, instructive level, and nature of occupation, conjugal status and so forth.

Statement of Problem

The current population in India still rely on cash payment for their transaction. Also, the main concern faced by the users is security of information and data while doing digital payment.

Sampling Technique: Simple random sampling method is used for collection of data. Sample is collected from 96 respondent randomly from different age, gender, education group.

Data Analysis and Interpretation

A. Descriptive Analysis

1. Awareness of E wallets

To understand whether the individuals are well aware about various E wallets. We conducted a survey and asked whether the target sample population has used any of the mobile payment applications. Based on the results of the survey we found that 96.9% of the sample size uses e-wallet services as their payment mode and 3.1% has no access towards e-wallet services. On the basis of the results of the Survey we could state that the target population used as part of the survey is majorly aware about E-wallets and other digital payment applications. Based on the results of the survey we found that 64.6% of the sample population uses Paytm, 60.4% of the population uses Google Pay, 47.9% of population uses PhonePe. On the basis of the results of the Survey we could state that the target population used as part of the survey is majorly aware about E-wallets and other digital payment applications with Paytm, Google Pay, Phone PE being the most widely used among the participants.

To understand the most preferred method of payment post demonetization. We conducted a survey and asked the target sample population on the modes of payments used by the group. Based on the results of the survey we found that 58.3% of the sample population uses E-wallet/Mobil App payments as mode of transaction, 53.1% of the population uses Credit/Debit Card and 41.7% of population uses Net banking. After demonetization which was announced on 8th Nov 2016, where India faced a drastic change towards different

payment modes such as e-wallet, net banking, plastic money, etc it is observed from the above data that there was a decrease in cash transactions.

Table 2: Awareness level of digital payment platforms

Applications Used	% of Population Using the Same
Paytm	64.6%
Google Pay	60.4%
MobiKwik	18.8%
BHIM	35.4%
PhonePE	47.9%
Apple Pay	8.3%
Samsung Mini	2.1%
Others	5%

Table 3: Mode of payment adopted post demonetization

Mode of Payment	% of Population using the mode
NetBanking	41.7%
Credit/Debit Card	53.1%
Cash	13.5%
E-Wallet/Mobile App	58.3%
Cheque	7.3%

Security Concerns

To understand the various security concerns that people face while making payments via e wallets. Based on the results of the survey we found that 59.4% of the sample population face problems while using e-wallet. It was seen in the survey that, as e- wallet is a new service people are facing some problems while using e-wallet. Based on the results of the survey we found that 53.1% of the sample population faces Internet problems, 51% of the population faces Site/Server Breakdown. It was also found that many people hesitate for sharing their personal details and the sample population face risks of misuse of personal details.

2. Factors affecting use of e-wallets

It is observed that quicker checkout (52.1%), access to coupons (49%) are one of the key motivating factors to use Mobile payment apps.

3. Preferred mode of Payment

It can be inferred that, 22.9% of the respondents believe e-wallet services as their preferred mode for high value transactions.

While majority of the respondents i.e. 46.9% prefer net banking for high value transactions and cash being the least preferred mode.

4. Primary purpose of E-wallet

Based on the results of the survey we found that bill Payments, Ordering Food (53.1%) and Online Shopping (62.5%) are the primary reasons for the usage of E-wallets. As per study, it was observed that most of the people (62.5%) use e wallet services for online shopping and very less respondents(24%) use it for routine expenses. Also, it was observed that 52.1% of the sample population are attracted to do more transactions because of cash and promo codes.

Hypothesis Testing

1. H01: There is no significant difference between the E-wallet brand preferences

H11: There exist significant difference in the E-wallet brand preferences

Table 3: ANOVA Single Factor: SUMMARY

Groups	Count	Sum	Average	Variance
Paytm	96	294	3.0625	1.764474
Google pay	96	320	3.333333	1.887719
Mobikwik	96	237	2.46875	1.556908
BHIM	96	270	2.8125	1.627632
Phonepe	96	258	2.6875	1.396053

Table 4: ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	43.1333	4	10.7833	6.549	3.89E-05	2.39071

Within Groups	782.1146	475	1.646557
Total	825.2479	479	

Findings

Based on the result of one-way ANOVA conducted, It can be inferred that Paytm and google pay is the most preferred payment app followed by Phonepe, BHIM and mobikiwik. samsung mini, freecharge are among the least preferred payment app. Further data analysis is done using anova: single factor and as shown

in the data above the F calculated value is 6.54 which is greater than the f critical value (2.39) so the null hypothesis is rejected. Also given the p- value (3.89E-05) is less than Level of Significance of (5%). We reject the null hypothesis. As a result, we can state that there exists a significant difference in the E-wallet brand preferences.

2. H02: There exists no significant difference between Usage of E wallets as a mode of payment and Education levels

H12: There exists significant difference between Usage of E wallets as a mode of payment and Education levels

Table 5: z-Test: Two Sample for Means

	1,2	3
Mean	3.6904	2.1167
Known Variance	1	1
Observations	84	11
hypothesized Mean Difference	0	
z	-13.4249245	
P(Z<=z) one-tail	4.19E-09	
z Critical one-tail	1.644853627	
P(Z<=z) two-tail	8.38E-09	
z Critical two-tail	1.959963985	

Findings

As per the above analysis the calculated z value is -

13.42 which is less than the z critical value that is -

1.64 so the null hypothesis is rejected. That means there exist significant difference Usage of E wallets as a mode of payment and Education levels. Also given the p- value (4.19E-09) is less than Level of Significance of (5%). We reject the null hypothesis.

We can state that Graduates and Post Graduates prefer Usage of E-wallets and consider it as a useful mode of payment as compared to Under Graduates.

i. Based on the survey results, we found that the sample population is not well aware on the digital payment system.

- ii. It can be concluded that, even though there is a boom in the market towards online payments, still some of the respondents feel it is unsafe to do transactions online or via e- wallets.
- iii. The sample population believes potential growth in online transactions in India and that it may become a cashless economy.
- iv. Based on the results of the survey it is found that the offers and rewards attract the user to carry out his\her transactions through online payment apps.
- v. The respondents face various obstacles such as lack of internet connectivity, site crash, etc. during online transactions
- vi. Based on the results of the survey it can be found that, Paytm is considered the most preferred application as compared to various other application such as Google pay, Apple pay, Mobiwik, etc. by the respondents.
- vii. Post-Demonetization, there was a sudden shift of trend amongst individuals towards payment system.
- viii. The respondents are hesitating to carry out transactions online as they have fear of their account being hacked and misuse of personal details.

Recommendations

- The services provided by various e-wallet service providers should analyze the issues faced by individuals and resolve them by doing up gradation to their sites. This could help resolve various obstacles faced such as, site crash during online transactions.
- The service provider should make the tie-up with the government to create awareness towards e payments and thereby promoting their brands.
- There should be an increase in the daily limit for carrying out transactions so that more footfalls will be seen on the online payment portals. This can be possible if there is an intervention of Reserve Bank of India.
- E-wallets service provider should be up with the authenticated green tick mark that the data shared is safe. That will help provide security to the individuals.

- Based on the results of the survey, we believe that the online payment service provider should undertake a promotional campaign by using flash ads during payments with a lucrative offer which will help attract respondents to do more online transactions.

Conclusion

The study was accomplished to explore consumer awareness, perceptions and willingness to engage in using a smart phone to replace the content of their physical wallets. Specifically, the study explored awareness, usage, and likelihood of using smart phones for completing the monetary transactions. With the increased penetration of internet connectivity and smart phones has led to an increase in the number of E-wallet users. E-wallet is getting more and trendier among the consumers. As per the findings of the study, E-wallet is getting popularity among the young lots such as students and employees. Further the study also explored which E- wallet gateway services is preferred by the consumers. The study witnessed that Paytm is leading among the other wallet providers. When a user is making

an online payment via E-wallets, the respondents are affected by various assorted factors. The main influencing factors has been identified as time, convenience, security, loyalty / reward points and discount deal etc. Making payment through M- wallets can be a great benefit to the users in terms of convenience, saving time and money. One of the prime obstacles is security issues, due to which the users get anxious about his or her confidential information which may get disclosed. Therefore, the E-Wallet providers need to understand and meet or even exceed towards the users trust expectations. This includes not only addressing security and privacy concerns but also safeguarding the backup mechanism if the phone is lost or stolen. The study mainly focused on Security, Necessity, Time and satisfaction of the services used that affect the consumer's perception toward E-Wallets, the study witnessed that there is a significant association between the perception and the above attributes. E- wallets are growing in INDIA as the consumers are relying upon the digital life style to make things convenient and faster and the consumers are embracing E-wallet with open arms.

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EVOLUTION OF SPIRITUAL INTELLIGENCE AND ITS INCREASING SIGNIFICANCE**N. Ismail¹ and A.E. Thomas²**¹School of Management and Entrepreneurship, KUFOS, Kerala²St. Paul's College, Kalamassery, Kerala**ABSTRACT**

The paper studies the Spiritual Intelligence and its impact on human behaviors. Research shows that high levels of spiritual intelligence are needed for psychological well-being and human development. The study found that Individuals with higher levels of spiritual intelligence are found to have less involved in substance abuse, they are able to solve their problems easily compared to others. They ride over hurdles rather than succumb to them. Spiritual intelligence is an important component of human development.

Keywords: *Spiritual Intelligence, Human Behaviors, Psychological Well-Being, Human Development*

Introduction

David Wechsler, an eminent researcher who was greatly involved in early intelligence testing defined intelligence as “the aggregate or global capacity of the individual to act purposefully, to think rationally and to deal effectively with his environment”. Kathleen Noble described spiritual intelligence as “an innate human ability”. Research shows that high levels of spiritual intelligence are needed for psychological well-being and human development. In today’s environment youth are increasingly found to have a feeling of loss of identity, confidence and meaning. Individuals with higher levels of spiritual intelligence are found to have less involved in substance abuse, they are able to solve their problems easily compared to others, overcome traumas in a better fashion than others. They are more focused and do realize that change is the only thing that is constant. They thereby do not depend on the worldly pleasures totally and are able to adapt to changes better. They ride over hurdles rather than succumb to them. Spiritual intelligence is an important component of human development.

Spiritual Intelligence

Vaughan (2000) characterize that “Spiritual Intelligence is a power to profound understanding of existing questions and perceptions about self awareness levels.” Spiritually Intelligent people nourishes inner life, have a feeling of completeness and joy. Gardner (1999) included nine different types of intelligence (natural, musical, logical,

existential, interpersonal, physical, linguistic, emotional, and spatial). He did not include the concept of spiritual intelligence in his theory; instead he used the concept of existential intelligence as viable. Emmons (2000) took it a step further in presenting the evidence that spirituality meets the criteria for intelligence. He identified five components of spiritual intelligence: the capacity for transcendence; the ability to enter into heightened spiritual states of consciousness; the ability to invest everyday activities, events, and relationships with a sense of the sacred; the ability to utilize spiritual resources to solve problems in living; and the capacity to engage in virtuous behavior (to show forgiveness, to express gratitude, to be humble, and to display compassion). Spiritual intelligence is different from Intelligence Quotient(IQ)) and Emotional Quotient(EQ). IQ and EQ are located in opposite hemispheres, Spiritual Intelligence is associated with synchronization and whole brain activation. A conscious intention is required to activate spiritual intelligence. Bowell, Richard A. (2005) reinforces the studies bringing out that IQ is highly linear. One brain cell firing to another to form a neural tract is called synaptic transmission and is the basis for the formal logic of IQ. EQ is different to IQ. It weaves associative patterns. Context, memory, comparison, appropriateness these are EQ skills.

Statement of Problem

Erikson (1950) described “Spiritual Intelligence as a feeling of being at home in one’s body, an impression of awareness in

one's direction". Spiritual Intelligence is something that is becoming increasingly important and has found to bring in propounding results in providing direction to one's life. The intention behind this study is to determine the Spiritual Intelligence among students since studies in the same area are scarce. To understand if Spiritual Intelligence has helped them to provide a direction, since students are the ones who are in the most dilemma (phase of their life). Spiritual Intelligence have always been analyzed for employees and so. However Spiritual Intelligence is something that has to be developed right from the age of adolescence. This will give them more confidence, clarity and meaning to life.

Objectives

- To understand the concept and evolution of Spiritual Intelligence.
- To examine the importance of Spiritual Intelligence.
- To measure the Spiritual Intelligence among two different categories of students.
- To analyze if gender has any impact on spiritual intelligence.

Methodology

Data Collection Sources

For the purpose of obtaining information regarding the students, both primary data as well as secondary data were collected. Primary data were collected by making the students fill in the structured questionnaire. Secondary data are collected from various books, magazines, journals and Internet etc.

Sample Design

A sample of 30 students are taken from students studying for professional course (Medical) in Ernakulam and 30 students studying for other graduate course (B.Com) in Ernakulam. Stratified sampling technique is used to collect information from students to analyze spiritual intelligence.

Tools of Analysis

Data were collected using structured questionnaire. Appropriate statistical

techniques were used for analysis and interpretation.

The Spiritual Intelligence Self-Report Inventory (SISRI-24) (King, 2008; King & DeCicco, 2009) A self-report measure of spiritual intelligence has been developed and validated. This tool provides a useful starting point for the measurement of spiritual intelligence. This tool has also been validated in Indian Context with a reasonably high reliability factor.

24 items are measured. 4 Factors/Sub scales:

- I. Critical Existential Thinking (CET)
- II. Personal Meaning Production (PMP)
- III. Transcendental Awareness (TA)
- IV. Conscious State Expansion (CSE)

Results/Findings

The average Spiritual Intelligence among two groups of students i.e. MBBS students and B.COM students were relatively same i.e. 49.2 and 50.5 respectively.

An analysis of gender impact on Spiritual Intelligence showed women (51.8) to have a higher spiritual intelligence than men (48.515). However studies show that as age increases usually men tend to have higher SI than women. This is because with age men are put through greater responsibilities both at work place and family life. So their EQ becomes further higher which helps the development of SI.

The students who scored high values in the SISRI-24 when interviewed directly were found to be highly focused, they seemed to have a relatively strong sense of social responsibility and as far as those students were concerned it was their decision to take up this graduation course. This proves their decision making skills are high as well. They have found themselves to be in a happy phase of life. They are thoroughly convinced that their work is a manifestation of their soul and their enthusiasm. They are highly motivated to achieve their goals as well.

Parameters	N	MINIMUM	MAXIMUM	MEAN
AGE	60	19	23	21
SI(MBBS)	30	25	78	49.2
SI(B.COM)	30	27	70	50.5
SI(MALE)	34	25	70	48.515
SI(FEMALE)	26	31	78	51.807

The range of Spiritual Intelligence in SISRI-24 questionnaire is 0-90. The higher the values, higher is the spiritual intelligence.

Discussions/Suggestions

With respect to organizations thereby, the HR managers should take care to employ candidates with high levels of Spiritual Intelligence. They will be more focused, can help solve issues if any in a more a logical manner. Various studies support the relationship between spiritual intelligence and work satisfaction, occupational commitment of employees. Wigglesworth's (2012) study also claims that mature leadership comes with high

levels of spiritual intelligence. A tumbling organization or an organization undergoing a crisis has spiritually intelligent employees, they will help it get back in shape through rebranding, revising policies etc. The major difference between emotional intelligent and spiritual intelligent people is that the emotionally intelligent people understand the situation they are in and figure themselves out in an issue however the spiritually intelligent people will think of whether the situation they are in is what they desire of and if not they will take steps to bring in the desired situation. Meditation and prayers helps develop Spiritual Intelligence.

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EXAMINE THE IMPACT OF THE SERVICES OF THE ACADEMIC LIBRARY ON STUDENT LEARNING - A CASE STUDY OF KLEF (DEEMED TO BE UNIVERSITY)**S.S. Kamara¹ and S. Dadhabai²**^{1,2}KL Deemed to be University Business School, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur, Andhra Pradesh, India¹sskamara75@gmail.com, ²sundaridadhabai@gmail.com**ABSTRACT**

Since university library is resolved to offer an excellent assistance for its users, it needs to build up an on-going discourse with the users. One of the principal devices that can be utilized to survey the library administrations is the user's overview. Even though the academic library is considered as the hub, heart and powerhouse where academic resources are stored, retrieved and disseminated to students and faculties for effective utilization and academic achievement, only a small number of researchers have researched on examine the impact of the services of the academic library on student learning. This research was undertaken to examine the impact of the services of the academic library on students learning while identifying user needs and the role of library in enhancing students' learning. A questionnaire-based study was utilized for information collections, which was administered among the sample size of 120 students. Descriptive statistics and SPSS were used to analyze the data. It was discovered that the students are by and large satisfied with accessible library assets, services and facilities. But it was further discovered that library assets and administrations are not being completely utilized by students, in view of these discoveries, it was suggested that a comprehensive information literacy program should be led to advance mindfulness and utilization of electronic data resources by students. It was additionally suggested that the library should expand the procurement of electronic data sources while proceeding to obtain general and reference materials to satisfy the current research needs of the users.

Keywords: Students Satisfaction, Library Services, Library Facilities, Students Learning, Students' Performance

1. Introduction

The KLEF (Deemed to be University) started in the KL College of Engineering (KLCE), which was established in 1980-81 by the Koneru Lakshmaiah Charities Trust (later Koneru Lakshmaiah Education Foundation in 1996), located in vaddeswaram, Guntur District of Andhra Pradesh in Indian. In February, 2009, Koneru Lakshmaiah Education Foundation was recognized deemed to be university by Government of Indian under UGC Act 3A. In 2012, the institution was accredited by NAAC (National Assessment and Accreditation Council) with an 'A' grade and later in 2018; it was re-accredited by NAAC with an 'A++' grade. In 2019 UGC and MHRD declared the institution as category '1' institution. KLEF (Deemed to be university) is situated on the banks of Buckingham of river Krishna, eight kilometres from Vijayawada city. New campuses were established in 2017 at Hyderabad, Moinabad and Bachupally.

2. Klef (Deemed to be University) Central Library

The KLEF (Deemed to be University) Central Library currently have nearly 170,000 books, about 32000 World e-books, 487 print periodicals including 280 national, 104 international journals, and 103 national magazines; 6657 back volumes of journals, nearly 6493 project reports, theses and dissertations; and about 11,551 CD/DVD-ROMs. The Library provides access to 35,199 e journals covering (ASCE, ASME, IEEE, J-GATE(JET, OEP, Nature Biotechnology, CMIE), Research Databases (EBSCO Business Source Elite, EBSCO Art & Architecture complete, J-GATE Engineering Science and Management, Manupatra. ASTM, CMIE, EBSCO Hospitality & Tourism Complete, GREENR, IEEE, (JET), J-GATE (JET, JSMS), and E-Books (Include World E: about 30,000 e-books & McGraw-Hill Books: 852), Access Engineering, Nature Biotechnology, Oxford University Press, and Springer, SCOPUS abstract and citation database. It has over

fifteen Departmental Libraries and one branch library at Hyderabad.

3. Significance of the Research

Libraries are viewed as social establishments that are made to build information, protect the social legacy and give data to various clients Benard, Ronald, Dulle and Frank well, (2014). Bhatt (2003) found that the arrangement of effective library administrations depends on fulfillment level of its clients with significant library data assets, library staff and client driven library administrations. Studies show that psychological needs of the staff in an organization can be satisfied through using quality of work techniques Shahnaz Uddin and Dr. K.S. SekharaRao, (2018). Agyekum and Filson (2012) noticed that the students utilization of library assist them enhancing their tasks, class notes and help them set up for assessment

4. Review of Related Literature

As early as 1924, the American Library Association developed a practical guideline and tool for the evaluation, administration, maintenance, and service of the library Wong and Webb, (2011). Ban leman and Adjon (2017), conducted a study on an analysis of the correlation between academic library use and student's academic performance in the University for Development Studies in Ghana. Finding reveals that students who used the library their Cumulative grade point average is statistically significant than those who do not used the library. eRodrigues and Manrekar (2020), conducted an empirical study on the impact of academic library services on student's success and performance in Nirmala Institute of Education and Narayan Zantye College of Commerce in India. Finding shows a significant and remarkable relationship between the library usage and students' academic performance and success. Pandey and Singh (2014), their study found that a large number of respondents were satisfied with library resources, services and books as are the most widely used services preferred by the users in circulation service. Suresha (2016) studied the users' satisfaction with library resources and services among the faculty members and students of St. Claret Degree

College, Bangalore. It was revealed that a large number of respondents were satisfied with library resources and services, the books are the most widely used by the users and circulation services is considered as the most preferred service in the library. Satisfaction is job induced motivation and interest in work, when work becomes interesting the worker gets a job of his choice gives him tremendous psychological satisfaction Sekhara Rao et al, (2018)

5. Research Gap

The library serves approximately 7000 users of all categories both inside and outside campus. More specifically this study was conducted to examine the impact of the services of the academic library on students' learning; as the research gap.

6. Objectives of the Study

1. To investigate the various aspects of students' visit to the library.
2. To examine library services and facilities students used in Learning and research.
3. To find out students' satisfactory with the services and facilities of the library.
4. To assess the impact of library services on student learning.
5. To give suggestions for students' use of the library.

7. Research Methodology

Based on the variables identified from previous literature, a structured questionnaire was prepared which consisted of two sections. The first section demographic information about respondents and second section has 23 statements and one suggestion question which was designed to measure the perception of the students. The Likert Scale was used to measure respondents' rate of agreement on each statement, from "1" as "strongly disagree" to "4" as "strongly agree".

7.1 Data Collection and Sampling Procedure

A simple random sampling technique was used to select 120 students from those that are using KLEF (Deemed to be University) central library. The researcher used a questionnaire as a research tool for primary data collection, which was distributed to the selected students.

7.2 Data Analysis

Quantitative data collected in this study were analyzed, using descriptive statistics which include frequency count, percentages and SPSS (Statistical Package for Social Science)

8. Results and Discussions

OBJECTIVE One: To investigate the various aspects of students' visit to the library.

Table 1: This table shows how frequent students Visit the Library.

Table 1: Frequency of visit					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Daily	32	26.7	26.7	26.7
	Once per week	20	16.7	16.7	43.3
	Once per month	4	3.3	3.3	46.7
	During Exams	12	10.0	10.0	56.7
	When necessary	52	43.3	43.3	100.0
	Total	120	100.0	100.0	-

Source: Survey Data April, 2021

Figure 1. Shows when students visit the library.

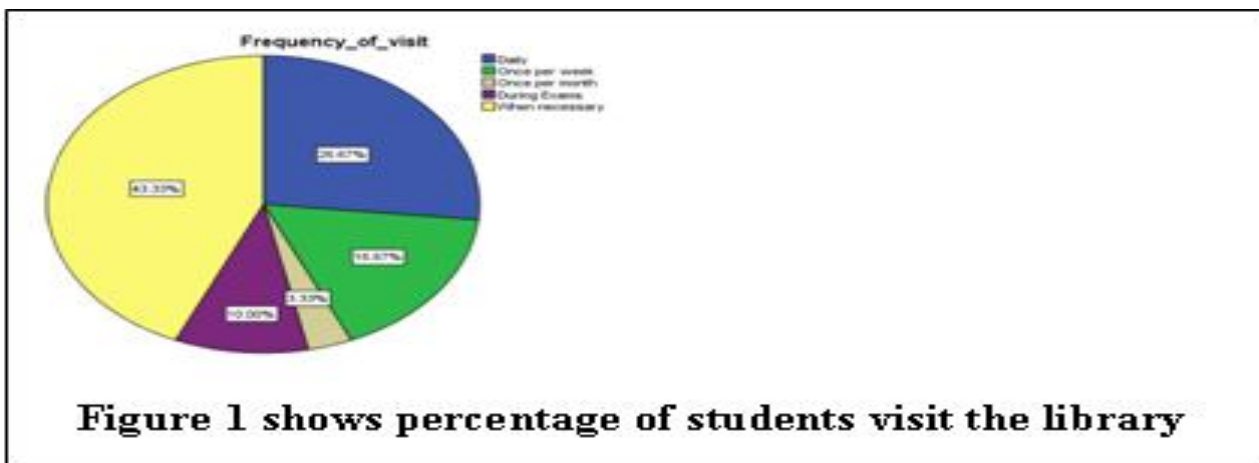


Figure 1 revealed that 43.33% students visited the library whenever necessary; therefore the librarians need to sensitize students regarding utilization of library materials. 26.67% students

visit the library every day, 16.67% students visit the library once in a week, 10% students visit the library during exams and only 3.33% students visit the library once in a month.

Table 2: Shows the frequency of students' purpose of Visit to the Library

No	Purpose	Frequency	Percent	Valid percent	Cumulative percent
1	Use of internet	46	19.17	19.17	19.17
2	Reading reference materials	28	11.67	11.67	30.84
3	Reading in the library room	42	17.5	17.5	48.34
4	Preparing notes	54	22.5	22.5	70.84
5	Prepare project or dissertation	12	5	5	75.84
6	Listening to audiovisual	14	5.83	5.83	81.67
7	Doing home work and study notes	44	18.33	18.33	100
	Total	240	100	100	

Source: Survey Data April, 2021

Figure 2. Show the percentage of students' purpose of visit to the library

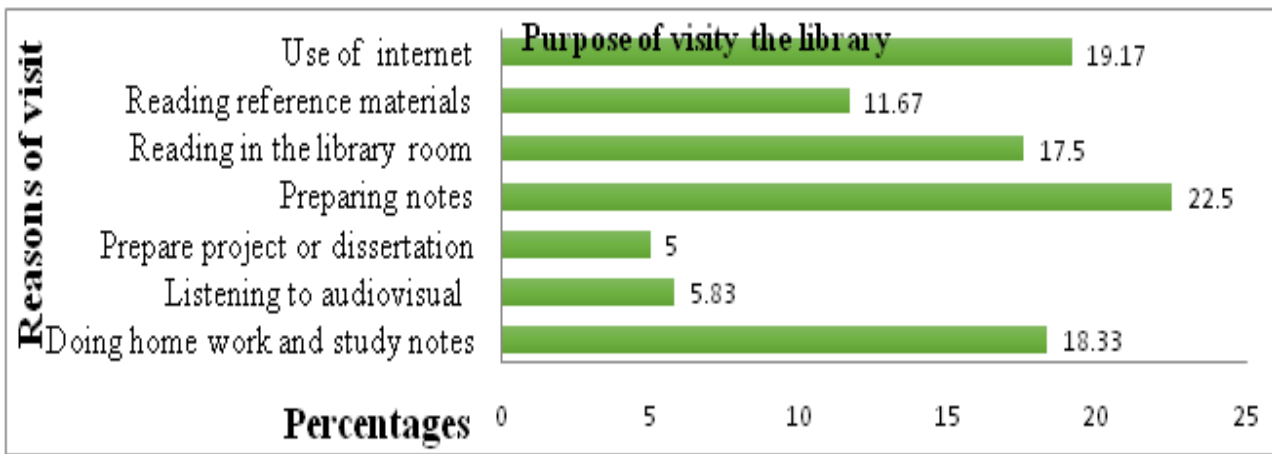


Figure 2 show that 22.5% students visit the library to prepare notes. 19.17% students visit the library to browse the internet, which revealed that nearly 80% of the students used their own internet to access information. About

18.33% students visit the library to do their homework and study their notes. 17.5% of the students visit the library for convenient reading.

Table 3. Shows frequency of the difficulties students’ faced in obtaining information from the library

No	Difficulties	Frequency	Percent	Valid percent	Cumulative percent
1	Very slow internet	24	20	20	20
2	Scanty information in the library	17	14.17	14.17	34.17
3	Poor library materials	10	8.33	8.33	42.5
4	Lack of enough time in the library	58	48.33	48.33	90.83
5	Inadequate resources	11	9.17	9.17	100
	Total	120	100	100	

Source: Survey Data April, 2021

Figure.3: percentage difficulties students faced in obtaining information from library.

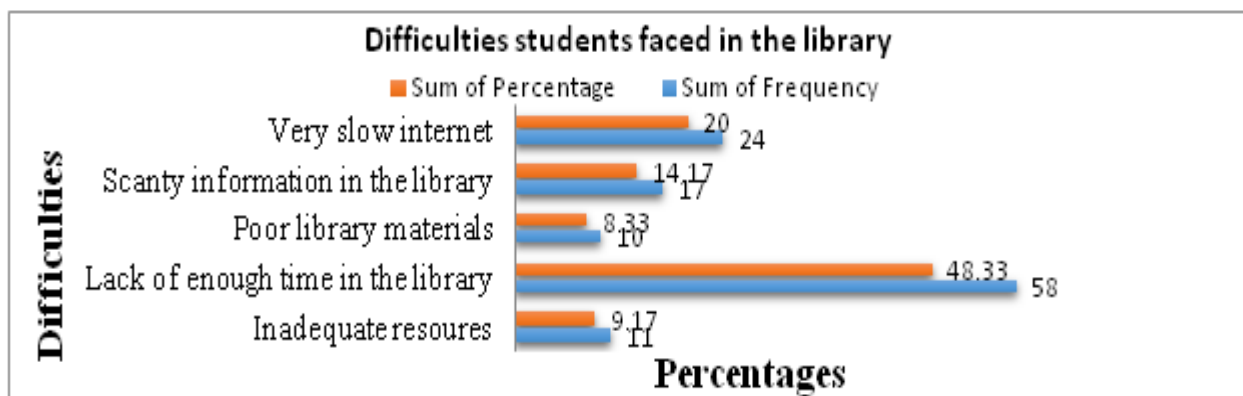


Figure 4 shows that 48.33% students’ emphasised lack of enough time for using the library, 20% students spoke on the very slow condition of the internet in the library,14% students emphasised that they are unable to get detail information in the library. While 9.17%

and 8.33% students talk on inadequate resources and poor library material respectively.

Objective Two: To examine library services and facilities students’ use for their Learning and research.

Table 4: Shows frequency of services and facilities used by students for learning and research.

No	Services and Facilities	Number of respondents	Yes of respondent number	Yes Percentage	No Number of respondents	No percentage
1	Borrowing facilities	120	103	85.83	17	14.17
2	Reference collection	120	106	88.33	14	11.67
3	Thesis collection	120	42	35.00	78	65.00
4	Internet facilities	120	64	53.33	56	46.67
5	Electronic journal services	120	32	26.67	88	73.33
6	Library web page	120	42	35.00	78	65.00
7	E-mail facilities	120	56	46.67	64	53.33
8	Photocopy services	120	102	85.00	18	15.00

Source: Survey Data April, 2021

Table 4, revealed that borrowing facilities (85.83%), Reference collection (88.33%) Photocopy service (85.00%) and internet facility (53.33%) were the most frequently used services and facilities by the students for learning and research.

4. **Objective Three:** To find out students' satisfactory with the services and facilities in the library.

Hypothesis Testing

H0: Students do not satisfy with the services and facilities of the library. (Null Hypothesis)

H1: Students do satisfy with the services and facilities of the library. (Alternate Hypothesis)

Normality Test

Skewness = - 0.5 to + 0.5 or r = -1 to + 1.

But according to descriptive analysis, skewness = 0.480

Therefore Skewness 0.480 < 0.5, the data is assumed to be Normal.

One – sample statistics analysis

Table 5: Shows One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Satisfaction	112	22.0804	2.55441	.24137

Source: Survey Data April, 2021

H0: $\mu=14$, H0: $\mu \leq 14$ Null hypothesis

H1: $\mu \neq 14$ H1: $\mu > 14$ Alternate hypothesis

In table 5, P (mean) = 22.0804. Meaning P > 14. Therefore 22.0804 > 14. Accepted

The alternate hypothesis is accepted, which stated that students do satisfy with the services and facilities of the library.

Objective Four. To assess the impact of library services on student learning.

Hypothesis Testing

H0: Library services do not impact significantly on student learning. (Null Hypothesis)

H1: Library services do impact significantly on student learning. (Alternate Hypothesis)

Normality Test.

Skewness = - 0.5 to + 0.5 or r = -1 to + 1.

According to descriptive analysis, skewness = 0.842.

Therefore Skewness 0.842 < +1. The data is assumed to be Normal.

One – sample statistics

Table 6: Shows One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Experience	112	12.8214	1.37030	.12948

Source: Survey Data April, 2021

H0: $\mu=8$, H0: $\mu \leq 8$ Null hypothesis
 H1: $\mu \neq 8$, H1: $\mu > 8$ Alternate hypothesis
 Since P value ($P = 0.001 < 0.05$)
 In table 6, $P = 12.8214$. Meaning $P > 14$.
 Therefore $12.8214 > 14$. Accepted.
 Accept the alternate hypothesis, which stated that the Library services do impact significantly on student learning.

Objective Five. To give suggestions for students’ use of the library
 Table 7. Additional comments or suggestions
 The open ended question about the suggestions students highlighted for effective utilization of the library, out of 120 respondents only 37 respondents gave their suggestions.

Table 7: Frequency table shows the suggestions given by students.

No	Responses(N=37)	Frequency	Percentage
1	Increase the library hours from: 9 :00 AM to 8:00 PM (Monday to Saturday) and 10:00 AM to 5:00 PM (Sundays)	17	46
2	Library needs more computers with faster internet access	10	27
3	Cleanness and Noise control should be emphasis	3	8
4	Library needs more references resources in the various specialist disciplines	7	19

Source: Survey Data April, 2021

According to table 7, increasing the number of hours for the opening of the library is the most important suggestion given by the students, followed by increasing the number of computers with faster internet facility and more reference resources in specialist disciplines are needed in the library.

5. Results and Discussion

It was confirmed that 43.33% students visited the library when necessary followed by 26.67% of those visited the library daily, the main purposes of visit were for preparing notes, browse internet, doing home work and reading notes. The study revealed that nearly 80% of the students depend on their own internets to access information. Insufficient time of using library was reported by 48.33%students. Moreover, the most important services and facilities received by students from the library were, borrowing facilities 85.83%, reference collection 88.33%, photocopy service 85.00% and internet facility 53.33%. Normality test and hypothesis was carried to find out students’ are satisfactory with the services and facilities in the library. The skewness was 0.480 shown

normal as compare to the range of skewness of -0.5 to +0.5. Hypothesis testing shown an acceptance of the alternative hypothesis, which stated that the students were satisfied with the services and facilities of the library. Another normality test and hypothesis was conducted to assess the impact of library services on student learning. It’s also shows normal because the skewness is 0.842, which fall between skewness range of -1 to +1. The hypothesis test accepted the alternate hypothesis, which stated that library services do impact significantly on student learning. Majority of the students (46%) suggested an increase in the library time of opening and adding more computers with faster internet in the library.

6. Conclusion

Many measurable existing indicators show the effectiveness of library usage to students learning, such as borrowing facilities, reference collections, photocopy service and thesis collection. Apart from these, libraries hold different collections of reading materials including books, periodicals, newspapers, magazines, journals, clippings, projects etc.

with a wide range of electronic documents. Findings show that, the students overall are satisfied with the library services and facilities, which is in support of Suresh, N. (2016), findings of the users' satisfaction with library resources and services among the faculty members and students. Physical libraries are still very important and appreciated by the students; therefore librarians should focus on being more adequately resourceful.

Suggestions

1. Majority of the students are not aware of the e-resources availability at the library, hence it is suggested that library orientation and information literacy programme to be conducted to sensitize students about services and facilities of the library.
2. The students feel that the existing timing is to be changed in the following manner:
 - Monday to Saturday, from 9:00am to 8:00pm and Sunday, from, 10:00 am to 5:00 pm.
 3. There should be available and stable internet facilities in all computers in the library.
 4. Seating arrangement should be structured so that students can sit beside each other.
 5. Majority of the respondents suggested for changing the chairs as the existing chairs are not comfortable for long sitting.
 6. The discussion rooms should be kept open so that students can easily access them.
 7. There should be enough text books available for all specialised disciplines.
 8. They suggested that the cost of photocopy in the library to be reduced to two (2) rupees per page instead of four (4) rupees per page.

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EXCELLENT SERVICE ENHANCES CUSTOMER LOYALTY AND STUDY ON HOTELS IN THE CAPITAL REGION OF UTTRAKHAND

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ABSTRACT

Loyal customers are the brand ambassadors. There are a number of programs offered by the hotels which include lifetime membership, special discount/ services for the frequent visiting customers, special corporate discounts etc. Some hotels also have a provision to upgrade the services at the same membership fee. It leads to a long term association of the customers with the Hotel. Many a times the customers are provided early check-in, late checkouts, discount on food bill, complimentary extra bed for under twelve years child and much more. The provision of providing clubs in the hotels has gained a momentum. By doing so the hotel adds particular gentry and makes them feel at a different level. Along with the regular club benefit the customers may be benefited to get a free entry with the sister brands. By doing so the customer is getting highly benefited, which obviously he will share with his family members and colleagues and ultimately the bonding is of the ultimate level which will enhance the goodwill of the hotel/brand in the market. In this era the customers are looking for the hotels where luxurious life and ultimately the services of higher standards are offered. They feel where customers are received with a pleasant smile and given a personnel touch by serving welcome drinks and innovative cocktails. In a hotel different outlets have distinct vibes with which each customer want to live. The guests like to interact and share their experiences with fellow guests. The list of beverages offered to the guests makes them feel out of the planet. After a daily busy business schedule the customers enjoy their quality time within themselves, with fellow family members and friends. This is the time when the customers charge them for the upcoming busy schedule ahead. Hotels have taken a smart move by putting their activities in the Event calendar, so it has become easier for the customer to find their favorite activities in time and participate in it. Travelers and guests feel more comfortable by knowing the property review online. Impeccable hospitality services provide customer's valuable feedback for a repeat business and making them loyal to the brand.

Keywords:-Customer Loyalty, Customer Satisfaction, Brand ambassadors, Good will, Repeat Business.

Introduction

With the rise in travelling only Inns and taverns were available for the travelers. More people started traveling for the purpose of tourism, education and business as a result the mode of traveling increased and consequently there was a need of accommodation. This was the Eighteenth century that Europe started the first hotels and made a landmark entry in the hospitality industry.

Auguste Escoffier (28 October 1846 – 12 February 1935) French culinary chefs , invented some 5,000 recipes and published Le Guide Culinary textbook. The French Revolution marked the early beginning of the hospitality and changed the features of culinary and future of the hospitality industry . Hospitality is the relationship between a guest and a host, where in the host receives the guest with some amount of goodwill, including the reception and entertainment of guests, visitors, or strangers. Today the customer satisfaction is

focused on personnel service provided to the guest and it revolves around transportation, lodging, boarding and related services. For it interpersonal skills, professionalism and dedication are required. It's completely a team effort, which includes all the departments in a collective manner to provide a memorable service to the customers. This is the reason that in the current scenario the developers, architects, interior designers along with a team of hospitality professionals are aware about the guest's taste and they cautiously make their respective planning. There is a continuous competition in experimenting and developing new aspects of hospitality in related to the customer satisfaction. So that the best service environment with the latest amenities and technologies can be offered to the guests within the competitive price. Every day we find changes with the mode of services provided to the customers. The different hotel brand chains are exploring with a new concepts, modern

updates and future vision. Food & Beverage service, tourism and recreational services are the main components of hospitality services. Personnel services are the centre point of all the components.

In India there were no hotels before Independence. After Independence every state organized their tourism sector, although it is governed by the centre. The states developed their hotels and restaurants as per the state flora and fauna, their traditions, their climatic conditions and their natural recourses. India was a member of International Union of Official Travel Organizations (IUOTO), which was replaced by World Trade Organization (WTO). The Indian Tourism Corporation (ITDC) managed Twenty Six hotels in India. These hotels represented the history, rich culture and cuisines of different parts of India. The prominent properties among are Ashok(New Delhi), Hotel Agra Ashok (Agra), Hotel Laxmi Vilas Palace (Udaipur), Hotel Bodh Gaya Ashok(Gaya) and Hotel Khajuraho Ashok (Khajuraho). The hotels made a great image of our country within the foreigner visitors, guests and tourists. In the beginning the hotels were doing great business. It was due to the reason because there were no competitors in those days. But after the coming up of private hotels and other branded hotels the ITDC started showing a huge loss in the revenue. The prominent hotels were Taj Palace, Taj Mahal Hotel and later Maurya Sheraton, Hyatt Regency, Park Royal and many more. Likewise in other places also the private hotels showed a tough competition to ITDC hotels and as a result they were getting the loss difference wider. As a result, Eighteen hotels have been sold so far.

In Indian culture the guest is considered as a God. As a result the guests are always welcome at any hour of the day. There is a very common saying that 'Atithi Devo Bhava'. In olden days the Indian culture had joint families and everyone in the family had different duty for keeping the guest comfort on the top priority. In the olden days the people traveled either for some business purposes or for pilgrimage. In both the cases the travelers used to stay in dharamshala, temples and monasteries.

As per records a Chinese monk Faxian (337CE- c.422 CE) visited India during the Chandragupta II reign and mentioned in his book that shelters for travelers with good facilities existed (Wikipedia). With the passage of time the en route travelers increased and consequently number of dharamshala also increased. Between the eleventh and thirteenth centuries, sarais came into existence. Britishers changed the hospitality services into much professional and modest. They started the culinary services into elite class gentry, in Army and in the officer's mess. The common man was not in a position to avail the services and was confined to take the street food. Thus the hotel industry in India initially started in Seventeenth Century during the British period. After Independence the service part in hospitality Industry showed a boom. The Taj Group of Hotels, The Oberoi Group of Hotels, Hyatt Hotels & Resorts, Hilton Hotels, Intercontinental Hotels, Marriott International and many more purchased many properties and set their high service standards. Many of them opened their chains in overseas also. In this era the customers are looking for the hotels where luxurious life and ultimately the services of higher standards are offered. They feel where customers are received with a pleasant smile and given a personnel touch by serving welcome drinks and innovative cocktails. In a hotel different outlets have distinct vibes with which each customer want to live. The guests like to interact and share their experiences with fellow guests. The list of beverages offered to the guests makes them feel out of the planet. After a daily busy business schedule the customers enjoy their quality time within themselves, with fellow family members and friends. This is the time when the customers charge them for the upcoming busy schedule ahead. There are a number of programs offered by the hotels which include lifetime membership, special discount/ services for the frequent visiting customers, special corporate discounts etc. Some hotels also have a provision to upgrade the services at the same membership fee. The reason behind to provide incentives to the guests is to retain their customers and make their customers into loyal customers. At the same time they can also interact with the online review writer for

knowing more about the property. The internet played an important role in hotel marketing. It makes the hotel online availability by which the hotel makes its continuous presence. Different types of event can also be seen periodically may include fashion shows, concerts, exhibitions, cultural events and many more.

Literature Review

Kalotra & Sharma (2017) performed a study to judge the service quality in hotels by using Servqual model. The purpose of the study was to find the difference between the customer's expectation and service performance about the service quality in hotels in India capital Delhi. This research applied quantitative research method. In this study the total 1067 customers who were availed the services of Delhi hotels considered as sample. The questionnaire and group interview was used to collect the primary data for the analysis. Total 22 statements under 5 dimensions were used in the questionnaire to know the gap between the customer's expectation and customer's perception. 7 point liker scale was used to find out response of the customers (1= strongly disagree, 7= strongly agree). For the purpose of analysis mean score of perception and expectation was calculated by using IBM SPSS software. The gap score (perception- expectation) for tangibility was -1.01, reliability was -1.22, responsiveness was -1.23, assurance was -0.88 and empathy was -1.04. Total Servqual gap score was -1.06 which represented that customer expectation was higher than the performance which proved that service quality provided by the Delhi hotel was not meeting customer expectation and improvement needed in all the areas.

Al-Msallam (2015) studied about the customer satisfaction relationship with brand loyalty in hotels. The main purpose of the paper was to know the effect of brand image and price fairness on customer satisfaction and brand loyalty. Total respondents in the research 584 selected from convenience method and judgment method. The data was collected through questionnaire. This study implemented structural equation modeling (SEM) approach to develop relationship between various variables. They found that brand image and price fairness had a positive relationship with

customer satisfaction and brand loyalty. Customer satisfaction had a positive relationship with brand loyalty. They also concluded that permanent and long term brand loyalty never possible; hotels have to invest on constant basis for the improvement in brand loyalty. They suggested that hotels should maintain consistency with other hotels belongs to the same chain to create brand image and with this they should also focus on customized services.

Khuong et al. (2015) studied about the topic named —Factor of Affecting Guests' Satisfaction and their Loyalty- A Study of Luxury Hotels in Ho Chi Minh City, Vietnam. The purpose of research was to analyze impact of tangibility, empathy, responsiveness, reliability, assurance, price and hotel image on customer's satisfaction and loyalty. This study was performed upon luxury hotels (3 to 5 star hotels). Quantitative research approach was applied in the research. Total sample size in the study was 300 respondents who were selected randomly. Data was collected through questionnaire and customer response measure through seven point liker scale (1= entirely disagree to 7= entirely agree). The results proved that there was a positive relationship of customer satisfaction and loyalty with empathy, tangibility, hotel image and assurance and there was not significant relationship of customer satisfaction and loyalty with reliability and responsiveness. They also found that there was positive relationship between the guest satisfaction and guest loyalty. High possibility was found that satisfied customer in future becomes loyal for the hotel.

(Hikkerova, 2014) reported that loyalty depends on the attitude toward a brand, which creates loyal behavior. The author has identified new dimension of loyalty ie commitment and trust. Trust is beliefs related to honest but on the other hand author has given the another definition of commitment "it is a relationship between a consumer and a firm, the aim to generate long relationship for long-term benefits for both partners".

Kofi Poku (2013), suggested that customers are sharing their experience through word of mouth. Word of mouth is a strong communication tool, which have some positive

and negative impact on customers, positive word of mouth communication show that customers are fully satisfied toward the product and service offered by the restaurant but on the other hand negative word-of-mouth communication show that customer are dissatisfied respectively.

Poku et al. (2013) studied about the service quality impact on customer loyalty in the Ghana city hotels. 3 hotels were selected from list of Ghana tourist board. 3 hotels which were selected named 2 star hotel lizze, 3 star hotel miklin and 4 star hotel golden tulip. The total sample size of the respondents was 150 (50 from each hotel) that were selected randomly and 15 staff members (5 from each hotel) were also selected by purposive method. They used regression model and weighted average score for the analysis of data. In respect of customer satisfaction weighted average score of golden tulip hotel was 4.58, miklin hotel was 4.59 and lizzie hotel was 3.95. Miklin hotel customers were most satisfied, golden tulip hotel was very close in respect of customer satisfaction to miklin hotel and lizze hotel customers were least satisfied with the services offered by the hotel. Tangibility score was low in all three hotels this proved that customers were not satisfied with the tangibility means physical factors quality was low in the hotels. This study also reveals that customers were more satisfied with the empathy factor where special services provided to them. In respect of customer loyalty weight average score of golden tulip hotel was 4.67, miklin hotel was 4.86 and lizze hotel was 4.00. Customer loyalty was highest in the miklin hotel followed by golden tulip hotel and lizze hotel customer loyalty was least. This data proved that customer satisfaction directly and positively linked to customer loyalty. Weighted average score of customer satisfaction and customer loyalty was highest in the miklin hotel. Result also proved that miklin hotels provided best value of money which provided satisfaction to customers. It is also found that that miklin hotel customer were more satisfied due to empathy and assurance which was better than golden tulip hotel. They concluded that hotel category not determinant of the satisfaction; satisfaction depends upon the services provided by the hotels.

(Rishipal, 2012) conducted a survey on changing paradigm of customer loyalty. Customer is sincerity, devotion, relatedness and faithfulness towards a belief, place and organization. Customer loyalty result their positive emotional experiences, physical attributes, perceive value and value of experience.

(Teng, 2010) mentioned in the study about loyalty card, it is one of the most important tool for promotional activities for any kind of business. Customer attitude and behavior attract towards the loyalty card. In United Kingdom, it is called "loyalty card". In Canada it is known as "reward card", in USA name given "discount card". Loyalty card give an option to customer repeat business or increase their visits. It introduced in early 1990s especially by airline industry, banking sectors and then other industries when results come in their favor.

According to Hsin Kuang Chi et al., (2009), study focus on effects among awareness, perceived quality and brand loyalty. Today it is very important to bring awareness Review of Literature 55 about the brand and quality offered by the restaurant. Customers always buy the product from a particular brand. Brand awareness means that customer can recognize and recall a brand in different situation. Brand play important role in customer routine life to purchase intention. Brand loyalty represents purchase commitment in future. The researchers have covered - the customer satisfaction relationship with brand loyalty in hotels, difference between the customer's expectation and service performance, Factor of Affecting Guests' Satisfaction and their Loyalty, service quality impact on customer loyalty, attitude towards a brand, commitment and trust, effects among awareness, perceived quality and brand loyalty, their positive emotional experiences, physical attributes, perceived value and value of experience, attitude and behavior attract towards the loyalty card and few suggested that customers are sharing their experience through word of mouth. The researchers have not covered the incentive /reward (in the form of Special discounts on accommodation, food & beverage, etc.) provided to the guests. So I have chosen this topic for my research paper.

Methodology

The paper evaluates most of the mentioned articles on the topic that have been brought out in academic journals with an intent to recognize the elements on the basis of which the customers analyses the quality of service providers, and to establish loyalty through customer's rational and efficacious assessment in hospitality industry.

Conclusion

To run a restaurant and a hotel is a difficult task. It's very much challenging. From displaying the property on the internet, making

the rooms reservation, selling the rooms, receiving the guests, running the front office department professionally, providing the rooms to the guest, operating the food & beverage production and service department, keeping the hotel maintenance intact and ultimately dealing with the customers in a professional manner all requires professionalism. By selecting a recognized brand the guests can be encouraged to visit the hotel, stay there and avail the facilities. After getting the facilities and services more than the expected one assures the guest repeat visit to the hotel. This enhances the guest loyalty towards the brand.

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LEGAL PERSPECTIVES ON CHILD SEXUAL ABUSE (CSA): A STUDY ON THE ROLE OF SHELTER HOMES

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ABSTRACT

Child Sexual Abuse (CSA) is one of the Indian societies' alarming crimes. It is like any sexually intentioned child's physical or mental abuse. Sexual abuse of children is a form of abuse of children by an adult or elderly teenager who uses the child to stimulate sex. Child abuse is a violation of a child's fundamental human rights and is the product of a cultural, political, emotional, and economic commodity interconnected. In 2012, the POCSO aimed to make this easier to use the legislation by including child-friendly reporting systems, proof collection, investigation, and timely prosecution of crimes by established special courts. The CSA issue and the related laws to solve this evil from society are discussed in this paper, and the government and the NGO shelter homes and their rehabilitation programs for CSA victims.

Keywords: Child, Sexual Abuse, Law, Shelter Homes

Introduction

The legal definition remained in line with its purpose. "child" means every person under 18 years of age under international law. The UN Convention on the Rights of the Child (UNCRC), an international legal document recognized by and ratified by most nations, has universally accepted this definition of children. Unless the majority is achieved before under the law applicable to the child, the child means all people below 18. In India, an individual's childhood age varies by law. Child abuse means a parent or caregiver causing a child, whether by action or negligence, to be hurt, harmed, emotionally damaged, or at risk of serious harm. The magnitude, range, and patterns of the problem were not understood in India and many other countries. The fundamental human rights, including protection against violence, originate from several interrelated families, social, emotional, and economic factors. This child abuse can be split into several headings. The violence of children under the age of 18 is child abuse.

In the context of a relationship of responsibility, trust, or influence, for the health, protection, development, or reputation of a child, this involves all types of physical and emotional aggression, sexual abuse, neglect, and commercial or other threats that cause actual or potential harm; disclosure of violence towards intimate partners may also often include child abuse. The advent in India

of state-run and funded shelters dates back to the late 1950s. The early housing institutions had social welfare roots.

Background of Shelters Home in India

The Department for Social Welfare launched "Short Stay Homes" (1969). These are supposed to be temporary shelters for women and girls who are "socially or spiritually unsafe" or who, due to various abusive encounters and violence, neglect, poverty, a lack of economic resources, emotional disorders, and mental illness, are made homeless. Preferences are given to those between 15 and 35 years of age.

The Shelter Stay Home program provides care and recovery facilities through charitable agencies other than housing. It allows children under the age of seven to stay with their mother, after which they are sent to a home for children. It also requires professional training and the development of expertise. Short Stay Homes are run by NGOs that receive government funding. The Social Welfare Committees and the Women and Child Commission play a vital role in the development and administration of the homes.

Working Women's Hostels (1972-73) were built to provide safe and affordable housing to women with paid work. Such hostels should be established in cities, small towns, and even rural areas. The criteria for eligibility for a seat in these hostels include women who are alone,

widowed, divorced, separated, and married but who live in a different town. The disadvantaged and the physically challenged are preferred. According to the June 2015 policy for these hostels, only women in metropolitan towns with a gross income of no more than 50,000 rupees per month and 35,000 rupees per month in any other area are qualified. Girls under the age of 18 and boys under the age of 5 may live with their mothers. These hostels also provide daycare for the children of the residents. The maximum stay time in these hostels is three years.

The Ministry of Women and Child Development launched Swadhar Homes (2001-2002) as part of the Swadhar Program after seeing the program's complexity for Short Stay Homes. The Swadhar scheme aims to deliver a multitude of integrated services for women who have no socio-economic support, including destitute women, poor widows, natural-disaster survivors and terrorist/extremist violence, migrants and refugees, ex-prisoners without family assistance, natural-disaster survivors, and women abandoned by families due to their physical/mental handicaps. Swadhar provides food, clothing, shelter, healthcare, counseling, legal aid, socio-economic rehabilitation through education, generation of awareness, and skills.

It has been implemented through the social welfare and child development department, women's development organization, urban local bodies, renowned state / private confidence, and volunteer organizations. A women's helpline, launched under the scheme for women, was stopped in March 2015. There were 311 Swadhar Homes throughout the country by July 2015, and the total number of women rehabilitated under this scheme in 2014-2015 was 4,247.

The two schemes were merged after assessing the performance of the Short Stay Homes and the Swadhar Homes of 2007 and the overlaps that emerged. The objective was to reduce and increase the functioning of administrative machinery and procedures. Since then, the current combined body—Swadhar Greh—has been managed by charitable organizations with non-profit State support. Every district in the

country was suggested to have at least one Swadhar Greh.

According to local needs, these new shelters can accommodate between 50 and 100 residents. Their residents' demographic is close to other homes: survivors of crime, the vulnerable and the homeless, individuals who are affected by HIV / AIDS, among others. The age limit was set for residents over 18 years of age.

One-Stop Crisis Centre (2014) or the OSCC is a product of the Legal Commission guidelines developed in Delhi following the 2012 gang rape. The 12th Plan Agency and Empowerment Working Group also recommended the establishment of a pilot OSCC. The OSCC was intended to provide abuse victims in informed hospitals with one-roof, one-window clearing, and multi-level support.

The Role of Shelter Homes

Additionally, sexually abused children are prone to future and recurrent abuse and an increased risk of secondary violence, which may be inflicted through the legal system. One specific example of this type of effort is a multi-disciplinary approach used by regular police, prosecutors, and judges who have not received specialized training on children's law, rights, or working with victims and speaking with the victims' parents. If court proceedings are not handled in a child-sensitive manner, evidence and trial proceedings will be affected and the overall quality of the trial.

It is another example of a situation where medical and counseling support for children is lacking, causing physical and mental stress to the child and their family and impeding their recovery. Because of this, parents and children, and victims of trauma cannot gain from the services of a lawyer. The correct organizations are not involved in the process at the correct time. Child victims are not provided guidance or support to help them overcome their fear of being torn away from their family and support system when the abuser is someone close to them, a source of financial stability. Even if the perpetrator is the child's parent or guardian, there is no tracking mechanism for young survivors' well-being during and after judicial processes.

It means that when it comes to helping people who are suffering or supporting those who are challenged, we need a rapid and system-wide multi-sectoral response, which decreases the risk of suffering, supports newborn development, and avoids additional trauma. It can be achieved by effectively addressing the children's needs to protect them from further abuse and help them cope with their trauma, and ensure that they are not victims during the justice system. In addition, the child must be guided along the path to healing, recovery, and rehabilitation.

Preventing sexual abuse of children, helping victims, delivering justice, and rehabilitating the victims are not isolated issues. To achieve those targets, the key players, including the police, judiciary, judges, medical institutions, therapists and experts, and social services for children, should act in a coordinated fashion. An integrated and coordinated approach is therefore required. It is crucial to identify and recognize each of these professionals' positions to discourage overlap and facilitate successful integration.

Although mindful of children's rights, a multi-sectoral solution would address issues relating to the uncoordinated interagency processes which survivors of children face in the system of legal and social care. It provides a framework for service providers to operate within and provides a forum to exchange information to support the survivor. The investigation and reference process will also improve.

The entire community must take responsibility for supporting children who are sexually abused, but the practitioners involved play a significant role in facilitating the healing process. Therefore, these guidelines are designed for different professionals who serve the child and other persons affected, including their family. It aims to promote better response processes requiring collaboration between these stakeholders, with the result that a multi-sector, interdisciplinary solution will evolve, which will make a significant contribution to the achievement of the objectives of the POCSO Act, 2012.

Need For POCSO

India ratified on 11 December 1992 the United Nations Convention, claimed that the already existing legislation did not adequately remedy the sexual offenses against children. The child's value as a survivor and as a witness had to be covered.

The Children Protection from Sexual Offences Act, 2012, explicitly addresses the issue of sexual offenses against children, which have never been put before the courts of the statute without differentiating between victims of adults and children. The punishments that are established by law are harsh and appropriate for the crime. Child-friendly procedures are created depending on which level of the judicial process is being addressed. The Special Court must ensure that the trial is completed as quickly as possible within one year of its beginning. In addition, releasing the baby's identity in the press is punishable by up to a year in prison.

For the protection of the child, the complaint must be made with the Special Juvenile Police Unit (SJPU) or the local police. Reasonable and immediate medical care and protection, such as referral to a shelter or the nearest hospital, should be offered to the infant.

Within 24 hours of the report being lodged, the Child Welfare Committee (CWC) must also be informed. The NCCPR and the SCPCR are responsible for identifying law enforcement. The 2012 POCSO Act covers all three aspects of sexual assault, sexual harassment, and child pornography, making it the full law for protecting children. Child-friendly reporting, proof recording, investigation, and quick prosecution methods are embedded throughout the legal process as safeguards for children's interests at all stages.

The POCSO Act 2012 also helps safeguard minors from sexual assault, sexual harassment, and child pornography. The term "child" in the POCSO Act means anyone under the age of 18. It can also be used to hold youngsters responsible for sexually predatory behaviour. Thus, sexual contact between or with individuals under the age of 18 is a crime. These inconsistencies must be resolved.

POCSO (Protection of Children from Sexual Offences) Act stipulates those infants who

undergo medical examinations in a way that results in no stress. Mothers or another adult should be present when the test is done on behalf of the infant, and the doctor should be a female when administering the test to the infant.

These special courts are established to hold trials in a child-friendly manner that protects the child's identity. Depending on the child's age, the witness or witness's parent/trusted companion may testify while presenting proof, look to the interpreter, an extraordinary instructor, or another professional for help. However, the youngster may appear in court via a video link, and he or she should not be called to testify on a routine basis. The reporting date in a child sexual abuse case should not exceed one year. In addition, the tribunal has laid out the means for a sexually assaulted kid to acquire the compensation available through the Special Court.

This POCSO Act defines practically every form of sexual abuse of children as punishable offenses. It also worked along with other state authorities such as the police, the judiciary, and child welfare organizations to ensure the safety of a kid who has been sexually abused.

In addition, this Act encourages the disclosure of the incident and offers compensation to the victims of sexual abuse. This legislation sets up a way to report and prosecute individuals who misuse and exploit the innocence of children and a powerful tool to combat such crimes.

The State governments must work together to implement the POCSO Act. As a result, the State Government is mandated to provide rules for people's usage, including NGOs, professionals, and specialists, to help a kid in the pre-trial and trial phases. The Central Government has provided these recommendations for use by the State governments.

POCSO Amendment Act 2019- Even though POCSO Act 2012 came into force on 14 November 2012, it failed to serve as an adequate deterrent to curb the spread of offenses against children. Further, it has been found that the conviction rate under POSCO was much less at around 20%, and over it,

about 90% of cases under POCSO are pending in court.

It has also been notified that about 70% of children remain silent, and these cases under POSCO, the molesters are found to be known acquaintances of the victim, which leads to suppression of such offenses, and they go unreported, because of all these the Act POCSO Act 2012 for the first time was amended in 2019. The protection of children from sexual offense Rules, 2020 came into force from 9 March 2020. The amendment Act has several provisions to safeguard children from offenses of sexual assault and sexual harassment. Some of the significant provisions in the amendment act are as follows

- 1) **Definition of Child Pornography** – POCSO ACT 2012 did not define Child pornography. “Any visual depiction of sexually explicit conduct involving a child which includes a photograph, video, digital, or computer-generated image indistinguishable from an actual child and image created, adopted, or modified appears to depict a child” has been added as clause 2(1) (d) to the Act by the amendment.
- 2) **Drugs and chemicals** – In 2019, an amendment to the POCSO Act, known as the POCSO Amendment Act, added a new subsection (v) to section 9. To attempt to convince, lure, or coerce a child to obtain assistance with administering any medicine or hormone to facilitate the child's attainment of early sexual maturity, commits child persuasion.
- 3) **Gender Neutral** – The introduction of the death penalty for perpetrators of serious sexual assault for both boys and girls, making the law gender-neutral, is an element of the POCSO (Protection of Children from Sexual Offences) Amendment ACT 2019.
- 4) **Fine** – The fine imposed under sections 4 and 6 of the Amendment Act is proportionate and reasonable and is payable to the victim to cover medical expenses and rehabilitation.

5) Enhancement in Punishment

Offence	POCSO Act, 2012	POCSO Amendment Act, 2019
Penetrative Sexual Assault (Section 4)	(i) Imprisonment of not less than 'seven years.' (ii) It may extend to life imprisonment (iii) And fine	(i) Imprisonment of not less than 'ten years.' (ii) It may extend to life imprisonment (iii) And fine Note: Clause 4(2) has been inserted specifying separate punishment for the offense held against children below the age of 16 years
Aggravated Sexual Assault (Section 6)	(i) Rigorous imprisonment not less than 'ten years.' (ii) It may extend to life imprisonment (iii) And fine	(i) Rigorous imprisonment not less than 'twenty years.' (ii) It may extend to life imprisonment (iii) And fine, or (iv) Death
Using a child for pornographic purposes (Section 14)	(i) Imprisonment, which may extend to 'five years and fine.' (ii) In case of second or subsequent conviction with imprisonment, which may extend to 'seven years and fine.'	(i) Imprisonment of not less than 'five years and fine.' (ii) In case of second or subsequent conviction with imprisonment, which shall not be less than 'seven years and fine.'

Legal Perspective and Conclusions

CSA should be viewed from the perspective of children's rights, education, and socio-legal issues. The professionals involved in investigations, prosecutions, adjudication, rehabilitation, counseling on CSA issues need to participate in a great deal of integrated and coordinated efforts. The entire community is responsible for supporting the victimized children. CSA prevention, provision of justice, security, and recovery of survivors are not isolated concerns.

All key players, including police, prosecutors, judges, medical institutions, therapists, clinicians, NGOs, and the public, must have a coordinated response to accomplish these goals. To a great extent, this purpose is fulfilled by the template guidelines provided. Notwithstanding the 2012 POSCO Act, the CSA avoidance and prosecution of the criminals involved will be exceedingly unlikely

unless the central and state governments take effective action to enact the Act.

Additional attention, care, and sensitivity must be given to parents, law enforcement, the courts, and prosecutors. While abuse by the victim may aid the perpetrator and erode the victim's and his or her family's trust, the abuse must still be accepted. The police need to investigate the case properly, maintain evidence and apprehend the defendant for further legal action. Unfortunately, CSA is viewed most of the time as a lesser offense than rape. Nevertheless, in CSA situations, the defendant must be disciplined exclusively. For a healthy society, investment in the welfare of a child is relevant and inevitable.

School administrators, educators, parents, and students must all play a constructive part in this. Awareness of sexual abuse can be very useful in avoiding horrendous CSA. Early detection, quick diagnosis, and deterrence of the offender, immediate prevention, and help for schools and communities must be nurtured.

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CUSTOMER PERCEPTION TOWARDS INSURANCE DURING COVID-19 PANDEMIC**A. Jacob**

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ABSTRACT

The unprecedented invasion of the Covid 19 Pandemic has impacted economies all over the world significantly. The insurance sector has been dramatically affected by changes in the way customers have started perceiving Insurance. The paper attempts to understand the changes in the customer perception towards health and life insurance during the Covid-19 Pandemic Period. It also attempts to explore opportunities available with the insurance companies to reach out to insurance customers in Post Covid -19 Pandemic Period. It gives an overview of the prevailing insurance sector in India.

Keywords: Life Insurance, Health Insurance, COVID -19

Introduction

The impending Covid Pandemic has caused the health insurance sector to undergo a total revamp with a significant shift in consumers' perception of health insurance. Consumers across all walks of life have become aware of the need to buy health insurance. At the same time, health insurers are also trying to innovate and introduce various newer products keeping customer preferences and demands at the forefront. It is a crucial time for customers and societies to respond to the changes rightly caused by the Pandemic as it will dictate public perception for many years to come.

It is the time for the insurance companies to develop business strategies, prioritize investments, rethink industry verticals' requirements, decide which customers to target, decide which products to build, etc. Companies that will prioritize and prepare for themselves in the future will be the ones that will emerge successfully and be ahead of their competitors.

There has been increased awareness created by IRDAI, making it mandatory for companies to insure their employees. Experts believe that this increased awareness will promote and create more opportunities for the insurance industry. Insurance companies have adapted to changing times and needs and have started introducing disease-specific policies, customizable covers, and digitalization.

Claims frequency has shot up for both Covid 19 and Non-Covid 19 claims. Insurance companies are now providing multiple facilities treatments to patients at their homes and, in some cases, even through

teleconsultation. If companies continue, they can bring down these costs and increase access for patients. Health insurance in India is making good progress in the field of Insurance. Increased standard of living, increased hospitalization cost, increased health care are some drivers for the growth of the health insurance market in India.

Insurance Sector Overview

The Insurance industry of India has many players in the life and non-life domain. Among the life insurance sector, Life Insurance Corporation of India is the sole public sector company. The stakeholders in the insurance market include agents, brokers, surveyors, and third-party administrators.

Liberalization of the economy since the early 1990s caused the government to open the private sector. It paves the way for the higher-income group to have access to new initiatives introduced by the government.

The market size of the insurance sector in India was expected to be around US\$ 280 billion in 2020. The life insurance industry is projected to increase at a CAGR of 5.3% between 2019-2023.

The premium from life Insurance Companies in India until March 2021 was predicted to be the US \$31.9 billion. The health insurance companies in the non-life insurance sector increased by 41%, driven by rising demand for health insurance products during COVID 19.

S&P Global Market Intelligence Data accounts India as the second largest Insurance technology Market in the Asia Pacific. Data till March 2021 shows the premium from the new business of life insurance companies in India to

be US\$ 31.9 billion. Life Insurance Corporation of India was able to get a first-year premium income of Rs. US\$ 7.75 billion under individual assurance business with a 10.11% growth over last year. In the Union Budget 2021 FDI limit in Insurance increased from 49% to 74%. This was announced through Digi locker of digital insurance policies by insurance firms. The Finance Ministry also announced to infuse US\$ 413.13 million into state-owned Companies dealing with Insurance.

Objectives

1. To understand the changes in the customer perception towards health and life insurance in the Covid-19 Pandemic Period.
2. To explore opportunities available with the insurance companies to reach out to insurance customers in Covid -19 Pandemic Period.

Change in Customer Perception During Covid -19 Pandemic

The recent outbreak of the Pandemic Covid-19 has made people more aware of life and health insurance. Most of the population who once considered Insurance as a luxury have a paradigm shift in their approach and now believe it a necessity. Recent research in this field tells us that only 10 percent of the population were interested in buying Insurance before the coronavirus pandemic. Still, after the Pandemic, there is a whopping 71 percent hike in the number of people desiring to get themselves insured.

There is now a great demand for single premium policies as people are keen to insure against the future loss of income. There is an excellent shift towards buying pure protection plans like term life insurance rather than insurance-based plans like ULIP's. Research also points to a significant change in the age of the customer desirous of buying insurance post-Covid. There is a massive rise in the millennials wanting to buy Insurance. There is a sharp rise in this age group by 33 percent, with a threefold increase in Tier 2 and Tier 3 cities.

Customers have also become cautious and calculative in taking a Life Insurance cover. There is a tremendous demand for comprehensive insurance plans, including a list of new diseases not included in the regular health plans. In India, there is a sudden surge in the purchase of these policies by 35 percent since April 2020.

IRDAI's Corona Kavach Policy covers hospitalization expenses if the insured is diagnosed with Covid -19. Corona Rakshak Policy, which offers a coronavirus insurance cover, provides a lump sum benefit of the total sum insured if a patient is diagnosed with Covid -19. The payout requires a minimum continuous hospitalization for 72 hours.

Health Insurance Policy Arogya Sanjeevani Policy also provides coverage for medical and hospitalization expenses up to five lacs. They are all initiatives introduced by the IRDAI, which has mandated all health insurers to develop the primary and standard health insurance policy for both individuals and families.

Insurance companies are also witnessing a rise in insurance-related queries, which according to them, has gone up by 50 percent in the past few months. The Covid -19 outbreak has shifted people's perspective towards buying Insurance and made them realize and understand its significance in a new way.

New Opportunities with Insurance Companies

The insurance sector has weathered the challenges thrown in by Covid -19 and now is preparing to face the new opportunities created because of it. Many insurance companies have been proactive and have introduced specific policies related to Covid, and they are also tailor-making products to meet customer expectations and requirements.

Given the changes mentioned above ushered in by Covid 19, Pandemic insurance companies must focus on certain core areas to be fully effective. Insurance companies must equip themselves with options for flexible payments, innovative products, online modes of transactions. Companies must pursue product innovation and do away with one size fits all.

There is a tremendous responsibility to reskill their staff with new training methods and

modules to communicate effectively. The ongoing Covid 19 Pandemic has brought in a digital shift towards selling insurance policies online, and this is sure to remain and progress over the years. Customers are also discovering the freedom they have in understanding the products before choosing to buy them. Companies must invest in digital access and mechanisms across the entire value chain to capture the online customer database. This would mean a more significant investment in integrating their existing channel into digital pathways.

Insurance companies must also explore complementary and value-added services, for example, tie-up with hospitals, online consultations, tie-up with pharmacies, discounted OPD Consultations or treatments, Health check-ups/diagnostics, redeemable vouchers to obtain health supplements, membership in yoga centers, sports clubs, and many more.

Soon the insurance industry is rapidly shifting from product-driven to service-driven offerings, which is bound to deliver a holistic experience to customers. This also opens new doors for enhancing strong Customer Relations.

Research tells that the online insurance market in India is expected to reach a value of approximately INR 220 billion by 2024. This

shift in the trend can be attributed to internet and mobile usage by customers. We cannot overrule the significance of agency channels in selling Insurance in India. Still, at the same time, online research on life insurance is observing an increasing trend as it is providing the customer an opportunity to make informed decisions.

Conclusion

The study aimed to understand the changes in customer perception during the Covid 19 pandemic. The insurance sector underwent severe impact with a sudden decline in business, delayed payment of premium, policy lapses, delay in settlement of claims, etc. Though the industry appears bleak, it also presented many opportunities for insurance companies to innovate and recreate. With changes in customer perception towards acquiring new policies, insurance companies suddenly found themselves facing a whole new level of meeting customer demands and expectations. It will require the insurance companies to adopt a more customer-centric and customer-driven approach to sustain the ever-increasing competition. The insurance sector must adapt to a robust and resilient frame of operations to accept the new normal brought in by the Pandemic.

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DELINEATION OF TRAUMA AND AGONY IN KHALED HOSSEINI'S THE KITE RUNNER AND A THOUSAND SPLENDID SUNS

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ABSTRACT

The present study takes into account Khaled Hosseini's The Kite Runner and A Thousand Splendid Suns. These novels focus on the traumatic experiences of people in war ravaged Afghanistan in the twentieth century. He vividly captures the pain caused by the turbulence of war. Set in distant geographical locations, this country yet he carries a representative status as the sufferings faced by the people of warring country in conflict remain the same throughout the world. It discusses in detail the effects of racial bigotry that separates one faction of the people from their fellow countrymen inciting them to commit acts of unspeakable brutality against them. It throws into relief the suffering of innocents due to the high headedness of a handful of people who seem to believe that they were sent into the world to effect retribution for the other communities' so-called wrongdoing.

Keywords: Trauma, Experience, Turbulence, Recovery

Introduction

Khaled Hosseini is an Afghanistan born American physician turned writer. He makes an honest effort to comprehend the force of contemporary history and their effects on individual human beings. In his fiction, he portrays the conflict situation in Afghan society and reveals how in turn human relationships are affected. He has elaborately discussed the conflict in Afghanistan and its impact on Afghan people and society. His novels are set against the background of political uncertainty and unrest.

Trauma that war generates in the lives of people plays a very important role in the texts written by both the novelists. Trauma as a field of study may be traced back to the early twentieth century, when Sigmund Freud developed his theory of psychoanalysis. He changed the meaning of the term "trauma" from indicating "physical injury" to "psychological injury." In the mid-1990s, trauma theory underwent a revival and theorists such as Cathy Caruth used Freud's theory as a basis to construct their own ideas on trauma.

In case of Hosseini trauma theory works. He felt the trauma of the Civil Wars in his countries and could never fully come out of it. It always made its presence felt in his lives in different forms and writing was one of them. He is a witness as well as a direct victim of the

circumstances which uprooted them from their homeland. He tells us how his parents and he moved from one country to another and finally settled in America. He tells us about the stories that haunted him which kept on pouring from his homeland about the dying people he knew. Hosseini's stories of Amir and Hassan and Mariam and Laila, namely The Kite Runner and A Thousand Splendid Suns have earned great popularity the world over and carved out a niche for him in a country which he once found alien. The early life of Hosseini was moulded by the upheavals in Afghanistan. The Islamic Republic of Afghanistan, commonly known as Afghanistan, is a landlocked country in south-central Asia.

In both the novels that is The Kite Runner and A Thousand Splendid Suns, the suffering of people because of the civil war in the country is highlighted. At one time it is the other nations' interests that diminish chances of happiness and normality in the country and at another the internal forces like the Taliban and Mujahidin prove to be the biggest hurdle in the progress of the nation and its people. For decades, people have been dying almost every day. Sometimes, it is because of violence and sometimes out of hunger.

In The Kite Runner, on Amir's return to Kabul in search of Sohrab, the most heinous form of racial intolerance is brought to the fore when Assef talks about the Hazara massacre in

Mazar-i-Sharif. The incident refers to an actual incident in Mazar-i- Sharif, a city in northern Afghanistan. At least 8000 Hazaras were singled out and massacred by the Taliban in August, 1998. According to an eyewitness, “most of the victims had been shot in the head, the chest and the testicles. Others had been slaughtered in what he called “the halal way”- by having their throats slit” (Michael Sheridan’s “How the Taliban Slaughtered Thousands of People,” Web). The reason for this massacre by the Taliban was nothing except that the victims were the Hazara, while the Taliban were the Pashtun. The civil war going on in the country gave the Taliban an opportunity to settle age old scores with the Hazara on account of their racial enmity. At that time the fate of the people in Afghanistan was decided by the Taliban. The Hazara, who were in minority, suffered interminably when the Taliban rose to power. The hatred between the Pashtun and the Hazara is not new; it is just an extension of the hatred that has continually plagued Afghanistan for centuries. Incidents like Mazar-i-sharif have created a permanent divide between the two groups, an enmity that resurfaces time and again. Even after centuries of having remained in the same country, the relations between the two factions remain strained.

The Kite Runner studies the Hazara-Pashtun relations in Afghanistan through the characters of Hassan and Amir. As children, they share an unusual bond despite belonging to different ethnic communities. The different faces of the Hazara-Pashtun interaction are seen in their encounters amongst themselves. Through Amir’s indifferent treatment of Hassan, it is revealed how irreconcilable the racial divide is. Although the novel starts before the civil war, still the division between the Hazara and the Pashtun is distinctly brought out. Even after Hassan is raped by his Pashtun friend Assef, Amir does not react at all. Rather he frames Hassan for the crime of theft so that his father will turn him out of the house and he will not have to face his guilt every day. Subsequent events in the novel reveal that Hassan is half-brother of Amir.

The Kite Runner takes off as a tale of innocent childhood friends Amir and Hassan and their carefree days in Kabul. But gradually, The Kite

Runner takes the reader through various experiences and locales where a fascinating picture of Afghanistan appears; alien as well as intimate. The emotionally charged atmosphere of love and betrayal, childhood guilt and traumas and their outcomes lends the story a human angle. Amir’s attempt to seek redemption for betraying his friend Hassan makes him return to Kabul for a last chance to find absolution. The novel is a journey through Kabul, Islamabad and America. It begins in peaceful pre-soviet era of Afghanistan and ends America with a hope for a better future.

The novel also paints a beautiful picture of rich culture and tradition of Afghanistan.

It emphasizes the importance of pride, honour, respect for elders, and a sense of hospitality towards strangers in Afghan society. However, towards the end of the novel, we witness the ugliness of the Taliban and their cruelty in the form of various Shari’a laws. These perverted forms of tradition and culture thus emerge as a burden. With the success of the novel, also arose a multitude of controversies. The Kite Runner was accused of propagating Western understanding of the Taliban by portraying Taliban members as representatives of various alleged Western myths of evil. The American Library Association reports that The Kite Runner is one of the most-challenged books and movies of 2008. There have been multiple attempts to remove it from libraries due to offensive language at places, unsuited to a certain age group. Afghanistan’s Ministry of Culture also banned the film from distribution in cinemas because of the possibility that the movie’s ethnically charged rape scene could incite racial violence within Afghanistan.

Despite all the controversies surrounding The Kite Runner, Hosseini kept working on his second novel. He was called ‘another Salman Rushdie’ on the internet. But Hosseini did not react. He accepted the criticism in a calm and healthy way. The publication of his next novel proved that by doing so, he was only “bracing himself for another firestorm of complaints over A Thousand Splendid Suns, which touches an even deeper wound for Afghans - that of the country’s deep-seated misogyny” (Khaled Hosseini’s” Despair in Kabul,” Web).

Though Hosseini was already born when the disturbance started in Afghanistan but as his

family had moved to America, he also witnessed the trauma from a distance. His life remained influenced by this trauma. The hardships that his family faced during their adjustment in the new country were something that he could never forget. The humiliation that his father faced when he did not have many resources finds expression in *The Kite Runner*, when Baba faces the similar conditions. His father had to take up many jobs in order to sustain the family. Having lived a life of self-sufficiency and comforts throughout, the idea of being on welfare was difficult, almost unacceptable for him. Accepting food for free was totally against Afghan traditions and his father went through a great mental stress at that time. On their first Christmas in the States, receiving charity was a mortifying experience for his parents.

In *The Kite Runner* also, a slice of history of Hazara subjugation is presented. One gets to notice a similar pattern in the life of Amir and Hassan, who with every passing day rediscover their relationship with respect to their social and ethnic differences.

The first link about Hazara-Pashtun conflict that Hosseini provides to us in the novel *The Kite Runner* is through Amir. He comes to know about the history of the Hazara subjugation in his Baba's library. Amir's perception and knowledge about the Hazara people are put to question by this history book on the Hazara. The facts in the book are at variance with whatever Amir had read or heard of. He is quite surprised when he finds an entire chapter on the Hazara in the book.

Hosseini, in *The Kite Runner*, performed the same function. He asserted that most of the Afghan people/refugees are the victims of the situations. They are the ones who have suffered throughout their lives. However, keeping a safe distance from the politics vis-a-vis the tumultuous history of his country in his first novel, he takes up these issues in his second novel *A Thousand Splendid Suns*, where again through the tragic lives of people he makes the world aware of the painful past and the present of his country.

While *The Kite Runner* captures Afghanistan during the unrest there and largely focuses on the Hazara-Pashtun clashes with history forming a backdrop, *A Thousand Splendid*

Suns foregrounds the problems faced by the general public due to political instability and civil war in the country through the journey of Mariam and Laila. The account of general public's opinions, trials and tribulations because of the war is interspersed with major events in the history of Afghanistan in the novel. The novel is a document of the times chronicling Daoud Khan's ascent to power post-9/11 events which led to the dethronement of Taliban from Afghanistan. It portrays the Afghans trying to rebuild their disintegrating nation and presents the saga of the undying hopes of humanity.

In *A Thousand Splendid Suns*, once again, Hosseini chose Afghanistan to be the setting, with Mariam and Laila as the protagonists. The novel showcases the last three decades of the country's tumultuous history of war, bloodshed, anarchy and oppression. Through this novel he wanted, as he himself said, "readers to walk away with a sense of empathy for Afghans, and more specifically for Afghan women, on whom the effects of war and extremism have been devastating" ("A Conversation with James Mustich," Web). Beginning with Mariam, Jalil and Nana in pre-Soviet era, the novel focuses mainly on the lives of Mariam and Laila. Brought together by destiny, their lives become an unending quest for love, family, home, acceptance, nonviolence and a promising future in the atmosphere of Sharia. These two women, who develop a very strong bond between themselves, reflect the lives of the Afghan women who have to suffer all through their lives. During one of his visits to Afghanistan, the gaze of two unknown women, through the narrow slits of their Burqas, made him picture this insightful narrative of the lives of ordinary women in Afghanistan. This novel sends a message to Islamic societies to have a look within and justify their denial of rights and opportunities for women.

In Hosseini's oeuvre also, the notions of "unhomely" surface quite frequently. When Hassan is betrayed by Amir and also falsely accused of theft by him, Baba's mansion, where both of them had spent their childhood, becomes like a prison for Hassan and his father AH. Both of them find it difficult to stay in the house with the tag of thieves in spite of Baba's

forgiveness. They eventually leave. When Baba and Amir start living as refugees in the States, they face the problem of living in “a boundary that is at once inside and outside, the insider’s outsideness” (Homi K Bhabha’s *The Location of Culture*, 21). They, especially Baba, find the American society as “unhomely.” He has to struggle really hard, both mentally and physically to negotiate a respectable space in that society. Even after years of living there, he cannot let go of the Afghan values and traditions of honour and respect and teaches Amir the same. He is never able to detach himself fully from his roots and accept the new place as his home. In his real life also, Hosseini had watched his father suffer from the similar pangs of homesickness and uprootedness. Living a comfortable life with his family in the United States, Hosseini has always expressed a desire to belong to both Kabul as well as the States. His writing and the humanitarian work for his war-torn country are perfect examples of a tormented self-torn between the present and the past.

A Thousand Splendid Suns also begins in 1970, when there is a relatively peaceful atmosphere in Afghanistan. People go about performing their daily chores in a usual manner. We find Mariam living on the outskirts of a remote village in Herat along with her unwed mother, and nobody bothers them. The novel showcases the time when it was possible for a woman to live alone in the contemporary society. Soon after however, it becomes impossible for a woman to live on her own as conservative forces start targeting the people violating their personal/skewed version of Quran. As the novel progresses, the things, both in the novel as well as real Afghanistan, change. The liberal atmosphere starts getting strained with people dying under mysterious circumstances. Hosseini in *A Thousand Splendid Suns* includes the real accounts of anti-Daoud demonstrations of people in the streets of Kabul after the murder of Khyber.

In March 1979, in Herat, between 3000-5000 people were killed and wounded during the revolts. “Soon there were Soviet advisors in Kabul, and the regime was using its aircraft to strike at rebels” (Norman Friedman’s *The Fifty-Year War: Conflict and Strategy in the Cold War*, 435). The people who believed in

the staunch Islamic principles and way of life and the people who were against the communist ways of the government had aligned themselves against Soviet controlled Democratic Republic of Afghanistan. They united and rose in the form of Mujahedeen. The rise of the Mujahedeen in Afghanistan can be considered as one of the most unfortunate events in the history of the country. It marked the beginning of violence and killings in the region and proved detrimental because it led to the rise of the Taliban also which further corroded the country. Even today, the people are suffering because of the legacies of the Mujahedeen and the Taliban. The term Mujahedeen is used for Muslims having a belief that they fight for the cause of God. They call their mission Jihad or the religious fight. Initially the Mujahedeen were not very organized or powerful. However, Muslims from the other countries supported them. The US provided financial support to the Mujahedeen as a part of American Cold-War strategy against the Soviets. “On July 3, 1979, the US president Jimmy Carter signed on executive order authorizing the CIA to conduct covert propaganda operations against the communist regime” (Harjeet Singh’s *South Asia Defence and Strategic Year Book*, 156). As a result, the power and influence of the Mujahedeen rapidly increased in Afghanistan. After issuing various inhuman edicts for the people of Afghanistan, the Taliban had taken on the mission of destroying the works of art, especially those that belonged to pre-Islamic period. Because of various wars and the consequent disturbances that had affected Afghanistan drastically, the country was not left with any significant cultural and artistic heritage. Whatever was left after the plunder by the Mujahedeen, was destroyed by the Taliban. The novel shows the devastating scenario of the country as the Taliban go all out to remove all traces of artistic heritage of the country, “men wielding pickaxes swarmed the dilapidated Kabul Museum and smashed pre-Islamic statues to rubble—that is, that hadn’t already been looted by the Mujahidin. The university was shut down and its students sent home. Paintings were ripped from walls, shredded with blades” (273). The destruction of the Bamiyan Buddha is one such incident

which caused international outcry. Joseph J. Collins in his book *Understanding War in Afghanistan* writes how the Taliban along with other reactionary forces took to the destruction of historical relics and monuments. He says:

In addition to human rights violations, the Taliban ... destroyed the Bamiyan Buddhas, two pre-Islamic, 6th century A.D. sandstone sculptures carved directly from a cliff-one 150 feet and the other 121 feet in height. (41)

Hosseini's novels end on a positive note capturing the silver lining amid the clouds of despair. The Afghan war situation may have had religious, ethnic or political origins but the sufferers build hopes for a better future even when things have not yet started looking up. In their own way, everyone is lending a hand in the reconstruction of the country. Laila goes back to Kabul though the war has still not abated. She helps, as already noted, in

reconstructing the orphanage which symbolically houses the future of the country. Amir also tries to bring a smile to the face of Sohrab, although he knows that it will be a long time before his scars heal completely. The actions of Amir and Laila are symbolic of the hope that the country nurtures for its future because these children who have had a traumatic past are the citizens of tomorrow.

A study of *The Kite Runner* and *A Thousand Splendid Suns* bears out that war affects a nation deeply and a war of monumental proportion leaves indelible scars on the psyche of common men and women. It brings to the fore many dormant conflicts that destroy peace and harmony of a nation. Hosseini's works, therefore, authentically mirror the trauma that innocent Afghan citizens have been subjected to for an unusually long period of their chequered history.

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ASSESSING IMPACT OF COVID-19 ON OPINIONS OF CONSUMERS AND MOTIVATING FACTORS FOR DIGITAL MARKETS

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ABSTRACT

Global pandemic covid-19 had inexorably transformed the workforce as it swings to the digital world through new approaches of communication and different work patterns and touched new heights. It prepared the world to be cognizant to face the upcoming troubled time as well. Though many firms need to adopt the digital practices to overcome with the crisis. Seeing as customers are the driving force behind any market, faced challenges in obtaining products and services from digital markets. With this context the aim of the present study was to assess the consumer's opinion regarding digital marketing during troubled times. The study was descriptive in nature where the data were collected from 334 respondents selected randomly. The data were gathered through a questionnaire and distributed online via Google form. The three section have been covered in the questionnaire which included respondent's background information, opinions of consumers towards digital marketing and consumer's motivation to buy products and services from digital market. The results showed that respondents were in the age group between 21-30 years, were female (59.10%) and were graduated (46.14%). It was also revealed that nearly 37.21 per cent of consumers were spending 4 -5 hours on internet. The findings revealed that the consumers had somewhat favorable opinion regarding digital marketing. The major factor that motivates consumers to buy products and services from digital market were the better prices of products in digital platforms (88.03%), time saving (87.43%), various offers and discounts during festival occasion in various digital platforms (87.43%) and wider selections of products (85.63%). The findings will be useful to develop new strategies in digital market management. In terms of managerial implication, the present study will also promote a small business into a universal one with the help of digital channels and new growth opportunities.

Keywords: Digital Marketing, Troubled times, Consumers, Opinion, Motivation

Introduction

Human behavior is pushed in different directions by a critical situation, with some aspects of behavior being irreversible. The COVID-19 pandemic is not a typical catastrophe, and adequate strategies were implemented to control disease spread, including complete and then partial lockdown (Mehta et al., 2020). The lockdown due the COVID-19 pandemic has effected on our personal and professional lives. Marketing has always been about making the right connections with the right people at the right time. Now, it means one you must meet them where they spend time already: on the internet. Digital marketing refers to any marketing effort that makes use of an electronic device or the internet (Alexander, 2021). India has the world's second largest online market. Nowadays, there is up-gradation in the basic necessities for endurance: "Roti", "Kapda", "Makaan", and "Internet". Societies are adapted to the digital world in their daily life.

On an average person spending 3 hours and 15 minutes per day on their phones (Spajic 2020). Digital marketing has become the most result-oriented department for running a successful business. From the last year, as the result of the Covid-19 pandemic it was found that the customers were shifting their engagement from offline mode to online mode. Marketers can find their consumers where they are already spending their maximum time on the internet. A 'consumer' is someone who recognizes a need or desire, purchases it, and then discards it during the consumption process. The utility of a typical consumer is determined by their consumption of agricultural and industrial goods, as well as services, housing, and wealth (Grundey, 2009). Consumer behavior is an individual's psychological element that has the impact on the purchase of all goods, services and other things from the digital market. Every consumer's behavior depends on many factors that are very important to any marketing team or any organization that directly addresses consumers (Barmola and Srivastav, 2015).

With this extent, it is important to study the factors that affecting their motivation to purchase the product from digital market and the extent of consumer’s opinion towards digital marketing. This study facilitate and helps to predict consumer’s purchasing behavior towards the digital market and also concerned the factors behind the consumer’s buying behaviour.

Statement of the problem: The present study was conducted to determine the motivating factors behind purchasing from digital markets and to assess the consumer’s opinion regarding digital marketing during troubled times

Objective

- i. To determine the motivating factors of consumers to buy product and services from digital market.
- ii. To assess the consumer’s opinion regarding digital markets during troubled times.

Methodology

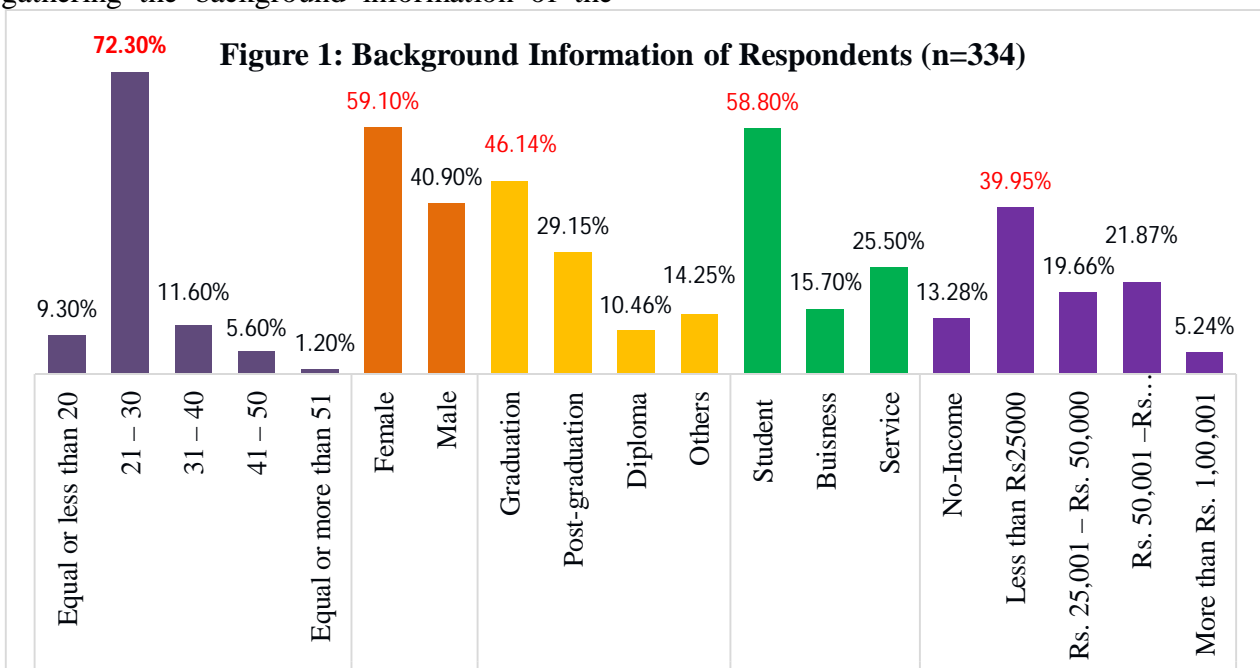
The current study was descriptive in nature. The data was gathered from 334 consumers of digital marketing from residing in Vadodara city. The respondents were selected through purposively random sampling method. The tool to collect data was a questionnaire which was distributed through digitally with the help of Google form. The questionnaire was divided into three sections. The first section focused on gathering the background information of the

respondents (including age, gender, occupation, education qualification and their income). The second section deal with the time spent by the consumers on the internet. Moreover, 20 dichotomous statements were also included in this section to elicit the information regarding to the consumer’s motivating factors to move their concern towards the digital platforms. The third section was Likert scale having 21 statements to bring about the opinions of consumers towards digital marketing. It had a 5-point scale for the responses 'Strongly agree,' 'Agree,' 'Neutral,' 'Disagree,' and 'Strongly disagree.' This section also includes the extent of consumer’s opinion towards digital marketing which was classified as ‘Least Favourable’, ‘Somewhat Favourable’ and ‘Most Favourable’. The content validity of the scales were established by giving to the panel of 5 experts from the related field.

Findings and Discussion

The results of the present research derived from data analysis, and their interpretations, which are supported by discussion, are presented here.

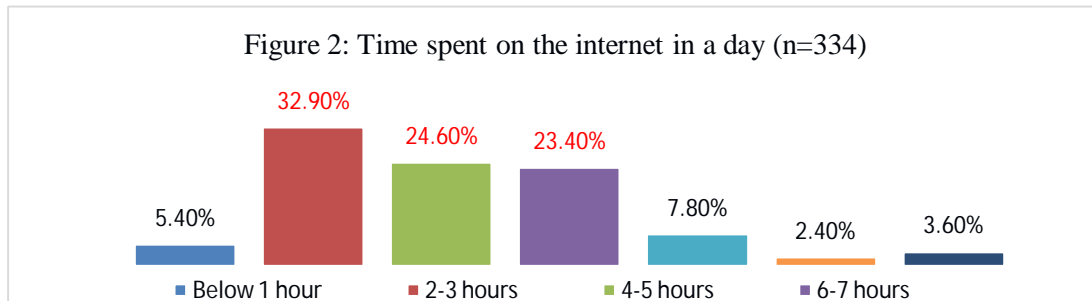
- i. **Background information:** This section contains personal information about the respondents. The results regarding the age, gender, educational qualification, occupation and their monthly income of the respondents.



The scrutiny of the data from figure 1 revealed that, less than three-fourth (72.30%) of the respondents was in the age group of 21-30 years. Nearly three-fifth (59.10 %) of the respondents were female. Less than one-half (46.14%) of the respondents were graduate (Fig. 1). Less than three-fifth (58.80%) of

respondents were students. More than one-third (39.95%) of respondents were earning less than Rs. 25000 in a month.

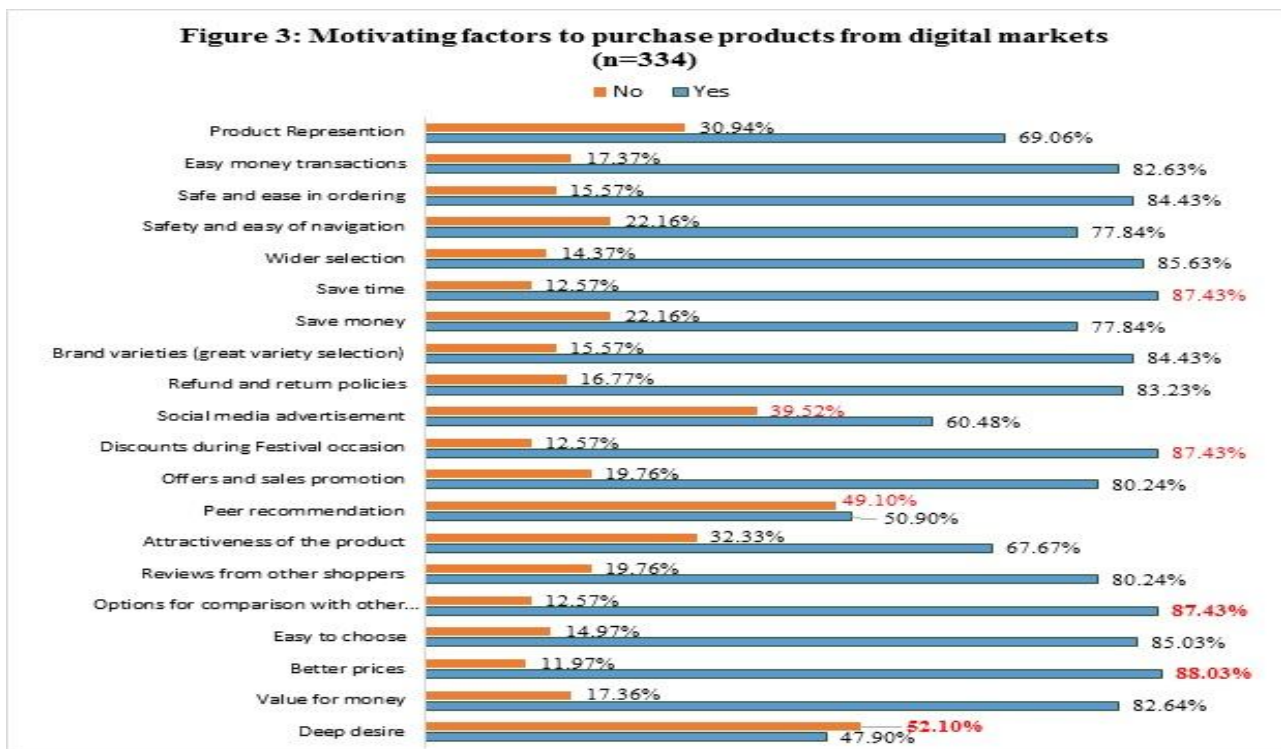
ii. **Time spent by the consumers on the internet:** This section contains the data to reveal how much time spent by the consumers on the internet in a day.



The scrutiny of data from the figure 2 revealed that almost one-third (32.90%) of the respondents were spending 2-3 hours on the internet followed by the approximately one-fourth (24.60%) respondents who were spending 4-5 hours on the internet in a day. Less than one-fourth (23.40%) of the

respondents were spending 6-7 hours in a day on the internet.

iii. **Motivation factors to purchase products from digital markets:** This section comprised the ultimate factors which motivates the consumers to purchase the products from digital market.



The figure 3 represented the data that revealed that majority (88.03%) of the respondents were motivated by the better prices offered by the digital platforms on various products, shopping from the digital market saves time and various discounts offered during festival

occasion (87.43%), options to comparison from other products (87.43%), saves times (87.43%), wider selection ((85.63%) easy to choose (85.43%). Also, More than four-fifth of the respondents motivated by the factors like brand varieties (84.43%), safe and ease ordering

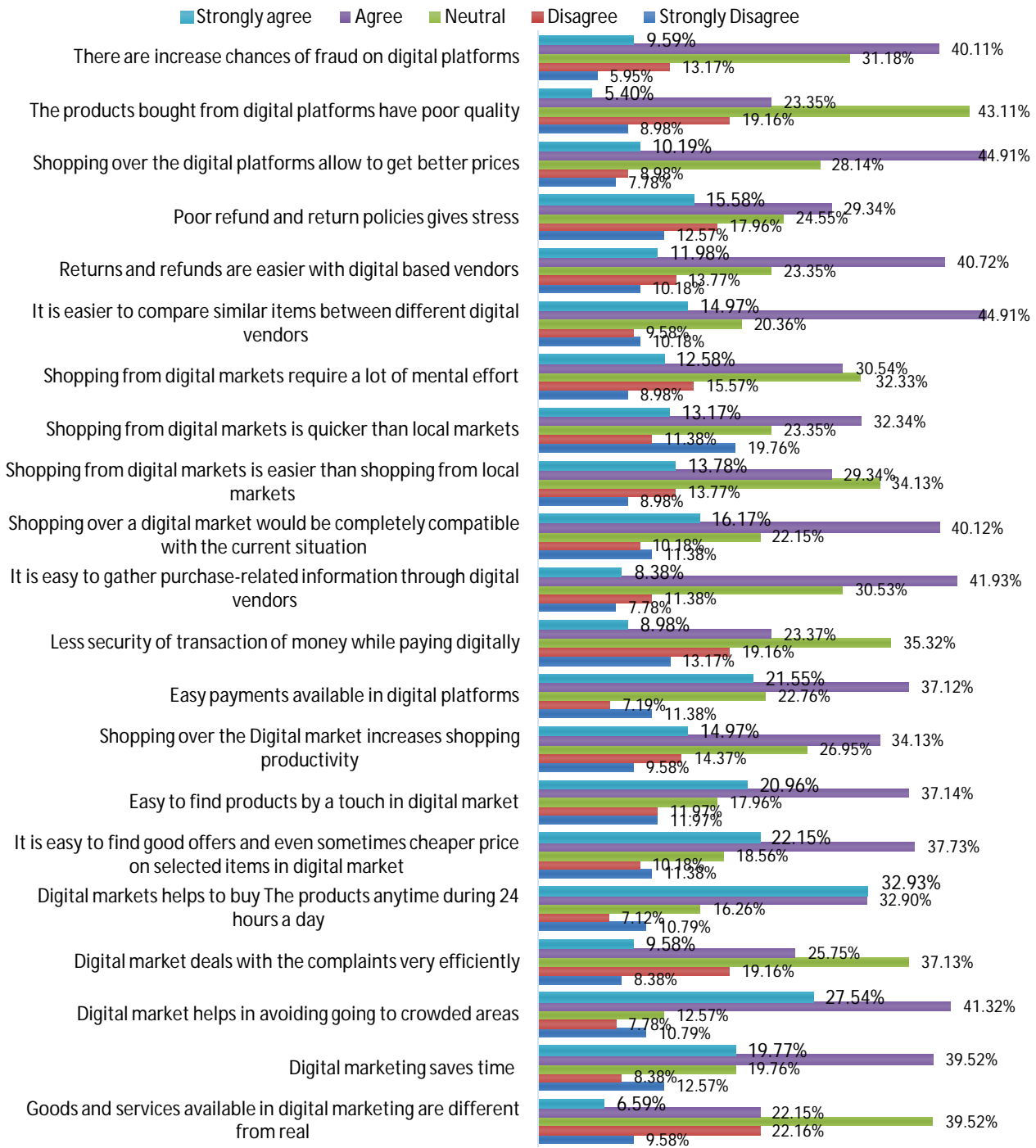
(84.43%), refund and return policies(83.23%), easy money transactions (82.63%) and value for money (82.64%).

Moreover, more than one-half (52.10%) of the respondents were not motivated with that factors like their deep desire to buy products from the digital platforms while less than one-half (49.10%) were not influenced by the peer recommendation to purchase the product from the digital market. Nearly two-fifth (39.52%)

of the consumers were not motivated through the advertising on social media to shop from the digital market.

iv. **Opinions of Consumers towards digital marketing:** It this section, Likert type scale encompassing 21 statements, which examined the consumer's opinions on the purchase of digital marketing products. The responses were 'strongly agree', 'agree', 'neutral', 'disagree' and 'strongly disagree'.

Figure 4: Opinions of Consumers towards Digital Marketing (n=334)

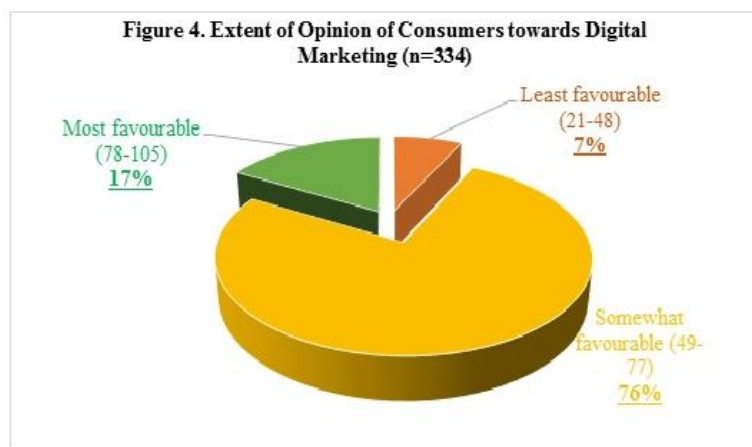


From the lucid examination of the data from table 1 revealed that the less than one-half (44.91%) of the respondents were agreed that shopping over digital market made easy to compare the similar products between different digital vendors on the basis on price, quality, brand etc. More than two-fifth (41.93%) of the respondents were agreed that digital platform made easy to gather purchase related information through digital vendors available on sites or mobile apps. Nearly two-fifth (41.32%) of the respondents were agreed that digital market helps the people to avoid going out and keep away from the crowded areas to save from the chaos of covid-19 pandemic. Around two-fifth (40.12%) of the respondents were agreed that buying products from the digital market would be completely compatible with the current situation aroused from the covid-19 pandemic. Around two-fifth (40.11%) of the respondents were approved that there are increased number of chances of fraud on digital platforms. Less than one-third (30.54%) of the respondents agreed that shopping from the digital markets requires lots of mental stress.

Less than one-fourth (23.39%) of the respondents were accepted that they got products of poor quality bought from the digital market.

Almost one-fifth (19.76%) of the respondents were strongly disagreed that shopping from digital markets is quicker than local market. Less than one-fifth respondents were strongly disagreed that less security of transaction of money while paying digitally and more than one-tenth (13.17%) of respondents were disagreed with this statement. More than one-tenth (12.57%) respondents were strongly disagreed that digital market saves time. Less than one-fourth (22.16%) of the respondents goods and services available from digital market are different from real. Less than one-fifth (17.96%) respondents disagreed that poor refund and return policies gives stress.

v. **Extent of opinion of consumers towards digital marketing:** This section was prepared to elicit the extent of opinion of consumer's with digital market where the responses were 'Most favourable', 'Somewhat favourable' and 'Least favourable'.



The scrutiny of the data from the figure 4 showed that more than three-fourth (76%) of the respondents had somewhat favourable opinion towards digital marketing. Whereas, less than two-fifth of the consumers had most favourable opinions towards the digital marketing. Furthermore, less than one-tenth of the consumers had least favourable opinions towards digital marketing.

Conclusion and Implications

The results of the present study revealed that people spend 2-3 hours in a day on internet. Digital market helps in avoiding going to

crowded areas, helps to buy. People can buy products anytime and anywhere during 24 hours a day. Shopping over a digital market would be completely compatible with the current situation and it is easy to gather purchase-related information through digital vendors. Data revealed that consumers were getting better prices in digital platforms, discounts during festivals times which motivated them to buy from digital platforms. Moreover, consumers admitted that poor refund and return policies gives stress. Customers also confessed that sometimes the products they ordered from digital marketing

were different from what they get in real and they also feels the chance of fraud on digital platforms while shopping. Consequently, their overall opinion were somewhat favorable towards digital marketing.

The pandemic covid-19 compelled people to go digital for workplace operations and many businesses have successfully made this switchover in an undersized period of time. Consumer's motivation and their opinion over the digital market play a significant role in marketing management. Considering the results, digital firms should improve the return and refund policies and also should work on the products quality. From this study, businesses can use data to target audiences

based on factors like gender, age, motivation factors and their opinion to improve their business in the better way. Buying products from the digital platforms is one of the best way to keep away the consumers from the crowded places and to be safe during this trouble time. In terms of managerial implication, the present study will promote the companies small or big businesses should have online presence which is becoming an important aspect these days. Likewise, this study will also advocate the businesses to create innovative customer experiences and precise tactics to identify the best track for driving up the performance of digital marketing.

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A STUDY ON USE OF ICT FOR SOFTWARE PROJECTS TOPIC SELECTION BY FINAL YEAR B.SC. COMPUTER SCIENCE STUDENTS

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ABSTRACT

Selection of topic and arriving at an appropriate title for the undergraduate project can be a very difficult task for undergraduate student in the final year. Avoiding redundancy is a real challenge. In this age of information and communication technology (ICT), it is natural to expect that students rely heavily on INTERNET as a ready source. The problem requires careful decision making by the student taking various factors into account. Matching of the skill set, current industrial relevancy, availability of resources are few of the factors. This paper critically analyses the current practices in topic selection by the students. Role of key search on the Internet in the process and the positive and negative effects of dependency on Internet are some of the aspects dealt with. A sample survey has been conducted with students and guides as respondents. Findings of the survey provide necessary evidence to most of the facts presented. The findings presented should prove helpful to guides in understanding the very process of selection of topics by students, role of IT in the process and provide guideline to make the process more efficient, quick and educationally relevant.

Keywords: ICT, Internet, software projects, search engine.

1. Introduction

One common problem faced by students and guides at the beginning of the final year of the graduation is 'selecting a proper topic' within a short period of time. Selecting a suitable project topic can seem quite difficult at starting phase. In this age of information and communication technology (ICT), the use of the Internet has become the norm. The use of the Internet plays a major role in helping undergraduate students to access huge amount of information from different parts of the globe. Taking help of Internet in the process, using proper filtering mechanisms and appropriate guide lines, and consistent communication between student and the guide can really help. It is strongly felt that the potential of use of ICT in this matter is not fully exploited by students and teachers. Hence the current research study has been taken up. The final year software project is a major element of a 3-year curriculum in the discipline of computer science leading to B. Sc. degree. The goal is to prepare the student for a career in Software Industry. Apart from programming skills, knowledge of basics of computer science and Mathematics experience of planning and executing a complete software

project is a necessity from the point of view of overall skill development angle.

2. Research Methodology

A sample survey conducted with students and guides as respondents forms the major components of the methodology. Experience the researcher himself, and facts recorded during his role as a project guide supplemented the experience of observing over one hundred students of the Final Year B.Sc. Computer Science who have undertaken software projects in the computer science department of one of the college affiliated under Savitribai Phule Pune University, Pune, over the past four years.

Objectives of the Study

1. To ascertain the **impact of the Internet** on the software project work of Computer Science final year students for the topic selection.
2. To determine the **extent of accessibility and utilization** of the Internet by Computer Science final year students.
3. To identify the **most frequently-used search engine and web browser** by Computer Science final year students.

3. Background Information

Academic and Project work load: In the third year of the degree course, students of

Computer Science, has to study 6 Theory subjects per semester and 3 Practical (Annual). This leaves around 150 hrs of work which a student can effectively use for his

project work. Of course, this is the minimum. Table 1 shows the time distribution of the load.

Table 1: Academic work Load Distribution in the T.Y. B.Sc. Computer Science

Duration	1 Full Years (June to April)
Project Load	3 Hrs. In Lab per week
Other Practical Load	6 Hrs. In lab per week
Theory (6 Theory Papers – 4 Lectures per week)	6x4=24 Lectures (One Lect. 45 Mins)=18 Hrs per week
Total Academic Load in college	27 Hrs per week
Expected academic load outside class room	27 Hrs per week
Total academic load in College + Outside class room	27+27=54 per week.
Total Project Load (3 Hrs in college + 3 hrs at Home) for 25 weeks x 6 Hrs per week	150 Hrs.

The whole process of the project planning and execution is generally taken up as per the typical Gantt chart shown in Fig 1. A look at the chart shows that the student has to finalize the project title and objective in about 15days from the date of start of the year. Selecting a

topic which matches the domain interest of the student, current day technology requirements with a feasible execution plan in two weeks takes lot of information search, thinking and decision making.

TASK	Time Schedule : Weekly for 20 weeks proposed																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Project Title, Introduction	█	█																		
Existing System			█																	
Proposed System			█																	
User Req.				█																
Platform & Database Used				█																
Analysis Phase Completion				█																
Design Specification					█															
Use Case diagram						█														

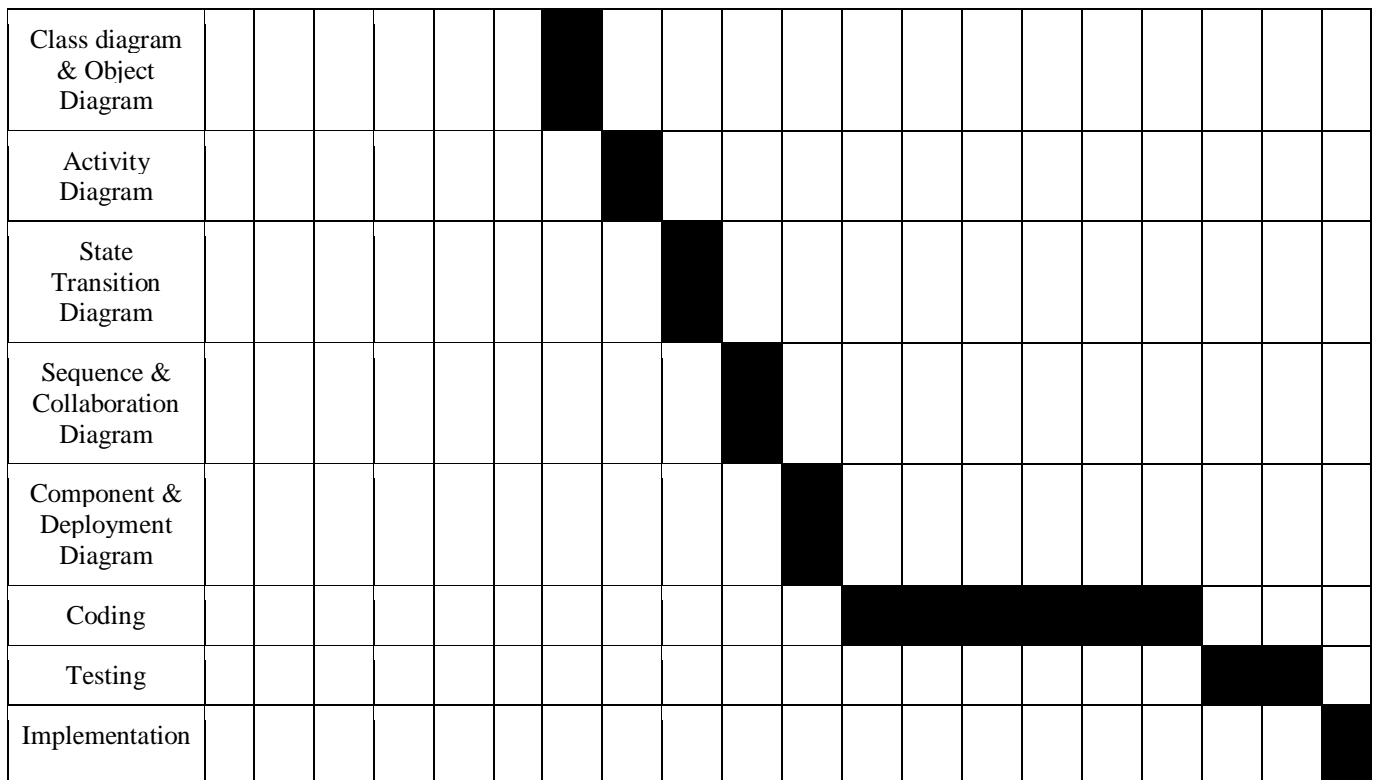


Fig 1: Typical Gantt chart For the Student Software Project Development Life cycle

The Survey

A questionnaire developed specifically for this study, was used. Target respondents were 100 final year students of the 2014-15 session of B.Sc. Computer science. Questions were about their access to, the use of skills, along with, preferences of use of ICT for a software project topic selection.

Have you searched software project topic on the Internet?

Which web browser you have used mostly for searching the project topic on Internet?

Which search engine you have used mostly for searching the project topic on Internet?

Have you used mobile web browser for project related search?

Have you got redundant search results?

Did project guide help you in selecting your project topic?

How much time you required for finalizing project topic?

Did you get expected search result on Internet?

Did your project guide use some e-learning tool during your project practical?

For which Technology based projects you have searched mostly?

What social networking sites have you used mostly for project related work?

Have you ever changed your software project topic after selecting once?

4. Data Analysis and Discussions

The responses were compiled and simple frequency analysis was carried out.

The extent of usage of Internet and search engines is given in Table 2. The table shows that all the respondents used the Internet, which is not a very surprising finding.

However we were surprised to find that even students of computer science do not use search engines other than Google.

Dependency on Internet poses many other questions about the quality of ideas, redundancy in domains to which the students are exposed etc. Non-Awareness of availability of different search engines on WEB is a matter of concern.

Table 2: Use of the Internet and the Choice of the Search Tool

	Use of Internet	Google as search engine	Yahoo	Bing	MSN	other search engines
Frequency	100	100	04	04	04	0

Students have their own choices when it comes to a question of choosing a proper domain of application.

Table 3: Expected search result and redundant topic search Internet

	Success Full Result of Search on Internet	Redundant topics during search
Yes	22	92
No	78	08

The table 3 shows that out of 100 students survey 78 the respondents did not got expected search result for the topic on the Internet as only 22% respondent says they got satisfactory topic by Internet search.

The table also shows that 92% students got redundant topics during search and only 8% says that they got relevant search not redundant. Table 4 shows the domains students opted when they went for topic selection.

Table 4: Domain choose by the students for their project topic search

Domain	Business	Education	Banking	Social Networking	Automobiles	Health-care	Others
Frequency	50	20	2	12	4	0	12

The Table 4 shows that Domain of the software project selected by the students. The table shows out of 100 students 50% respondents have selected Business domain for software project. Whereas 20 % students have selected Education based, 12% social networking based,

12% for others containing IT, Government Sector, Online review etc. based software projects. Banking 2%, Automobile 4% and none has chooses Automobiles as a Domain of the project.

Table 5: Time period required to finalize the project topic (weeks)

Duration	<= 1	<=2	<=3	>3
Frequency	20	36	40	4

The Tables 5 above shows that Time period required to finalize the project topic by considering domain of their interest are as 40% students group need two or more than two

weeks and 36% required more than one week but less than two weeks. 20% are very fast in selecting topic they finalized their project topic within a week.

Table 6: Project Group (Team size) size chooses by Students

Size	1	2	3	Total
Frequency	6	72	22	100

As team work required for better performance but we allow students to work in groups. Table 6 shows the project group sizes where students

prefer two students in a group are 72%, three in a group are 22 and alone are 6%.

Students generally search topic on the basis of technology to be used in the development.

Table 7: Search on Internet for a specific software technology

	Successful Search	Redundant topic during search	Software Technology		
			JAVA	PHP	Others
Yes	22	92	46	54	34
No	78	08			

The table also shows that 92% students got redundant topics during search, searching on Internet need proper use of keyword while searching on Internet.

Table 7 shows that While project related search the frequency of JAVA is 46% ,PHP is 54% and others 34% students search with both software technology because as per University syllabus for T.Y.B.Sc Computer Science project practical should be based on either JAVA programming language or PHP programming language only. Whereas the project has the use of CSS, Java Script etc.

5. Topic Selection: Project Guide's Opinion

It is fine for students to start the topic selection process with vague ideas about what they are

trying to achieve. But these ideas need to focus on a central point, so that their work is coherent and has clear direction. What are their hobbies? What are their aspirations for future work or further study? During discussion on topic selection for the software projects I suggest them to pick a project that fits in with those aims or interests. For Example: If students in my class say that they would like to do a project based on social networking then I do discussion with them about current issues in the social networking world.

Sample Student Project Title

Two latest trends based selected projects topics having two group members are discussed as a sample case study,

Table 8: Sample student Project Title details

Sr. No	Title	Domain	Group Size	Use of Internet for Topic selection
1	Friends Corner Connect	Social Networking	02	Yes
2	We Suggest –Online Mobile Review	Online review	02	No

In the table First one is “**Friends Corner Connect**” based on social networking and second is “**We Suggest –Online Mobile Review**” based on user generated reviews and during discussion with them I have found that the second project is inspired from websites like GSMArea.com, mouthshut.com.

6. Concluding Remarks

The aim of this study has been to capture the thoughts, feelings and experiences of undergraduate students as they embark on the journey of research for the first time. Apart from the Project Guide students are generally found to use the INTERNET as effective virtual consultant in the process of selection of topic and finding answers too many of their basic questions.

Students often ask many Questions (FAQ) during Project Topic Selection process, and they expect to get answers from the guide and Internet.

What exactly am I supposed to do in the project?

Can you suggest any topic for the project?

In which development language will I have to develop the project?

Where can I get information about the project?

How many group members are allowed to do project?

Can we get some previous year's project reports to refer?

Can I use Internet to search project topic and related information?

Which topic will be useful in future?

Which will be easy to implement, that will be completed on time?

Can we use Internet in our practical lab?
What if I want to change my topic later on? It is possible?

In each case searching on Internet leads to partial answers, but the personal experience of the student helps him a lot.

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A STUDY ON AWARENESS AND PERCEPTION ABOUT DIGITAL PAYMENT AMONG PEOPLE OF GUJARAT

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ABSTRACT

Purpose: After demonetization people are eager to use various digital payment modes because now a day's different modes of payment are available. In other words we can say that e-payment is a method in which a person can make online payments for his purchase of goods and services without physical transfer of cash irrespective of time and location using various modes of digital payment. The main objective of the present study is to check and analyze the awareness of people of Gujarat about digital payment and there is also try to know how the people perceive this method. Type of paper: The paper is empirical in nature. Design/Methodology/approach: Inferential statistical research design is used for the present study. Social Implications: Gujarat could be prosperous state with enlightening diversity. Now Indian government as well providing various types of subsidies and reliefs for that also digital payment awareness by people is necessary. So the present study can help for assisting various government schemes, programme related to digital payment. Findings: It was observed people are aware and there is no significant difference in their perception about digital payment system on the basis of various demographic factors like income, age, profession. It was found that most of the students are using banking cards and paytm. They consider digital payment system is better than traditional method of payment. So it is clear that students are aware about digital payment and there is great future ahead for this method of payment. Research limitations: As the primary data has been collected through questionnaires, so there may be a chance of subjectivity biases of respondents

Keywords: Digital Payment, Students, Digital Wallet, Online Payment, Payment System

Introduction

Digital Payment in India

As digital payment can save national savings, increase productivity, improve tax collection. India has largest data consumption at cheapest rate in the world. Digital payment system can help to combat various financial leakages and crimes.

As per report (November 218) of National Payments Corporation of India, BHIM, Unified Payments Interface increased up to 913 millions in volume from 7 million. It shows the decrease in the use of cash. That has been available from "Fintech Festival at Singapore on November 2018. It indicates that it is the time to use technology in finance for financial inclusion. Aadhar has been created for 1.3 million and with JanDhan Yojna more than 330 million new bank accounts has been opened. Now students can get scholarship directly in their bank accounts. Around 4000 micro ATMs are available in remote villages. Farmers have been provided with access of land record, price, credit, insurance, market etc.

BHIM UPI app is very sophisticated and simple payment method in world. Aadhar enabled payment system without mobile & internet. Over 128 banks are connected to UPI in India. UPI transactions grow by 1500 times in last 24 months and value of transactions also increased over 30%.

Digital Payment in Gujarat

Since the prime minister has announced to transform India into cashless economy, Gujarat has also actively joined in this initiative. Various training and awareness programme have been organized to train the people about cashless system. The main aim of such programme was to promote digital payment and make people aware about how it can transform society. Such training programmes include training to youth, /89*communities and training to anganwadi workers, Asha workers etc.

After demonetization cashless transactions have become very popular. There are various platforms for digital transactions which are as follow.

- NFC or MST transmission waves platform sound based payments platform
- Sound based payments platform
- Mobile Money Identifier
- UPI App based payments platform
- QR code based payments system
- USSD code payments system
- Aadhar enabled payment system
- Net banking payments platform
- Digital Wallet payment System
- Magnetic stripped cards.

To promote digital transaction some of the famous temples in Gujarat accept donation through e-wallet, ATMs . For this purpose they introduced swipe machines have started accepting e-payments started to accept e-payment for the “Prasad”.

1.2 What is Digital Payment?

Digital payment is mode of payment where cash is not used for payment purpose but other digital modes are used for payment purpose. Digital payment is found very easy & convenient by most of the people. In this payment method electronic gadgets are used for payment purpose. Digital payment programme is very important to transform India into a digitally empowered society. There are various modes available for cashless transactions like:

1. Banking Cards
2. USSD
3. AEPS
4. UPI
5. Mobile wallets
6. Banks Pre paid cards
7. Point of sale
8. Internet Banking
9. Mobile Banking
10. Micro ATMs

2. Literature Review

2.1 Introduction

In the present time digital payment is playing very important role in India. By giving significant drive to digital payments our present Prime Minister Shri Narendra Modi wants to make our country –“Digital India.” Various studies have been conducted in the area of digital payments with the increase in digital payment transactions.

2.2 Literature Review

Extensive research related to digital payment has been carried out from various perspectives. The review of research studies at national and international level has been presented in two categories viz.

- (a) Studies in India.
- (b) Studies outside India.

(a) Studies in India

Gandhi et.al (2014) in their research article, “Pre and Post Behavioral Study of Students Regarding e-commerce and Cyber Security.” has highlighted that in the field of e-commerce students have idea about purchase and sale only. Students don’t have credit/debit card as they are not financially independent. Students are quite confident after getting knowledge of e-commerce. They are also ready to spread awareness among friends, parents and others.

Sujith et.al (2015) in their research paper, “Opportunities and Challenges of E-payment System in India” It identified that there is great risk like theft of data in online payment. So the use of technology for reasonable security is must. He has also analysed different mode of payments and various opportunities and challenges in digital payment system.

Mrunal Joshi (2017) in his research paper entitled, “Digital Payment System: A Feat Forward of India.” That studied flow of various digital payment modes in last three years. He found that during last three years there was a striking growth in digital payment.

Singh et. al. (2017) in their paper “Study of Consumer Perception of Digital Payment Mode” found that there was no significant difference was perceived by the respondents on the bases of gender, age, profession and annual income. Adoption of digital payment was influenced by education level. It was also found that the area where education level is high in such area acceptance of digital payment is much higher.

(b) Studies Outside India

Dr. Ali M A-Khoury (2014) in his paper “Digital Payment Systems: Global

Opportunities still Waiting to be Unleashed” concluded that for technological development in the field of digital payment within few years we can see number of applications around us with, “a wave of a mobile or a gesture with a wearable device”. But it is also noticed that more auxiliary opportunities for more innovative developments in this field.

Oyewole et.al (2013) in their paper “Electronic Payment System and Economic Growth: A Review of Transition to cashless Economy in Nigeria” the researcher found that GDP per capita and Trade per capita. Only ATMs are found to have contributed positively to economic growth while other e-payment channels contributed negatively. It was also identified that significant positive relationship exist between e-payment system and economic growth in Nigeria.

Research Gap

Most of the studies are on particular mode of payment like digital wallet, paytm and credit card but for overall digital payment awareness studies have not been attempted by any researchers in India. No particular studies have been conducted particularly for Gujarat for digital payment awareness and perception. Most of the studies are carried out in foreign countries.

3. Research Methodology

3.1 Identification of the Research Problem

People of Gujarat being passionate, spirited, pioneer and ever changing in nature are the most important section of the population of India. People show strong passion, motivation and willpower which also make them the most valuable human resource for fostering economic, cultural and political development of a nation.

In present time there is great need of technology revolution and for this government of India is also trying to focus for technological advancement. And to cope up with this it is quite relevant to pay attention towards awareness and perception of people about digital payments. The primary research question for this study has been identified as follow:

“A Study On Awareness And Perception About Digital Payment Among People Of Gujarat”

3.2 Objectives of the Study

1. To have an idea about basic characteristics of digital payment system.
2. To know whether the people using digital payment service or not.
3. To know whether the people are aware of digital payment service or not.
4. To study the sources of information about digital payment.
5. To understand how people perceive digital payment service
6. To understand various risk and challenges like fraud data hacking which are faced by people while using digital payment.

3.3 Research Design

Inferential statistical research design has been apply for present study..

3.4 Data Collection

The data for the present study has been collected from primary and secondary sources. Secondary data has been collected from websites, newspaper, journals, magazines etc. Primary data has been collected through structure questionnaire. Questionnaire was distributed among people of different places of Gujarat .

3.5 Sample Size & Technique

From the total population of Gujarat 301 respondents have been selected for present study. Convenience sampling technique was used for a period of one month February 2019

3.6 Hypotheses of the Study

The following hypotheses have been examined:

- (1) H₀1- There is no significant awareness regarding digital payment among people.
- (2) H₀2- There is no significant difference in the perception of male and female.
- (3) H₀3- There is no significant impact of age on their perception about digital payment.
- (4) H₀4- There is no significant impact of income on their perception about digital payment.

- (5) H₀₅- There is no significant impact of education on their perception that digital payment can reduce corruption.
- (6) H₀₆- There is no significant impact of education on their perception regarding information of digital payment.
- (7) H₀₇- There is no significant impact of education on their perception regarding continues use of digital payment system.
- (8) H₀₈- There is no significant impact of demographic area on their perception satisfaction from digital payment system.
- (9) H₀₉- There is no significant impact of demographic area on their perception regarding cost of digital payment system.
- (10) H₀₁₀- There is no significant impact of profession on their perception regarding security while using digital payment.

- (11)H₀₁₁- There is no significant impact of profession on their perception regarding necessity of digital payment.

3.7 Data Analysis and Interpretation

The collected data from the various sources were analyzed using appropriate statistical techniques like t-test, chi-square test, Anova test through Excel and SPSS. Frequency analysis has been opted to analyze the awareness of respondents about digital payment. For analyzing perception of respondents on the basis of their age and family income, anova test has been used. And for analyzing their perception on the basis of income, education, profession and demographic area, chi-square test has been used.

Table No.1 Demographic profile of respondents

	Category	Frequency	Percentage
Gender	Female	139	46.2
	Male	162	53.8
Age	18-30 years	178	59.1
	31 to 45 years	80	26.6
	46 to 60 years	29	9.6
	Above 60 Years	14	4.7
Education	Illiterate	4	1.3
	High School	46	15.3
	Under Graduate	112	37.2
	Post Graduate	129	42.9
	Other	10	3.3
Family Monthly income	Up to 20000	130	44.1
	20001to 30000	79	26.8
	30001 to 50000	52	17.6
	Above 50000	34	11.5
Demographic Area	Kutch	41	13.9
	Saurashtra	49	16.6
	South Gujarat	46	15.6
	Central Gujarat	120	40.7
	North Gujarat	39	13.2
Profession/Occupation	Student	91	30.2
	Service	103	34.2
	Business	33	11
	Professional	33	11
	Farmer/Farm Worker	9	3
	House wife	26	8.6
	Unemployed	6	2
Total		301	

[Source: obtain by researcher through questionnaire]

Table No.1 explains demographical details regarding respondents taken for study. From

the total sample 53.8% of respondents are male and 46.2% are women.

From the above table it is clear that majority of respondents i.e. 59.1% of the total respondents are between the age group of 18 to 30 years of age 26.6% are of 31 to 45 years 9.6% are 46 to 60 years of age whereas only 4.7% are of above 60 years of age.

37.2% of them are undergraduate degree and 1.3% were illiterate.15.3% were did their education up-to high school, 42.9% were postgraduate and 3.3% have other education.

44.1% of the respondents have their monthly family income below Rs.20000, 26.8% belongs to 20001 to 30000 income group, 17.6% belongs to 30001 to 50000 income group and 11.5% of them have above Rs. 50000 income.

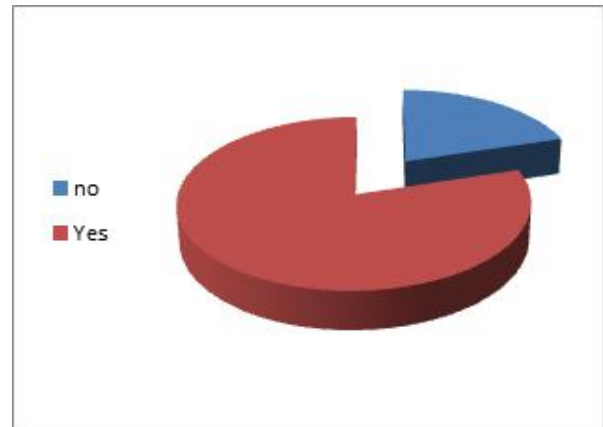
40.7% of them were belongs to central Gujarat 16.6% from saurashtra, 15.6% are from south Gujarat, 13.2 from north Gujarat and 13.9% are from Kutch.

Most of the respondents i.e. 34.2% are from service sector, 30.2% are students, 3% are farmers, 8.6% are housewife, 11% are farmers, 11% are professionals and only 2% are unemployed.

Statistical Analysis

H₀1: There is no significant awareness about digital payment among students.

Graph No. 1 for digital payment awareness



It is clear from above graph 1 that from the total respondents 301 around 75.7% are aware of digital payment as they all are using or plan to use digital payment method in future. Only 24.3% have never used digital payment system. So H₀1 is rejected and it is clear that people are aware about digital payment system.

H₀ 2: There is no significant difference in the perception of male and female.

Table No 2. Descriptive statistics

		N	Mean	Std. Deviation	Std. Error Mean
corruption	Female	97	1.91	0.292	0.030
	Male	131	1.83	0.375	0.033
Offline is better than D.P	Female	97	1.85	0.363	0.037
	Male	131	1.76	0.427	0.037
Enough information	Female	97	1.78	0.414	0.042
	Male	131	1.84	0.368	0.032
Benefit from D.P	Female	97	1.75	0.434	0.044
	Male	131	1.76	0.427	0.037
Cost of D.P	Female	97	2.44	1.594	0.162
	Male	131	2.44	1.442	0.126
Security in D.P	Female	97	2.11	1.527	0.155
	Male	131	2.06	1.363	0.119
Not necessary	Female	97	3.30	1.615	0.164
	Male	131	2.79	1.627	0.142
Satisfaction from D.P	Female	97	4.12	1.139	0.116
	Male	131	3.94	1.169	0.102
Continues use of D.P	Female	97	1.99	0.102	0.010
	Male	131	1.96	0.192	0.017

Table No 3 for Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Corruption	Equal variances assumed	11.530	.001	1.639	226	.103	.075	.046	-.015	.165
	Equal variances not assumed			1.701	225.447	.090	.075	.044	-.012	.162
Offline is better than D.P	Equal variances assumed	9.951	.002	1.527	226	.128	.082	.054	-.024	.188
	Equal variances not assumed			1.563	221.536	.119	.082	.052	-.021	.185
Enough information	Equal variances assumed	4.600	.033	-1.080	226	.281	-.056	.052	-.159	.046
	Equal variances not assumed			-1.061	192.632	.290	-.056	.053	-.161	.048
Benefit from D.P	Equal variances assumed	.140	.709	-.187	226	.852	-.011	.058	-.124	.103
	Equal variances not assumed			-.187	205.090	.852	-.011	.058	-.125	.103
Cost of D.P	Equal variances assumed	2.356	.126	.003	226	.998	.001	.202	-.398	.399
	Equal variances not assumed			.003	194.777	.998	.001	.205	-.404	.405
Security in D.P	Equal variances assumed	1.936	.165	.272	226	.786	.052	.192	-.326	.431
	Equal variances not assumed			.268	193.089	.789	.052	.195	-.333	.438
Not necessary	Equal variances assumed	.122	.727	2.360	226	.019	.513	.217	.085	.941
	Equal variances not assumed			2.363	207.825	.019	.513	.217	.085	.940
Satisfaction from D.P	Equal variances	.527	.469	1.193	226	.234	.185	.155	-.120	.490

	assumed									
	Equal variances not assumed			1.198	209.842	.232	.185	.154	-.119	.489
Continues use of D.P	Equal variances assumed	7.007	.009	1.298	226	.195	.028	.021	-.014	.070
	Equal variances not assumed			1.413	206.633	.159	.028	.020	-.011	.067

We can observe that the mean of male respondent than female respondents is higher for their perception about security and necessity of digital payment. This also indicates that female respondents have more

information compare to male respondent. It means there is significant difference in the mean score of male and female respondents.

H0 3: There is no significant impact of age on their perception.

Table No 4 for annova test

		ANOVA					Ho Accepted/rejected
		Sum of Squares	df	Mean Square	F	Sig.	
corruption	Between Groups	.037	3	.012	.104	0.958	Accepted
	Within Groups	26.748	224	.119			
	Total	26.785	227				
Offline is better than D.P	Between Groups	2.819	3	.940	6.208	0.000	Rejected
	Within Groups	33.901	224	.151			
	Total	36.719	227				
Enough information	Between Groups	.400	3	.133	.882	0.451	Accepted
	Within Groups	33.863	224	.151			
	Total	34.263	227				
Benefit from D.P	Between Groups	.290	3	.097	.523	0.667	Accepted
	Within Groups	41.442	224	.185			
	Total	41.732	227				
Cost of D.P	Between Groups	.579	3	.193	.084	0.969	Accepted
	Within Groups	513.680	224	2.293			
	Total	514.259	227				
Security while using D.P	Between Groups	7.194	3	2.398	1.172	0.321	Accepted
	Within Groups	458.223	224	2.046			
	Total	465.417	227				
Not necessary	Between Groups	14.242	3	4.747	1.788	0.150	Accepted
	Within Groups	594.754	224	2.655			
	Total	608.996	227				
Satisfaction from D.P	Between Groups	5.939	3	1.980	1.488	0.219	Accepted
	Within Groups	297.991	224	1.330			
	Total	303.930	227				
Continues use	Between Groups	.014	3	.005	.184	0.907	Accepted
	Within Groups	5.828	224	.026			
	Total	5.842	227				

Table No. 6 helps in drawing following inferences:

- $p= 0.958$ for their perception about reduction in corruption by using digital payment which is Higher than 0.05 and therefore there is no significant difference in their perception.
- $p= 0.000$ for their perception about digital payment is better than offline system which is lower than 0.05 and therefore there is significant difference in their perception
- $p= 0.451$ for their perception about enough information about digital payment which is higher than 0.05 and therefore there is no significant difference in their perception
- $p= 0.969$ for their perception about cost of using digital payment which is higher than 0.05 and therefore there is no significant difference in their perception.
- $p= 0.321$ for their perception about security while using digital payment

which is higher than 0.05 and therefore there is no significant difference in their perception.

- $p=0.150$ for their perception about their thinking digital payment system is not necessary which is higher than 0.05 and therefore there is no significant difference in their perception.
- $p=.0.219$ for their perception about their satisfaction with digital payment which is higher than 0.05 and therefore there is no significant difference in their perception.
- $p=0.907$ for their perception about their thinking about continuous using of digital payment system is higher than 0.05 and therefore there is no significant difference in their perception.

So we can conclude that age of respondents do not have much impact on their perception.

H0 4: There is no significant impact of income on their perception.

Table No 5 Anova test for impact of income on perception

		ANOVA					
		Sum of Squares	df	Mean Square	F	Sig.	Ho Accepted /Rejected
corruption	Between Groups	.586	4	.146	1.246	0.292	Accepted
	Within Groups	26.199	223	.117			
	Total	26.785	227				
Offline is better than D.P	Between Groups	.484	4	.121	.745	0.562	Accepted
	Within Groups	36.235	223	.162			
	Total	36.719	227				
Enough information	Between Groups	.096	4	.024	.156	0.960	Accepted
	Within Groups	34.168	223	.153			
	Total	34.263	227				
Benefit from D.P	Between Groups	2.289	4	.572	3.235	0.013	Rejected
	Within Groups	39.443	223	.177			
	Total	41.732	227				
Cost of D.P	Between Groups	11.207	4	2.802	1.242	0.294	Accepted
	Within Groups	503.052	223	2.256			
	Total	514.259	227				
Security while using D.P	Between Groups	6.178	4	1.545	.750	0.559	Accepted
	Within Groups	459.238	223	2.059			
	Total	465.417	227				
Not necessary	Between Groups	18.383	4	4.596	1.735	0.143	Accepted
	Within Groups	590.612	223	2.648			
	Total	608.996	227				
	Within Groups	297.706	223	1.335			

	Total	303.930	227				
Continues use	Between Groups	.070	4	.018	.679	0.607	Accepted
	Within Groups	5.772	223	.026			
	Total	5.842	227				

Table No. 5 helps in drawing following inferences

- $p= 0.292$ for their perception about reduction in corruption by using digital payment which is higher than 0.05 and therefore there is no significant difference in their perception.
- $p= 0.562$ for their perception about digital payment is better than offline system which is higher than 0.05 and therefore there is no significant difference in their perception
- $p= 0.960$ for their perception about enough information about digital payment which is higher than 0.05 and therefore there is no significant difference in their perception
- $p= 0.294$ for their perception about cost of using digital payment which is lower than 0.05 and therefore there is no significant difference in their perception.
- $p= 0.559$ for their perception about security while using digital payment which is Higher than 0.05 and therefore

there is no significant difference in their perception.

- $P=0.013$ for their perception about benefits available from digital payment which is lower than 0.05 and therefore there is significant difference in their perception.
- $p=0.143$ for their perception about their thinking digital payment system is not necessary which is higher than 0.05 and therefore there is no significant difference in their perception.
- $p=0.607$ for their perception about their thinking about continuous using of digital payment system is higher than 0.05 and therefore there is no significant difference in their perception.

So we can conclude that income of respondents do not have much impact on their perception

H0 5: There is no significant impact of education on their perception that digital payment can reduce corruption.

Table No 6 chi-square test statistics

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.649	4	0.618
Likelihood Ratio	3.335	4	0.503
Linear-by-Linear Association	1.230	1	0.267

Table No 6 shows that p value of chi-square test is 0.618 which is higher than 0.05, therefore null hypotheses cannot be rejected at 5% level of significance. Therefore there is no association between education of

respondents and their perception about corruption.

H6: There is no significant impact of education on their perception about enough information of digital payment.

Table No 7 chi-square test statistics

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.891	4	.576
Likelihood Ratio	3.161	4	.531
Linear-by-Linear Association	.861	1	.353

Table No 7 shows p value of chi-square test is 0.576 which is higher than 0.05, therefore null hypotheses cannot be rejected at 5%

level of significance. Therefore there is no association between education of respondents and information about digital payment.

H0 7: There is no significant impact of education on their perception about continue use of digital payment system.

Table No 8 chi-square test statistics

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	41.008	4	0.000
Likelihood Ratio	10.531	4	0.032
Linear-by-Linear Association	.138	1	0.710

Table No. 8 shows p value of chi-square test is 0.000 which is lower than 0.05, therefore null hypotheses is rejected at 5% level of significance. Therefore there is significant difference in their perception about continues use of digital payment.

H8: There is no significant impact of demographic area on their perception about satisfaction from digital payment system.

Table 9 chi-square test statistics

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	26.846	16	0.043
Likelihood Ratio	30.762	16	0.014
Linear-by-Linear Association	7.739	1	0.005

Table No 9 shows p value of chi-square test is 0.043 which is lower than 0.05, therefore null hypotheses can be rejected at 5% level of significance. Therefore there is significant

difference in their perception about satisfaction by use of digital payment.

H9: There is no significant impact of demographic area on their perception about cost of digital payment system.

Table 10 chi-square test statistics

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	30.981	16	0.014
Likelihood Ratio	33.149	16	0.007
Linear-by-Linear Association	2.991	1	0.084

Table shows p value of chi-square test is 0.014 which is lower than 0.05, therefore null hypotheses is rejected at 5% level of significance. Therefore there is significant impact of demographic area on their

perception about cost of digital payment system.

H0 10: There is no significant impact of profession on their perception about security while using digital payment.

Table 11 chi-square test statistics

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	29.953	24	.186
Likelihood Ratio	37.359	24	.040
Linear-by-Linear Association	3.294	1	.070

Table No 11 shows p value of chi-square test is .186 which is higher than 0.05, therefore null hypotheses cannot be rejected at 5% level of significance. Therefore there is no

impact of profession on their perception about security while using digital payment system.

H11: There is no significant impact of profession on their perception that digital payment system is not necessary.

Table 12 chi-square test statistics

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	29.001	24	.220
Likelihood Ratio	34.005	24	.085
Linear-by-Linear Association	2.564	1	.109

Table no 12 shows p value of chi-square test is .220 which is higher than 0.05, therefore null hypotheses cannot be rejected at 5% level of significance. Therefore there is no impact of profession on their perception that digital payment system is not necessary.

3.8 Major Findings

1. Majority of the respondents 75.7% of total respondents 301 using or plan to use digital payment system.
2. Demographic area of respondent has much impact on their awareness.
3. Family income of respondent has no impact on their perception
4. Age of respondent not have much impact on their perception.
5. There is significant difference between perception regarding digital payment of male and female.
6. Most of the respondent 68.9% have been informed about digital payment through friends and or relatives and only 7.5% have been from government programs.
7. Network connectivity error is most faced problems faced by respondents.
8. Out of 301 respondents 197 which are 65.48% believes that digital payment system can reduce corruption in India.
9. 182 [60.47%] respondents agree that digital payment system is better than offline system.
10. 173 respondents having 57.48% were agreed that digital payment system can eliminate to bring money which is beneficial.
11. Apart from cash and banking cards and pay-tm is most popular among people
12. 97.4% of respondents wants to continue the use of digital modes of payment.
13. Banking cards, mobile banking and mobile wallets are most popular methods of digital payment among people.
14. 46.5% of respondents are satisfied and 18.4% are highly satisfied with digital payment system.
15. Fraud and data hacking is most feared problem associated with digital payment.
16. Network connectivity is the challenge that is faced by people the most.

3.9 Limitations of the Research

1. The study is confined to people of Gujarat state only.
2. Primary data has been collected through questionnaire which may suffer from the subjectivity biases of the respondent.
3. The present study is limited to only 301 respondents of Gujarat state only. Although researcher take in selecting the samples but it may not be representative of the actual population.

3.10 Scope for Further Research

1. Similar type of studies can be undertaken for other emerging technology.
2. Version of the study can be expanded to cover the state wise implementation and awareness among respondents about digital payment.
3. Researcher can opt for similar study for other stakeholder viz., school students, millennial, rural population senior citizens etc. would be interesting to carry out.

Conclusion

Technological inventions made life of people much easier than ever before. In present study an attempt is made to study the awareness and perception about digital payment. The study reveals that the people of Gujarat are highly aware about digital payment. Chi-square computation supported this as there is a significant difference in the perception of people on the bases of various demographic factors. As most of the respondents consider digital payment system easy, convenient and time saving as it is available 24*7. Digital

payment system can definitely help people for their day to day transactions like bill payment, recharge, online shopping etc. The present study may helpful to government,

students, policy makers, service providers and to all those who are working for the betterment of people.

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A STUDY ON THE GAINING POPULARITY OF E- COMMERCE DURING COVID-19 PANDEMIC : A CASE STUDY OF NAVI MUMBAI

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ABSTRACT

E-Commerce had been consistently acquiring force — the world over and furthermore in India much before COVID19 occurred. Overall the beginning of the pandemic and the resulting lockdown has lost the movement of internet buying balance on account of limitations on qualified things to fundamentals and because of the restrictions put on actual development straightforwardly affecting conveyances. In any case, encounters of life during the lockdown may bring about poking mentalities towards picking internet business once things are back to typical. This examination is an endeavor to comprehend the current status and patterns of Web based business and to likewise dissect the effect of Coronavirus on Online business through the assistance of both primary data and secondary data. Most extreme respondents knew about web based shopping and they favored purchasing products on the web. Few were as yet reluctant and were attempting to adapt up.

Keywords: Covid-19, E-commerce, Online Shopping, Pandemic

Introduction

On 24 Walk 2020, the Public authority of India under Executive Mr. Narendra Modi requested a cross country lockdown for 21 days, restricting development of the whole 1.3 billion populace of India as a preventive measure against the Coronavirus pandemic in India. It was trailed by a 14-hour willful public time limitation on 22 Walk, in the wake of implementing a progression of guidelines in the country's Coronavirus influenced locales.

Since the time then, at that point, the Covid Internet Shopping cases are expanding at a fast rate and subsequently the lockdown additionally got broadened. Stage 1: 25 Walk 2020 – 14 April 2020 (21 days) Phase 2: 15 April 2020 – 3 May 2020 (19 days) Stage 3: 4 May 2020 – 17 May 2020 (14 Days) Stage 4: 18 May 2020 – 31 May 2020 (14 days) Stage 5: (just for regulation zones): 1 June 2020 – 30 June 2020. Internet business is occurring when purchaser and vender manage their deals with the assistance of web. The term electronic trade or online business alludes to any kind of deal that includes the exchange of data through the web. Online business organizations are of following significant sorts like

- 1) Business-to-Business (B2B)
- 2) Business-to-Shopper (B2C)
- 3) Business-to-Government (B2G)

- 4) Consumer-to-Customer (C2C)

- 5) Mobile Trade (M-Business).

E-commerce“ and „online shopping“ are frequently utilized reciprocally however at its center online business is a lot more extensive than this – it's anything but an idea for working together web based, consolidating a huge number of various administrations for example making on the web installments, booking flights and so on Web based business has encountered fast development since its modest beginnings with online business deals projected to develop to 599.2 billion USD by 2024. The Coronavirus flare-up saw online business deals spike 25% in Walk 2020 alone. The force of online business ought not be belittled as it keeps on swarming regular daily existence and present huge freedoms for little, medium, and huge organizations and online financial backers. You don't have to look far to see the capability of online business organizations.

Amazon, for instance, which set the norm for client orientated sites just as a lean production network, is selling more than 4000 things every moment from SMBs alone. Advantages for Individuals Purchasing 'On the web':-

Lower Costs: Dealing with an online retail facade is far less expensive than a disconnected, physical store. Normally less staff are needed to deal with an online shop as electronic administration frameworks empower proprietors to mechanize stock

administration and warehousing isn't really needed (as we talk about later). Thusly, web based business entrepreneurs can stand to give operational Internet Shopping investment funds to buyers (as item or administration limits) while securing their general edge. Besides, with the ascent of value examination sites, buyers have more straightforwardness concerning costs and can search around, normally buying from online outlets all things being equal.

1. **Accessibility and Accommodation:** Dissimilar to numerous disconnected stores, buyers can get to web based business sites 24 hours every day. Clients can find out about administrations, peruse items and spot orders at whatever point they wish. In that sense, internet shopping is very advantageous and gives the customer more control. Moreover, Web based Shopping living in more far off regions can arrange from their home at a dash of a catch, saving them time traveling to a mall.
2. **Wider Decision:** For as long as twenty years, the development of web based shopping has generally been based around expanded decision. With an Internet Shopping unending selection of brands and items to Web based Shopping from, purchasers are not restricted by the accessibility of explicit items in their nearby town, city or country. Things can be sourced and transported all around the world.

Curiously, one late investigation found that buyers are really beginning to get disappointed by web based business locales that offer an excess of decision. However you take a gander at it however, more decision has likely been something to be thankful for over the long haul. While one Forbes study information shows that ladies are bound to be worried about the impacts of Coronavirus, it additionally shows that men are bound to have it sway their shopping practices. 33% of men, contrasted with 25% of ladies, detailed the pandemic influencing the amount they spend on items. Moreover, 36% of men, contrasted with 28% of ladies, revealed it influencing the amount they are spending on

encounters (travel, cafés, amusement, and so forth)

The Indian retail market is significantly split between the sloppy area, which incorporates about 13.8 million traditional family run area stores and the coordinated retail area with an offer under 10%. The coordinated area incorporates all coordinated block and mortar stores and internet shopping destinations. In spite of the blast in B2C online business area in India, greater part of Indians keep on having more confidence in the local block and mortar stores for shopping as they incline toward contacting and feeling the items and arranging limits over-the-counter, prior to purchasing. In India, an extraordinary larger part of B2C internet business retailers attract clients to shop online by offering deals like free conveyance, limits, get one-get sans one and trade offers. Nonetheless, numerous Indian customers known to be Web based Shopping-cognizant and moderate as a piece of their worth framework are by and large not pulled in into settling on fast choices dependent on advancements and notices. Also, online customers, many-a-times, come Web based Shopping issues concerning item conveyance courses of events and client care administrations. Customers' impression of hazard toward online sites is exasperated because of the mediocre IT set-up utilized by a few e-rears, bringing about hacking of individual data.

Enter the novel Covid which causes an exceptionally irresistible illness Covid sickness (Coronavirus) that has contaminated in excess of 4 lakh individuals around the world. Since it spreads basically through contact with a contaminated individual (when they hack or wheeze) or when an individual contacts a surface that has the infection on it, the most ideal approach to make preparations for it is to remain at home. This has expanded internet shopping use, around the world.

On 25th Walk, 2020, Major Crate - a key online staple part in India had the accompanying message "We'll be back soon! We are presently encountering uncommon interest. Considering this, we are confining admittance to our site to existing clients as it were. Kindly attempt again in a couple of hours." So overpowering was the reaction that

it's anything but a breakdown because of a lofty expansion sought after in the midst of Coronavirus.

Grofers – an adversary had a comparable sort of message which said "Because of the unexpected surge, we have quit adjusting numerous areas, however we are attempting to expand limit and will continue tasks quickly."

Amazon – one of the main web based business major parts in the country, and the world, has reported on its website that the clients are depending on them more than ever in their social removing and self-isolate endeavors. Henceforth Amazon is briefly focusing on its accessible satisfaction and coordinations ability to serve fundamentals, for example, family staples, bundled food, medical care, cleanliness, individual security and other high need items. It is briefly going to quit taking requests for lower-need items.

All around the world too Amazon has seen a flood in orders and is raising extra time pay for partners working in its distribution centers, during the Covid flare-up. This spike in B2C web based business in India is obviously because of existing on the web customers loading up on basics given the Covid episode and the lockdown Internet Shopping by the Public authority (to check its spread). Anyway it additionally comprises of maybe two additional portions – aside from the one that purchases on the web, consistently. A portion that didn't shop on the web, given the repressing elements point by point in the start of this article and another section that up till now, was either uninformed about web based shopping or didn't have a gadget or information plan. It is intriguing to check – the number of customers from these two portions change to web based shopping, even after the Covid emergencies is finished.

Objectives

The objectives of present study are:

1. To understand the present status and trends of E-Commerce
2. To analyze the impact of Covid 19 on E-commerce
3. To study the shift in consumer buying behavior as a consequence of the

pandemic lockdown.

Literature Review

Bansal.S,(April 02, 2020) will consumer behavior see shift post-covid- 19 ?? Shuchi Bansal said that, as a consequence of COVID-19 lockdown, there would be a major shift in the supply chain and an increased consumption of e-commerce portals through the internet. It has been estimated that the online stores engaged in sales of groceries and other FMCG products could see a massive shift in demand to avoid going out to crowded shops and marketplaces. After analysing the consumer buying behaviour from the time India first encountered COVID-19 till the time it went under the lockdown, it could be said that people have become more conscious about health and hygiene and there would be fewer visits to stores and more online shopping for customers.

Nath.S,(April 28, 2020) Did the lockdown accelerate the digitization of India Inc? Sanstuti Nath threw light on the term 'digital consumption'. Her study on the consumption patterns of consumer's post-pandemic lockdown, showed that the e-commerce companies have seen a significant growth of 70-100% for essential commodities. And this sudden adaption of digital platforms can be allocated to mobile advertising. Top companies and brands were already benefiting themselves from these platforms, and also now post lockdown this whole scenario is going to change how consumers buy.

FE Online, (April 29, 2020) Millennials will buy in revenge once lockdown lifts; Consumer behavior to change in these ways It said that as the country is under lockdown for such a long time, the buying behaviour of the consumer, especially the Millennials are expected to undergo massive changes as most of them are going to do revenge buying, as they didn't get to buy goods as they used to buy in the pre- lockdown period. And if the e-commerce industry is talked about, they are estimated to be the clear winners, especially in the FMCG online sales, in the short and long term both, as part of the strategies of FMCG companies.

Euro Monitor International, (April 20, 2020) Coronavirus effect on Indian FMCG industries and services

During the lockdown period, the industry that has been impacted the most is the FMCG industry, being affected due to the breakdown in the supply chain of the country. Also, the consumer's definition of essential goods has also been changed, with masks and sanitizers entering into the category, while the other FMCG goods like beauty products, footwear, clothes have taken a back seat with groceries and packaged goods with high demand among the consumers. Where grocery retailers accounting for about 60% of store-based sales have been permitted. With a threat of getting infected consumers are now shifting to online stores for making the purchases of essential commodities so that they don't have to go anywhere else and confined to their homes safe and secure.

PTI, (April 24, 2020) Majority of Indian consumers may shift to online shopping in the next nine months

The surveys done have estimated that the pandemic breakdown and lockdown are going to bring major changes in how the Indian consumers going to buy goods or their buying behavior. If essential commodities are talked about, there will be a major shift from 46% to about 64% in online shopping in the next 6-9 months. Also, as compared to 59% of consumers, around 46 % of consumers are going to buy from physical stores. A survey conducted showed that nearly 74% of consumers prefer to buy online post the lockdown.

PTI (April 19, 2020) Post lockdown, online-to-offline strategy to get prominence in the retail sector: LOTS Wholesale The retail outlet LOTS wholesale have stated that as consumers are now more conscious of their health and protection against the pandemic, there is going to be a drastic change in the consumer behavior especially in buying FMCG goods and all retailers will be bound to do the sales on online platforms, that is the e-commerce portals to meet the demands of consumers and promote contact-free ordering and Delivering services. Also, they said that

to cater to the changing needs of customers there would be a need to have an Omni-channel strategy, online to offline. As for now, there is increased demand for only essential commodities but a considerable amount of time will be taken for shopping behavior to get normal, as purchasing habits are going to change drastically.

Data Analysis And Interpretation

72% of respondents have bought goods online before lockdown and 28 respondents haven't even considered buying goods online.

66% respondents says that they buy online goods online for Convenience, 22% says that they buy online groceries for a better discount, 6% respondents say that they don't have any specific reason behind on buying goods online and only 6% respondents say that there are some other reasons which convince them to buy goods online.

51% says that they agree that during this lockdown they prefer to buy goods online, 35% respondents strongly agree on this, 10% says that they are neutral on this, which means they are not sure on this whether the frequency of buying goods online, 3% respondents disagree on this and only 1% respondents strongly disagree that it lockdown period doesn't increase the frequency of buying goods online.

27% respondents say that they agree, that E-commerce is going to replace the offline shopping in future, 26% respondents reacted that they strongly agree on this, 22% respondents say that they are not sure about this whether E-Commerce is going to replace Offline retail shopping in the future and 17% respondents disagree on this and only 8% of the respondents strongly disagree that they don't think that E-Commerce is going to replace the traditional offline shopping.

38% are satisfied, 6% respondents give the neutral response which means that they are not either satisfied or dissatisfied from buying the goods online

38% say that they agree on this statement, 10% of respondents are neutral on this, both 1% say that they disagree and strongly disagree over these respondents

Findings

“Have you ordered goods online during the lockdown period?” 89% of respondents say that they ordered online goods online and only 11% of respondents say that they haven't purchased goods online

Around 66.7% of respondents say that they buy goods for their Convenience and 22% say that for a better discount. So these are the two main factors that are influencing the customers to use more and more usage of E-Commerce for buying goods online.

And 51 respondents agree that their frequency of buying goods online has increased and 35% of respondents strongly agree on this and 10% are neutral on this. So, after getting these strong numbers on increased the buying frequency of the customer, there could be tons of reasons behind it like, during this pandemic lockdown period people are more scared to get out of the house, fear that they can take virus from the outside to their home.

Stepping out of the house is the biggest challenge for many people due to COVID-19. 28% of respondents Agree that E-commerce is going to replace the offline kirana stores and 27% Strongly Agree and 23% are not so sure about this whether it is going to replace with traditional offline shopping and only 17% respondents disagree with this.

These numbers clearly indicates that more customers are looking at the E-Commerce as the future of their online Kirana stores, where they can buy from where ever they want, no matter what the place is. Over 52% of the respondents are very satisfied are more satisfied with buying goods online rather than going to the retail store to buy goods and 38% of respondents are very satisfied with this and 7% are neutral on this.

This data clearly indicating that most of the

customers are more satisfied with buying goods online rather than going to an offline kirana store. When I asked to the respondents that E-commerce in goods are playing a vital role in the lockdown period. 51% are strongly agreed, 37 agree and 10% are neutral on this statement.

Over 87% agree that e-commerce has been playing a vital role in every consumer's life during this lockdown period. Over 70% of respondents say that they are going to spend more than before on buying goods online and 15% are not sure about it and 13% are saying they are going to spend the same as before.

It's a positive sign that more customers are taking interest in spending more on online goods rather than offline retail shops. 63% strongly agree and 28% agree that they are going to order goods online on the post lockdown period. Many customers are showing interest to buy groceries online and not during the lockdown period but after the lockdown, they are interested in buying goods online, because they are more satisfied with the services of the E-Commerce rather than offline retail shops.

Conclusion

In this paper, researcher has reviewed and deliberated disparagingly COVID-19 outbreak. Researcher is primarily interested in knowing how corona virus spread and affected the e-commerce globally. This paper also discussed, how e-commerce provides alternative way to people to meet their demands. E-Commerce enhanced by COVID-19. How it impacted e-commerce will be encouraging for other researchers to investigate more deeply in this area such as ecommerce trends are changed by corona and future trends.

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INSTITUTIONAL SALES: MANAGING CUSTOMERS FOR SALES NOT PROFIT**T. Mistry¹ and S. Sindhu²**^{1,2}Indira School of Business Studies, Pune, Maharashtra, India¹tausif.mistry@gmail.com**ABSTRACT**

Concept of Institutional Sales is not new in the industry. Various Organizations who are having chain stores across a city, state or even a country end up purchasing the products from a centralized purchase store commonly termed as Institutional Purchase store. There are benefits of institutional purchase to the organization and also to the company who is selling these products as they end up clearing their inventory and are better prepared when it comes to facing competition. However, there are certain cases where the concept of Institutional sales has ended up doing more harm than good to the seller company. This case study will help companies in understanding the cons of Institutional Selling and help them in providing a road map for framing policies with respect to Institutional Sales.

Keywords: Institutional Sales, Business Ethics, Sales Management

Summary

A Sunday evening when the traders are shut and the entire market wears a deserted look, Ravi gets a call from Mohan Seth enquiring about some product requirements for the hospital. Trembling with Steve Jobs innovation in his hand, somehow managing to tap on the answer button “Hello sir” says a soft spoken Ravi. A stern voice from the other end responds “*Haan, kal maal le aana hospital pe, order likh*” (Yes, Get the goods tomorrow to the hospital, write down the order). This is a routine practice every week which is now entering its 18th week for ‘Breathe’ – a respected chain of hospitals serving the asthmatic patients of the city and has a sister pharmaceutical drug store within the premises of the clinic with the same brand name.

Phase I: Breathe – An Introduction

‘Breathe’ – A decade old speciality hospital which started as the brainchild of Dr. Sohan. Dr. Sohan had done his graduation from a prestigious city government medical college, went to the states for completing his masters, practiced few years in one of the reputed hospitals in US before returning back to India in the year 1995. October 5th the same year which also marked the second birthday of his only daughter was chosen as the day for the grand opening of the hospital. The attendees were the who’s who in the medical fraternity and local politicians alike. Within 2 years, Dr.

Sohan expanded to 4 hospitals serving the four corridors of the city. In the next 5 years, Dr. Sohan had his presence felt in 3 Tier – I cities in equal number of states boasting of state of the art equipment and infrastructure providing relief for more than ten thousand patients. The total number of ‘Breathe’ hospitals increased to 10 by the end of 8th year in those 3 cities.

Phase 2: Mohan Seth – The Business Wolf

Mohan is paternal first cousin of Dr. Sohan who had the license to operate a drug store in anyplace in India. Mohan being born in a typical business family had his eyes on the flagship drugstore in the heart of city and was always on the lookout for new business opportunities. An aspirational soul who was driven by challenges and new ventures and would seldom be restless if he felt he was stuck in business and nothing new to explore. He had successfully ventured into Import – Export business catering to 25 clients worldwide in pharma exports and swiftly climbing up the 10 crore turnover amount. Having automated the demand, supply and logistics for his overseas business, Mohan had his eyes on the booming business of ‘Breathe’. Being elder to Dr. Sohan and raised up together in a joint family, he did not hesitate a second to propose a business plan of setting up retail drug stores which will exclusively cater to the patients of ‘Breathe’ explaining the opportunity to attract more patients by providing them medicines at

subsidized rates. Dr. Sohan a compassionate doctor and also a brother agreed keeping the larger picture in mind. This is how “Breathe – Drug Stores” at all 10 branches of the brand were born with Seth (*Magnate, Capitalist*) being suffixed before the name of Mohan. The date that year read October 5th.

Phase 3: The Rise of Institutional Sales

Within a year of launch of “Breathe – Drug Stores”, Mohan Seth realized that the profit margins were reducing on account of the promise made to his brother of providing medicines at subsidized rate. After all, they were in the business of service to mankind. Mohan Seth as he was fondly called by all the pharmaceutical companies who pampered him and fulfilled the craziest of his demands in lieu of getting orders in bulk was a bit restless looking at the profit statement. One fine evening, Mohan Seth visited a city departmental store which had chain stores all across the country for returning a product and during the process he enquired about the purchase department. He met one of the purchase managers and got to know that the products are all purchased centrally and then shipped across various stores in the country. That was his Eureka moment and the key which will open the door to prosperity and calm his restlessness down. He called up the 10 managers who were running the respective ‘Breathe’ stores and asked them not to place any orders before consulting him. The very next evening, he dug into the historical data of purchases at all the stores and studied the consumption pattern of various products which were sold at “Breathe”. Within a week Mohan Seth was ready with the purchase plan for different brand of products. That was the rise of Institutional sales at ‘Breathe – Drug Stores’ where products would be purchased centrally and then shipped to the respective stores. In spite of the additional central tax and legal cost on account of State taxation policy that he had to suffer, Mohan Seth could easily achieve 1.8 times the profit which he was making prior to Institute purchase.

Phase 4: Managing Customers for Sales Not Profits

A year down, with profits growing at a steady rate, his brother pleased with the steady increase in the patient footfalls, patient’s pleased with the quality of treatment and the discounted price of medication, the restlessness somehow managed to creep into the mind of Mohan Seth because he was unable to scale his business and felt he was stuck.

Ravi – one of the senior executives working with a multinational pharmaceutical company was a hardworking management graduate who had the distinction of cracking the toughest clients. Being an MNC having a dedicated marketing budget, Ravi utilized the budget to the optimum. The CRM techniques taught at his business school were aptly applied on the targeted customers to increase loyalty and the customer lifetime value (CLV). When Ravi met Mohan Seth for the first time, his fluent accent, the-sweet-boy-next-door charm instantly clicked and there was a healthy bond that developed between the two within a week. Ravi added one more significant client ‘Breathe’ to his achievements. ‘Breathe’ alone was worth 20 lakhs a month for Ravi’s company and was equally treated with CRM offers. The professional meets in the hospital were soon replaced by evening snacks at a local eatery where Ravi would discuss the company’s sale targets given to him and how these sales were achieved with some light on the unethical practices followed by sales executives to earn the hefty incentives and foreign visits. In the hour long monologue that Ravi had about sales, Mohan Seth was stung by one of his statements which revealed about a client who was worth 4 lakhs per month. The restlessness which had crept Seth’s mind earlier could now be subsided with another avenue to earn huge profits and explore a business opportunity.

Few days later, Mohan Seth proposed a 50% margin on all the products purchased from Ravi against 30% which they had agreed upon on condition of increasing the order quantity to 38 lakhs per month – a near 100% increase in the purchase amount which would be delivered to ‘Breathe’ directly from the company depot. The greed of incentives and promotion written large on his face, Ravi

dialed up his seniors for approval. Within 2 days he was back at the drug store and this time invited Mohan Seth for dinner at one of the swankiest hotels of the city. Having a sip of *Rasa Shiraz*, Ravi laid down a condition – the order will be every month for the next 12 months. Mohan Seth with a wry smile moved his hand towards Ravi and the deal was closed.

Two months down the line, Ravi was showered on praise by his colleagues, his bosses, head office, even the Corporate HO which was miles apart on a foreign soil for the numbers Ravi had to show in the quarterly meet. Ravi even enjoyed an all - expense paid trip to Singapore along with his family. Little did Ravi know while enjoying one of his joyride in Singapore, he actually had dug his own grave back in India and Mohan Seth was busy digging it deep.

‘Breathe’ was worth 20 lakhs per month, this number was after taking into consideration the sale at all the 10 drug stores across the 3 states, then how did it increase to 38 lakhs overnight? Was it because there were plans to start 5 more clinics at Tier-II cities – NO. Was it because the patients had doubled or the consumption of the products had doubled by the existing patients – The answer a BIG NO.

The Rude Reality

Ravi had clients who would purchase from the authorized stockiest at a fixed margin of 10%. These were known as Trade Sales or Trade Account. There were few like “Breathe – Drug Store” who would purchase directly from the company depot bypassing the middlemen as they were given extra discounts which were customized according to the CLV. These were known as Institutional Sales or Institutional Accounts.

Ravi had no idea that the client who was worth 4 lakhs per month and similar such

clients who were worth a significant amount in his region had stopped purchasing the products from the company authorized stockiest. Instead these clients were now purchasing the products at twice the margin from “Breathe – Drug Stores”. Mohan Seth had calmed down his restlessness with the plan of getting a wholesale license, conducting a market research of all the major clientele in the city and the other parts where he could easily approach and proposing them an offer which they would never refuse.

It took 4 months for Ravi to realize the monster that he created is now growing at a rapid pace and will soon eat him up and his career if not controlled. Ravi was shattered when the mask of Mohan Seth’s face had been removed and was now in a dilemma. A billion - dollar question as to how to control this menace which he himself had nurtured and boasted about among his colleagues would give him sleepless nights. He can neither stop giving the discount to ‘Breathe’ fearing he might as well lose 50% of the genuine sales at ‘Breathe’ nor can he report this problem to the company for the fear he might lose his job.

There are many sharks like Mohan Seth lurking around in the market and making the company bleed by finding loopholes in the system and leveraging the concept of “Institutional Sales”. As a corporate organization it becomes imperative to plug these loopholes and not let any customer take the organization for a ride.

Questions

- 1.) What policy should the company come up with to curb the unethical practice followed by Institutional sales?
- 2.) According to you, list down the possible alternatives that Ravi has to ensure he does not lose his job nor does he lose the Institutional client.

ENHANCING CUSTOMER EXPERIENCE THROUGH AI IN E-GROCERY PLATFORMS

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ABSTRACT

Customers are everywhere. Artificial Intelligence has been gaining more and more prominence in the e-grocery sector to identify and suit the needs of customers. The concept of e-grocery stores came up in 2011, and since then it has grown at a rapid pace. For primary data collection, a self-designed questionnaire is floated to understand how consumers perceive the e-grocery shopping and what are their expectations from the same. Once the data is collected, to check the reliability of data Cronbach's Alpha test is performed. As part of the conclusion, the authors formulated a model, which can be considered by online grocery companies using AI, as well as companies developing AI systems to enhance the overall customer experience. Through this author will also be able to find out the gaps that exist between the customers and the companies and the factors that can help in the customer retention and satisfaction in e-grocery platforms. Further this will help in improving the customer relationship systems so that the overall experience of the customer enhances.

Keywords: Customer Satisfaction, Grocery e- tailing, Artificial Intelligence, Customer retention

I. Introduction

In this era, everyone wishes to solve their daily problems like grocery needs, in a cheaper and timely manner. The pandemic has turbocharged their use. In an advertorial in business standard dated 26th Feb, 21, Niranjana Chintan says "The leaders are turning agile by redefining their business models while capitalising on three key priorities- digital excellence, contactless engagement and dynamic customer insights." Such a transformation has undoubtedly made e-grocery stores highly efficient in fulfilling the needs of the customers. The innovations in chatbots and virtual assistants are going to reap great benefits. The upheaval of e-grocery stores has led to great deal of expectations coming out from the customers. The online pattern differs hugely from the offline pattern. Hence, it is very important to understand how the customer behaves and what are the expectations to maintain a good customer relationship and make deliverable outcomes in a contactless setting. A good AI system can ensure that most consumers' needs are satisfied. It can help maintain real-time and context aware interactions. In this ever-increasing competition scenario, the e-grocery platforms need to understand the

relevance of AI systems and cater to the needs of customers.

This paper aims to study some of the factors that play a huge role from the perspective of the grocery e-tailers and customers and discuss the challenges and opportunities that lay in disguise behind adopting this system. According to Roy Et Al, 2017- Customer experience in e-tailing is an antecedent of other factors. Customer experiences include three components- personalisation, convenience and service quality.

Personalisation includes user interface, content and interaction process. While we go to buy grocery items in the store, our senses play a huge role. Customers tend to see, touch, smell and then buy a product. This facility is lacking while we shop for groceries online. The interaction and the aura of a grocery shop does not resemble that of an online platform. This might create challenges and understanding this variable will give more insights.

Convenience in a way ensures that the customer can proceed with something without any difficulty in terms of time or place. It is the quality of a service provider of being useful, easy or suitable for someone. The grocery stores are present in the vicinity of the customers, sometimes too near, sometimes little far. The online grocery

platforms have brought these stores at home, increasing the level of convenience in terms of time and place.

The service quality which means that the service provided to the customers is of premium quality that includes the interface design, security, reliability and the customer service. Online grocery platforms' image is very sensitive, and they must keep on building the reliability and security all throughout. Any hurdle in the service quality might challenge the very base of the e-grocery platforms. Hence, keeping up with the quality parameter is a must. service quality is of a significant importance because the goods here are perishable and logistical operations can make or break the reliability of the platforms.

Through all this, we will be able to understand the dynamics around customer retention which makes sure that customer relationship is maintained throughout the present and in the future. Two factors that define it are- frequency of purchase and repurchase (the key feature of service quality).

Through this paper, the authors will focus on understanding the customer perspective of the e-grocery platforms along with their expectations. They will also aim at understanding how the customer experience can be enhanced through AI technology. The system can be used from before and after sales services to choosing the potential customers to logistics to delivery methods. The strategy should be made keeping in mind all the stakeholders for it to become a win-win situation in grocery stores.

II. Literature Review

There exists a bridge between customer expectations and customer satisfaction, so in order to reach the ultimate point of customer satisfaction, it is of the utmost importance that a firm fulfills the expectations of the customer. So in this regard, this paper aims to study how CRM systems in online grocery stores can satisfy the customers and what are the customer expectations from CRM. Where personalization, convenience and service quality are enhancing the overall experience

of the customer and helps the firms to retain their customers.

Nisreen Ameen, Ali Tarhini, Alexander Repel, Amitabh Anand, 2021 explained how cutting-edge technology and artificial intelligence can improve the shopping experience for consumers. They further highlighted the positive role of relationship commitment and significant mediating effects of trust in AI enabled customer experience. (Barak Libai, August, 2021) Which was further explained by Barak libai, Yakov Bart, 2020 suggesting that marketers should not only focus on technology and tools but should also consider the past relationship with customers. Mohannad A.M. Abu Daqar, Ahmed A.M. Smoudi, 2019 mentions that there is a positive relationship between customer experience and AI. They further elaborated that providing personalized customer services leaves a great impact in customer experience and helps the firm in a long way. In addition, they talked about integrating AI in such a way that it shortens the waiting time for consumers. Gede Juanamasta, Wi Made Wopita Wati, 2019 focuses on the fact that companies with good public image hold the upper hand while maintaining their CRM systems because it makes it easy for the consumers to share their details with the firm, which turns out to be the win-win situation for both the parties. Suman Kumar Deb, Ruchi Jain, 2018 explains AI benefits different areas of companies and CRM gets the most out of it. Bang Nyugen, Dilip S. Mutum 2012 gave eight propositions for CRM enhancement including privacy issues, CRM confusing practices, CRM exploitation etc. further quoting that transparency and fairness should be kept in mind while designing a CRM system. Andrew Green, Neil Woodcock 2011, mentions social media tie up with CRM systems for better customer engagement, quoting knowledge gained and built through SCRM will create a good experience for both the ends. Paul Greenberg 2010, focuses on the requirement of transparency, convenience and quality from the customer's part to meet their expectations and satisfy them to their best. Marianna Sigala 2004, talks about

alignment of CRM management and CRM performance to avoid discrepancies

Through the study of these research papers, it can be concluded that to enhance the overall customer experience it is not only the one factors that needs to be fulfilled but a combination of various aspects and factors like privacy concerns, transparency, alignment of management and performance and many more that needs to be understood in order to enhance the customer experience. It can be made out from the paper that personalization, convenience and service quality are not being considered to a great extent. So, we would like to go beyond it and explore this unexplored side.

III. Research Methodology

A. Data

Data is collected through primary sources like self-designed questionnaires and expert interviews. For the primary survey, a convenience sampling method was used and the questionnaire was floated in the Delhi-NCR region.

B. Variables

- 1. Personalization:** It stands out to be the concept where information is tailored or painted according to the needs of a single user and contributes to the customer experiences. Epsilon research states that more than 80% of the shoppers are more likely to buy from a company that offers personalised experiences. Personalization attracts the customers and hence gives them the sense of belongingness and the reason to stay with the organization/ store. Grocery items normally have a shorter sales cycle, the impact of personalisation in such a scenario can be a blessing, as it may help in improving the delightful experiences and customer engagement, giving higher conversions and return on investment. One of the primary concerns that lay with personalization is privacy issues. According to a study, more than 86% of the consumers are very concerned about their privacy issues.
- 2. Convenience:** It could be defined as the ability to complete a task in the shortest

span of time with the least wastage of human energy i.e., ease in doing or completing a task. A convenient service is determined by saving time and efforts of customers, which persuades the customer to retain themselves with the place. Saving time and money on routine jobs is one of the key features of e-grocery stores, enabling them to spend time on other important tasks. Grocery needs emerge on a regular basis. In terms of convenience, e-grocery stores give the advantage of not standing in the big lines, adhering to the store timings, making multiple trips in case of forgetting something, or unavailability of a product at one time. While it is likely that the products may or may not be available at a particular time on the website as well, the convenience factor varies in online and offline. While for some customers, buying online might be convenient, it may not be the same for others.

- 3. Service quality:** According to Lewis and Booms, "Service quality measures the extent to which the service provided matches customers' expectations, and meets the expectations". Service quality is traditionally defined as the difference between expected and perceived service and assumed by how customers perceive a brand's offerings (Parasuraman et al ,1994). The metric of service quality is indeed very subjective. It is directly proportional to the worth of the product. It includes the right quality of the product, at the right price at the right place and time, of the right size and if any positive change though, would directly result in higher satisfaction. Service quality in e-grocery stores happens to be of utmost priority as it has to be directly consumed by the customers. What more is to see, how much is the degree of importance that the customers tend to give to the variable.
- 4. Customer Retention;** The Pareto principle says that 80% of the sales come from 20% of the customers and clients. It is a concept of holding the customer with the organization i.e. retaining the customers by providing them the best

services. Customer retention is determined by the frequency of purchase and repurchase made by the customers. Customer retention is a reflection of trust and expectations of the best from the supplier. This variable will help

in understanding the truest nature of e-grocery stores and the expectation that its customers and consumers have from it. All these above variables lead to customer retention.

C. Conceptual Framework

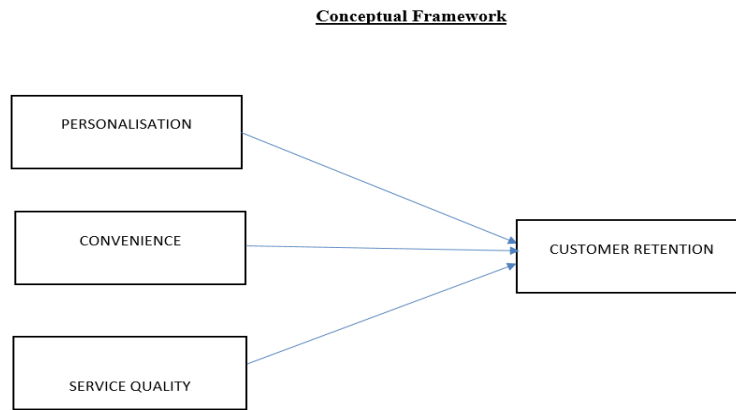


Fig. 1 Conceptual Framework

IV. Data Analysis and Interpretation

Measurement Scales

The measurement items (all statements) for all constructs were adopted from previous

studies. Also, multiple items were used to measure each factor. For each item, a seven-point Likert Scale is used ranging from "Strongly Disagree" to "Strongly Agree".

Table 1. Conversion of Likert Scale into Numerical Scale

Likert Scale	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
Number	1	2	3	4	5	6	7

Reliability Analysis

For checking, the reliability of the questionnaire and reliability of each factor Cronbach's Alpha test is done.

Reliability Statistics

Cronbach's Alpha	N of Items
.931	17

From the above table, Cronbach's Alpha value is 0.931, so we can say that the questionnaire is reliable.

Reliability Results as per factors

Service quality

Reliability Statistics

Cronbach's Alpha	N of Items
.922	4

Retention Reliability Statistics

Cronbach's Alpha	N of Items
.845	5

Convenience

Reliability Statistics

Cronbach's Alpha	N of Items
.959	4

Personalisation Reliability Statistics

Cronbach's Alpha	N of Items
.933	3

From the above tables of reliability as per factor the combined Cronbach’s Alpha for each variable is more than 0.7, which means that all the variables and contributing statements are reliable.

Now, we have used EFA (Exploratory Factor Analysis) to explore the construct under each variable. PCA (Principal Component Analysis) method is used with Varimax Rotation.

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.897
Bartlett's Test of Sphericity	Approx. Chi-Square	1798.516
	df	120
	Sig.	.000

This test fulfils the assumption of KMO, which needs to be more than 0.6, and here it is 0.897 which means that sample is adequate up to 89.7%. In addition, the significant value should be less than 0.05 and here the P-value is 0.000, which means the result is appropriate and normality is achieved. Now we will move ahead with communalities. The basic assumption about communality is that it should be more than 0.5 and in the below table it is achieved as all the values are above 0.5.

Communalities

	Initial	Extraction
SQ 1	1.000	.814
SQ 2	1.000	.849

SQ 3	1.000	.858
SQ 4	1.000	.732
R1	1.000	.617
R2	1.000	.588
R3	1.000	.778
R4	1.000	.718
R5	1.000	.557
C1	1.000	.848
C2	1.000	.842
C3	1.000	.863
C4	1.000	.821
P1	1.000	.741
P2	1.000	.700
P3	1.000	.689
Extraction Method: Principal Component Analysis.		

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.583	53.642	53.642	8.583	53.642	53.642	5.476	34.225	34.225
2	2.285	14.279	67.921	2.285	14.279	67.921	3.368	21.047	55.272
3	1.148	7.178	75.099	1.148	7.178	75.099	3.172	19.827	75.099
4	.781	4.883	79.982						
5	.601	3.753	83.736						
6	.521	3.259	86.994						
7	.436	2.723	89.718						
8	.363	2.269	91.987						
9	.276	1.722	93.709						
10	.229	1.432	95.141						

11	.197	1.234	96.374						
12	.186	1.165	97.539						
13	.121	.758	98.297						
14	.104	.648	98.945						
15	.089	.556	99.502						
16	.080	.498	100.000						
Extraction Method: Principal Component Analysis.									

The above table shows the total variance explained by the factors and it is 75.0997

which is satisfactory. This states that 75.099% of variance is explained by mentioned 3 factors in the model.

Rotated Component Matrix^a

	Component		
	1	2	3
C3	.900		
C1	.886		
C2	.873		
C4	.848		
P1	.787		
P3	.729		
P2	.716		
SQ 2 Security		.836	
SQ 3 Reliability		.822	
SQ 1 Interface design	.458	.760	
SQ 4 Customer service		.757	
R3			.846
R4			.842
R1			.739
R2			.691
R5			.571
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.			
a. Rotation converged in 5 iterations.			

The above table shows satisfactory KMO Values. Hence we can say that we are able to extract the variables. Therefore, from this table, we can get the statements and appropriate factors, and all the criteria are met.

V. Findings & Conclusion

While retailers need to implement innovative technology, it is pivotal to understand how customers perceive the technology and with the help of better personalisation, providing service quality and making more convenient usage of technology can help in better

retention of customers. The three components or the variables have reinforced the importance of applying AI in enhancing the customer experience in e-grocery stores. The important points that can be concluded from the above study are that all the factors are reliable and all the statements are considered and extracted in EFA, so the model is the best fit and can be used by the E-Grocery industry, to make the more efficient and effective use of the technologies in the e-grocery segment and hence improve the customer engagement- frequency of purchase and repurchase.

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MATERNAL AGE ON FERTILITY RATE AMONG THE SANTALS AND TANTIS: A CASE STUDY IN THE TEA GARDENS OF LAKHIMPUR DISTRICT

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Introduction

Maternal age, particularly age at menarche and age at menopause vary from population to population and society to society. According to Freedom et. al (1981) Udry and Cliquet (1982), women with early onset, as compared to those with late age at menarche are relatively more prone to earlier pregnancy and earlier child births for a given exposure to the risk of conception (cf. Bhasin and Nag, 2002). Ghosh and Kumari (1973) have rightly suggested that a wide variation in menstrual cycle is responsible for differential fertility in man. For both social and medical perspectives, it is often considered the central event of female puberty, as it signals the possibility of fertility. Girls experience menarche at different ages. The timing of menarche is influenced by female biology, as well as genetic and environmental factors, especially nutritional factors. Menstruation is a biological event imbued with social, cultural and personal significance (Marven et.al, 2003).

Menopause is defined as the cessation of menstrual cycle in woman and is caused by ovarian failure. Worldwide median age at which the menopause generally occurs is 52 years (Rees and Purdie, 2006). Various bio-social factors are responsible for early and late age at menopause; like body size, body shape, blood pressure, menarcheal age, socio-economic status, age at first child birth, parity, income, education and dietary habits (cf. Pathak and Parashar, 2010).

The age at marriage is one of the major parameter for differential fertility. The general expectation is that the higher the age at marriage, the lower the fertility rate. The age at marriage in developed countries has by and large been observed to be higher than in the developing ones (Fernando, 1982 cf. Bhasin and Nag, 2002). Pearl (1939) opines

that contraception is less effective than age to control fertility.

The Objective

The objective of the study is to understand the effect of maternal age of fertility performance of the Santals and the Tantis of Lakhimpur district of Assam.

The People

The present study has been carried out in two ethnic groups, namely, the Santals (tribe) and the Tantis (caste). Both the population belong to the tea garden labour population of Assam. The Santals, one of the populous tribal communities of India are mainly found in the districts of Mayurbhanj, Keonjhar and Balasor in the state of Odisha. Besides, they are also found in the neighbouring Jharkhand, West Bengal, Bihar and Assam. This tribe was brought to Assam to work as a tea workers in the tea gardens from Jharkhand, West Bengal and Bihar. Various researches and studies approve that the Santal had existed in Assam. Since 150 A.D. They are Kolarian aborigines of India among the Mundari group of Proto Australoid origin. They bear common features of Austric people. They are generally short in stature, but they have sturdy limbs. Among them the flat nose with a sunken, ridge is fairly common. They frequently have wavy hair, with black eye and dark skin color. The Santali dialect is the only medium of conversation among them. Their religion is Hinduism. A good number of them in Assam have accepted Christianity.

The Tanti is a Hindu caste found in the state of Bihar and Bengal in India. In July, 2015, the Tanti was granted the status of schedule castes in Bihar. But in Assam, this group was classified as MOBC. The word 'Tanti' is derived from the Hindi word *tant* which means loom. They were traditionally

weavers. They are found in South Bihar, Rachi in Jharkhand and also in Orissa. A good number of them are found in Assam. They call themselves by the names of Kalahari, Kondri, Sambalpuria, Pan tanti, Tantubai and Saibasias. They speak Panchapargania dialect. Linguistically, they belong to Austro-Asiatic linguistic family. Their own dialect is known as Sambalpuria dialect. They now speak Sadni (tea garden dialect) which is a mixture of Assamese, Hindi and their ancestral dialect. They are of Proto-Australoid origin.

Materials and Method

The present study has been conducted among the Santal and the Tanti population of Lakhimpur district of Assam. For the purpose

of data collection, a total of seven tea gardens in the Lakhimpur district were selected. The present study is confined to 400 ever married women, out of which 200 women from Santals and 200 women from Tantis of age at 15-65 years who have given birth to at least one live-birth and that the child is alive at the time and the husbands are also still alive at that time have been considered for investigation. The structured schedule was applied to collect the data. The collected data are quantified and analysed statistically. The data are presented in terms of mean, standard deviation, standard error and proportions/percentages. The difference between two means are tested using t-test.

Results and Discussion

Table – 1: Distribution of ever married women according to age

Present age group	Santal		Tanti	
	No of women	%	No of women	%
15-19	8	4.00	9	4.50
20-24	22	11.00	27	13.50
25-29	27	13.50	42	21.00
30-34	27	13.50	34	17.00
35-39	26	13.00	32	16.00
40-44	39	19.50	20	10.00
45-49	21	10.50	21	10.50
50-54	15	7.50	8	4.00
55-59	7	3.50	3	1.50
60-64	8	4.00	4	2.00

Table - 1 shows the distribution of evermarried women according to the present age among the Santal and the Tanti populations. The women are categorized in different age groups taking five years interval in each age group. Out of 200 Santal women, 39 (19.50%) fall in the age group of 40-44 years. It is followed by the women in the age group of 25-29 years (13.50%) and 30-34

years respectively. Only 7 (3.50%) women are reported in the age group of 55-59 years. Out of 200 Tanti women highest number of women 42 (21.00%) fall in the age group of 25-29 years. It is followed by 34 (17.00%) and 32 (16.00%) women under the age group of 30-34 years and 35-39 years respectively. Only 3 (1.50%) women is in the age group of 55-59 years.

Table – 2: Distribution of women according to age at Menarche

Age at Menarche	Santal		Tanti	
	No. of women	%	No. of women	%
11	23	11.50	28	14.00
12	48	24.00	59	29.50
13	66	33.00	58	29.00
14	52	26.00	45	22.50
15 and above	11	5.50	10	5.00

Mean 13.40 ± 0.08
 13.25 ± 0.08
 t-Value 1.33, non significant

Table - 2 reveals the distribution of women according to age at menarche. Menarche occurs from 11 years to 15 and above years in both the population groups. The highest frequency of the occurrence of the first menstruation is noted in 13 years in the Santals (33.00%). It is followed by 26.00% of women in 14 years of age. Whereas among the Tanti the highest frequency 29.50% of women have experienced their first menstruation in 12 years of age. It is followed by 29.00% of women in the 13 years of age. The mean menarcheal age among the Santal women is 13.40±0.08 and among the Tanti women is 13.25± 0.08. However, When the t-test of significance is applied, the age at menarche shows no significant differences between the Santal and the Tanti population.

From the tea gardens of Assam, we have information on Munda (12.94± 0.06 years), Oraon (13.31±0.07 years) and Savar (13.15± 0.07 years) women, (Phukan Gogoi and Sengupta, 2014); Oraon (13.19± 0.17 years; Ahmed Das and Konwar, 2002); Santhal (13.24±0.12 years, Buzarbarua, 1983); and the Munda (12.42±0.10 years; Buzarbarua, 1983) population. Both the population groups show more or less similar mean menarcheal age with the above mentioned tea tribes except the Munda. Among the Idu Mishmis of Arunachal Pradesh the mean age at menarche is low i.e. 12.92±0.04 (Das, 2014). Baruah (2007) reported the mean menarcheal age among the Mishings of Assam which is 12.97±0.08. Among the Ahom also the mean menarcheal age is 12.24±0.09 years reported by Baruah (2007). The mean menarcheal age among the Santal and Tanti women age at menarche is higher than the above mentioned population groups of Assam and Arunachal Pradesh.

Table – 3: Frequency distribution of women according to age at marriage

Age at Marriage	Santal		Tanti	
	No. of women	%	No. of women	%
13-15	28	14.00	27	13.50
16-18	58	29.00	81	40.50
19-21	52	26.00	63	31.50
22-24	35	17.50	17	8.50
25-27	24	12.00	9	4.50
28-34	3	1.50	3	1.50
Mean ± S.E	19.67±0.27		18.64±0.19	

t-value = 3.12, significant at 5% level
 The distribution of women according to age at marriage under studied population is revealed by the Table - 3. In both the population the age at marriage ranges from 13-34 years. Among the Santals the highest percentage (14.50%) of women got married between 16 - 18 years of age. It is followed by 13.00% of women who got married in the ages of 19-21 years. The lowest women (0.75%) have been seen in between the ages of 28-34 years. The mean age at marriage of Santal women is 19.67 ± 0.27. Among the Tantis the highest percentage (20.25%) of women got married between 16-18 years of age. It is followed by

15.75% of women who got married in between the ages of 19- 21 years. The lowest women (0.75%) have been seen in between the ages of 28 – 34 years. The mean age at marriage of Tanti women is 18.64 ± 0.19. However, the t–value (3.12) shows a significant difference at 5% level in between the two population groups. The mean age at marriage among the present Santal sample is more or less similar to the Munda (19.70±0.11 years), Oraon (19.26 ± 0.13 years) and Savar (19.19± 0.12 years) by Phukan Gogoi and Sengupta, 2014. The Santhal (Buzarbarua, 1983; 18.26± 0.27 years) and the Munda (Buzarbarua, 1983; 18.50± 0.21 years) of Assam shows a close similarity to the present Tanti sample. Both

the studied populations show a smaller mean value than the Oraon (Ahmed Das and Konwar, 2002; 20.50± 0.23 years) of Assam.

The mean age at marriage among the Mishing women of Assam has been reported by Baruah (2007) and Das (2009) as 20.98±0.27 and 20.98±0.27 years respectively. Among the Sonowal Kachari women of Assam the mean age at marriage

is reported by Baruah (2007) as 20.17±0.24 years. Das (2014) reported among the Idu Mishimis of Arunachal Pradesh the age at marriage is 20.29±0.12 years. Saikia (2015) reported the age at marriage among the Sonowal Kacharis of Assam 24.30±0.14 years. While comparing it is observed that in both the studied populations the mean age at marriage is lower than some other population groups of North East India.

Table -4: Distribution of women according to age at Menopause

Menopausal Age	Santal		Tanti	
	No. of women	%	No. of women	%
38-39	8	11.10	6	11.76
40-41	8	13.90	9	17.65
42-43	16	23.60	6	11.76
44-45	20	29.85	9	17.65
46-47	10	14.92	11	21.57
48-49	10	14.92	10	19.65
Mean ± S.E	43.18±0.28		44.07±0.45	

t- Value = 1.68, non significant

Table – 4 shows the distribution of women according to age at menopause. Their age at menopause is ranges from 38 to 49 years. Among the Santal peak is seen in between 44- 45 years of age (29.85%) whereas among the Tanti it is in between 46-47 years (21.57%). The mean menopausal age among the Santal is 43.18 ± 0.28, whereas among the Tanti it is 44.07± 0.45. When the t- test is applied, it suggests no significant differences in between these two population groups.

The mean age at menopause among the Santal women is somewhat similar with the Santhal (43.98±0.24 years, Buzarbarua, 1983), Munda (43.99±0.17 years, Buzarbarua, 1983) of Assam. The mean menopausal age is higher among the Santal under investigation than the Munda (42.83±0.13years), Oraon (42.41± 0.12 years) and Savar (42.39±0.08 years) studied by Phukan Gogoi and Sengupta, 2014. The mean age at menopause in the present Tanti sample is somewhat higher than the above population

groups except the Oraon (45.52±0.56 years, Ahmed Das and Konwar, 2002) of Assam.

The age at menopause among the Koch and Brahmin is 45.31±0.57 and 45.93±0.65 reported by Das (1995). The mean age at menopause is 45.85 among the Garos as reported by Ahmed Das and Saikia (1999). Saikia and Dutta Das (2006) reported 40.98 mean age at menopause among the Tangsas of Upper Assam. Baruah (2007) also reported the mean age at menopause among the Ahom, Mishing and Sonowal Kacharis of Assam as 46.80, 48.40 and 47.12 years respectively. Saikia and Baruah (2009) reported the mean age at menopause as 45.27±0.98 years among the Kaibartas of Assam. Das (2014) observed 45.41±0.29 years as a mean menopausal age among the Idu Mismis of Arunachal Pradesh. The mean age at menopause has been reported by Saikia (2015) as 45.81±0.219 years among the Sonowal Kacharis of Assam. In both the population group the mean menopausal age is higher than the Tangsa women but lower than the other mentioned population groups of North East India.

Table – 5: Details of ages at Women’s reproductive events

Age at event	Santal	Tanti
Mean age at menarche	13.40±0.08	13.25±0.08
Mean age at marriage	19.67±0.27	18.64±0.19
Mean age at menopause	43.18±0.28	44.07±0.45

Table - 5 shows the details of menarche, marriage, menopause among the Santal and the Tanti women. The mean age at menarche among the Santal women is 13.40 ± 0.08 years, whereas among the Tanti it is 13.25 ± 0.08 years. The Santal women represent 19.65 ± 0.27 mean age at marriage, whereas it is 18.64 ± 0.19 years among the

Tantis. The mean age at menopause among the Santals are 43.18 ± 0.28 years, whereas among the Tantis it is 44.07 ± 0.45 years. The reproductive span among the Santal women is around 30 years, whereas among the Tanti women it is about 31 years. It is observed from the table that the reproductive span among the Tanti is slightly longer than the Santal.

Table – 6: Fertility pattern by age menarche

Age at Menarche (age group in yrs)	Santal			Tanti			t-value	Probability Level
	No. of women	No. of live birth	Mean±S.E.	No. of women	No. of live birth	Mean±S.E.		
Early (≤ 11) %	23 11.50	57 9.48	2.48 ± 0.68	28 14.00	93 18.38	3.32 ± 0.26	1.15	Non Significant
Intermediate (12-13) %	114 57.00	536 59.23	3.12 ± 0.55	117 58.50	271 53.56	2.32 ± 0.09	1.43	Non Significant
Late (≥ 14) %	63 31.50	188 31.28	2.98 ± 0.84	55 27.50	142 28.06	2.58 ± 0.13	0.47	Non Significant

The fertility pattern by age at menarche of Santal and Tanti women are shown in the Table – 6. According to the age at menarche the women are classified into three categories, i.e. Early (≤ 11), Intermediate (12-13) and Late (≥ 14) age.

Among the Santal out of 200 ever married women, the highest frequency of women is 57.00% as well as the highest frequency of live birth is 59.23% observed among the women who attained their menarche in between the ages of 12-13 years. It is followed by 31.50% women and their frequency of live birth is 31.28% who attained their age at menarche at ≥ 14 years. Lowest frequency of women (9.48%) as well as live birth (9.48%) have been found among women who attained their menarche at ≤ 11 years. The mean number of live birth is highest (3.12 ± 0.55) in the women who have attained their menarche in between the age of 12 to 13 years. The mean number of live birth in the women who have attained their menarche in the late age (≥ 14 years) is 2.98 ± 0.84 . 2.48 ± 0.68 mean number of live birth is found in the women who have attained their menarche in the early (≤ 11) age.

Among the Tantis out of total 200 ever married women the highest 117 (58.58%) women are found in the ages who attained their menarche in between 12-13 years of age. It is followed by 55 (27.5%) women who have attained their menarche at ≥ 14 years. Only 14.00% of women show their menarcheal age at ≤ 11 years. The mean live birth is highest (3.32 ± 0.26 per women) among the women who attained their menarche at ≤ 11 years. It decreases to 2.58 ± 0.13 live birth per women who attained their menarche at ≥ 14 years. 2.32 ± 0.09 live birth is found in the women who attained their menarche in between the ages of 12-13 years. It is apparent from the table that live birth slowly increases with the increase age at menarche among the Santals but among the Tantis higher live birth is found among the menarche of younger ones. When the t – test of significant is applied, it shows no-significant differences in between these two population groups in respect of the early (< 11), intermediate (12-13) and late (≤ 14) age at menarche (1.15, 1.43 and 0.47 respectively).

Table -7: Fertility pattern by age at marriage

Age at marriage (age group in yrs)	Santal			Tanti			t-value	Probability level
	No. of women	No. of live birth	Mean±S.E.	No. of women	No. of live birth	Mean±S.E.		
≤19 %	92 46.00	268 44.59	2.91 ± 0.99	124 62.00	320 63.24	2.37 ± 0.16	0.54	Non significant
20-25 %	97 48.50	298 49.58	3.07±1.00	64 33.50	161 31.82	1.77±0.14	1.29	Non significant
≥26 %	11 5.50	35 5.82	3.18 ±0.99	9 4.50	25 4.94	1.73 ±0.35	1.38	Non significant

Table -7 shows the fertility pattern by age at marriage. The present study reveals that among the Santals, the highest frequency of live births (49.58%) have been found in the women who got married within 20-25 years of age. It is followed by 44.59% live births in the women who got married at ≥ 26 years of age. The mean live birth is high (3.18±0.99) among the women who got married ≥26 years of age. It decreases to 2.91±0.99 live birth among the women who got married ≤19 years of age. Lowest frequency of live birth (5.50%) is recorded among the women who got married ≥26 years of age. It decreases to 2.91±0.99 live births among the women who got married ≤19 years of age.

On the other hand, among the Tantis the highest frequency of live birth (63.24%) is recorded among the women who got their marriage ≤19 years of age. It is followed by 31.82% live births among the women who got their marriage within 20-25 years of age. Lowest frequency of live birth (4.94%) is

recorded among the women who got their marriage at ≥26 years of age. The mean number of live birth (2.37±0.16) is highest among the women who got their marriage at ≤19 years of age. It decreases to 1.73±0.35 among the women who got married at ≥26 years. The number of live birth among the women decreases with the increase of their age at marriage. Several researchers like Coale and Tye (1961), Choudhury (1984) and many others have pointed out that increase of age at marriage decline the fertility rate which is similar to the Tanti population. Saikia (2015) also observed that among the Sonowal Kacharis the fertility rate is decreased with the increase age at marriage. Though a reverse relationship between the age at marriage and fertility rate has been observed among the Santal yet when the t-test of significance is applied in all the age groups of marriage, it shows a non significant relationship in live birth between the Santal and the Tanti (t-values = 0.54, 1.29 and 1.38 respectively).

Table – 8: Fertility pattern of women by age at Menopause

Age at Menopause (age group in yrs)	Santal			Tanti			t-value	Probability Level
	No. of women	No. of live birth	Mean±S.E.	No. of women	No. of live birth	Mean±S.E.		
≤40 %	14 20.90	48 19.59	3.43± 0.42	12 23.00	34 19.54	2.83± 0.30	0.23	Non significant
41-45 %	38 56.72	139 56.73	3.66± 0.31	18 35.29	53 30.46	2.94± 0.42	1.38	Non significant
≥46 %	15 22.39	58 23.67	3.87± 0.49	21 41.18	87 50.00	4.14± 0.33	0.46	Non significant

Table - 8 shows the fertility pattern of women by their age at menopause. The menopausal age of women are customarily classified in to three categories viz. early (≤ 40 years) age,

intermediate (41-45 years) age and late (≥46 years) age respectively. Among the Santal the highest number 38 (56.72%) are observed among the women of 41-45 years. 22.39% of women have experienced their menopause at

≥ 46 years of age. The lowest frequency (20.90%) of women have attained their menopause at ≤ 40 years of age. The highest frequency of live birth (56.73%) is recorded among the women who have attained their menopause in between 41-45 years of age. 23.67% live birth is recorded among the women who have attained their menopause at ≥ 46 years of age and 19.59% women have attained their menopause at ≤ 40 years of age. The mean number of live birth (3.87 ± 0.49) is highest among the women who have attained their menopause at later ages (≥ 46 years). It is followed by the women who have attained their menopause at 41-45 years of age (3.66 ± 0.31). The lowest average number of live birth (3.43 ± 0.42) is observed in the women who have attained their menopause at ≤ 40 years.

On the other hand, among the Tanti the maximum frequency of women (41.18%) are observed in the women who have attained their menopause at ≥ 46 years of age. The highest live birth and highest mean live birth are also observed in the same age group (50.50% and 4.14 ± 0.33). It is followed by 35.29% of women who have attained their menopause in between 41-45 years of age and their live birth frequency is 30.46% and mean live birth is 2.94 ± 0.42 . Lowest frequency

(23%) of women have attained their menopause at ≤ 40 years of age and their live birth is 19.54% and mean live birth is recorded as 2.83 ± 0.30 . However, when the t-test of significant is applied, it shows no significant differences in live births considering the all the menopausal age groups. In both the population groups the mean number of live birth is increased with the increase age at menopause which is similar to the Sonowal Kacharis of Assam (Saikia, 2015).

The difference in the number of live birth in between the Santal and the Tanti is statistically not significant regarding the age at menarche, age at marriage and age at menopause.

Conclusion

The researches among the tea garden women are essential, as they constitute the largest women labour force in a single industry in Assam. The population of this community exhibits an upward trend, but their scope of employment corresponding to this rise is limited. In spite of its relevance and importance the fertility of female workers of tea garden have not been adequately studied by social scientists. To fillup the gap the study has been undertaken.

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NON-PERFORMING ASSETS IN INDIAN BANKS AND ITS IMPACT ON EARNINGS - A COMPARATIVE STUDY

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ABSTRACT

Advance or loan in lieu of which the interest or principal amount remains outstanding for 90 days' time period is termed as NPA. Then this loan can further be categorized into substandard assets, doubtful assets or loss assets based on the basis of time period of NPA. As per India's central bank (RBI), India's banking sector is having a whopping NPA of 8.5% of their total advances as of March 2020 and this could reach 14.7% by March 2021. NPAs is very severe issue in case of Public banks but banks in Private sector have performed better in managing of NPAs. This study examines impact of NPAs or poor loans on earnings of the banks. The current paper is based on 20 public sector banks (PSBs) and 21 private banks (PrSBs) and the period of the study is from 2015-19. The outcomes of the paper revealed that growth of NPAs is higher in PSBs than PrSBs. It is also found that these NPAs have a substantial impact on earnings of the banks.

Keywords: NPAs, Indian Banking Sector, Financial Health, Economy, RBI.

Introduction

Growth of NPA's in India's banking industry has become a hot topic for discussion not only for researchers but also the politicians, the reason being its huge impact on overall economy. When a bank advances money to its customers as loan, it as an asset for the bank, but if interest on this amount or this whole amount is not paid to the bank within a time period of 90 days when it falls due, it is termed as non-performing asset. So, in simple terms till the asset or the lent amount is generating revenue to the bank it does not become a NPA, but when it haltsgenerating income to the institution, it becomes a NPA. The priority sectors of India includes agriculture, education sector, exports, small-scale businesses etc. as identified by the government in order to give these areas more importance when it comes to advancing. But this lead to an increase in non-performing assets to banks and as per Narasimhan committee (1998) 47% of non-performing assets came from priority sector. Since then our NPA's have amplified year after year and this has led to decrease in the earnings of the banks. Banks not merely help in creating jobs but do one of the most significant activity in an economy which is mobilization of savings and lending of this amount in different avenues. So, for an economy to function well it is important

that most imperative pillar of this economy is also stable i.e. banks. The problem of NPA's has severely impacted the banking segment in India and this problem is very deep rooted in public sector of Indian banking industry due to various internal and external reasons like wrong technology, technical problem, business failure, Government policies, willful default etc. In the current pandemic situation the problem of NPA's has worsened and it will a huge impact not just on banking sector, but also on overall economy of our country.

Literature Review

Bawa et al. (2018) NPA's are those assets which do not generate income through interest earned on principal amount. NPA's result from default of interest or principal amount and it may be intentional or unintentional default. An asset becomes non-performing asset in event of non-payment of interest or principal when due. Samir, Dr. and Kamra, Deepa (2013) Non-performing asset is not just non-performing, but it also makes the banker non-performing because it delays recycling of funds, denies interest income, and decreases profits. NPA's reduce the overall income of banks. Pillai, K. (2018) the increase in bad debts poses a threat to other productive assets of banks and our well knitted banking structure has not facilitated banks to get insulated from potential

credit risk. As NPA's increase, there is an increase in the risk also. As per Dhar, S. (2016) NPA's are like virus which not just effect banks liquidity but profitability as well. Liquidity is an important factor which may impact the survival of a bank and profitability being the measure of economic success is also important. Chilukuri, S., & Madhav, V. (2017) found that there is association between loans and outstanding's of selected banks and they also concluded that outstanding's have a huge impact on NPA's. Which means higher the outstanding's more are the chances of NPA's. Jain, R., (2019) found that smaller banks have performed better in keeping the NPA ratio lower as compared to medium and large banks. Which means bigger banks have failed to contain the virus of NPS's whereas smaller banks have managed NPA's better. Kadanda, D., & Raj, K. (2018) found that earnings of PSBs have dropped and there is upsurge in poor loans of public segment banks. Study also found past NPA's, operating efficiency, capital adequacy and interest rates are main causes of growth in NPA's. Which means operating efficiency with capital adequacy and interest rates can help in managing NPA's.

There are many studies which have compared growth of Non-performing assets in private and public sector banks and Agarwala & Agarwala, N. (2019), Misra, S., & Rana, R. (2019) and Sharma, D. (2019) found that progress of NPA's is lower in Private sector banks (PrSBs) than that of PSBs, public banks and including SBI have failed to manage this issue of poor loans efficiently. The gross non-performing asset ratio of the PSBs is larger than that of the PrSBs, which means that banks in private segment have superior asset quality management. Public sector banks have not managed the loans efficiently, which has led to the increase in NPA's as compared to private sector banks. Most of the studies have found that private sector banks have performed better in management of non-performing assets as compared to public sector banks.

There are various measures taken by banks and Dr. T.R. Gurumoorthy, D., & B. Sudha, B. (2011) found that banks public sector have implemented stringent measures to overcome the problematic state of NPA's but this problem of NPA's is still there and is very

severe in the PSBs as compared to PrSBs. Mishra, S., & Aspal, P. (2011) found that subsequently the implementation of SARFAESI act has considerably reduced the proportion of poor loans in PSBs in India. As per the study there was a decrease of 80% of the poor loans in public sector banks after the enactment of this act. Which means prior to SARFAESI act there were not much legal options available which could have helped to tackle NPA's. This brings us to the point to say that there should be enough legal options available to the bankers also which can help them to reduce the burden of non-performing assets.

There has been lot of research conducted on NPA's in Indian banking sector, but it has been limited in terms of number of banks selected for the research and most of these studies were conducted before 2019. There was a measure change in Indian insolvency and bankruptcy proceedings with the introduction of IBC-2016. This study will be helpful in assessing the impact of IBC-2016 on NPA's post 2016.

Need for the Study

Assets of an institution do have an impact on overall financial wellbeing of the institution and if the asset quality is poor, the overall financial health of banks will deteriorate. Banking sector in India has seen a spike in the NPA's for the last few years. But the major chunk of NPA's is in PSBs than PrSBs. This study analysis the growth of NPA's in PSBs and PrSBs over the past half decade and also analysis the influence of NPA's on earnings so that we can see whether there is a surge in NPA's of banks post 2015 and to have a comparison of growth in NPA's of PSBs and PrSBs in India.

Objectives

1. To see the growth of NPA's in Banking sector.
2. To compare the non-performing assets in PSBs and PrSBs.
3. To assess the impact of NPA's on earnings.

Methodology

This is a descriptive study and it is based on 20 public banks and 21 private banks. These banks were incorporated in this study based on

the availability of the data and the time period of the study is 2015 to 2019. For comparing the growth in NPA's percentages will were used and to assess the impact of NPA's on earnings, regression was be used. The study is confined to 41 banks in India with a time period of five years. The data from RBI reports will be analyzed using SPSS-24.

Data Analysis

The data was analyzed using excel and SPSS. Year 2015 was considered as base year and percentage increase in growth of NPA's were computed in comparison with base year.

Table 1: Percentage Increase in NPA's in PSBs (2015 as base year)

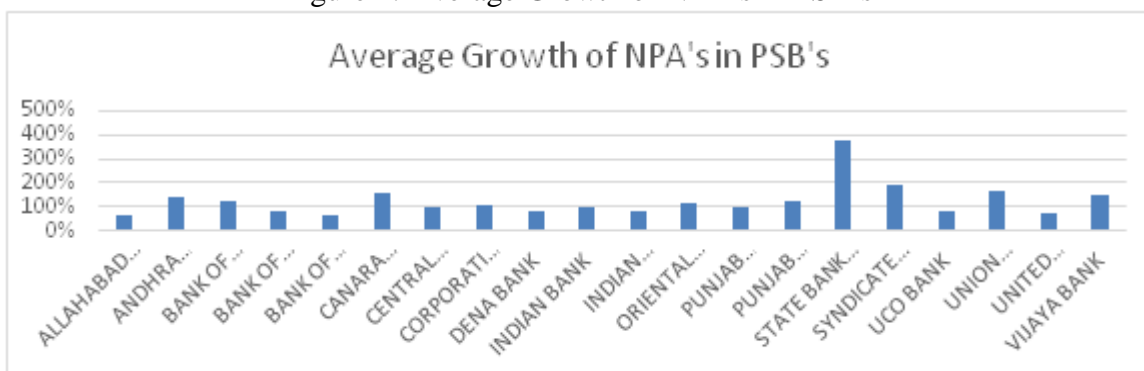
Percentage Increase in NPA's in PSBs (2015 as base year)					
BANK Name	2019	2018	2017	2016	2015
ALLAHABAD BANK	24%	105%	24%	72%	100%
ANDHRA BANK	146%	243%	146%	64%	100%
BANK OF BARODA	93%	191%	93%	140%	100%
BANK OF INDIA	41%	109%	41%	107%	100%
BANK OF MAHARASHTRA	11%	134%	11%	66%	100%
CANARA BANK	163%	227%	163%	138%	100%
CENTRAL BANK OF INDIA CORPORATION BANK	66%	155%	66%	95%	100%
DENA BANK	55%	215%	55%	105%	100%
INDIAN BANK	38%	160%	38%	74%	100%
INDIAN OVERSEAS BANK	116%	89%	116%	72%	100%
ORIENTAL BANK OF COMMERCE	46%	108%	46%	96%	100%
PUNJAB AND SIND BANK	96%	197%	96%	106%	100%
PUNJAB NATIONAL BANK	120%	103%	120%	30%	100%
STATE BANK OF INDIA (And its associates)	95%	216%	95%	130%	100%
SYNDICATE BANK	366%	685%	366%	388%	100%
UCO BANK	229%	244%	229%	135%	100%
UNION BANK OF INDIA	52%	122%	52%	81%	100%
UNITED BANK OF INDIA	194%	252%	194%	103%	100%
VIJAYA BANK	42%	153%	42%	50%	100%
Total Public Sector Banks	142%	203%	142%	158%	100%
	118%	226%	118%	134%	100%

Source: Data extracted from RBI reports

In the above table we can observe that the non-performing assets of all the 20 banks are growing and in year 2016, the overall NPA's of PSBs have grown by 134% compared to 2015. The increase has been highest in the year 2018 which was 226%. The growth of NPA's was

highest in SBI, followed by Syndicate bank and Union bank of India. We can also observe that even after the implementation of IBC-2016, this is an average growth of than 100% in public sector banks.

Figure 1: Average Growth of NPA's in PSB's



Source: Data extracted from RBI reports

Above the graph above we can see the average growth of NPA's from 2015 to 2019 in public

sector banks and the highest increase can be seen in SBI.

Table 2: Percentage Increase in NPA's of Private Sectors Banks (2015 Base Year)

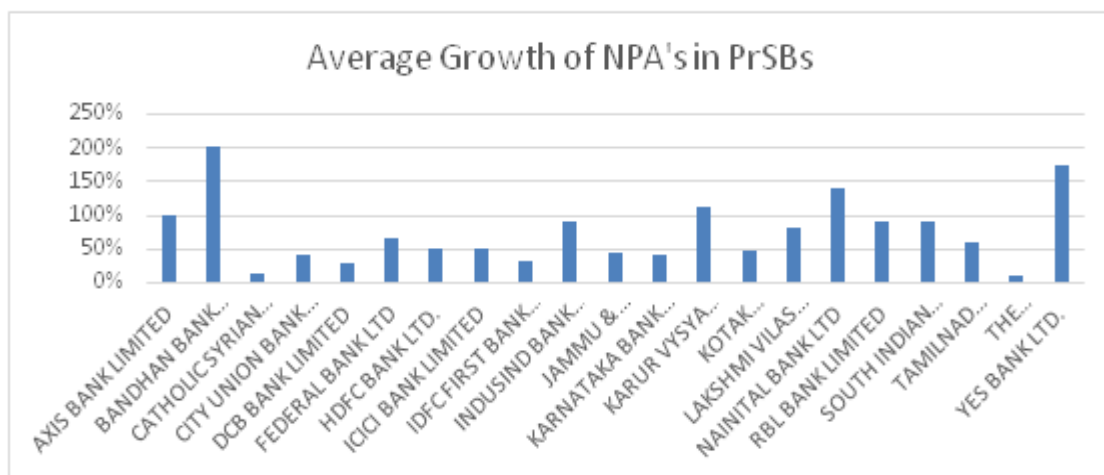
Percentage Increase in NPA's of Private Sectors Banks (2015 Base Year)					
Bank Name	2019	2018	2017	2016	2015
AXIS BANK LIMITED	-32%	92%	242%	92%	100%
BANDHAN BANK LIMITED	32%	183%	497%	100%	NA
CATHOLIC SYRIAN BANK LTD	-42%	-7%	30%	-5%	100%
CITY UNION BANK LIMITED	25%	16%	26%	39%	100%
DCB BANK LIMITED	5%	18%	28%	-8%	100%
FEDERAL BANK LTD	5%	65%	-1%	155%	100%
HDFC BANK LTD.	24%	41%	40%	47%	100%
ICICI BANK LIMITED	-52%	10%	95%	107%	100%
IDFC FIRST BANK LIMITED	24%	55%	-49%	100%	NA
INDUSIND BANK LTD	202%	70%	36%	53%	100%
JAMMU & KASHMIR BANK LTD	16%	15%	12%	75%	100%
KARNATAKA BANK LTD	15%	44%	23%	28%	100%
KARUR VYSYA BANK LTD	30%	80%	378%	-23%	100%
KOTAK MAHINDRA BANK LTD.	-7%	-3%	36%	107%	100%
LAKSHMI VILAS BANK LTD	3%	248%	81%	-23%	100%
NAINITAL BANK LTD	422%	-3%	42%	100%	NA
RBL BANK LIMITED	19%	65%	53%	222%	100%
SOUTH INDIAN BANK LTD	53%	110%	-43%	232%	100%
TAMILNAD MERCANTILE BANK LTD	24%	34%	90%	48%	100%
THE DHANALAKSHMI BANK LTD	-22%	17%	-14%	-24%	100%
YES BANK LTD.	242%	22%	277%	224%	100%
PRIVATE SECTOR BANKS	-18%	35%	79%	95%	100%

Source: Data extracted from RBI reports

In the above table we can see that from the year 2015 to 2016 there was an increase of 95% in NPA's of all 21 private banks, but there after the growth has decreased and it was negative

for the year 2019. We can also observe that there is a decreasing trend in growth of NPA's post introduction of IBC-2016.

Figure 2: Average Growth of NPA's in PrSBs



Source: Data extracted from RBI reports

In the above graph we can see the average growth of NPA's in private sector banks from 2015 to 2019. The highest NPA growth can be seen in Bandhan Bank, followed by Yes bank and Nanital bank.

Comparison of NPA's PSBs and PrSBs in India.

We will set up our hypothesis to check the difference using one way ANOVA.

H₀: NPAs of PSBs and PrSBs do not differ.

The results of ANOVA are as: ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1813537017.000	1	1813537017.000	15.675	.000
Within Groups	4627841500.000	40	115696037.500		
Total	6441378517.000	41			

In the above table, p = 0.000, which is < 0.05 hence therefore null hypothesis is rejected hence there is variation between the average NPAs of PSBs and PrSBs.

Impact of NPA's on Earnings

Let's set a hypothesis to see the impact of NPA's on earnings of the banks

H₀: NPA's do not impact earnings of banks.

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.893 ^a	.797	.791	19218.54200	.797	152.715	1	39	.000

The outcomes show significance, which means there is considerable impact of NPA's on Earnings of the banks (F, 1, 39) = 152.71, p < .05). The model explained 79.7% of variance in earnings.

Findings

Study displays that there is growth in non-performing assets of banks, which is a worrying thing for our economy. The growth of NPA's is excessive in case of PSBs, whose average growth rate stood at 139% over the last five years. The growth can also be seen in NPA's of PrSBs, but the average growth of NPA's in PrSBs stood at just 58% for the last five years. This shows the condition of NPA's is not really good in case of India's PSB's and this means they do not have efficient credit appraisal mechanism.

There was a major difference between the NPA's of PSBs and PrSBs, which is pretty clear from the average growth rate of NPA's and volume of NPA's. The outcomes of ANOVA have shown that there is a variation between the total NPA's of these two sectors of banks. The major chunk total NPA's in India's banking sector comes from public sector banks.

It was also found that with the introduction of IBC-2016, growth of NPA's has decreased, but there has not been any effect on NPA's of public sector banks which is worrying.

Non-performing assets have an effect of the earnings of the banks. The outcomes of study show that there is 79.7% variability caused by the NPA's in earnings of the banks. This shows how NPA's can have a substantial effect on the overall banks' profitability. NPA's can also effect liquidity of banks which becomes very vital for the existence of banks in short run and for maintaining liquidity to meet short term obligations.

Conclusion

NPA's are a cause of worry for all the banks because it not just effects the profitability of banks but also their liquidity, failing to maintain liquidity might lead to bankruptcy. Indian banking sector has failed to contain the growth of NPA's especially the public sector banks. There is a dire need to have a check on the growth of NPA's. The Indian banking sector needs to strength its credit appraisal system and put in place stringent measures so that they can bring down the volume and growth of NPA's.

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PCA FOR SENTIMENT DOMINANCE ANALYSIS OF DEMONETIZATION TWEETS

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ABSTRACT

Social Media data analysis involves improvement in every step of customer transactions, opinions to improve customer experience. Social media analytics is the practice of collecting and evaluating data from social networks such as Facebook and Twitter. It is frequently recycled by marketers to track online chats and talks, reviews, and communications about products and companies. These analysts mostly tries to get insights, opinions in form of sentiments of their stakeholders. But as sentiments are not exact science, existing traditional binary categorization of sentiment if significantly correlated with other variables of interest of sentiment integrated with data science and statistics for computer applications is need of time for continuous improvisation. So the current research work revealed insights of sentiments with dimension reduction with real glimpse of data and identified dominant components of sentiments by applying PCA to pre-processed demonetization Tweets data Sentiment Analysis.

Keyword: Dominance Analysis, Integration, Pre-Processing of Data, Principal Component Analysis, Sentiment Analysis, Social Media Analytics.

I. Introduction

I.1 Principal Component Analysis (Dominance)

Principal component analysis (PCA) is a statistical method that uses orthogonal transformations to convert a set of observations of possibly correlated variables (entities each of which takes on various numerical values) into a set of values of linearly uncorrelated variables called Principal Components.”

If voluminous data need to be processed efficiently then dimension reduction can help. PCA maintains main content of most useful data without losing important information. PCA method is based on variance calculation to get orthogonal uncorrelated preceding components of proportional variances. Karl Pearson invented PCA in 1901.

Initially eigenvalue decomposition or normalization of data set is used to normalize data by reducing number of variables.

Orthogonal Basis

An orthogonal basis for internal product space V is basis for V whose vectors are equally orthogonal. If vectors of orthogonal basis are normalised, the resultant basis is orthogonal basis. PCA and canonical co-related analysis are also associated with each other. CCA

generally used cross co-variance correlation analysis for 2 data set whereas orthogonal is used for single dataset.

Eigenvector

The eigenvector is also known as characteristic vector or latent vector of a linear transformation. It is a non-zero vector that changes by only a scalar factor when that linear transformation is applied to it.

$$T(v) = \lambda v$$

Where,

λ = scalar in the field F , known as the eigenvalue, characteristic value, or characteristic root

v = eigenvector

Diagonal in matrix reflects to non-zero same value for each eigenvector is eigenvalue.

Properties and Limitations of PCA

Property 1: For any integer q , $1 \leq q \leq p$, consider the orthogonal linear transformation

Property 2: Orthonormal Transformation.

Property 3: Sectoral Decomposition.

Limitations of PCA:

PCA reflects results based on scaling of variables.

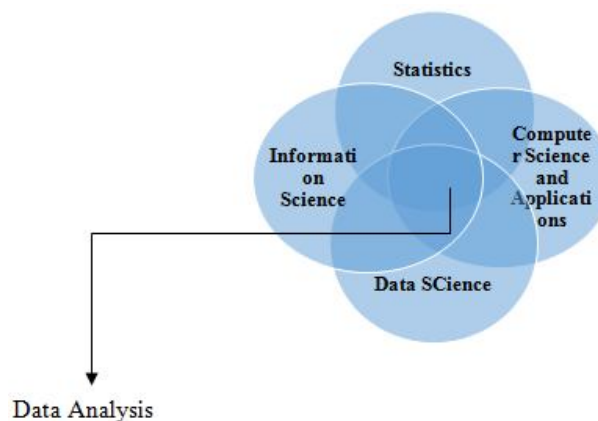
PCA limits to capture linear correlation with violated mean removal process while obtaining co-variance matrix for PCA.

PCA and Information

PCA is dimension reduction process without loss of most useful information or may have optimum expense of information.

I.2 Ways of Analysis

The figure No. 1 depicts that, Data Analysis is proper mix of application of statistics, expert skills, ANN Techniques and related data analysis strategies. It needs theories and knowledge applications from various fields mainly statistics, Computer Science and applications, data science and information



Source: Compiled by Researcher

Principal Component Analysis (PCA) applied to four variables negative, positive, reTweetCount and freq (frequency) of pre-processed dataset of 3555 data objects for data reduction and dominant data group formation. PCA score and PCA loading values are determined for the twitter demonetisation data. Components with variation are shown with histogram. Further scree plot to analyse variance consistency and relationship and biplot for dimension relationship analysis are plotted for the same principal components.

I.3 PCA for Sentiment Analysis

Social Media data is large data set having multiple variables for analysis. Mathematical model like PCA is old but in recent years PCA is active and still very widely used technique for dimension reductions. By maintaining variability in data, PCA maintains content of statistical information in form of reduced or transformed data that avoid loss of information content.

science. Zainuddin, N., Selamat, A. & Ibrahim, R[10] identified improved accuracy performance for implementation of Hybrid sentiment classification method by integration of principal component analysis (PCA), latent semantic analysis (LSA), and random projection (RP) feature selection.

Figure 1 Integration of Technological Advancement with Various Fields

According to G. Vinodhini, R. M. Chandrashekar(2014), PCA analysed as effective a feature reduction method for text sentiment classification in integration with ANN.

I. Research Methodology

The researcher followed design and Creation Research Strategy. The strategy spotlights PCA application to Demonetization tweets.

II.1 Materials and Sample Size

Twitter – Demonetization tweets records from online source Kaggle.com. Demonetisation tweets -Twitter data. Online source

Sample Size – Demonetization.csv 15000 tweets records from online source [14]

II.2 Software Used

Software used for programming and simulation in network environment are as shown in Table No.1

Table No. 1: Software Used

Sr. No.	Software Used	Version
1	R Tools Framework	3.5.2
2	R Studio	1.1.463
3	Microsoft Excel	Office 2007

Source: Compiled by Researcher

II.3 Algorithm

Perform Extract data from social media networks

Step 2: Apply Data Preprocessing and Data Normalization or Regularization on extracted data. Let P be the downloaded posts and tweets, $P = \{p_1, p_2, p_3, \dots, p_n\}$ then after applying stop word removal and identifying key features set F as $F = \{f_1, f_2, f_3, \dots, f_n\}$.

Step 3 Calculate Term Frequency and Cumulative Term Frequency (Probability Distribution function) and Identify Key parameter set or term set

Step 4: Classify the identified terms using dictionary based techniques in positive and negative sentiments. And Generate merged Data Frame of classified terms and cumulative frequency to get Input Parameters Sentiment

Category, Frequency and Share/like/retweet Count.

Step 5: Apply Principle Component Analysis to identify components dominance in classification.

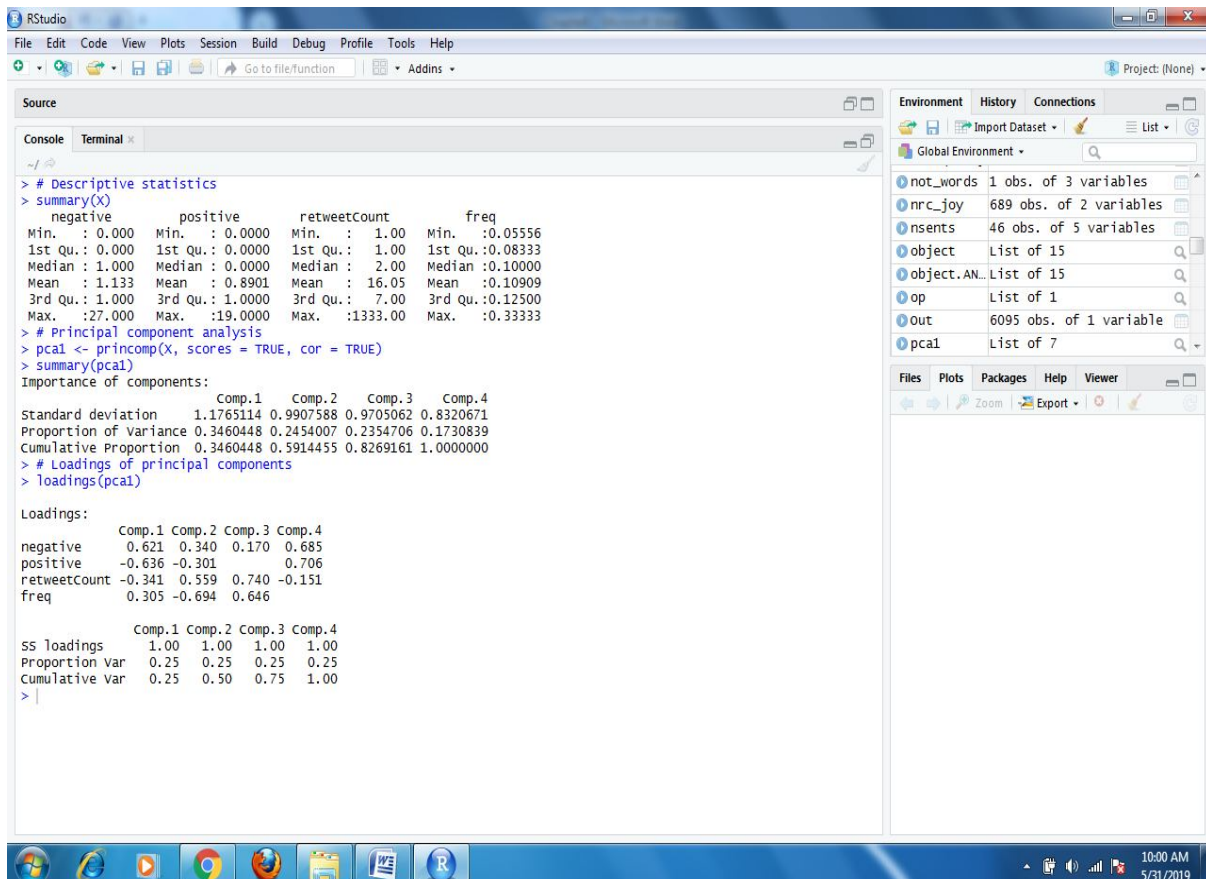
Analyze result and effectiveness of all developed algorithms.

II. Results and Discussion

The algorithm implemented for demonetization data shows results as below after application of PCA for dimension reduction and dominance analysis. Researcher has compiled pre-processing stage to get 3555 pre-processed objects from 15000 tweets. And further results of algorithm are as below:

PCA for Twitter Pre-Processed Data

Figure 2: Component Analysis



Four variables are scaled to get principal components forming four components with proportional variance 0.25. Standard deviation for component 1 is 1.17 which is highest value

as compared to other three components. Component 1 shows maximum variation captured.

Table 2: PCA Loading Values of Demonetisation Tweets

Component Variable	Component 1	Component 2	Component 3	Component 4
Negative	0.621	0.340	0.170	0.685
Positive	-0.636	-0.301	---	0.706
reTweetCount	-0.341	0.559	0.740	-0.151
Freq	0.305	-0.694	0.646	---

Source: Compiled by the Researcher

As shown in table no. 2 and Figure No.2, the loading value close to 1 or -1 are considered as most influenced variable with positive and negative association, so as component 1 has having negative variable value 0.621 is closer to 1 shows large positive association with negative sentiment variable, at the same time instance Component 1 has Positive variable value -0.636 is closer to -1 and reTweetCount variable value -0.341 is also closer to -1 which shows large negative or opposite association with variable Positive sentiment. That is Component 1 repeals large negative sentiments with dominance in tweet records about demonetisation and large negative association with positive sentiment again supports absence of positive sentiment approach about demonetisation. As component1 is major component which is having dominance in negative sentiment with fine freq and negative reTweetCount, so based on twitter demonetization tweet data it clearly presents the strong negative sentiments of tweet authors about demonetisation.

In Component 2 reTweetCount value is 0.55 which is close to 1 and positive variable is -0.301 close to -1 shows negative association with positive sentiments. In Component 3 negative variable loading value is 0.17 which again supports to negative sentiment dominance. Component 4 is having least preference due to low variation.

Maximum variation in component identifies major dominant components to be mainly considered for evaluation from large voluminous data. In the histogram in Figure No. 3 component1 explains 35% of the total variance, which reflects that majority of demonetization sentiment data, can be summarised using component1 only. Component2 confers 25% of the variance; Component3 determined with 23% of the variance. Component4 makes clear 17% variance so, by expressive the place of a test in relation with Component1 and Component2 with other components, one can get a very correct view on, in all data, as the Component1, Component2 and Component3 explains 83% of the variance.

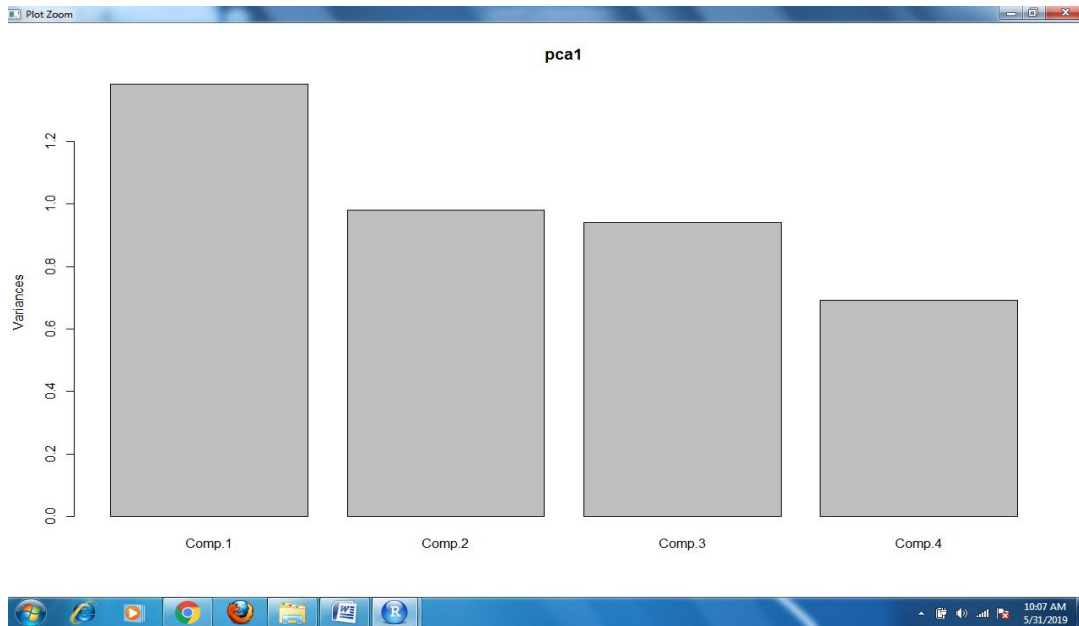


Figure 3 Histogram of Components-Variance.

PCA is performed in significantly correlated data variables to learn dominance in data grouped in form of different components based on variance. Here negative sentiment, positives sentiment, reTweetCount and frequency these four dimensions are considered for reduction. Variance, Loading and score values are used for analysis and plotting graphs like histogram, biplot, screeplot to analyze dominance in components.

Without disposing valuable information reduction in numbers of dimension focuses on

dominant sentiment data and gives exploration to influencing characters. Overall sentiment can be determined by dominance of data in entire data as parameter of evaluation, so in demonetisation tweet dataset component 1 plays important role representing dominance. As explained in loading values and variation component 1 clearly supports to negative sentiment variable, so with these clear negative sentiment dominance, authors or users of twitter in demonetization tweet data are strongly in oppose of demonetisation decision.

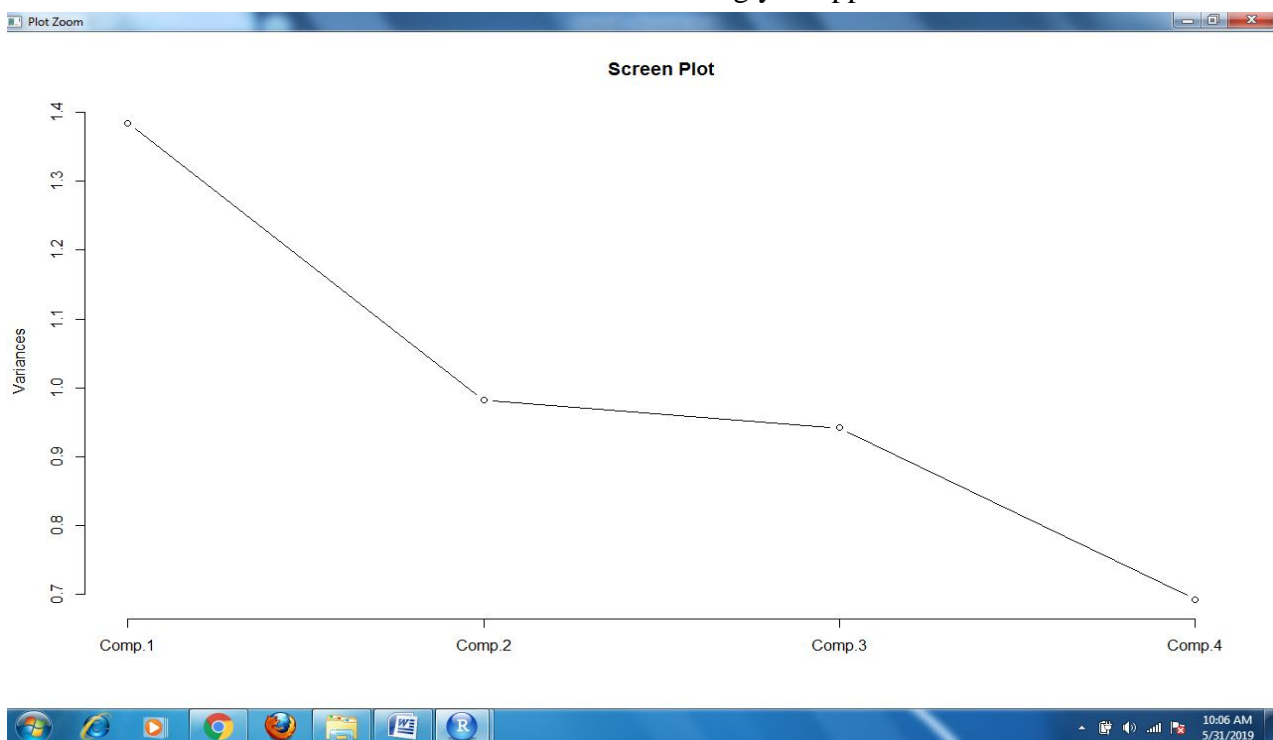


Figure 4 Scree Plot of Component Variances

As depicted in Fig No 4, the Scree plot shows variance proportion and relationship of consistency of component variations from component 1 to component 4.

The first component in Scree plot is having highest variation as compared to other three components. And successive Principal components are placed showing the contribution of amount of variation each one is representing. So the very First Component 1 captures the largest part distinction, Component 2 is second largest variation component, and so on. All the components contribute to Scree plot variation contribution and the principal component represents to maximum distinct characteristics of dataset of

demonetisation twitter data. If these major components are left then it may be risk to miss important information.

So first two or three principal components which are having the majority of the information without losing valuable information focusing on dominant tweet data of negative sentiment, positive sentiment, reTweetCount and term frequency value dimensions. Principal component 1 gives exploration to influencing characters that are influencing to negative sentiment with maximum reTweetCount, so overall sentiment determined are showing dominance in negative sentiments about demonetisation decision.

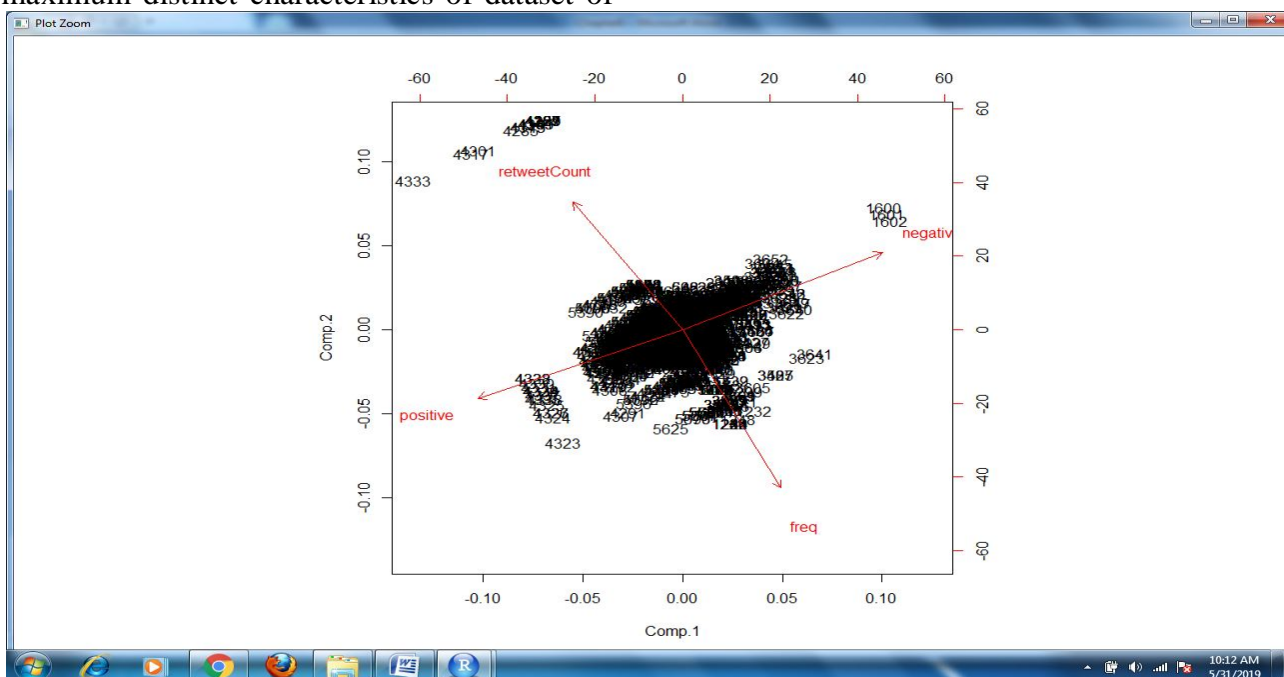


Figure 5 Biplot of Score Variables

Biplot represents multivariate data matrix in which top-right axes reflects loading values for principal components determined and other axes shows principal component score values.

A PCA Biplot in Figure No. 5, shows component score variables in black numbers and vector represents loadings plot displays how much variation each principal component captures from the data. If the first two or three PCs are sufficient to describe the essence of the data, the scree plot is a steep curve that bends quickly and flattens out.

As demonstrated in Fig No. 5, all four variables are almost in 90o angle with each other, which indicates there is no correlation between loading values of positive sentiment,

negative sentiment, frequency of word and reTweetCount. And almost all are showing their necessity in describing essence of data; hence input parameters are valid and sufficient parameters for information retrieval in sentiment analysis. PCA showing variation means all these four different characteristics important to analyse different sentiment can be represented using these parameters.

In PCA, four components are generated for dominance evaluation in demonetisation data. As PCA shown in section 6 Part I, data points with largest variance as strong component Comp1 in result give an idea about dominance explaining 35% variance. Comp2 and Comp3 are having second largest variance.

Component1 and Component3 showed data dominance associated to 1 in negative sentiment category for demonetisation pre-processed tweets objects, so entire data with maximum variation reflects negative sentiment category about demonetization decision.

VI. Conclusion

In PCA, four components are generated for dominance evaluation in demonetisation data. As shown in histogram (Figure No.3), data

points with largest variance as strong component Comp1 in result give an idea about dominance explaining 35% variance. Comp2 and Comp3 are having second largest variance. Component1 and Component3 showed data dominance associated to 1 in negative sentiment category for demonetisation pre-processed tweets objects, so entire data with maximum variation reflects negative sentiment category about demonetization decision.

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ACADEMIC ANXIETY AMONG STUDENTS OF DIFFERENT STREAMS

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ABSTRACT

Introduction: Academic anxiety will wreak havoc on a student's performance over time. If a student's academic success deteriorates, so does his or her concern over specific academic activities. When students experience elevated levels of academic anxiety, it interferes with attention and memory, all of which are essential for academic achievement. There are numerous factors that contribute to academic anxiety, including intimate, familial, societal, and institutional factors. Objective: The major objectives of the study were to assess and compare the academic anxiety among 12th class students (girls) of different streams (Arts, Science, and commerce). Methods: The tool used for the data collection was academic anxiety scale (AAS-SAMRUA) English (New) (2017) by M. Abid Siddiqui and Atieq VR Rehman. Design of the study was based on questionnaire method. The result was obtained from data tabulated on the basis of frequency and percentage. Result: The results of the test showed that none of the students had exceptionally low levels of academic anxiety. 10% of students have moderate academic anxiety and below average academic anxiety, 43% have average academic anxiety, and 94% have above average academic anxiety. Whereas 38% of students have high academic anxiety and 3% have very high academic anxiety. Conclusion: According to the t-test results, the null hypothesis "There is a significant difference in anxiety levels among students of Arts and Science as well as Science and Commerce" is rejected. However, the null hypothesis "There is no substantial difference in the degree of anxiety between Arts and Commerce" is acknowledged.

Keywords: Academic anxiety, Students, Streams, Adolescence

Introduction

Adolescents are the precious human resources of the country but they are exposed to excessive competition, rapidly changing culture and social values, cross-cultural influences etc. All these exposures made the young generation to live in urgency and emergency; as a result they become directionless and fail to perceive their real goal. The constant feeling of comparison hampers the development and maintenance of healthy social relations and cause stress among them. Expectations of the youth are generally unrealistic and unusual which unintentionally lead to frustration and a result in misbehaviors like- suicides, addiction to drugs, intolerance etc. and therefore present study is the need of the days. (Sonali, 2018)

Academic Anxiety

Academic anxiety can become more detrimental over time. As a student's academic performance suffers, the anxiety level related to certain academic tasks increases. When academic anxiety in the students is high, it interferes with concentration and memory which is critical for academic success. There are many factors which are responsible in

provoking academic anxiety like personal, familial, social and institutional. Personal factors include emotional disorders, health disorders, maladjustment, low self concept, low aspiration level, intelligence levels etc. Familial factors include low socio economic status, lack of guidance, indifferent attitude of parents and other family problems. Social factors include irrational norms imposed on someone, casteism, unequal distribution of resources, illiterate locality etc. Institutional Factors may be related to the school type (Government Private School), school environment, curricular and co-curricular aspects, teacher student relationship etc. (Alam*, 2017)

Depending on which of these you are feeling, the approach for lowering your anxiety will differ.

Worry: Concerns that keep you from concentrating on and successfully completing academic tasks. For example, failure prediction, self-deprecating thoughts, or concern with the repercussions of poor performance. Self-hypnosis and arguing negative and self-defeating ideas are two helpful strategies for controlling this component.

Emotionality: Anxiety's biological manifestations. For example, a racing heart, sweaty hands, and muscle tension. Muscle and breathing relaxation techniques are the most efficient ways for dealing with emotions.

Task generated interference: Behaviors that are connected to the job at hand yet are unproductive and impede successful execution. For example, continuously monitoring the time during an exam or devoting a significant amount of time to a test question that you cannot answer. Because these behaviors can manifest in a variety of ways, the best management strategy is to collaborate with a study skills instructor or a counselor to identify the particular habits that are causing issues and develop a plan to decrease or alter them.

Deficits in study skills: Issues with your present study practices that cause anxiety. For example, cramming at the last minute results in not knowing the answers to test questions, or poor note-taking during lecture results in uncertainty regarding a significant assignment. As a result of study skills deficiencies, many students feel the first three components of academic anxiety.

Procrastination: To procrastinate is to put off or postpone something for another day. Procrastination has an impact on kids' behavioural, psychological, and physical health. Academic procrastination is a type of educational procrastination. Procrastination has been shown to cause stress, worry, a sense of shame and crisis, health difficulties, significant loss of productivity, and social condemnation for failing to meet duties or commitments. These feelings, when coupled, may encourage greater procrastination. Piers Steel(2010) stated in that worry is just as likely to motivate people to start working early as late, and that the emphasis of procrastination studies should be impulsiveness. That is, worry will only lead someone to be late if they are impulsive.

The course of Academic Anxiety

There are various reasons and dimensions of academic anxiety in students are:-

1) **Academic anxiety symptoms**—abnormal behavior of a student shown at the beginning of any new academic task like procrastination in academic activities, worrying most of the time, perform poorly

in school work, fail classes and withdraw from socializing with peers or pursuing activities that interest him/her.

- 2) **Anxiety from poor study habits**—anxiety caused by study strategies applied by students in their daily academic learning process.
- 3) **Anxiety from subjects**—possessing negative attitude towards a particular subject or different subjects due to one or the other reason. Anxiety caused by it is called anxiety from subject.
- 4) **Anxiety from school environment**—anxiety caused by prevailing school environment like stiff competition among students, role of school administrator (Authoritarian/Democratic) is called anxiety from school environment.
- 5) **Anxiety from teachers**—teaching incompetency and partial attitude of teachers inside the classroom also provoke academic anxiety of students. Anxiety occurring due to this phenomenon is called anxiety caused by teachers.
- 6) **Anxiety from examination**—Introduction of schemes like continuous and comprehensive evaluation (CCE) may lead students towards severe anxiety sometimes. Anxiety caused due examination type (Formative & Summative) is called anxiety from examination. (Rehman, 2016)
- 7) **Parental Pressure** - Finally, students at either level experience stress from parental pressures. Parents want their children to succeed in school. They want to see good grades, but they also want to see success in life's other areas. In their attempts to guide their children, parents can become one of the major causes of stress on students. It is wise for parents and others who work with students to take time to recognize the stresses students face, if they then provide stress management techniques, they will do much to relieve and encourage their students.
- 8) **Peers** - Peer relationships can provide estruses or distress. As peers apply pressure in regard to dress, behavior, choice of friends or sic, and many other areas of life, that pressure can become a huge presence of stress on students. (Rani, 2017)

The following are the some reviews that had been studied in order to understand facts related to Academic anxiety.

Dhull and Kumari (2015) conducted a study on “Academic stress among adolescents in relation to gender”. Finding indicated that, there is significant difference between academic stress of male and female adolescents. Female subjects were found to be under more academic stress as compared to their male counterparts.

Kaur and Kaur (2016) conducted a study on “Academic Stress in Relation to Emotional Stability of Adolescent Students”. Results revealed that there is no significant difference exist between academic stress (academic frustration, academic conflict and academic anxiety) with respect to gender but academic pressure showed significant difference between boys and girls. Girl participants are found to be more under academic pressure as compared to boys.

Yusuph (2016) investigated the causes and effect of anxiety on the academic performance of secondary students of Domodo, Tanzania. Results revealed that the major cause of anxiety among students was corporal punishment followed by school milieu and potentials (capabilities) of the students, and significant number of the students is affected by it. Moreover, there was an inverse relationship in between anxiety and academic performance. Girls were more prone to anxiety as compared to boys.

Rehman (2016) carried out a study to find out the causes of academic anxiety among higher education students and its preventive measures. Findings of the study clearly revealed that there are various potential threats such as personal, familial, institutional, social and political that

provokes the anxiety among students and clinical and non-clinical measures are available to deal with the anxiety. There is a dire need to spread awareness among the students, parents, and teachers.

Materials and Methods

Participants and procedures

The following study was conducted in Sharda Mandir at Banasthali Vidyapith located in District Tonk, Rajasthan with the sample size of 200 students (Girls) of three different streams (Arts, Science and Commerce) of 12th class i.e., 66 Arts, 67 Science, and 67 Commerce were selected. The students were selected through simple random sampling technique. For the sample selection, first step taken by the investigator was to obtain the list of senior secondary school in Banasthali Vidyapith. In second step, a prior permission was taken from the principal of school. Finally third step from the sample size of 200, the respondents were divided between the streams equally. Sample had been selected according to the presence of the students in class. The statistical techniques used in the study were Frequency, Mean, Standard Deviation, and t-test. IBM SPSS statistics 21 version software was used for the calculation.

Measures

The tool used for data collection was Academic anxiety scale (AAS-SAMRUA) English (New) (2017) by M.Abid Siddiqui and Atieq VR Rehman. (This scale consists of 44 items divided into 6 dimensions-academic anxiety symptoms, anxiety from poor study habit, anxiety from subject, anxiety from school environment, anxiety from teachers, and anxiety from examination

Results and Interpretation

Levels of Academic Anxiety	Frequency of Students			
	Arts%	Science%	Commerce%	Total%
Extremely High Academic Anxiety	0	0	3	3
High Academic Anxiety	14	12	12	38
Above Average Academic Anxiety	36	25	33	94
Average Academic Anxiety	12	16	17	45
Below Average Academic Anxiety	2	8	0	10
Low Academic Anxiety	2	6	2	10
Extremely Low Academic Anxiety	0	0	0	0

The degree of academic anxiety among students from three distinct disciplines. None of the Arts and Science students and about (3%) of Commerce students fell into the first dimension, **Extremely High Academic Anxiety**; whereas (14%) of Arts, (12%) of Science and (12%) of Commerce students were in the second dimension **High Academic Anxiety**; while (36%) of Arts, (25%) of Science and (33%) of Commerce students comes in the category of **Above Average**

Academic Anxiety; whereas (12%) of Arts, (16%) of Science and (17%) of Commerce students comes in the category of **Average Academic Anxiety**. The students who come under **Below Academic Anxiety** are (2%) from Arts, (8%) respectively from Science and none from Commerce; whereas (2%) of Arts, (6%) of science and (2%) of Commerce students comes under the category of **Low Academic Anxiety**. And none of the students were found in the category of **Extremely Low Level of Academic Anxiety**.

Group	Mean	Standard Deviation	"t-test"	Significance "p"	Remark
Arts	85.59	8.913	2.075	.000**	Significant
Science	80.19	13.582			
Science	79.92	13.504	3.348	.001**	Significant
Commerce	86.68	9.567			
Arts	85.59	8.913	.572	.449	Not significant
Commerce	86.51	9.537			

Level of significance among streams

** Significant at 0.01 level

*Significant at 0.05 level

Table shows the mean score, standard deviation, t-value and level of significant among the streams (Arts, science, and Commerce). According to above table, in the first group the mean scores of Arts and science stream on the level of anxiety were 85.59 and 80.19 respectively. When "t- test" was applied to compare scores of both streams, it was found that the calculated value was (t=2.705, p<.000), which was significant at 0.05 level. Therefore, it can be inferred that the significant difference was found in the level of anxiety among students of Arts and Science. **Hence, null hypothesis "There is significant difference in the level of anxiety among students of Arts and Science" is rejected.** Similarly, in the second group it has been found that the mean scores of Science and Commerce on level of anxiety were 79.92 and 86.68 respectively. When "t-test" was applied to compare scores of both streams, it was found that the calculated value was (t=3.348, p<.001), which was significant at 0.05 level. Therefore, it can be inferred that the significant difference was found in the level of anxiety among students of Science and Commerce also. **Hence, null hypothesis "There is significant difference in the level of anxiety among students of**

Science and Commerce" is rejected. Meanwhile, in the third category, the mean scores for Arts and Commerce on level of anxiety were 85.59 and 86.51, respectively. When "t- test" was applied to compare scores of both streams, it was found that the calculated value was (t=.572, p>.449), which was Not significant at 0.05 level. Therefore it can be inferred that significant difference was not found in the level of anxiety among students of Arts and Commerce. **Hence, null hypothesis "There is no significant difference in the level of anxiety among students of Arts and Commerce" is accepted.**

Conclusion

According to the findings of the study, there is a substantial difference in anxiety levels among students of Arts and Science and Science and Commerce." However, the null hypothesis "There is no significant difference in the degree of anxiety between Arts and Commerce" is accepted.

Academic anxiety is a type of anxiety that is caused by a variety of causes such as anxiety from bad study habits, anxiety from the subject, anxiety from the school atmosphere, anxiety from teachers, and worry from the examination. The results demonstrate that academic anxiety may be reflected in the disciplines chosen by pupils. The kids'

performance reflects their degree of anxiousness.

Human Development, Faculty of Home Science, Banasthali Vidyapith.

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This study was supported by my esteemed supervisor **Dr. Suvidha** (Associate professor),

Conflicts of Interest

There are no conflicts of interest.

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INDIAN CORPORATE GOVERNANCE-ISSUES AND CHALLENGES

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ABSTRACT

Generally speaking, corporate governance is a method or set of mechanisms designed to ensure that a company's financial disclosures and transparency are in compliance with applicable laws and regulations, as well as that the company's legal practises, organisational structure, and social welfare are all regulated and controlled in accordance with those laws and regulations. When these factors do not comply with statutory corporate governance requirements, a problem arises, and the situation becomes untenable. It is necessary for investors to be actively involved in order to overcome the challenges associated with establishing responsible behaviour by boards of directors and management. However, shareholder engagement is a concept that has only recently gained popularity in India. Domestic mutual funds can make a positive contribution to improved corporate governance by looking beyond their quarterly results. These funds have the ability to influence the quality of a company's governance because of the clout they wield through their share votes. As a first step toward addressing corporate governance shortcomings, these investors have begun communicating their concerns to boards of directors and management; however, foreign shareholders alone are unlikely to have sufficient influence. Individuals shaped by cultural and personal notions of hope, ambition, greed, fear, insecurity, and arrogance, as well as the social ethos, are responsible for establishing and administering corporate governance structures, institutions, and the legal framework that govern organisations. The term "investor dialogue" is frequently used to persuade investors or allay their fears, rather than as a forum for meaningful discussion that welcomes opposing viewpoints and encourages them to participate. According to this Private Sector Opinion, the dynamics of Indian culture and corporate governance are examined by focusing on three areas of contention: related-party transactions, the actions of promoters or large shareholders, and the nominations, deliberations, and effectiveness on the board of directors (Board of Directors).

Keywords: *Corporate Governance, Corporate Social Responsibility, Sustainable Development,*

Introduction

Corporate governance addresses a company's value orientation, performance standards, and social accomplishments. Incorporated governance is concerned with the efficiency of resources, the creation of value, and the development of wealth within the broad confines of the corporate philosophy established by corporate governance. Trustees of their companies' assets on behalf of their shareholders are, by definition, the responsibility of their board of directors. Internal stakeholders (promoters, members, employees, and executives) as well as external stakeholders (consumers, suppliers, and competitors) are all involved (shareholders, customers, lenders, dealers, vendors, bankers, community, government and regulators). Even though many people in India are familiar with the concept and benefits of corporate governance, they are unsure about how to put these principles into practise in their own organisations. It was in the aftermath of corporate failures, as well as widespread dissatisfaction with the way many corporations conduct their operations around the world, that

the concept of business governance came into existence. The Indian government was successful in implementing corporate governance practises when it did so in 1997. They have easy access to large sums of money, which is advantageous in their situation. It is critical for a corporation to be managed in such a way that investors have confidence in the organisation. It is founded on the principles of transparency, honesty, and management responsibility, with an emphasis on the public good in general and investor protection in particular, as defined by the International Organization of Corporate Directors.

Corporate Governance -A need

In order to maintain a healthy capital market and to protect investors, effective corporate governance is required. Shareholder value is increased while other stakeholders' interests are protected. Suppliers, customers, creditors, bankers, employees, and the government cannot be sacrificed for shareholder wealth.

Objective of the Study

- To study the Indian Corporate governance system
- To study the challenges and Issues faced by them

Corporate Governance in India

In part because of its reliance on external sources of capital as well as the prevalence of insider-dominated family businesses, India has characteristics in common with a number of other emerging market nations. Around 1983, the Indian organisation became aware of the significance of corporate governance for the first time. The Indian corporate world has seen a slew of controversies over the course of the last few years. Investors in corporate funds have suffered irreparable damages and losses as a result of financial fraud, unethical management practises, and other unethical business practises, according to a recently released report. There had been a failure in almost every aspect of the government's operation. As a result of the introduction of the Companies Act in 1997, India became the first country in the world to effectively implement corporate governance. The Co-federation of Indian Industries developed a voluntary code that served as the foundation for everything that followed (C I I). The Securities and Exchange Board of India (SEBI) then established a committee led by Kumar Mangalam Birla to investigate global corporate governance for companies that are publicly traded on stock exchanges. The committee's findings were presented to the SEBI for consideration. A small number of companies, such as Infosys and Wipro, have adopted good governance principles and engaged in Corporate Social Responsibility in order to set a precedent for other businesses to follow (CSR).

Corporate governance should allow employees to point out unethical practises within the company, while empowering them to bring new ideas to the forefront and fostering a collaborative work environment to help the overall company succeed. Corporate governance activities that aid in the country's economic growth and development should be attended to by company managers. The purpose of corporate governance is to both encourage ethical behaviour within the

company, as well as to support social responsibility by reducing waste and pollution while also providing a safe work environment for the company's employees. Investing in mechanisms to promote fair, honest, and truthful financial and non-financial disclosures, and underscoring the importance of shareholders in the decisions made by the organisation are two priorities for improving corporate governance.

It is the Board of Directors' responsibility to carry out the business's objectives, which includes developing mission statements, developing overarching policies, and selecting high-level executives to carry out those goals and policies. To monitor and evaluate both managerial performance and corporate management, the board keeps an eye on management to ensure that management is managing the company well and shareholders' interests are protected. In addition to coordinating various regulatory frameworks, the directors supervise various regulatory frameworks while working alongside other regulatory frameworks. The proper organisational structure will show the following characteristics: they will be effective and focused, they will have a thorough plan, they will have a well-defined stance on problems, and they will incorporate multiple CEOs.

Audit and Corporate Governance

Corporate governance uses auditing to keep track of the organization's actions. In order to determine whether the operational operations of an organisation are genuine in nature, it is necessary to conduct a thorough investigation. An organization's accounting records are examined in order to determine whether or not its transactions were completed correctly. This process is referred to as a "cost audit." Quality auditing is an additional service that is critical in the improvement and refining of corporate governance processes in Indian companies and organisations, as well as in the development of new processes.

Business Ethics and Corporate Governance and Corporate Social Responsibility

Business ethics is the study of how ethical principles are applied in the workplace. On just

and unjust business practises and their consequences are discussed. It also refers to the moral and ethical standards that all employees must adhere to. India's ethics are based on scriptures, concepts, and Vedas.

Corporate governance principles such as honesty, integrity, openness, and communication have been recognised by several Indian companies. Ethical issues include corruption, tax evasion, poor quality products and services, disregard for the environment, and hazardous working conditions. The Foreign Exchange Management Act 2000.; The Companies Act, 1956, The Competition Act 2002, The Consumer Protection Act 1986, The Environmental Protection Act, 1986, The Essential Commodities Act, 1955

An organization's business model incorporates corporate social responsibility (CSR). All of India's major corporations are involved in corporate social responsibility (CSR) projects in areas like education, health, livelihood, skill development, and empowerment of the poor. The shrinking role of government, increased customer interest, and investor protection are driving businesses to embrace CSR. Corporate social responsibility is undertaken to positively impact society, consumers, employees and stakeholders. Corporate social responsibility programmes affect many departments within a company.

Corporate Governance- Sustainable Development- Monopoly Vs Competition

Societal issues and risks should be dealt with by organisations that are committed to social responsibility. Its approach has evolved to include considerations of the environment. Pollution reduction and punishment of polluters were the primary goals of previous strategies. When it comes to environmental challenges and hazards that threaten society's overall well-being, a socially responsible organisation should be on the forefront of the solution. Its approach has evolved to include considerations of the environment. Policies in the past aimed to reduce pollution while also penalising polluters. According to them, economic growth should benefit all people, rather than only a small number of wealthy

individuals, while not further depleting the planet's finite natural resources.

Competition and monopoly are two of the most important economic characteristics to consider. Many businesses compete to deliver identical items at low prices, and the results are often disappointing. Overall, consumers benefit from the availability of high-quality products at competitive prices. Long-term competitiveness can be achieved by implementing sound corporate governance standards throughout an organisation.. In contrast, monopoly is caused by the concentration of control in the hands of a single organisation. Investors are put at risk because monopolies encourage corruption, bureaucracy, and inefficiency, which are detrimental to the economy. It is a hindrance to good governance as well as economic growth.

Culture and Corporate Governance Principles in India

A story is told through the lens of corporate governance about how a culturally diverse nation deals with global standards as part of its economic revolution. Cultivate an understanding of different perspectives on the concept of culture by considering the different theorists' ideas. According to University of Michigan professor Richard E. Nisbett, there are specific structures and operating rules that guide the activities of organisations. Society needs people to manage everything, but these people must be managed by people, who are essential to society. Thus, organisations are social units that are affected by a variety of social norms, structures, cultural practises, and value systems. When a company is relocated from one culture to another, conflict frequently arises. Cross-border mergers and acquisitions are not a one-size-fits-all situation. This is particularly true for multinational corporations, where the clash of cultures frequently results in disagreements. Culture has taken on various connotations throughout history, such as the cultivation of the soul or the intellect. Hofstede's theory is called "the communal programming of the mind that differentiates one person from another." Culture is made up of four basic elements: normal human behaviours, values, beliefs, and symbols of expression. These all exhibit a similarity that underlies all definitions and meanings. Social

and cultural norms and expectations of behaviour govern individual and collective actions as well as organisational behaviours. Those who belong to one group and those who belong to another. By this definition, culture can be defined as a group of shared values. According to Edgar Schein, a culture is "the deep-seated assumptions and beliefs that are present in an organisation, which provide a deep, innate perception of the organisation and its environment, and that function without conscious thought." Because of these significant differences in cultures, future governance may be affected. Finally, it was discovered in a multinational study on corporate governance by Jiatao Li and Richard Harrison that national culture has a strong influence on the organization's structure. Future cross-national studies are recommended to focus on national culture and incorporate it into their methods. Hope, ambition, greed, fear, uncertainty, and arrogance all have an effect on an individual's behaviour, as do the social expectations and legal framework. Nations exert considerable influence on corporate governance practices globally as a result. Also, one's family's particular cultural traditions significantly influence the decisions he makes. The director general of the Institute for Family Business in the UK, Grant Gordon, and the University of London's Nigel Nicholson claim that culture can be found in the habitual behaviours and attitudes that are accepted within a family. Feelings play an important role in a number of these topics, such as love, control, and identification. An additional characteristic of the family climate is the importance of thinking and acting. If the requirements of corporate governance regulations and the demands of cultural factors clash, an issue arises. To understand cultural imperatives, as well as the opportunities and challenges that they present, boards of directors, senior management, stock exchanges, governments, and other implementation and enforcement groups must be informed about them. Moreover, investors will benefit from these observations. To improve the business governance of other societies and businesses, India has learned lessons from its own experience. These examples show how culture influences corporate governance interpretation

and application. In their book, "Families and How to Survive Them," Gordon and Nicholson claim that, "In confrontations between families, the primary focus is typically on inequality, but more often than not, the issue is seen as one of faith." Corporate governance begins with values that are rooted in a company's culture. Guilt and shame are significant in a culture because of how people deal with them. One example of how accountability standards are decided upon is the presence or absence of adequate content, application, and enforcement.

Issues of Corporate governance in India

1. Reducing the board's variance

Because the role of good corporate governance has already been discussed elsewhere, no further discussion is required on the board. In order to maintain board equality, all board members serve both executive and non-executive roles. Furthermore, there must be at least one woman as a director for diversity, and thus this is required by law. To a significant extent, diverse and capable board members would improve governance standards in a company. While corporate governance is already established as a standard of business conduct in order to help companies become more compliant "in spirit", the difficulty lies in clarifying how the standards apply in practice. In India, most corporations operate only on paper; board appointments are still based on recommendations from other board members or on word of mouth. This is fairly common in the context of appointing members of a promoter's friends and family to the board. Innovative as well as a requirement in the current environment, a director performance evaluation benchmark has been set.

2. Evaluating the performance of directors

Directors' performance evaluation caught the regulator's attention recently, which was ironic, considering that it has been a longstanding part of the legal framework in India. SEBI, India's capital markets regulator, released a guidance note in January 2017 detailing the process for board evaluation. This note proposed several ways to assess performance, including the ability to articulate goals, a variety of standards, and evaluation strategies.

Performance evaluation results are commonly called for in order to aid governance implementation, which calls for public access to the results. At the same time, disclosure of results is delicate and could potentially backfire. The main reason peer reviewers don't publicly release negative feedback is so that they aren't open to scrutiny. Independent directors have a critical role in performance evaluation to correct this undesirable behaviour.

3. Without exception, the directors' independence is indisputable.

Corporate governance reform was expected to be implemented through the independent board members being appointed. More than 15 years after their emergence, independent directors have yet to achieve the impact they were aiming for. Additionally, the regulatory authority has on numerous occasions implemented stricter definitions of independent directors, such as the audit committee, and has also made requirements stricter by revising definitions of corporate governance criteria. However, in India, promoters will often use a tick-the-box approach to comply with regulatory requirements. In order to perform their most important duty of standing up for the interests of the shareholders who are not majority shareholders, independent directors have a responsibility to keep promoters in check. However, the regulator still has a ways to go before it is adequate. In situations where it conflicts with the independence of directors, perhaps it is time to re-prioritize regulating promoter influence.

4. The removal of the independent directors

Criticisms levelled against independent directors are that they continue to serve on the board while being ineffective in influencing decisions. However, in instances where the promoter's decisions have been challenged by an independent director, those decisions have been rejected. Promoters removed them from their positions, and this could be the reason. According to the law, promoters or shareholders holding a majority stake in the company can remove an independent director. People are forced to make independent

decisions due to this inherent conflict. It was SEBI's International Advisory Board that made the suggestion of more transparent director selection and removal earlier this year. In order to protect independent directors from vendetta action and to grant them greater freedom of action, additional checks should be instituted in the process of removing them.

5. The Actors' Obligation

Increased responsibilities and personal accountability are required when empowering independent directors. Directors are required to have more than one duty with regard to both the company and shareholders as well as the employees, the community, and the environment in Indian company law, which went into effect in 2013. Directors have fallen short of performing these duties because of their apathy. The more people who are present, the more shareholders and stakeholders feel involved.

6. Compensation for top management is complicated, for the management is complex.

In the eyes of the shareholders, executive compensation is a controversial subject, especially when held accountable to the company. Competitive compensation must be offered by employers in order to attract the most talented employees. In addition, it should be the shareholders and stakeholders who oversee executive compensation. The board currently has to come up with a compensation policy for senior executives. In addition, annual salaries for corporate executives must be made public. Is there any more of this? According to some companies, implementing more transparent remuneration policies and procedures that require shareholder approval is advantageous for shareholders and executives alike.

7. Entrepreneurship is critically dependent on founder control and succession planning.

Indian entrepreneurs have the potential to totally disrupt corporate governance. As opposed to developed economies, in which the founder and the company are more commonly differentiated, India is frequently where the

founders and the company are fused together. The founders continue to wield a considerable amount of influence on business decisions, and no plans for succession have been put in place. In terms of governance and business continuity, the best practise is succession planning. Despite a reluctance to give up control, family-owned Indian businesses have thus far avoided taking on any additional clients. In addition, increasing the number of shareholders is sufficient to deal with this. Basically, this means the company's stakeholders (including founders) should work to increase the number of shareholders, which forces founders to consider succession plans and to cede control.

8. Business risk management includes this element

To be successful in today's business environment, large corporations must keep up with on-the-spot monitoring from national and local media sources. It is critical to establish a risk management policy in a company that is not running the business, and doing so in a creative and attractive way is an additional benefit. The company law in India requires that the board's report to shareholders include a risk management statement. Independent directors are required by the company's bylaws to perform a review of the company's risk management practises. In order to ensure successful decision-making in day-to-day activities, it is absolutely critical to have a sound risk management policy in place.

9. Data and privacy are crucial for an online relationship to succeed.

Risk management requires privacy and data protection, and these both have a big impact on governance. For all directors today, knowing the fundamentals of cyber security is a necessity. To be successful, firms that adopt good governance must have executives who can understand and interact with firm-specific employees. To decrease the risk of misuse, the board must conduct a risk assessment and implement appropriate safeguards to protect data. To guarantee data security, the board should allot sufficient time and funds.

As part of the corporation's overall mission, corporate social responsibility is viewed as an essential component (CSR)

While many countries have legislated on corporate social responsibility (CSR), India has one of the few in the world that has actually implemented the law. In order for a company to engage in CSR activities, it must form a CSR committee within the board. This committee then devises budgets for CSR programmes and strategies by applying the CSR policy that was created first. At the end of each of the previous three financial years, 2% of the average net profits must be spent on R&D. The companies must supply full explanations of why they failed to meet their CSR spending obligations when their boards of directors supply them. The Ministry of Corporate Affairs (MoCA) sent out notices when a company failed to comply with their CSR obligations, and some times called out the reasons given by the company as being inadequate. As the board takes a more active and serious role, it is required to put in additional effort and show dedication. It is vital that corporate social responsibility (CSR) projects are run by a board that is as involved and enthusiastic as any other project.

Observations and suggestions

1. Remuneration and incentive systems, which should be the focus of board (and occasionally regulatory) scrutiny, should be addressed generally and not just centred on the chief executive officer and board members, depending on the company's features.
2. Because choices and negotiations are not carried out at arm's length, remuneration/incentive system governance has frequently failed. Managers and others have wielded much too much power over the level and terms of performance-based pay, with the board unable or unwilling to make objective, independent decisions.
3. It's striking how often the link between performance and remuneration is shaky or impossible to establish. Companies, for example, have frequently relied on broad stock price metrics rather than the relative success of specific firms. Factors beyond

- the CEO's control have frequently been emphasised.
4. Compensation plans are frequently unnecessarily convoluted or obfuscated in order to conceal the situation. This is especially true in the case of difficult-to-value pension plans. They're also asymmetric, with low negative risk, which encourages people to take unnecessary risks. Transparency must be improved, and this entails more than just more information, which has improved in recent years. Companies should be able to describe the key features of their performance-based remuneration plans in simple, non-technical language. The entire cost of the programme, the performance metrics employed, and how remuneration is adjusted for related risks should all be included of the programme is critical. Such plans are complex, and legal restrictions such as caps and some fiscal measures are unlikely to be sufficient to achieve this goal. There's also the possibility of a trend toward excessive fixed remuneration components, which would make incentives less aligned with the company's long-term success.
 5. It is recommended that remuneration policies be presented to the annual meeting and, if necessary, subject to shareholder approval.
 6. The Financial Stability Forum's Principles for Sound Compensation Practices should be followed by financial firms.
 7. The statement should also include the budgeted capital and revenue expenditures for the environment management programme, as well as the source of funds to be used. This would aid in the correct control of an environmental management program's implementation.
 8. Companies should develop their own environmental management and conservation programme based on their needs, including the environmental conservation issues to be addressed, such as environmental management, pollution control, garbage recycling, and tree planting, among other things.
 9. There is a need for an integrated law on environmental clearances, and businesses must be aware of their obligations for environmental maintenance and protection, as well as energy responsibilities. The government is making some efforts in this direction. There is a need for more environmental disclosure requirements to be implemented in all businesses, not just at the start of the company but also during its operations. It is past time to foster its communication.
 10. It is necessary to develop an accounting framework for the measurement and reporting of environmental data. It is extremely difficult to adequately assess the environmental consequences of corporate activity.

Conclusion

The social, economic, and legal conditions of a country shape the future of corporate governance. Corporate governance is an important component of any business and is widely used in developed countries. People in developing countries understand the concept and benefits of corporate governance, but not how to implement it. Liberalisation, privatisation, and globalisation are the main drivers of corporate governance (LPG). Everyone involved in the process, including the government, SEBI, and other industry groups, is pushing for good corporate governance. Corporate governance is expected to improve in the coming years, particularly in terms of accountability. Corporate governance is a dynamic process.

Shareholders, the board of directors, and management are key players in corporate governance.

Corruption and unethical practises have flourished in many companies due to legal loopholes in India. Rather than the other way around, developers should help regulators with their control tasks. The government's role as a friend, philosopher, and guide should be strictly limited.

Shareholders, accountants, auditors, directors, and CEOs must all perform their duties honestly and effectively to ensure good corporate governance.

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E-LEARNING RESOURCES -A WAY OF ONLINE LEARNING**R.A. Peerzade**

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ABSTRACT

Electronic learning is gaining popularity as a means of reaching those who are underserved in terms of both quantity and quality. Because of the ever-increasing amount of information available, web information retrieval systems must now assist people in not only locating relevant information, but also in automatically accessing and aggregating data from multiple sources. Higher education e-resources data centres house a significant amount of information. In order to maximise the benefit of research and development, it is necessary to identify, retrieve, process, and integrate the information.

The impact of science and technology has been responsible for the majority of significant modern developments. Learners can gain access to information at any time and from any location thanks to information and communications technology (ICT). Learning Management Systems (LMS) such as Blackboard, MOODLE, SAKAI, and ANGEL, among others, are now almost universally used in all areas of education. The success of Learning Management Systems is dependent on the consistency with which teachers and students manage resources.

Introduction

The use of ICT is driving today's educational system. The University Grants Commission has been using its IUCs' resources, particularly the CEC and INFLIBNET, to support ICT education and research in colleges and universities. The scholarly information arena continues to grow, giving researchers access to more e-resources. Their own library catalogue, catalogues outside their own library, such as national or union catalogues, catalogues or another institution that specialises in similar subjects, and search engines are likely to contain material relevant to their subject. To be successful, you must be familiar with the resources, their access mechanisms, their query interface, and the types of results they return. The user must manually compare the results from various resources and cannot move from one resource to another for discovery and navigation. As the amount of relevant information on the internet grows, web information retrieval systems face new challenges. These include not only locating relevant information but also automatically accessing and aggregating data from multiple sources.

The research and academic communities deal with data. They are always on the lookout for quick, accurate, and current information to further their studies and research.

In tertiary education, e-resources are vital in providing scholarly and current information to

the Indian research and academic communities. This programme has already given users access to over 8000 scholarly e-journals from a variety of academic disciplines. Learners prefer electronic learning because it is the only way to reach unreached populations in terms of both quantity and quality. E-books and e-journals can be used to support e-learning. E-resources data centres house large amounts of data from various fields of study. This data must be identified, retrieved, processed, and integrated to maximise the benefit of research and development, avoiding duplication, and identifying promising opportunities. Identifying and retrieving information requires sophisticated processing tools, which are now available. Academic communities interested in covering a wide range of topic areas that cross traditional disciplinary boundaries are concerned because the intense specialisation required in every discipline requires easily accessible referral material as well as new knowledge sources. Informatics processing and integration problems are not formalised as much as they should be, especially in cutting-edge areas of new discoveries and innovation.

Objective of the Study

1. To study the role of E resources in online learning
2. To study the feasibility of the E resource

Research Methodology

The research paper is based on secondary data collected from Intenete ,Reports of UGC and Variouse Research papers.The Data was carefully analysed by reviewing the variouse data set available o the internete.

Technology in Teaching & Learning

The use of information and communications technology (ICT) is driving today's educational system (information and communication technologies). The University Grants Commission (UGC) has been utilising IUC resources, particularly CEC and INFLIBNET, to support information and communications technology (ICT) education and research in colleges and universities. Because of the expansion of the scholarly information arena, researchers now have access to an ever-increasing number of electronic resources. Most search engines and online catalogues will most likely have material that is relevant to their subject matter. In order to be successful, you must be familiar with the resources, their access mechanisms, their query interface, and the types of results that are returned from the resources. It is necessary for the user to manually compare the results returned by different resources in order to discover and navigate further. In recent years, the amount of relevant information available on the internet has increased, posing new challenges for web search engines. Automatic access to and aggregation of data from multiple sources are among the other features.

In both research and education, data and data management are critical components. As a result, they are constantly on the lookout for trustworthy and up-to-date information.

When it comes to tertiary education, electronic resources are essential for disseminating scholarly and up-to-date information to Indian research and academic communities. More than 8000 scholarly e-journals from a wide range of academic disciplines have already been made available to users as a result of this initiative. Electronic learning is becoming increasingly popular as a means of reaching those who have not yet been reached in terms of both quantity and quality of information. E-books and e-journals are available to assist with e-learning in a variety of formats. Universities and colleges of higher education have large

amounts of data from a wide range of fields of study stored in E-resources data centres. To maximise the benefits of research and development, data must be identified, retrieved, processed, and integrated. This includes avoiding duplication and identifying promising opportunities. It is a complicated process that necessitates the use of sophisticated tools in order to identify and retrieve information. Because of the intense specialisation required in every discipline, academic communities interested in covering a broad range of topic areas that cross traditional disciplinary boundaries are particularly concerned, as are academic communities interested in discovering new knowledge sources. When it comes to information technology processing and integration problems, they are not formalised as much as they should be, particularly in cutting-edge areas of reference material used to infer new discoveries and innovation.

Informative tool: It provides vast amount of data in various formats such as audio, video and documents.

Situating tool: It creates situations, which the student experiences in real life. Thus simulation and virtual reality is possible.

Constructive tool: To manipulate the data and generate analysis.

Communicative tool: It can be used to remove communication barriers.

There are many systems and tools available in today's market and they can help teachers and administrators to succeed with some of the many things they need to do in their roles. These technologies enable educators to improve communications, enhance student learning, controls costs, and manage Internet access in the classroom. Some of the technology tools directly impact teachers, students, and/or parents. But both administrators and teachers alike will recognize the potential of these technologies to help them be more efficient and more effective in their day to day operations.

Lecture Capture: Teachers can record their lectures with very little effort, and those lectures can be made available to students to replay and to review complex concepts, or for students who couldn't attend class.

SaaS (Software-as-a-Service): Software as a service (SaaS) is a web-based on-demand application with a provision that uses periodic, recurring subscription fees, and typically, a pay as you go model. In the SaaS model, costs are directly aligned with usage. As a result, depending upon specific contract terms, the cost is lower when an organization is smaller and will grow as the company grows and usage of the application increases.

Skype: Skype is one of the most popular Web 2.0 free application tool makes it easy to connect (using webcams, or just audio) over the internet. Free video conferencing capability can really extend the reach of administrators, teachers, and students being requested and used in the school.

Open Educational Resources (Oer)

OER is educational content that is available online, which is openly licenced and allows others to use, improve, share, and redistribute it without restrictions. With the help of the various forms of media and ideas, as well as documented teaching strategies / techniques or practises, the components of open educational resources include texts, various media, ideas, and documentation. Open educational resources (OER) advocates might argue that the value of OER lies in their ability to support learning in numerous ways and in diverse contexts. While the aim of OERs is to increase access to information, they are part of a larger open movement, which aims to achieve this by taking advantage of the opportunities offered by the internet. While aspects of this movement include open access to research, open availability of data, open science for global collaboration, and open source software, some of these ideas originate from earlier movements like open access to research, open availability of data, and open science for global collaboration.

Since they are freely available, open educational resources allow students to interact with the material for a longer period of time. Students have access to a wide variety of tools to improve their learning experience. To enable accessibility from any location and at any time of day, it makes sure the content repository is accessible. Furthermore, it supports collaborative learning. Involve students in the

teaching process by encouraging them to become involved. OER and online learning are not the same thing, even though many people mistakenly believe otherwise. Source content, such as text, video, and audio, can be created in any medium, such as printed texts, video recordings, and audio recordings. Although open educational resources (OER) are commonly found in e-learning courses, this does not mean that OER are necessary for e-learning. When openly licenced educational resources have the ability to make a positive impact on the overall quality and effectiveness of education, they deserve to be considered. Institutions need to support curricular development, ongoing course design, contact session scheduling, and overall ICT infrastructure rollout in a deliberate and planned manner. Some of the Indian OER initiatives are:

- A-VIEW (Amrita Virtual Interactive E-learning World)
- OER4S (Homi Bhabha Centre for Sc Ed.)
- OSCAR (IIT, Mumbai under Ekalavya Project)
- Shakshat
- NIOS-OER
- NPTEL

E-Learning Environments and Learning Management Systems

Implementing educational e-learning systems can help students learn more effectively, but this must be done in the context of sound pedagogy. When developing customised E-learning programmes, it is critical to have strong design, programming, and time management abilities. The use of learning management systems in conjunction with training materials is an alternative to this approach. With the passage of time, MOODLE (Modular Object-Oriented Dynamic Learning Environment), a popular online course management system, has grown in popularity. Moodle provides the developer with the ability to customise the system in order to meet the needs of their various stakeholders and achieve the project's objectives. Additionally, when working with web-based resources such as Facebook, YouTube, and Wikipedia, developers have a wide range of creativity and versatility at their disposal. It was with socio-

constructivist pedagogy in mind that MOODLE was created. Ultimately, it wishes to provide a collection of tools to aid in the design and implementation of inquiry- and discovery-based online learning.. Furthermore, it is intended to be used in conjunction with traditional classroom instruction as a supplement. instruction.

Learning Management Systems: Features & Functions

Much more academics than students use computer-based applications in teaching and learning. This is due, in part, to the overall strength of applications that run on computers and use algorithms to manipulate symbols and words, which is central to academia. Since the internet is so cheap and people have converged on PCs, mobile devices, and multimedia and communication technology, the internet has reached many people today. While information and communication technologies (ICTs) have advanced over the years, recent developments in internet technologies have led to an increase in our dependency on information and communication technologies (ICTs), allowing us to connect a greater variety of resources while also bringing about the ability to create new kinds of services. Focus on offering educators the most effective learning management tools to help them facilitate and advance student learning. LMS such as Moodle are being used by a number of institutions to deliver fully online courses. Others are using them to complement their face-to-face offerings (known as blended learning).

A very advanced and user-friendly system has helped to revolutionise the learning process by enabling students and teachers to work together on projects. Each learner has a toolbox of online teaching techniques, along with a wide array of proven teaching principles and classroom exercises, which are all used to support and enhance the application of their own teaching methods. The goal of an LMS is to encourage students to participate in training by making them feel more connected and engaged. Many people who use learning management systems (LMSs) in the social constructionist tradition, such as journals, databases, and wikis, use activity modules like forums, wikis, and databases to create

collaborative communities of learning around their specific areas of interest. In this scenario, some teachers prefer to use LMS (such as SCORM packages) to deliver content to students and then assess student learning by having them complete assignments and quizzes.

Moodle-A Tool for Web Based E-Learning

Moodle was developed by an educator and computer scientist who attempted to incorporate principles of social constructionism into the development of the software. There are many different types of resources that can be integrated into Moodles. These include messages, forums, and booklets, as well as all kinds questions, collections of problems and exercises (including lecture notes), as well as text-based or HTML documents of any kind (such as images, videos, or MP3 files). " According to constructionist theories, the ability to construct something for the benefit of others is a critical component of learning. Any type of intellectual creation, whether it is a spoken sentence or an elaborate artefact such as a painting, a house, or a software package, is considered to be a work of intellectual creation. Social constructivism, which incorporates the concepts of individual construction of objects for oneself and cooperative culture-creation, extends the concepts of individual construction of objects for oneself and cooperative culture-creation to a group of people who are collaborating to build a small culture of shared objects and shared meanings. In this type of culture, you're constantly learning how to blend in and be accepted by others." In a constructivist approach, students are actively involved in the process of meaning construction, and teachers look for opportunities to engage students in activities such as analysis, investigation, collaboration, sharing, construction, and generation.

Some of the tenets of constructivism in pedagogical terms include:

- Students come to class with an established world-view, formed by years of prior experience and learning.
- Even as it evolves, a student's world-view filters all experiences and affects their interpretations of observations.

- For students to change their world-view requires work.
- Students learn from each other as well as the teacher.
- Students learn better by doing.
- Allowing and creating opportunities for all to have a voice promotes the construction of new ideas.
- Allows students more control of their own learning
- Allows lectures to guide more, teach less
- Allows student to build up knowledge, and become part of the teaching process.
- Can provide some really engaging learning experiences
- Collaborating can be very well supported

Conclusion

To enhance teaching and learning, to provide information about the student life cycle, and to boost the career success of students, e-resources are increasingly critical. To enhance the Webgaming experience, it is important to raise awareness in the ICT communities about the information technology's potential to boost scientific and technological research and delivery. In regards to the learning management system (LMS), a platform for software automating many of the processes of the learning process is viewed as one that supports educators and learners alike. The application helps in delivering content, resources, and activities; as well as providing administrative tasks for managing them. In today's classrooms, teachers have the opportunity to transform learning from a traditional model, in which students passively receive information, to a student-centered model, in which students are more actively involved. This is due to the availability of numerous educational resources, the emergence of new theories of learning, and greater Internet access. One must recognise the systemic nature of learning management systems (LMS) in order to understand other computer education terms. An LMS (learning

management system) is the structure that oversees the learning process in its entirety. There are many definitions of learning management systems, however, we use LMS to describe an infrastructure that delivers and manages instructional content, and it also identifies and assesses individuals and organisational training needs. It also keeps track of the progress of an entire organisation in regards to meeting those needs, as well as tracks and displays data for supervising the learning process of the organisation as a whole. It is also important to have an LMS, which handles all of the aforementioned tasks such as registration for courses, administering courses, identifying skills gaps, tracking and reporting for all of the courses. We've noticed that there are many difficulties when introducing new technology in the classroom. If we want to implement new technology in our courses, the first challenge is finding the time to do so. The technology itself may fail, which necessitates instructors to use other methods as a backup. Due to the rapid rate of technological change, it can be difficult to keep up with the ever-changing technological developments that have an impact on the performance of classroom equipment and software. An institution is necessary. There is no doubt that the use of new technology is essential in our modern world. Every classroom has to be equipped with a wide variety of technology resources, including computers, classrooms, and graduate assistants, in order to bring the benefits of technology into the classroom. This must be done together across the institution in order to ensure that students are placed in an effective learning environment for the duration of their studies. It is critical to maintain technology in good working order, but other factors such as making the physical design of a classroom allow for the most effective use of technology must also be considered. In order to more effectively use technology, moving toward a more coordinated approach is of great importance..

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IMPACT OF LONG WORKING HOURS ON EMPLOYEES IN HOTEL INDUSTRY

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ABSTRACT

In service sector, Hotel industry is one where it needs lot of hard work, focus, alertness, job knowledge, multi task and multi process skills. Employees both male and female working at all levels junior to mid- managers the demand for hard work or multi task skills in this industry. To survive in the competitive market the hotels requires productive and competent employees to accomplish the goals of the organisation. To retain the competent employees and to minimize the cost of recruitment it is important to pay attention on employee's problems. In this industry, employees have to put their efforts, and extra hours to deliver the quality service to the customers. Hotels are open for 24/7 so employees does not have fixed working hours. Employee's job profile consists 80 percent work is done manually which is quite tiring and may affect their health. The purpose of this study is to identify the impact of long working hours on the employees in the hotel industry. The data is collected through primary and secondary sources. The primary data are collected through online survey from 60 number of respondents working in hotels and restaurants. The study identified that there is negative impact of long working hours on the employees in the hotel industry. This research paper determines that long working hours affects the physical/ mental health, work life balance and productivity of the employees. Due to this, it hampers the career growth of the employees and the organisational growth.

Keywords: Hotel Industry, Service Sector, Skills, Employee, Restaurants

Introduction

Over the last three decades the service sector has become dominant sector for contributing the growth of GDP in India. Our nation has scope in various other services such as hotels, restaurants, travel and tourism.

According to Bardi (2003, p.9), the author of Hotel Front Office Management, **Hotel** is a business that usually provides an accommodation and services, which may include reservations, suites, personal service valet, public dining and banquet facilities, specialty shops, housekeeping service or laundry.

Hospitality industry falls under service sector and is ranked top 10 sector in India. The large numbers of skilled and semi- skilled employees are required in hospitality sector. It is important to retain and maintain high performance of employees in the hotel industry.

In hospitality sector, it is not always possible to satisfy employee due to high workloads, extended long working hours during peak season, one week off, hotels are open for 24/7 or restaurants open for 9 hours but work hours extends to 10-12 hours. Heavy workload and continuous long working hours sometimes skip their 1 or 2 time meal of the day due to which it affects the health of the employees. This

situation results in low productivity and efficiency of the employees in the organization.

Review of Literature

Milind A. Peshave, Dr. Rajashree Gujrathi (March 2014), Analysed the hospitality industry is concerned about the issue related work life balance of employees, measures taken to improve this problem is not effective. Employees have rated work life balance as a second most important factor to enhance the productivity in the hotel industry.

Amanda Connick (May 2014), have studied on the work & home-life balance satisfy hotel employees in west & mid west regions. It is analysed that the employees of hotel in mid west region has more work load and less of home life as compared to west region.

Anuradha Karmarkar (January 2015), examined that women are passionate for working in hotel industry but due to irregular working hours, work stress and problem of managing work life balance discourage to continue in the same industry and most of them leave the job within a short span of 2 Or 4 years.

Wireko-Gyebi Sampson and Oheneba Akyeampong (2014), has examined the causes and effects of work related stress in the Kumasi metropolis hotel, Ghana. Employees experience work related stress due to work

conflicts, lack of support from the employees or employer, lack of control over their work and poor remuneration. The work related stress has affected the physical & mental health of the employees.

Research Problem

In service sectors such as hospitality industry mostly relied on the employees as they directly serve to the customers. In order to achieve the target or the work of the organisation the employees are treated as machines and make them to work continuous long working hours and allocate more work load to the complete the task at the earliest.

It also affects the productivity of the employees due to tiredness, absenteeism to avoid more work load or fear of not able to complete the work, skipping meals during peak hours, poor work life balance, lack of support from employees or adjusting the shift or work. This affects physical and mental health problems to the employees of the hotel industry.

Research Objectives

1. To find out the extent of overtime duties performed by the employees in hotel industry.

2. To find the impact of long working hours on employee's physical & mental health.
3. To provide suggestion & recommendation on improvement in working hours policy.

Research Methodology

The purpose of this study is to explore the impact of long working hours on employees in the hotel industry. The research study consist of both primary and secondary data. The primary data is collected through the survey by providing questionnaire with 60 respondents are employees i.e. male and female from all the departments in hotels or restaurants. Secondary data would be collected from journals, magazines, and websites.

Research Analysis and Data Interpretation

The study is conducted on impact of long working hours on employees in the hotel industry and it will help to identify the causes and negative impact upon employee's productivity and health issues.

The number of respondents was 60 out of which 57- Male and Female- 03.

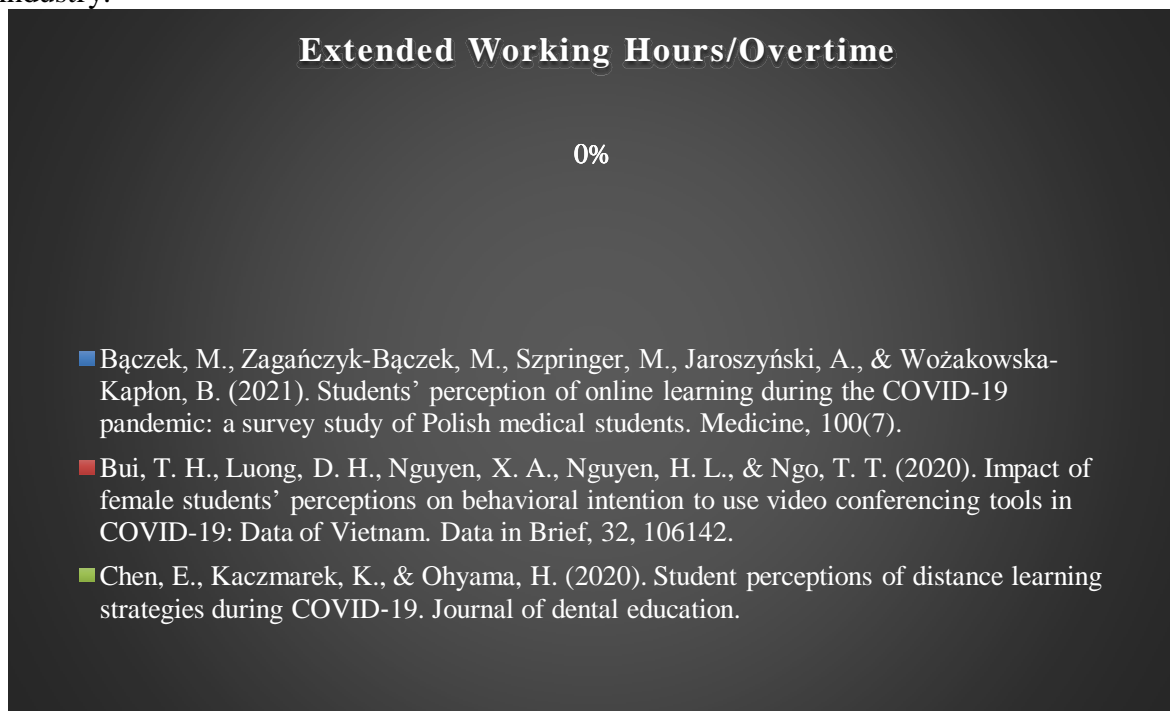


Figure No.1

From the above figure no.1, 34% of respondents most of the employees have to work for extra hours during seasonal or peak

periods. These Percent of employees are working at junior level to team leader.

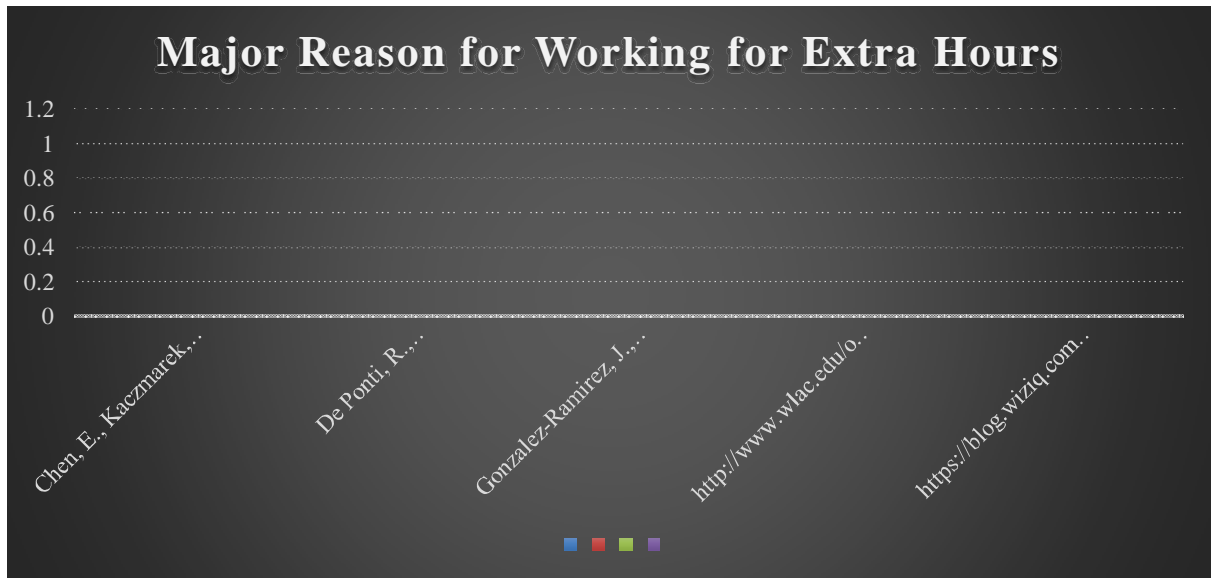


Figure No. 2

In figure no.2, the mostly employees have to extend their working hours during peak hours and due to less staff it is difficult to complete

heavy work load within estimated time period which have to wait back for completion of the task.

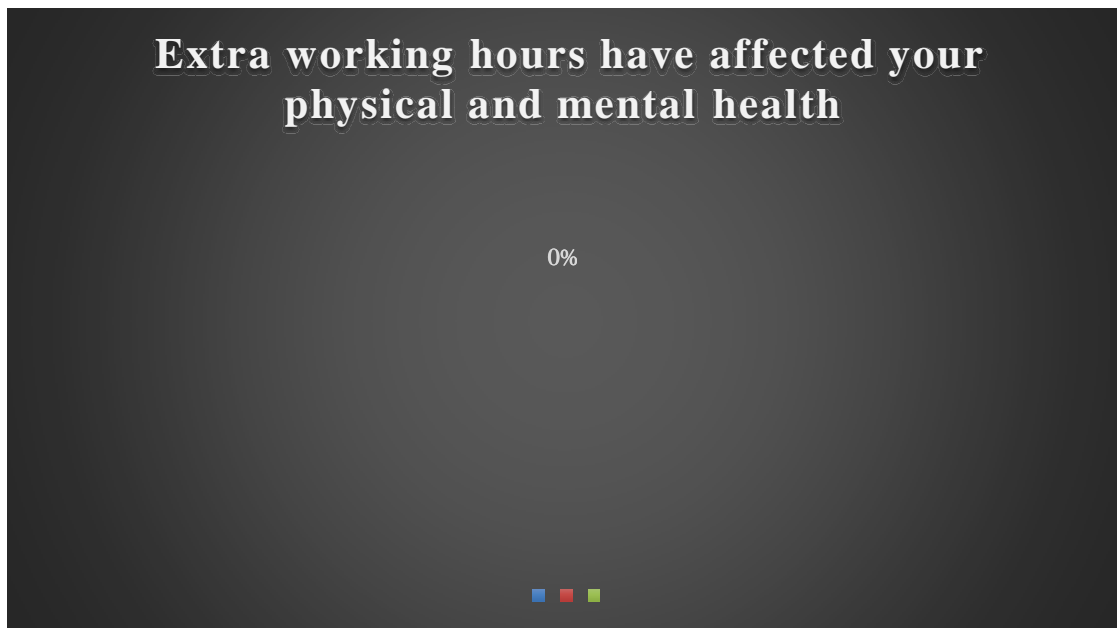


Figure No. 3

In fig. no. 3, 61 per cent of employees have agrees that their physical and mental health is affected due to long working hours. The organisation should consider the health problems of the employees and avoid making them to work for long hours.

The maximum employees facing physical health problems are headaches, muscle pains and feels low energy due to lack of sleep, skip meals, high work stress and constant standing or walking with less break hours.

The mental health issues faced by the employees are depression, frustration and

mental stress this is due to more responsibility and less authority, low quality work life and poor work life balance.

Findings

- The study shows that the most of the employees junior to middle level managers work for long working hours, especially during peak hours. The typical working hours is 9 hours but employees have to extend three hours in a week but very few organisation pays the overtime to their employees. Therefore, the employees does

not work willingly and dedicatedly in the organisation which results demotivation and low productivity.

- The employees have to extend the working hours during busy days like weekends, festivals or due to late night events / parties etc. Therefore employees cannot leave early as they have to maintain the records of sales, cutlery items used and bar inventory. Another reason for long working hours is due to less staff it is difficult for managers to handle the restaurant operations, sometimes even the employee have to do multiple task which results heavy work pressure. This may also decrease the service quality of the hotels/ restaurants and leads to grievances.
- More frequent extended long working hours affect the employee's physical and mental health. During busy hours, the employees tend to skip their meals in order to deliver the customers with quality services which affects their health and due to lack of time to rest it causes mental stress. Most of the employees are facing headaches, back pains, anxiety, depression, loneliness etc. most of the time these physical and mental issues hampers their work life and the employees do quit or change the industry.
- Most of the male above 35 years and female after 30 years have changed their profession due to physical and mental health issues. Therefore organisation must put focus on the extended long working hours during peak or non- peak hours and find the alternate solution like allotting the employees with break shifts where the employees can take rest during their break and also balance the human resources to reduce workload on an individual.

Suggestions/ Recommendations

- In other service sectors like communication, banks, IT etc. there are fixed working hours to the employees as per the factories act 1948 except the hotel and tourism sector. Therefore, a law should

be passed for fixed working hours in hotel industry.

- The organisation should develop best overtime policy either providing monetary benefits or non-monetary benefits to the employees. The monetary benefits by providing extra payment and non-monetary benefits is compensating the off day or giving holiday. This will help the organisation to motivate and increase the productivity.
- The organisation should also provide weekend off once in a month to each and every employee, so that they can spend time with their loved ones and get refresh.
- As employees working in this industry does not get any holidays during festivals, so the managers should celebrate festival at their work place this will be stress buster and creates a feeling of belongingness for the employees.
- The organisation should provide vouchers like movie tickets, spa, resorts or family vacation package for the employees who are quiet productive. This results in increasing their morale and reduce mental stress of the employees.

Conclusion

In hotel industry human is a vital element. Therefore it is important to focus on the employees problems related to extended working hours. The organization must understand the employees' health issues causing due to long working hours and also hampers the sales of the organization. Many mid-age employees at managerial level switch the profession which losses the productive employees and face the loss. The long working hours is not only impacting the employees but also hotel industry.

Employees frequently change the companies which also impact on career growth. In this competitive market, it is difficult to retain the productive employees so the employers should provide better work life, fixed working hours and overtime benefits. This would retain the standard quality service and enhance the expansion of hotel industry in Indian

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THEORETICAL AND METHODOLOGICAL ASPECTS OF STRATEGIC MARKETING AT TOURIST BUSINESS ENTERPRISES

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ABSTRACT

This paper summarizes the arguments and counterarguments within the scientific discussion on the issue theoretical and methodological aspects of the conceptual strategy of the strategic development of the tourism business. The main purpose of the research is on the basis of generalization of existing researches to improve scientific and practical aspects of the concept of strategic marketing in activity of the enterprises of tourist business. Methodological tools of the research methods were such general scientific research methods as: analysis, synthesis, comparison and analogies. The object of research is the activity of tourist business enterprises. The theoretical and methodological basis of the study are the provisions of economic theory, the theory of competitive advantage, the theory of transaction costs, the theory of cross-border cooperation, marketing theory, strategic marketing, place marketing, marketing of the tourist region. In the course of research methods are used: monographic - for revealing of approaches to comprehensive studying of a subject of research; methods of comparison, analogy, analysis, synthesis and generalization - to reveal the content of basic concepts and terms; retrospective analysis - to determine trends in tourism; tabular-graphic method - to study the dynamics of phenomena and processes of formation of supply and demand in the market of tourist services; method of taxonomic analysis - to assess supply and demand in the market of tourist services; method of sociological survey - to build a matrix of interests and needs of consumers of tourist services; expert evaluation - to determine the level of readiness of tourism enterprises and related activities to cooperate in the tourism cluster, as well as general scientific methods such as traditional analysis, deduction and induction, which processed secondary information and results obtained by other methods. The article contains the comparative characteristics of the classical approach to tourism marketing and strategic approach from the standpoint of the importance and effectiveness in decision-making. Particular attention is paid to the input elements of strategic marketing in tourism.

Keywords: tourist market, tourist business enterprises, concept of strategic marketing, strategic analysis, marketing goals, input elements, marketing strategy.

JEL Classification. M00 General. Business Administration and Business Economics; Marketing; Accounting; Personnel Economics: General

Introduction

Modern business conditions are characterized by the presence of fierce competition in both domestic and international tourism markets. The influence of globalization processes and the rapid development of innovative technologies in the field of tourism contribute to the search, adaptation and implementation of modern tools and technologies for the promotion and sale of tourism products in accordance with the changing demand of tourist consumers. Most domestic tourism enterprises have a low or no level of strategic orientation, and the developed missions of tourism enterprises are mainly focused on internal potential, taking into account available resources. The intuitive nature of management

decisions is caused by low level of training of staff, lack of department or at least persons who carried out strategic marketing research in domestic and international tourism markets, lack of proper information and analytical support, as well as limited resources for modern innovative technologies of strategic management of tourism enterprises. Within the concept of strategic marketing, the theory of consumer behavior of the market of tourist services has been improved taking into account demographic, social, biological and psychological factors of their motivation. As a result, the consumer of the tourist product encourages businesses to create new products of high consumer value, thus motivating management in the application of marketing

management. All this necessitates the study, development and improvement of theoretical and methodological and scientific and practical aspects of the concept of strategic marketing in the tourism business.

Main Body of Paper

Strategic marketing takes into account the interests of all subjects of the travel services market in the environment of the enterprise. Characteristic features of strategic marketing are the continuity, integration and prospects of developing new tourism products and entering new markets. As strategic marketing is based on the results of the analysis of strengths and weaknesses of the enterprise and the forecast of the existing environment, it, accordingly, maintains the achieved successes in the market and allows to provide long-term prospects for its development.

An analysis of the available literature has shown that strategic marketing should be considered as a new concept of marketing activities of the enterprise with its own terminology and research methodology, which is closely related to the management and marketing of travel services. In particular, for management decisions such management functions as goal setting, planning and forecasting are implemented, which at the same time is necessary for solving information and analytical tasks of strategic marketing.

From certain points of view, marketing can be considered as the implementation of a separate management function aimed at tracking changes in the macroeconomic environment, analysis of external factors and the development of appropriate indicative management decisions [1, p. 12].

Successful activity of enterprises in the modern competitive market is possible only if the focus is on achieving the final practical result of production and marketing activities. This result is achieved by interconnected implementation of strategies and tactics of adaptation to the needs and demands of potential consumers and targeted influence on them. Marketing management directs the company's activities to achieve long-term results in gaining market share, increase sales. Thus, marketing plays a

key role in the field of strategic planning of any enterprise, which is manifested through: ensuring the implementation of guiding methodological principles that focus the company's strategy on the needs of important consumer groups and accordingly develop a marketing strategic plan to identify and attract attractive market segments [2, 3].

Strategic marketing is characterized by medium- and long-term time measurements, the main tasks are to participate in determining the mission of the enterprise and its goals, selection and justification of development strategy, ensuring optimal "business portfolio", development of marketing strategy and formation of favorable conditions for its effective implementation [4, p. 53].

The object of strategic marketing in tourism is the theoretical provisions and practical experience of marketing activities of tourism enterprises in the process: defining the mission and goals of the enterprise, developing a strategy for its development and forming favorable conditions for its effective implementation.

The subject of strategic marketing in tourism is the participation of marketing in the system of strategic management of a tourist enterprise, including:

- marketing analysis and forecasting of the external and internal environment of the tourist enterprise;
- participation in defining its mission and goals;
- selection and justification of the company-wide strategy;
- participation in business portfolio management;
- market segmentation;
- positioning;
- development of marketing strategy;
- development of a tactical marketing program;
- other.

The subjects of strategic marketing in tourism are specialists in the field of tourism, marketing, managers, top managers and other specialists who, due to their professional responsibilities or other conditions, are involved in the process of strategic marketing. Further generalization of scientific research on

strategic marketing allows to identify the principles, consistent adherence and use of which allows to carry out successful activities of enterprises (tabl. 1) [6, p. 133].

Table 1 : Principles and tools of strategic marketing

Principles	Means of its implementation
Concentration of product policy on the weaknesses of competitors	focusing available financial, production, and intellectual resources on output that is associated with either the greatest potential success or a focus on the weaknesses of competitors
Focus on the strengths of one's own consumer value	ensuring the highest quality products at all stages of the quality loop
Using of favorable chances of the market environment of the enterprise	market environment monitoring
Implementation of innovative activities on the basis of marketing	introduction of innovations taking into account market requirements and possibilities of the enterprise
Using the synergy of resource potential of the enterprise	optimization of all types of available resources to ensure the interaction of potential factors to achieve the desired success for the enterprise
Compliance with the needs of the time	coordination of goals and means of their implementation
Creating a targeted managed marketing-oriented organization	development of a balanced concept of enterprise management on the basis of an appropriate development strategy
Risk compensation	early identification of those measures that will minimize its occurrence or impact
Using opportunities for cooperation or joint implementation of certain business projects	formation of competitive advantages in the implementation of the chosen strategy
Simplicity	clarity of the strategy for the personnel involved in the implementation of the tasks formulated on its basis

Thus, having studied the conceptual foundations of strategic marketing of enterprises based on the analysis of the scientific literature, we can conclude that the application of this concept can be a formula for success for all businesses, including businesses in the tourism sector.

Thus, we can formulate a number of advantages of strategic marketing, which are manifested in the fact that it allows:

- 1) to create the general effective strategy of marketing activity for the subject of tourist branch;
- 2) to transform the direction of the business entity of the tourism industry from inert response to the influence of market factors on active decisions and actions;
- 3) to analyze and evaluate the effectiveness of each area of activity;
- 4) to coordinate all spheres of activity of the tourist enterprise (scientific and design

developments, sale, formation of innovative tourist products), directing them on studying, research and satisfaction of needs of consumers for the purpose of maximizing profit;

- 5) to determine the optimal distribution channels of tourist services and products, as well as to find out the necessary level of their financing;
- 6) to provide a very specific quantitative and qualitative nature of the enterprise;
- 7) to provide the subject of the tourism industry the opportunity to focus on the most promising and successful areas of development of the enterprise strategic opportunities and guidelines [5, p. 30].

The study of the principles of strategic marketing in the tourism business and its prospects is impossible without determining its categorical apparatus. The main categories of strategic marketing are given in Table 2 [7].

Table 2 :The main categories of strategic marketing

Category	Definition	Explanation	Example
The mission of the enterprise	The main purpose of the enterprise	It is determined on the basis of: <ul style="list-style-type: none"> – needs, – consumers, – goods, – competitive advantages 	The mission of the tourist enterprise «TUI» is: “We create a holiday that makes people happier.” The mission of the tourist enterprise «Coral Travel» is: to make quality rest accessible to all Ukrainians.
Strategic business unit	The business zone of a tourist enterprise is singled out as a certain type of market activity. It can cover an important division of the tourism industry, several groups of service packages or even one travel product created by the firm.	It is characterized by the following parameters: <ul style="list-style-type: none"> – a certain type of travel services, product tour; – specific needs that can be met; – consumer group; – competitive advantages of the tourist enterprise. 	Tour operator «Coral Travel» has such SBU: <ul style="list-style-type: none"> – excursion tours; – ski tours; – wedding tours; – cruises - sea voyages; – gourmet tours
Marketing goal	Defines the main purpose of marketing activities	Must meet the following requirements: <ul style="list-style-type: none"> – hierarchy; – quantitative certainty; – reality; – coherence; – flexibility 	The main goals of "Coral Travel" include: <ul style="list-style-type: none"> – increasing the market share of the enterprise; – business expansion by improving the quality, development of directions and expanding the range of services provided
Business portfolio of a tourism entity	The set of all strategic units of the enterprise	Based on the strengthening of the position of promising SBU, disbandment of non-profit and the formation of new SBU carry out business portfolio manageme	The business portfolio of the tourist enterprise TUI Ukraine includes: online insurance, online booking, passport services, SIM-roaming cards, car rental abroad, business tourism services, additional services on flights and at the airport, gift certificates
Strategy	A comprehensive comprehensive action program that prioritizes issues and resources to achieve the main goal	The way, the rules of choosing goals in specific, unforeseen situations and the means to achieve them from possible - this is the strategy	Coral Travel's strategy is to maximally promote the creation of a civilized tourism market, where the client-agent-operator relationship is based on mutual trust and respect.
Market share of the enterprise	This is the share of products of the tourist enterprise in the total capacity of the market	$MSE = VS/CM * 100\%$, де MSE – market share of the enterprise %; VS – the volume of sales of products of a particular tourist enterprise in this market, natural units; CM – capacity of this market	At the beginning of 2018, the market share of the tour operator Join UP was 36%, TPG – 18,9%, Coral Travel – 10,2%, TUI Ukraine – 14,9%
Relative market share of the enterprise	This is an indicator that characterizes the competitive position of the enterprise in the market. If $RMSE > 1$ - the company is the market leader. If $RMSE = 1$ - the market position of the enterprise is the same as that of a competitor. If $RMSE < 1$ - the company has a weak market position	$RMSE = \frac{MSE}{MSSC}$, where RMSE – relative market share of the enterprise; MSE – market share of the enterprise, %; MSSC – market share of the strongest competitor, %.	At the beginning of 2018, the strongest competitor in the market of tourist services was the tour operator Join UP (market share 36%) $RMSE$ TPG – 0,5, Coral Travel – 0,28, TUI Ukraine – 0,4.

The main categories of strategic marketing include: the company's mission, marketing goals, strategic business unit, business portfolio of the firm, market share of the firm, the relative market share of the firm.

The mission of the firm (or corporate mission) summarizes the main purpose of the firm, through which it realizes the purpose of its existence. In fact, the mission of the organization is a concentrated fusion of philosophy and strategy, which is proclaimed and implemented by its top management. According to some leaders of tourism enterprises, now the mission of their organizations is to develop and provide consumers with a comprehensive, high quality, thought out to the smallest detail and provided with all necessary components of the product, which has its individuality, uniqueness or unification and can be transformed and modified over time.

However, a significant number of entrepreneurs do not understand what the mission of their companies and do not even think about it. At the heart of their activities is the main motive is to make a profit or salary.

Defining and understanding the company's mission allows us to consider the panorama of the company's business and evaluate it from a strategic point of view.

The company's mission is determined by the following main factors:

- range of needs that are met (or trying to meet) the firm;
- circle of consumers of the firm;
- goods produced by the firm;
- competitive advantages of the firm.

Under the conditions of marketing orientation of the enterprise, the mission of the firm should be determined first of all taking into account the market needs that the firm is trying to meet. Table 3 shows examples of the formulation of missions of tourist enterprises of Ukraine.

Table 3 : Formed missions of tourist enterprises of Ukraine

Tour operator	Formed mission
ANEX Tour	We help people to realize their dreams and give the main joy - discovery. We work for clients and try to make quality rest accessible to everyone [8]
Join UP!	Our mission is to make travel accessible to most Ukrainians and open Ukraine to the world [9]
Travel Professional Group (TPG)	TPG's mission is implemented in the following areas: 1. Tourist satisfaction. We strive to make the world closer to man, to enable as many people as possible to know the world more deeply, drawing energy from it to restore their own strength. We strive to exceed tourist expectations. 2. Providing opportunities for full self-realization of our employees. We are responsible for recognizing the human dignity of employees, their fate in our success, the selection of talented and wise managers, the appropriate (highest in the industry) level of material security of those who create our product. 3. Getting profit. However, we do not set ourselves the goal of making a profit for the sake of profit. We need profit for our own development and realization of our goals. 4. Benefiting the society in which we work. We achieve this by creating high standards of highly professional business, working hard to meet the demands of our partners - agencies, as well as by providing assistance to those areas of public life that need it, including the treatment of children. 5. Affirmation of the greatness of the Ukrainian State in the international arena, ensuring respect for Ukrainians and their achievements around the world. [10]
Coral Travel	The mission of the tourist enterprise is to make quality recreation accessible to all Ukrainians [11]
TUI Ukraine	We create a rest that makes people happier [12]

From the category of "mission of a tourist enterprise" logically follows the category of "strategic business unit" (SBU). This category

was first used during the work of the consulting firm "McKinsey" on the problems of the company "General Electric". SBU is a

separate business area of the firm, which is responsible for a certain type of its market activity.

SBU can cover an important division of the firm, several product groups or even one product or brand produced by the firm [13, p.36].

The strategic business unit is characterized by the following parameters:

- a certain type of travel services, product tour;
- specific needs that can be met;
- consumer group;
- competitive advantages of the tourist enterprise [5, p. 243].

Comparing the constituent elements of SBU and the company's mission, we can see their similarity. The difference between these two categories is that the SBU is the primary area of the firm's strategic planning, and the mission is a generalizing, unifying category at the firm level, which involves defining certain priorities among the SBU.

Many companies operate in different types of business, have a diversified focus. But it is not necessary for these types of business to be separated into organizational units. Yes, one organizational unit can cover several types of business, and vice versa, one type of business can be divided into several units. As for the strategic business unit, it is mandatory to allocate it to the organizational unit in the structure of the firm.

Strategic business units are often distinguished by the commodity principle. The main features of SBU are:

- covers a particular type of business (or several interrelated types of business) that is separate from others within the firm;
- has its own circle of competitors, which it tries to catch up and surpass;
- each SBU is managed by a separate manager who is responsible for its strategic development.

The main task of strategic marketing for a strategic business unit is: to determine the competitive state of this unit in the market and the directions of its strategic development. For this purpose, the tools of matrix analysis are mostly used (matrices of I. Ansoff, Boston

Advisory Group (BAG), McKinsey - General Electric, M. Porter's strategic model, etc.).

On the basis of strengthening the position of promising strategic units, disbandment of non-profit and the formation of new strategic units of the tourist enterprise manage the business portfolio. A business portfolio is a set of activities and products that determine a company's profile. It allows you to assess the activities that determine the profile of the company. An effective business portfolio is one that optimally reconciles the strengths and weaknesses of the enterprise with the opportunities of the market environment.

The tasks of strategic marketing for managing the company's business portfolio are:

- strengthen the position of sustainable profitable SBU;
- develop, invest promising SBU;
- to exclude from activity non-profit, hopeless SBU;
- to form new SBU [13, p. 35-36].

The next category of strategic marketing is goal setting. The process of establishing the goals of strategic management of the tourism enterprise is the core of its functioning in the services market, because the realization of such a goal helps to unite employees and create an effective motivation to achieve the expected result. As noted by A. Thompson and A. Strickland, it is the establishment of goals translates the strategic vision of the development of the enterprise in specific tasks related to the production and performance of the enterprise [14].

The objectives in this case are certain obligations of the tourist enterprise to achieve the established results of its operation as an organizational system in a certain period of time.

Goals are the desired and necessary results of activities that must be achieved by a certain time. They are valuable mechanisms that allow you to consistently turn competitive advantage and investment strategies into tasks and programs that need to be implemented. Goals can be set for all activities and for all departments of the enterprise. The marketing goal is set after the formation of the company's mission and determining the impact of the

marketing environment. It determines the main purpose of marketing activities.

Marketing goals must meet the following requirements:

- hierarchy (subordination) implies that the mission of the firm should be subordinated to the goals of the firm, and the goals of the firm should be subordinated to the goals of its functional units;
- quantitative certainty - is the certainty of goals in size and time, ie the goals must be quantified;
- the reality of the goals implies the need to reconcile them with the real capabilities of the enterprise, which is confirmed by the analysis of the capabilities and competitive positions of the firm, and not just the subjective desire of management;
- coherence (compatibility) of goals means that actions and decisions to achieve one goal should not interfere with the achievement of other goals;
- flexibility of goals means the need to make certain changes in the target orientation of the firm as a result of changes that occur in the environment [13].

Strategy - a general comprehensive program of action that identifies the priorities of problems and resources to achieve the main goal. Different definitions of the category "strategy" are given in scientific works. According to B. Karloff, strategy is "a generalized model of actions needed to achieve goals by coordinating and allocating company resources" [15]. A. Chandler argues that the strategy - is to define the main long-term goals and objectives of the enterprise, approval of the course of action and allocation of resources needed to achieve these goals. These definitions indicate that strategy is a coordinating, unifying factor between the goals and resources of the firm. According to American researchers, the share of marketing strategy in the overall strategy of the firm is about 80% [16, p. 10,11]. The way, the rules of choosing goals in specific, unforeseen

situations and the means to achieve them from possible - this is the strategy.

The market share of the firm is the share of goods of the tourist enterprise in the total capacity of the given market. This figure is calculated as a percentage.

Market share is calculated in the following ways:

- market share in terms of sales;
- market share in a particular segment;
- relative market share;
- market share relative to the leader;
- market share in relation to three competitors.

The "relative market share" indicator is very important in strategic marketing (especially when considering the Boston Advisory Group matrix). The value of the indicator "relative market share" is that it more objectively than the indicator of market share, characterizes the competitive position of the firm in the market.

The value of the indicator "relative market share" is that it is more objective than the indicator of market share, characterizes the competitive position of the firm in the market. If the relative market share of the firm is greater than one - the firm is the market leader and has the strongest market position. If the RMSF is equal to one, the market position of the firm is the same as that of its main competitor. If the RMSF is less than one, the firm has a weak market position.

Regarding the consideration of the main functions of strategic marketing, a number of scholars in the works note that strategic marketing has basic management functions, namely: planning, organization, control and regulation.

But taking into account the specifics of the concept of strategic marketing should also take into account the functions that are also inherent in strategic planning [16, p. 49].

Based on the generalization of existing approaches in Fig. 1 shows the main functions of strategic marketing.

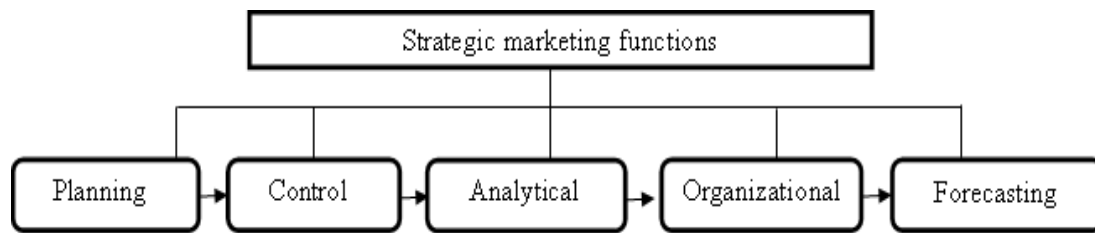


Fig. 1. Functions of strategic marketing

The essence of the function of forecasting strategic marketing is analytical and scientific prediction of the future state of all subsystems and individual elements in the relevant management decisions, the result of which is the formation of strategic alternatives to marketing strategies.

Analytical function includes research, analysis, study, systematization of factors of the marketing environment. It is implemented on the basis of:

- research of target markets;
- analysis of the behavior of target market participants (consumers, competitors, suppliers, etc.);
- identification of advantages and disadvantages of the enterprise and its main competitors.

The following actions are implemented within the *organizational function*:

- development of marketing strategies and tactics on the basis of certain goals and objectives, strategic marketing plan of the enterprise;
- providing marketing activities of the organization with the necessary tangible and intangible resources;
- establishing links between different departments of the enterprise.

The *control function* is realized through the creation and use of control systems for the implementation of marketing strategy. Based on this function, the company has the opportunity to:

- promptly respond to changes in the environment;
- monitor the effectiveness of marketing activities of the enterprise.

Implementation of strategic marketing functions involves the following tasks:

- information support and creation of normative base of marketing researches;

- analysis and forecasting of needs, demand and market conditions of tourist services;
- analysis and forecasting of factors of competitive advantages of the enterprise;
- analysis of the company's relations with the external environment;
- forecasting market volumes by segments;
- forecasting the competitiveness of future tourism products in specific markets;
- formation of goals and methods of promotion and sale of tourism products;
- development of a strategy to stimulate sales of tourism products and increase profits.

Conclusion

Thus, having explored the conceptual foundations of strategic marketing of enterprises based on the analysis of the scientific literature, we can conclude that the application of this concept can be a formula for success for all businesses, including businesses in the tourism sector. The essence of strategic marketing involves the application of the principles of management and marketing in the activities of the tourist organization at a better level, which involves the development and implementation of strategies for the development of the tourist enterprise to achieve long-term and effective long-term goals. The main principles of strategic marketing in the tourism business are: understanding the needs of consumers; struggle for the consumer with the help of a conceptually new quality tourism product; matching the needs of the market and the existing potential of the enterprise; focus on long-term goals in close cooperation with the overall strategy of the enterprise; adaptation of the enterprise to the impact of the external environment through a system of environmental monitoring and analysis of competitors; taking into account the company's strategic opportunities and guidelines.

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MENTAL TOUGHNESS AND VOLLEYBALL PERFORMANCE**Sudhakara. G.**S,P,H,S.Hiremagalur, Chikmagalur, Karnataka, India
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ABSTRACT

This study examined the relationship between Game Performance with Mental Toughness of Volleyball men players who have represented state level, their age ranged from 18-25 years. For the purpose is to understand the relationship between players performance and Mental Toughness, Allan Goldberg's(1995) Questionnaire was used to test Mental Toughness. The questionnaire comprised of 30 statements. Every statement had two possible responses i.e. True or False. The ability to play volleyball players has been found using a four point rating scale when playing. Data in the four skills namely serving ability; passing ability (service reception), attack and blocking ability were rated on a scale from zero to three. Playing ability was measured by the coach's judges rating scale during a game by three skilled coaches who know volleyball game. The results were obtained using the Pearson product moment co-relation statics the study. The results of the study showed that there was a significant correlation between game performances with mental toughness.

Keywords: - Mental Toughness, Volleyball, Game, Performance, Ability, Psychological.

1. Introduction

Successful game of volleyball needs ability of the players to generate good speed, agility, flexibility and incredible power in relation to anthropometrical, physiological and psychological effects during the play of game. Basic Skills such as Serving, Passing, Attack and Block are of utmost importance for the best volleyball players. Although players have good skills, their mental, physical and physiological factors play an important role in demonstrating his playing performance and it helps the team win.

Mental toughness depends on a player's capacity to speedily leave the faults and failures behind. Hanging onto the so far committed mistakes will get that specific player into big trouble, performance wise. She should forget the mistakes and mentally bounce back quickly. This can be seen if a player misses the service and the opponents definitely make her to receive the first pass. So the standard of rebound ability is essential for a volleyball player irrespective of game situations. Volleyball players must possess the ability to handle the pressure. They must stay calm and come up to the expectations at times of crisis. Peak performance demand that you are relaxed once the performance begins. Even though the team is trailing back by more than five or six points, the players on the court can

handle the game situation with utmost care and come out of the pressure.

One of the best characteristics of a mentally tough volleyball player is confidence. The level of confidence should be high enough in all the players to come out of the setbacks and failures. Under the pressure of competitiveness, short faith will neutralize natural ability, hard work and ability. Similarly, high confidence will enhance a player's training and hidden talents, lifting their performance to a higher level. Motivation is the fuel to volleyball players to drive the overall training to a successful completion and accomplishment of the given goals. Without adequate motivation the players get stuck having "Permanent Potential". Without motivation players or the entire team won't put in the work necessary to become a winner. A good motivation makes the team to perform better even after a setback. Mental toughness is learned, not inherited. This is an important understanding. Tough mindedness plays a significant role in volleyball performance. Mental toughness is nothing to do with heredity, intelligence or your character mental toughness is an acquired skill. Proper perseverance understanding and practice are sufficient to achieve mental toughness. Performance in Volleyball is task oriented. Any good team performs better against an inferior team. Whereas, playing against an equally good team or superior team

requires a good amount of physical, physiological and mainly psychological preparations. Specifically the mentally tough teams can create surprises by winning against superior teams.

There are many areas a team can excel and over power their opponents. For example, serve placement. An intelligent player, after getting some feedback from her coach focuses herself to serve to the weak point of serve reception formation of their opponents. For this, that particular player should be mental tough to go for an effective serve placement and scores a point. Likewise, an attacker or a blocker can also score points with grit and determination. Ultimately success in performance at higher levels of competitive volleyball can be seen by mentally tough players only.

Mental or psychological training helps Volleyball players to summarize and adopt a set of working formulae, creeds or tenets as a habitual model for action, for self-encouraging, self-consoling, self-assessing, self restricting, self-motivating and self-mobilizing. Mental toughness training is a method whereby, through self-hinting or self-suggestion, one train to relax, to remain in a state of calm and composure, to imagine emotions or maneuvers, to idealize and to fancy, concentrating and so forth. Such an exercise in the regular training work outs will be good to eliminate fatigue, storing up a maximum amount of pre-match energy and preventing pre-game excitement and nervositas. Such an exercise may be done after a session of practice in techniques and tactics or done prior to a formal game. This method of training is essential to expect higher level of performance especially among female volleyball teams.

It is well understood that volleyball game requires a perfect blend of physical, technical, tactical and psychological capabilities. Out of the psychological traits required for successful volleyball game, the most important are team cohesion and mental toughness. Team cohesion plays a vital role because it is a team game and the success depends on the collective efforts of all the players. This collective effort is possible only when each player is playing her role and putting up her best efforts in her position. Volleyball is fun and it requires a lot of hard

work and good neuromuscular coordination and muscle tone. The mental toughness of the players is a determinant factor in the game situation and the competitors who have better mental toughness usually win the game.

The purpose of the study was to know the relationship with Volleyball Men Players performance with mental toughness of the state level volleyball players.

2. Methodology

2.1 Selections of Subjects

For the present study 40 Men Volleyball Players who had participated in State level Volleyball Tournament held at Kairangala, Mangalore(District), Karnataka (State) during the year of (14th February) 2021 were selected as subjects. Their age ranged 18-25 years.

2.2. Criteria of Measurement

The Mental Toughness of Volleyball players were measured with the help of a Questionnaire invented by Allan Goldberg (1995) was used to test volleyball players Mental Toughness. The questionnaire comprised of 30 statements. Every statement had 2 possible responses i.e. True or False. The four point rating scale was used to evaluate the game performances of the volleyball players during match situations with the help of three qualified coaches. Data in the four skills such as serving ability; Passing ability (service reception), Attack and blocking ability were rated on a scale from zero to three. All the instructions were given to the subjects before the administration of the tests. The Covid-19 rules (Standard Operating Procedure) are maintained during data collection.

2.3 Statistical Analysis

To establish the relationship among the variables measured Pearson's Coefficient of Correlation was applied. The collected Data were analyzed with the help of SPSS (Statistical Package for Social Science).

3. Results

To establish the Relationship of Mental Toughness with Volleyball performance among state level volleyball men players. Pearson moment correlation(r) was computed

and data pertaining to this has been presented in table-1.

Table- 01: Relationship of Mental Toughness to Volleyball Men Players Performance

Sl No	N	Volleyball Men Players Performance Correlated With Mental Toughness	Correlation Coefficient(r)
01	40	Rebound ability	0.34*
02	40	Ability to Handle Pressure	0.46**
03	40	Winning Concentration Ability	0.65**
04	40	Self Confidence	0.48**
05	40	Goal Setting	0.57**
06	40	Mental Toughness(Total)	0.69**

*Significant at 0.05 level. ** Significant at 0.01 level.

The above table-01 illustrated the analysis of the game performance with the mental toughness is represented. From the above table it is clearly exemplified that there exists a positive correlation between game performance with rebound ability ($r=0.34^*$), Ability to Handle Pressure ($r=0.46^{**}$), Winning Concentration Ability ($r=0.65^{**}$), Self Confidence ($r=0.48^{**}$), Goal Setting ($r=0.57^{**}$) and Mental Toughness (Total) ($r=0.69^{**}$).

4. Conclusions

On the support of the conclusion of the research, and within the limitation it is observed that:

1. There was a significant relationship found between Mental Toughness facets such as

reboundability and Game performance of state level Volleyball men players.

2. There was a significant relationship found between Mental Toughness facets such as Ability to Handle Pressure and Game performance of state level Volleyball men players

3. There was a significant relationship found between Mental Toughness facets such as Winning Concentration Ability and Game performance of state level Volleyball men players.

4. There was a significant relationship found between Mental Toughness facets such as Self Confidence and Game performance of state level Volleyball men players.

5. There was a significant relationship found between Mental Toughness facets such as Goal Setting and Game performance of state level Volleyball men players.

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ANALYTICAL STUDY AND IMPURITY PROFILING OF FIXED DOSES COMBINATION OF ATORVASTATIN CALCIUM AND EZETIMIBE BY RP-HPLC

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ABSTRACT

The fixed-doses combination of Atorvastatin Calcium (ATV) and Ezetimibe (EZB) is used to prevent hypertension. It is difficult to separate and quantify individual known and unknown impurities with optimum resolution from each other in a combination product with a single chromatographic method. The objective of this study was to develop and validate a high-resolution method for fixed-dose combination formulation of ATV and EZB with its impurities by using advanced techniques i.e., Reverse-phase high-pressure liquid chromatographic (RP-HPLC). By using the gradient RP-HPLC method, more than 20 known and unknown impurities related to combination formulation were separated and quantified in the range of (0.8 to 3.2 µg/mL) for ATV and (0.1 to 0.4 µg/mL) for EZB. In this study, two separate analytical methods RP-HPLC has been developed, validated and compare for the simultaneous quantification of ATV and EZB tablet with their impurities. The proposed methods have a high degree of sensitivity and will provide fast and cost-effective quantitative control of Pharmaceutical formulations.

Keywords: Atorvastatin Calcium, Ezetimibe, High-pressure chromatographic system (HPLC)

Introduction

Hypertension or elevated blood pressure is a serious medical condition that involves a higher risk of heart, brain, kidney and other diseases. Worldwide major population is suffering from a heart-related disease which is directly in correlation with hypertension. No treatment or late treatment of hypertension can lead to the cause of illness or death. Early diagnosis and treatment of hypertension can prevent heart, brain and chronic kidney disease. Many products are available in the market for the cure of hypertension as a single drug formulation and fixed-dose combination product but fixed-dose combination products are more efficient in the treatment of hypertension as per various research. A triple-drug combination of ATZ and EZB is one of the fixed-dose combinations which is very effective and widely used products for the treatment of hypertension. Various research shows such combinations are very useful to control cardiac activity significantly with lowering the risk of coronary cardiac disease and other critical conditions related to the brain and kidney.

The fixed-dose combination for ATV and EZB are available in the market under various brands. Many researchers have reported determining impurities related to both active

pharmaceutical ingredients (API) by RP-HPLC for this double combination product with a longer run time but no research is reported to separate all process and degradation impurities of ATV and EZB by a single method. Impurity profiling with separation and identification of each related impurities of individual API's in combination product is very critical and it is more important for safety assessment and formulation process development.

Literature survey shows many analytical methods are reported for identification and quantification of impurities by RP-HPLC for ATV and EZB and a combination product of three drugs.

In this research work, single chromatographic method was developed by RP-HPLC to separate all possible degradation products and processed impurities of each API and validated them according to ICH guideline.

The study is important for separation and quantification of all possible degradation and process-related impurities of ATV and EZB in the fixed-dose combination products and it helps to identify and control any degradation product in formulation with a safe and good approach for the product life cycle. The structures of ATV and EZB are demonstrated in Figs 1 and 2.

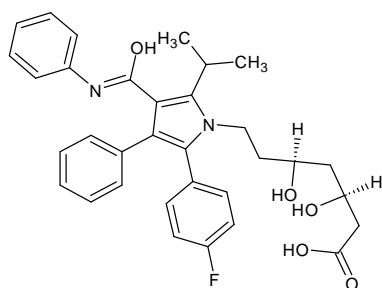


Figure 1. Chemical structure of ATV

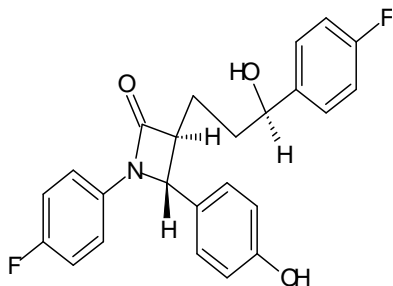


Figure 2. Chemical structure of EZB

Material and Method

Material and Reagents:

ATV API, EZB API, related known impurities were received from a Paradise Healthcare and combination tablets of ATV and EZB purchased from market. HPLC grade water, Acetonitrile, THF, ammonium acetate and glacial acetic acid were purchased from Merck.

Solution Preparation

Mobile phase-A:

20mM Ammonium acetate buffer pH 5.0:

Weighed 3.08gm of ammonium acetate and dissolved it in 1000mL of water.

Carefully adjusted the pH to 5.0 ± 0.05 with the dilute glacial acetic acid solution. Mixed well and filter through $0.45 \mu\text{m}$ membrane filter before use.

Mobile Phase B

Acetonitrile : THF (95:5% v/v).

Diluent preparation

Prepared by proper mixing of water (200 ml) and acetonitrile (800 ml).

Sample Solution Preparation

Weigh 20 tablets and the average weight was determined. Tablets were crushed by mortar-pastel to a fine powder and weigh accurately sample powder quantity equivalent to 160.0 mg

of ATV, transfer into 100mL volumetric flask, added 20mL of diluent and sonicate for 30 minutes with intermediate shaking, diluted it to volume with diluent. Mixed well and filtered the clear supernatant solution through $0.45 \mu\text{m}$ syringe filter and analyzed in HPLC system.

High-Performance Liquid Chromatography (HPLC Analytical)

A Waters HPLC system with a quaternary pump, photo-diode array detector, and auto-sampler has been used for analysis. An RP-HPLC gradient method is used for the determination of known and unknown impurities and degradation products related to ATV and EZB combination tablets. A YMC ODS-AQ ($4.6 \times 250 \text{ mm}$), $3.0 \mu\text{m}$ column was used for analysis with a flow rate of 0.6 ml/minutes. The analyte peaks were monitored and the detection wavelength 244 nm. A mixture of 20mM ammonium acetate buffer pH 4.5 and acetonitrile in the ratio of 70:30% v/v was used as mobile phase-A. A mixture of 20 mM ammonium acetate buffer pH 4.5 and acetonitrile in the ratio of 35:65% v/v was used as a mobile phase-B. The mobile phase gradient was started at 10% of B up to 15.00 minutes and increased to 45% of B up to 30.00 minutes then increased to 80% of B up to 38.00 minutes and continue up to 45.00 minutes, then started initial gradient ratio from 55.00 minutes for gradient saturation up to 60 minutes. The injection volume was $20 \mu\text{l}$. Column temperature 35°C .

Diluent prepared by proper mixing of water and acetonitrile in the ratio of 20:80% v/v.

Method Validation

The method for determination of impurities and degradation products related to ATV and EZB by HPLC was validated as per ICH guidelines with all validation parameters like specificity, LOD and LOQ determination, linearity-range, repeatability, accuracy, and robustness are included in the study.

Specificity

Specificity is the ability to assess unequivocally the analyte in the presence of components, which may be expected to be present. Typically, these might include impurities, degradation products. The

specificity of the method was performed by injecting solutions of diluent, individual known impurities, sample solutions individually.

Linearity

The linearity of an analytical procedure is its ability (within a given range) to obtain test results, which are directly proportional to the concentration (amount) of analyte in the sample. In some cases, the test data may have to be subjected to a mathematical transformation before the regression analysis. Linearity was performed using five determinations covering the whole range from LOQ (0.05% of sample concentration) to 150% of the specification limit of individual limits as per ICH. Linearity was plotted by using a linear regression method to evaluate r^2 .

LOD and LOQ Determination (Sensitivity)

LOD and LOQ of known impurities of ATV and EZB were performed by preparing different solutions and determine the signal-to-noise ratio. The detection limit (LOD) of an individual analytical method is the lowest amount of analyte that can be detected but not necessarily quantitated as an exact value, while the quantification limit (LOQ) is the lowest amount of analyte in a sample which can be quantitatively determined with suitable precision and accuracy.

Accuracy

Accuracy of the related impurities method was determined by recovery studies at four levels of concentration (LOQ, 50.0, 100.0, and 150.0%) for known impurities of ATV and EZB. Triplicate samples for individual concentration were injected. The recovery (%) for added known impurities of ATV and EZB and %relative standard deviation (RSD) was measured for individual replicate samples.

Repeatability

The Repeatability (System precision and method precision) for proposed methods were performed by multiple measurements of standard and sample solution, individually. A system precision was performed by five injections of the standard on the same day.

Method precision was assessed by five injections of the sample on the same day. The RSD of the obtained results was calculated to evaluate repeatability results.

Robustness

Robustness study was performed for deliberate and minor modifications in the instrumental parameters, for example:

Change in flow: ± 0.1 mL/minutes

Change in column temperature ($\pm 5^\circ\text{C}$)

pH of the buffer: ± 0.2

The alteration was made to evaluate its impact on the method. The %RSD and difference in percentage were verified against original data for each of the modified parameters.

Result and Discussion

The aim of the study was the development of accurate and precise stability-indicating method for impurities of ATV and EZB fixed-dose combination product. In this research work, two equivalent analytical methods are developed to separate 23 known and unknown impurities of ATV and EZB by HPLC within a short run time. ATV and its impurities are polar with compare to EZB and its impurities. To elute all the impurities of ATV with well retention and impurities of EZB within the shorter run time method development was started with ODS-aqua which is unique reversed phase bonded column with both hydrophobic high carbon loading and a relatively hydrophilic surface. ODS-AQ stationary phase can be "wetted" with polar components and which can give optimum retention to polar components due to polar phase and good separation due to wetted effect. Some of the impurities related to ATV and EZB are having co-elution with mobile phases containing acetate and phosphate buffer at different pH (2.5 – 6.0) with organic modifier (i.e. Acetonitrile) and gradient program. For optimization of the mobile phase, gradient, HPLC column and diluent sequential trials were taken by using various combinations of solvent and buffers. The summary of method optimization trials and final gradient is given in Table-1 and 2.

Table 1. Method development trials

Sr. No.	Development trial details	Remarks
01	Zorbax RX-C8 250 X 4.6mm, 5.0 μ , Column Temp: 30°C Flow: 1.5mL/min, λ_{max} =244nm, MP-A: pH-5.0 acetate buffer: ACN: THF (67:21:12 % v/v/v), MP-B: pH-5.0 acetate buffer: ACN: THF (27:61:12 % v/v/v) Injection volume: 25 μ L	All peaks of ATV impurities well separated from each other but EZB impurity merged with EZB peak and two impurities not detected with method. Need to change gradient to separate EZB with impurity.
02	Zorbax RX-C8 250 X 4.6mm, 5.0 μ Column Temp: 30°C Flow: 1.5mL/min, λ_{max} =244nm, Run time-105 min MP-A: pH-5.0 acetate buffer: ACN: THF (67:21:12% v/v/v), MP-B: pH-5.0 acetate buffer: ACN: THF (27:61:12 % v/v/v) Injection volume-25 μ L (Gradient changed)	All peaks of ATV impurities well separated from each other but still EZB impurity merged with EZB peak and two impurities not detected with method. Need to get more resolution, for that need to optimize mobile phase and gradient composition. Need to slow gradient in initial stage.
03	ODS AQ 250*4.6mm, 3.0 μ , Column Temp: 30°C Flow: 0.6 mL/min, λ_{max} : 244nm, Run time: 115 min MP-A: pH-4.5 acetate buffer: ACN (70:30 % v/v), MP-B: pH-4.5 acetate buffer: ACN (35:65 % v/v), Injection volume-25 μ L	ATV impurity-B peak merged with ATV peak and EZB impurity ZTB-5 merged with EZB. Need to get more resolution, for that need to optimize mobile phase and gradient composition. Need to slow gradient in initial stage.
04	ODS AQ 250X4.6mm, 3.0 μ , Column Temp: 30°C Flow: 0.6 mL/min, λ_{max} : 244nm, Run time: 90 min MP-A: pH-4.5 acetate buffer: ACN (70:30 % v/v), MP-B: pH-4.5 acetate buffer: ACN (35:65 % v/v), Injection volume: 25 μ L (Gradient changed)	All peaks retained more and eluted late but merged with each other. Need to get more resolution, for that need to optimize gradient composition. Pressure in column observed higher side so for purpose of resolution and pressure of column temperature changed from 30°C to 35°C.
05	ODS AQ 250X4.6mm, 3.0 μ , Column Temp: 35°C Flow: 0.6 mL/min, λ_{max} : 244nm, Run time: 60 min MP-A: pH-4.5 acetate buffer: ACN (70:30 % v/v), MP-B: pH-4.5 acetate buffer: ACN (35:65 % v/v), Injection volume-25 μ L (Gradient changed)	All peaks separated from each other but due to injection volume ATV impurity-B got slight merged with ATV peak. Run time get short compare to previous trials. As no problem with responses of all peaks need to check same method with lower injection volume.
06	ODS AQ 250X4.6mm, 3.0 μ , Column Temp: 35°C Flow: 0.6 mL/min, λ_{max} : 244nm, Run time: 60 min MP-A: pH-4.5 acetate buffer: ACN (70:30 % v/v), MP-B: pH-4.5 acetate buffer: ACN (35:65 % v/v), Injection volume-20 μ L (Gradient changed)	All peaks separated from each other's for both ATV and EZB impurities. Run time get short compare to previous trials. This method can be used for RS analysis.

Table 2.Final gradient for HPLC method

Time (minutes)	Mobile phase-A (%)	Mobile phase-B (%)
0	90	10
15	90	10
30	55	45
38	20	80
45	20	80
55	90	10
60	90	10

HPLC method was developed with optimum chromatographic conditions to get separation and quantification of total 23 peaks of ATV,

EZB and its impurities with optimum separation with symmetrical peaks. The chromatogram of spiked sample analysed by HPLC shown in Fig. 3.

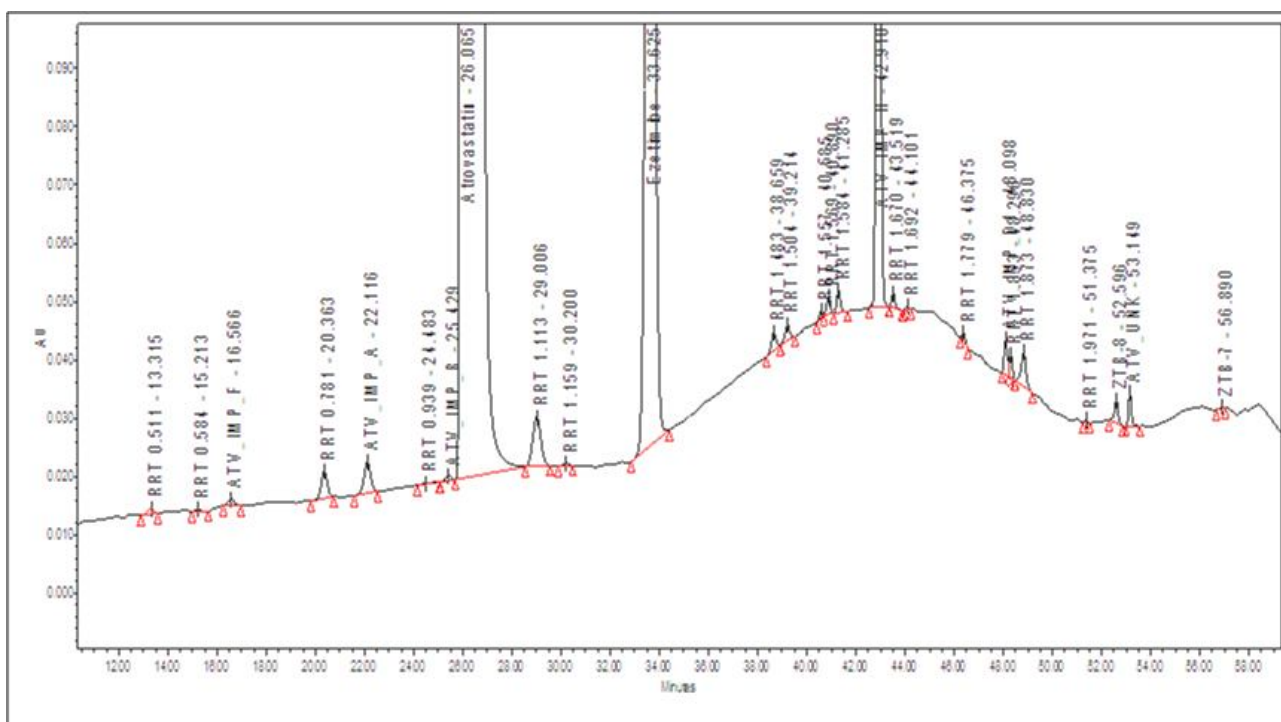


Figure 3. Spiked sample chromatogram

Method Validation

Specificity

Specificity was accessed by comparing chromatograms of blank, standard solution, sample solution, impurity spiked sample solution with all impurities (mentioned in Table1), and individual impurity solutions (ATV EP Impurity A, B, C, D, E, F, G, H, EZB Impurities ZTB-5, ZTB-7 and ZTB-8) were injected into HPLC system. Based on the study it can be concluded that there is no co-elution and all the peaks were pure hence, proved that both the methods are specific for the intended use.

Linearity and Range

Linearity is demonstrated as the ability of the method to get a test that is directly proportional to the concentration of analyte with a defined range. The peak area of the peak was plotted against the respective concentration to get the calibration graph demonstrated in Figs 4 – 5. The linearity curve shows a linear relationship over the analyte concentration range from LOQ (0.05% of sample concentration) to 150% level of specification level for ATV EP Impurity A, B, C, D, E, F, G, H, ZTB-5, ZTB-7, ZTB-8. ATV and EZB. Based on the regression calculation, a linear equation was obtained $y=mx+c$ and r^2 was found greater than 0.990, which is representing the method is linear over the defined concentration for the intended use. Linearity values are demonstrated in Table 3.

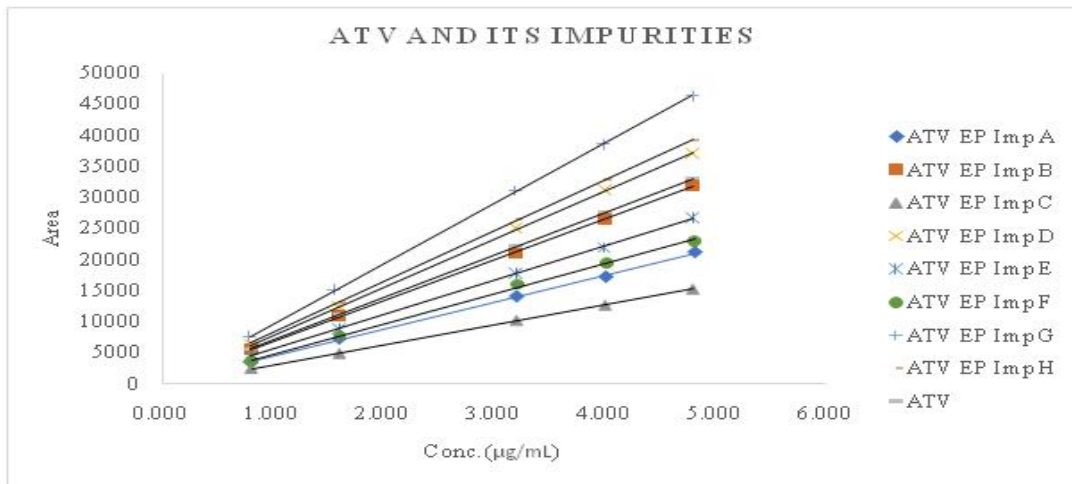


Figure 4. Linearity curve for ATV and its impurities

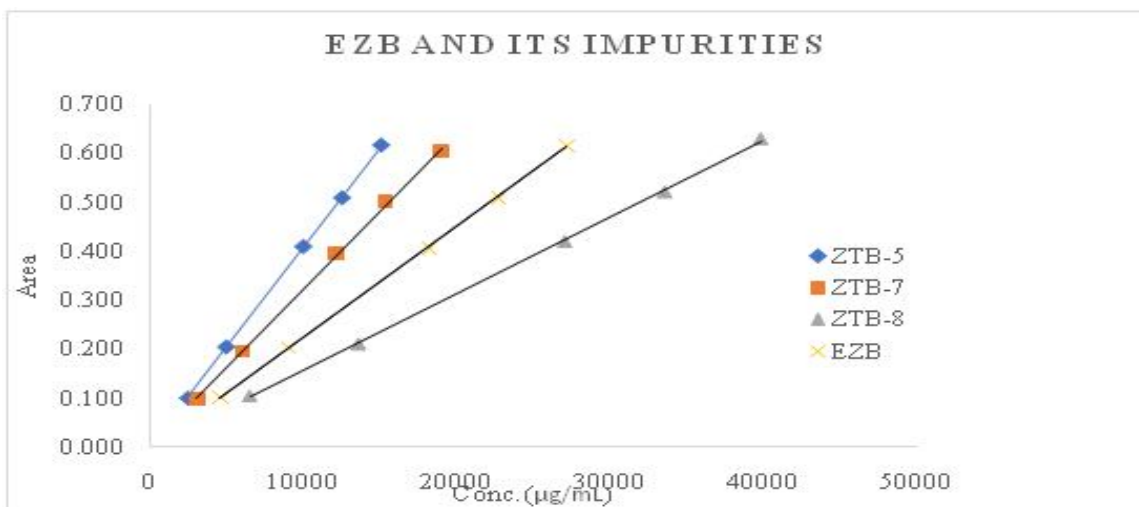


Figure 5. Linearity curve for EZB and its impurities

Table 3. Linearity results

Component	Slope	Intercept	Correlation coefficient
ATV EP Imp A	4364.743	64.44257	1.000
ATV EP Imp B	6597.364	200.668	1.000
ATV EP Imp C	3195.372	-132.847	1.000
ATV EP Imp D	7718.674	78.69994	1.000
ATV EP Imp E	5570.433	-9.05123	1.000
ATV EP Imp F	4888.566	-206.51	0.999
ATV EP Imp G	9655.8	19.43769	1.000
ATV EP Imp H	8149.964	130.2432	1.000
ATV	6865.791	109.3879	1.000
ZTB-5	24521.84	-47.5514	1.000
ZTB-7	31287.72	-127.635	1.000
ZTB-8	63703.92	-23.5647	1.000
EZB	43971.11	134.2266	1.000

Limit of Detection and limit of quantification (LOD and LOQ)

The LOD is the lowest analyte level in the sample that could be detected and LOQ is the lowest analyte level in the sample that could be

quantified precisely. The results presented as LOD and LOQ for impurities and API are 0.03% and 0.05% of sample concentration respectively.

Accuracy

The accuracy of an analytical procedure describes the closeness to the accurate value generated by a method. Accuracy study was performed by spiking known impurity level (LOQ, 50%, 100% and 150%) and calculated

as a %recovery shown in Table 4. The result of accuracy expressed in %recovery at all four levels in the range of 90% to 110% for all impurities. The results prove that the method is accurate for the intended use.

Table 4. Accuracy results for impurities

Impurity	At LOQ (0.05%) level	At 50% level	At 100% level	At 150% level
ATV EP Imp A	96.1	98.1	99.8	100.1
ATV EP Imp B	95.9	98.9	99.7	99.2
ATV EP Imp C	97.2	98.5	98.5	97.6
ATV EP Imp D	96.9	99.2	99.5	98.9
ATV EP Imp E	96.2	99.1	98.9	99.6
ATV EP Imp F	96.8	98.9	99.3	100.1
ATV EP Imp G	97.2	98.5	97.9	99.4
ATV EP Imp H	96.8	99.2	98.2	97.9
ZTB-5	97.9	98.4	99.8	100.5
ZTB-7	97.0	99.3	98.2	100.6
ZTB-8	96.8	98.9	100.1	100.0

Precision

The precision of the method is derived as the closeness of agreement between a series of measurements obtained from multiple sampling of the sample from the same homogenous sample under the prescribed condition and it is generally expressed as a %RSD. Based on the results of both system and method precision proves that the method is precise with satisfactory limits.

Robustness

Robustness was evaluated for an analytical method by assessing the influence of minor changes in chromatographic conditions on system suitability parameters and %impurity value difference from as such condition of the proposed method. The results of robustness testing proved that the minor deliberate changes in the method parameter e.g., flow rate, column temperature and pH of the mobile phase are robust and within the acceptance criteria. In all modifications, system suitability was achieved and

%impurities were observed within the acceptable range. Hence, the method is robust.

Conclusion

In the described research, a simple, accurate, precise, linear and cost-effective analytical method by HPLC has developed and validated for related impurities of ATV and EZB fix dose combination product. Hence, this method can be employed in routine analysis in the pharmaceutical industries to save time and cost. Also, these methods are more efficient to separate many impurities by single method. The HPLC method is capable enough to resolve more than 20 peaks with optimum run time. The method is suitable for intended use in pharmaceutical analysis.

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PSYCHOSOCIAL FACTORS ASSOCIATED WITH SUICIDAL IDEATION AND COMPLETED SUICIDE AMONG ADOLESCENT POPULATION-A LITERATURE REVIEW

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ABSTRACT

Suicide now-a-days has become a public health emergency and the awareness of its emergency should not be overlooked, especially when its rate is increasing at an alarming speed and that too in the most productive population of a society, that is adolescents. It is considered as one of the most prime causes of mortality among adolescents throughout world. Suicide is a multifactorial process, but as far as the current review is concerned, it mainly focuses on the psycho-social factors that pave a way for suicide and suicidal ideation of adolescents as both of them share common factors. The search strategy included research carried out internationally and in India. Recent major reviews on factors associated with suicide and suicidal ideation were traced electronically and for relevant articles, the references of these reviews were examined. The sources of information included relevant books, journals, abstracts of relevant articles, and internet search engines like Google, Bing, and Medscape. It was concluded that out of various factors, suicide and suicidal ideation among adolescents are at peak because of the most prominent psycho-social factors such as depression, stressful life events, substance abuse, sexual abuse, and bullying.

Keywords: Suicidal Ideation, Suicide, Psycho-Social Factors, Adolescence.

Introduction

Globally, suicide is one of the main public health issues that has a multifactorial origin. More than 800,000 lives are lost annually due to suicide (WHO, 2014). The WHO (2011) statistics estimate showed that the suicide mortality rate throughout the world is 16 per 100,000 that means 1 death every 40 seconds, and that the number of suicide fatalities could reach to 1.5 million by 2020 (WHO, 2004). For the year 2012, the annual global age-specific death rate was projected to be 11.4 per one lack, and it has been estimated that this rate will remain constant through 2030 (WHO, 2013, 2014). Traditionally, suicide rates were seen to be higher among the adult population, but now a days, there is a radical increase in rates of suicide among younger population and has increased to such an extent that the young population has reached at the point where the risk of committing suicide is higher, irrespective of the type of country whether developed or developing (WHO, 2011). Although suicide is estimated to be 9th prominent cause of death in general population, it has become 2nd primary reason of ending their life among adolescents, and suicide rate among adolescents has a threefold increase from 1950 (King, Price, Telljohann, & Wahl,

1999). The report of 1987 by Fremouw, Callahan, & Kashden (1993), showed 4,924 adolescents aged 15-24 lost their lives to suicide, which accounts for 12.9 deaths per 100,000 adolescents. The suicide rate among adolescents has now equaled that of general masses, even though suicide among adolescents has often been underreported to shield the families from the stigma associated with it (Hawton, Saunders, & O'Connor, 2012).

Suicide is not a meteoric process. It starts with the onset of thoughts about killing oneself, technically known as suicidal ideation. The continuum of suicidality consists of four stages as suicidal ideation, suicidal plan, suicidal attempts, and finally completed suicide (Jena and Sidhartha, 2004). Suicidal ideation is regarded as the preliminary stage and is also regarded as the prime indicator for more dangerous suicidal behavior (Smith and Crawford, 1986). Suicidal ideation according to Evans, Hawton, Rodham, & Deeks (2005) has become more prevalent among adolescents than older people. Sareen (2005) stated that in community, the prevalence of suicidal ideation is more than that of attempted suicide, the rate of suicidal ideation in western cultures was found to be 11-14% and 2.5-4.6% for suicidal

attempts while in Asian cultures the rate of suicidal ideation was 12-17% and the rate of suicidal attempt was 2.5-4.8%. Cao, Zhong, Xiang, Ungvari et al. (2015) revealed that in general population the pooled lifetime prevalence of suicidal ideation ranged from 2.3 to 23.6 percent in Asian countries, while as it ranges from 3.0 to 15.9% in Western countries. Looking at the gravity of the situation, it becomes more important to trace out the factors that lead adolescents to suicidal ideation or end their life by committing suicide. This review paper is an effort in this direction to find out those psycho-social factors that shows a more significant relation with suicidal ideation and or completed suicide among adolescents.

Depression

Depression is one of the grave mental health issues that lead students to more perilous situations. One of such situations is the development of suicidal ideation which it remains persistent, may lead to suicidal attempt or even to completed suicide. In the etiology of suicidality of children and adolescents, one of the chief factors is depression (Goldston, Daniel, Erkanli, Reboussin, Mayfield et al., 2009; Spann, Molock, Barksdale, Matlin et al., 2006; Asarnow, Baraff, Berk, Grob et al., 2008a; Vitiello, Brent, Greenhill, Emslie et al., 2009). It has been consistently shown by previous research studies that depression is associated with every stage of suicidal process of which the first stage is suicidal ideation (Medoff, 2007a; Shaffer & Waslick, 2002a; Wild, Flisher & Lombard, 2004; Cannetto, 2008; Stein, Apter, Ratzoni, Har-Evan, & Avidan, 1998; Beautrais, 2003; Furr, Westefeld, McConnell & Jenkins, 2001; Dunlay, Aquah & Wilson, 2015; suicide attempt (Garrison, Jackson, Addy, McKeown & Waller, 1991; Goldney and Pilowsky, 1980; Weissman, 1974; Otto, 1964; Toolan, 1975) and finally suicide (Guze and Robins, 1970; Shaffer and Craft, 1999; Brent, Perper, Moritz, Allman, Friend et al. 1993; Skogman, Alsen, & Ojehagen, 2004). The rate of Suicidal ideation and depression among female population is more than their male counterparts (Cheung & Dewa, 2006b; Shaffer and Waslick, 2002b; Medoff, 2007b).

Stressful Life Events

Among all developmental stages, adolescence is the most stressful period of one's life (Davis, 1983). Adams and Lehnert (1997) in their review study found stressful life events which include family arguments, divorce, death of closer ones, relocation, and legal problems as main factors for individuals to take a daring step of ending their life. Most of empirical studies have reported that suicidal attempts or completed suicide by adolescents are the result of negative life events (Beautrais, 2003; Pan & Spittal, 2013; Stein, Apter, Ratzoni, Har-Evan, & Avidan, 1998; Yen, Pagano, Shea, Grilo et al., 2005; Brent, Perper, Moritz, Baugher et al., 1993). Moreover, family problems and peer conflict may develop suicidal thoughts among adolescents and these persistent thoughts push them to attempted or completed suicide by exceeding their coping strategies (Agerbo, Nordentoft, & Mortensen, 2002; Wagner, Cole, & Schwartzman, 1995; Kerr, Preuss, & King, 2006; Wild, Flisher, & Lombard, 2004; Bruffaerts et al., 2010). There are numerous studies that have showed the positive association of negative life events with all the rungs of suicidal ladder with first among them is none other than suicidal ideation (Chang, 2002; Dupere, Leventhal, & Lacourse, 2009; Fisher, & McFarlane, 2000; Lam, Bond, Chen, & Wu, 2010), the second one is suicidal attempt (Orbach, Stein, Palgi, & Asherov, 1996; King, Raskin, Gdowski, & Butkus, 1990; Nruham, Holen, & Sund, 2010; Stein, Chiu, Hwang, Kessler et al., 2010) and the last and final one is accomplished suicide (Cheng, Chen, Chen, & Jenkins, 2000; Zhang, Conwell, Zhou, & Jiang, 2004; Li, Phillips, Chang, Xu, & Yang, 2008; Khan, Mahmud, Karim, & Prince, 2008). Individual with a stressful environment at home, school, or workplace feels as prisoned which in turn compels him to take harmful steps like thinking about, attempting or even committing suicide to get himself free.

Substance Abuse

Substance abuse includes alcohol misuse and all those drugs that are illegitimate. It has been revealed by the empirical studies of Arria, O'Grady, Caldeira, Vincent et al. (2009); King,

Schwab-Stone, Flisher, Greenwald et al.(2001); Brent, Emslie, Clarke, Asarnow et al.(2009); Rossow, I., Ystgaard, M., Hawton, K., Madge et al.(2007) that misuse of alcohol by adolescents of clinical or nonclinical populace is one of the major risk factors for their suicidal behavior. Adolescents who misuse alcohol have increased tendency of suicidal ideation, are more prone to suicidal behavior and it also increases their rate of attempted suicide (Park, Koo, & Schepp, 2005; Weiner, Abraham, & Lyons, 2001; Wilcox, & Anthony, 2004). Studies conducted by Brener (1999); Levey, & Deykin (1989); Rivinus (1990); Almansour, & Siziya(2017); Mortier, Auerbach, Alonso, Bantjes et al. (2018); Peltzer, & Pengpid (2012) have revealed that substance abuse and suicidality-ideation, attempt and completed suicide are strongly correlated. Ilgen, & Kleinberg (2011), in their study revealed that substance abuse disorders increase the risk of suicidal attempts among individuals six times more than those without a substance abuse problem.

Sexual Abuse

Almost all childhood adverse experiences laid out their effect on suicidal behavior (Hovens, Giltay, Spinhoven, van Hemert, & Penninx, 2015), but physical sexual abuse during childhood has more venomous impact (Belik, Cox, Stein, Asmundson, & Sareen, 2007; Joiner, 2007; Bruffarets, 2010). The association between suicidality and childhood abuse has been found to be significant in the research studies conducted by Shaffer & Pfeffer (2001); Mulder, Beautrais, Joyce, & Fergusson (1998); Bagley, Wood, & Young (1994); Frazier, & Cohen (1992); Seng (1989); Manigio (2011); Fry, Mecoy, & Swales (2012). In their research studies Lopez-Castroman, Melhem, Birmaher, Greenhill et al.(2013) and Spokes, Wenzel, Stirman, Brown et al.(2009) have found higher suicidal ideation and hopelessness in adolescents who had faced sexual abuse in childhood. It has been shown by research studies that adverse childhood experiences pave a way to different kinds of disorders which include mood disorder, borderline personality disorder, anxiety and substance use (Battle, 2004; Pirkola, Isometsa, Kestila, Hamalainen et al., 2005; Widom,

Czaja, & Paris, 2009; Garno, 2005; Hovensetal, 2015; Nanni, Uher, & Danese, 2012) and these disorders lead a person to suicidal behavior (Bebbington, Cooper, Minot, Brugha et al., 2009; Fergusson, Woodward, & Horwood, 2000).

Bullying

In the modern schools, one among the major issues is that of bullying. As estimated by the population based studies of Dake, Price, & Telljohann (2003); Forero, Mcllellan, Rissel, & Bauman (1999); Wolke, Woods, Stanford, & Schulz (2001) 20 to 30% of school going children are directly or indirectly involved in bullying, either as bullies or as victims of bullying. Empirical research has projected and manifested a significant connection between bullying, suicidal ideation and attempts (Van Geel, Vedder & Tanilen, 2014; Rigby & Slee, 1999; Kaminski, & Fang, 2009b; Montoro, Thombs, & Igartua, 2015) and have found suicidal ideation more prevalent among victims of bullying than non-victimized individuals (Kaltiala-Heino, Rimpela, Marttunen, Rimpela, & Rantanen, 1999; Ronald, 2002; Van der Wal, 2005).

Conclusion

Suicide and suicidal ideation among adolescents is a warning sign to all concerned; and the need of the hour to find effective measures to curb these issues in the most effective manner possible. Suicide has now become the 2nd prominent cause of death among the adolescent population on which society's future progress is dependent. Adolescents, as named as the future assets of the society, should be saved from the menace of suicide, which is only possible by knowing the associated factors of suicide and suicidal ideation among them. Suicidal thoughts among adolescent population is a warning signal that they may reach to the stage of attempting suicide or even they may commit suicide if remain unidentified. So the need is to be cautious and not to neglect these thoughts at any point of time as it is not only confined to one or other country but to the whole world. Analysis of existing research studies on suicide and suicidal ideation largely suggests that adolescents are more prone to have suicidal

ideation or commit suicide regardless of their belongingness. Various studies have identified risk factors that are universal for suicide and suicidal ideation, but so far as psychosocial

factors like depression, stressful life events, substance abuse, sexual abuse, and bullying are concerned, these are more strongly associated.

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SCHOOL EDUCATION AND TRIBAL CHILDREN OF JAMMU AND KASHMIR: ANALYSING TRENDS IN ENROLMENT, GENDER PARITY AND DROPOUT RATE

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ABSTRACT

The paper analysed school progression, enrolment, disparity, and dropout patterns and trends of tribal school going children of Jammu and Kashmir over time. The study applies the time series approach and uses U-DISE data of Ministry of Education, Government of India. The data regarding the above-mentioned indicators published from the year 2012-13 to 2018-19 were analysed. To analyse and visualise the data, descriptive statistics and graphical representation were employed. The study found an increasing trend in school growth over these years. The study found a declining trend in enrolment patterns of tribal children in school education at primary and upper primary stage while as improvement in enrolment trends at secondary and senior secondary stages. Tribal GER rate at initial stages (primary & upper primary) showed increasing trends, while as in terminal stages (secondary & senior secondary) showed a sharp decline. Although, tribal GPI has increased over a period of time but are yet to be achieved, which shows wider gender disparity. The trend in dropout rates of tribal children at primary stages have steeply increased and with each passing stage, it becomes more severe. Moreover, the stage, gender, and district-wise variations and gaps in these parameters have been found among tribal as well as non-tribal children. The results of the study can be helpful in enhancing enrolment, reducing disparity, and dropout rates among tribal communities of Jammu and Kashmir. The study will be helpful to policy makers, educators, tribal cum social welfare organisations, researchers, and NGO's to explore the different forces (intrinsic and extrinsic) that haunt the participation, transition, and survival of tribal children in school education.

Keywords: Scheduled Tribe, Gross Enrolment Ratio, Dropout, Gender Parity, School Education.

Introduction

Indigenous People, also called Adivasi, aboriginal, native, autochthonous, or first people, are tribal groups and communities marked by distinctive culture, language, religion, customs, traditions, life style, livelihood and occupational patterns; thus, making them unique from mainstream culture. The history bears witness that the suppression of the “indigenous or adivasi” groups not only in India but across the globe as well. The indigenous people have been and are still living a miserable life, facing absolute exclusion, exploitation, inequality, and discrimination from all sides; their communities are poverty ridden, having elevated illiteracy levels and low socio-economic status making their life miserable and critical. Their socio-economic marginalisation and backwardness severely affect their human development - Health, Education and living standards (United Nations, 2009; Xaxa, 2014).

Residing in, over more than 90 different nations, the global population figure of

indigenous people as per World Bank figures is between 300–500 million. Their share of the total world population is only five (5) percent (World Bank, 19 May, 2021). The dominant majority of indigenous people reside in African and Asian countries. Africa's indigenous population is estimated to be 50 million having more than 3000 tribal groups and India estimated tribal population is 104.3 million, with 705 tribal groups accounting for 8.2 percent of the total Indian population (UN, 2013; Indigenous Work Group for Indigenous Affairs, 2021; Census, 2011). Erstwhile Jammu and Kashmir, now one among the eight (8) Union Territories of India, has a tribal population of 1.49 million, covering 11.9 percent (including Ladakh, now a separate Union Territory, was earlier part of J&K State) of the total population. There is no universal nomenclature of indigenous peoples across the globe, different nations designate them as per their own legislation, using different terminology, nomenclature, and definitions that lag conceptual clarity (Béteille, 1986; Khan,

2016; Wikipedia, May 21, 2021). India designates them as scheduled tribes for administrative and political convenience, thereby making it “Politico-administrative category” (Pathy, 1984; Xaxa, 1999). For the first time in Census 2001, the listing of scheduled tribes was initiated officially. Twelve (12) tribal groups have been notified by Jammu and Kashmir constitution as scheduled tribes so far, out of which eight (8) viz., Boto, Beda, Balti, Changpa, Garra, Mon, Purigpa, Shina/Dard were notified in 1989 and other four (4) viz., Sippi, Bakarwal,

Gaddi and Gujjar were also included in 1991 (Scheduled Tribes Order, 1989; Scheduled Tribes, Amend. Act, 1991). The tribal groups are spread all across Jammu and Kashmir and their population varies not only from division to division but also from district to district. The Ladakh division (used to be the part of the erstwhile Jammu and Kashmir state till 2019) has 79.54 % of the tribal population, followed by Jammu with 15.07 % and Kashmir with 6.74 %. The population of scheduled tribes of Jammu and Kashmir as per Census 2011 is given below in Table 1.

Table 1. Showing Percentage of tribal population of Jammu and Kashmir.

Tribe	Population	Percentage of tribal population	Tribe	Population	Percentage of tribal population
Gujjar	980,654	65.67 %	Purigpa	39,101	2.61 %
Bakerwal	113,198	7.58 %	Sippi	5,966	0.39 %
Bot, Boto	91,495	6.12 %	Changpa	2,661	0.17 %
Balti	51,918	3.47 %	Mon	828	0.05 %
Brokpa, Drokpa, Dard, Shin	48,439	3.24 %	Garra	504	0.03 %
Gaddi	46,489	3.11 %	Beda	420	0.02 %

Source: Census, 2011. Note: The population figures of all divisions of the erstwhile J&K state (now Union Territory) including Ladakh (Now a separate Union Territory) are included.

Located in the lap of the great Himalayan region, northern part of Indian continent, Jammu and Kashmir (J&K) represents a, “Panorama of plurality” (European Foundation for South Asian Studies, 2020) habituated by a multitude of ethno-linguistic, religious and culturally diverse groups and communities. The tribal development and progress still frustrate the administrators, policy makers, and educators as tribals still in the 21st century are backward and marginalised as far as their education, literacy, parity, health and economy are concerned. The tribal literacy rate of Jammu and Kashmir is 50.60 % (Male 60.6 % & Female 39.70 %) which is much below than the national and state average of 74.04 % & 67.2 % respectively, as well as the literacy rate of total tribal population of India 58.96 %. The poor literacy rate of females when compared to their counter parts at national and state level visualises a wider gap. Xaxa (2001) rightly observed that tribals in literacy

as well as educational attainment especially of female folk are significantly low compared with mainstream population. About 10.35 % people fall under poverty line, comparatively higher than the all India average of 6.84 % (NITI Aayog, n. d.). Directorate of Economics and Statistics, J&K in its Economics Survey 2014, revealed that the prevalence of poverty is highest among tribals (42 %) compared to the general population (21.6 %). The rural areas of J&K have the highest 26.14 % and urban areas have 7.96 % living below the poverty line (BPL). Tribal women’s (expecting/lactating) under nutrition and tribal child malnutrition severely affects their health in tribal communities and leads to deformities, diseases, and morbidity (Hameed & Naida, 2017; Debnath & Bhattacharjee, 2014; Manhas 2021). The low participation of tribals in educational endeavours determines a falling demand of education among them. To mainstream tribals in education, the central and state governments from time to

time made policies, programmes, and intervention schemes. A lot has been achieved in terms of educational participation, but the retention and survival of tribals in school education until completion needs to be highly focused.

India has made significant efforts to provide education to all social groups. However, some social groups or communities like ST/SC/OBC could not reap educational benefits and as a result of it, remain deprived, marginalised, and backward. Moreover, the higher incidence of wastage as well as stagnation in school education among such communities is rampant since independence. Even though every section of society has equal access to school education but, when outcomes are taken into account, tribals lag behind in access, quality, equity and achievement parameters. Tribal children experience numerous barriers to reap the fruits of government provisions, policies, programmes, incentive schemes, etc offered by various departments like education, social welfare, tribal welfare, etc which inversely affects their capabilities and hampers their school progress and completion. Education plays a key role in the social, economic, and educational mobility of marginalised tribal communities (Sedwal & Kamat, 2008). Education alone has the potential to mitigate the impediments stemming from numerous forces affecting a child's education (SOS children's village, 2013). Enhancing living and health conditions, removing disparities, poverty, ignorance among marginalised indigenous/tribal communities, education is the only way forward and school education is the first step in this regard. The education will raise the socio-economic conditions and living standards of marginalised tribal communities also. Education has a vibrant role in developing a socially just society (Freire, 1970; Bandhopadhyay, 2006).

The statistical figures of tribals of Jammu and Kashmir in school education show a gloomy picture and depressing numbers. The neglect of school education trends over time by administrators, policy makers, educators, statisticians in school progression, enrolments, dropouts and disparity at different educational stages and the real

essence of schooling and education among tribal communities of Jammu and Kashmir cannot be overlooked furthermore. The paper strives to reveal such trends and is an eye opener for the concerned authorities, researchers, and NGO's to explore the different forces (intrinsic and extrinsic) that haunt the participation, transition and survival of tribal children in school education. The results of the study can be helpful in enhancing enrolment, reducing disparity and dropout rates among tribal communities of Jammu and Kashmir.

Objectives

- ❖ To visualises the trends in school education with reference to school progression, enrolment ratio's, gender parity, and dropout rates especially among scheduled tribes of Jammu and Kashmir.
- ❖ To make a stage and gender-wise comparison of the above-mentioned accessibility, equality, and equity parameters of scheduled tribes.

Design/Methodology/Approach

The study uses a time series design/approach, where data from various points of time, i.e., from 2012-13 to 2018-19 was taken from U-DISE plus, School Education & Literacy Department, Ministry of Education, Government of India. U-DISE captures school education data annually from all the Indian States and Union Territories. Descriptive statistical analysis, particularly percentage analysis, was used to visualise trends over time, graphical representation particularly trend lines and bar graphs were used for analysis of data.

Findings and Discussion

School Education in Jammu and Kashmir: School, Enrolment Progression and Gross Enrolment Ratio (GER)

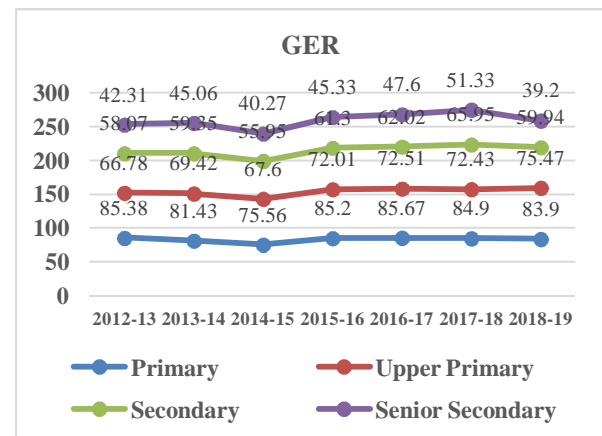
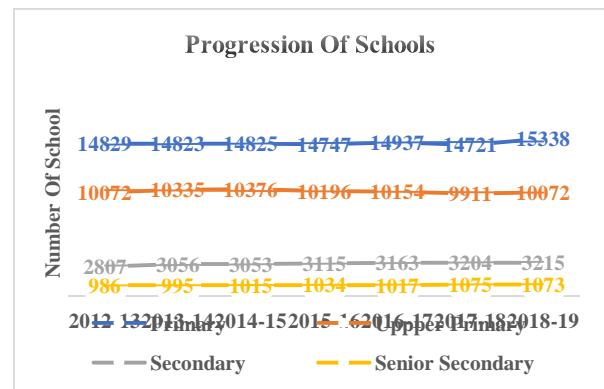
During the past decades, school education system of India has witnessed monumental structural transformation (Manjrekar, 2005) and Jammu and Kashmir is not an exception. The impressive progression of school growth at the national level is praiseworthy (Ramachandra, 2004). Involvement of private enterprises, local community, varied

institutional approaches (modern, secular, religious), mobile, residential and shift schools, etc has further strengthened the bonds of the democratic setup, universal education, and progressive societal transformations. This in turn, has resulted in increased institutional accessibility and social equity. Since, 2013-14 to 2018-19, notable incremental changes have taken place in the quantum of schools in Jammu & Kashmir. In Jammu and Kashmir, primary, upper primary, secondary, and senior secondary schools have increased 3.43, 0.21, 14.53, and 8.81 times, respectively, during 2012-13 to 2018-19. Table 1. Further shows the year-wise number of schools, stating the continuous progression of school growth.

Over the past decade, the dynamism in school management at various school education stages has been observed. In Jammu and Kashmir, school management types include schools managed by Centre/UT government (aided/unaided), Private, and Madrasa managed (un/recognised). In the year 2018-19, a total of 27908 schools are in Jammu and Kashmir, out of which 80.84 % (24018) are managed by govt., 0.09 % (29) are govt. aided, 18.72 % are private managed (5552 recognised & 11 unrecognised), 0.20 % (45 KV's, 17 JNV's) and 0.12 % (34 Wakf recognised & 2 Unrecognised). Looking at stage-wise figures, of all 15348 primary schools for the year 2018-19, 87 % (13502) are managed by govt. 0.16 % (26) govt. aided, 11.65 % (1780 recognised, 9 Unrecognised) are privately managed, below zero percent are managed by central govt. (0.006 %,) and wakf/madrassa (0.19 %,) managed. At upper primary stage, 79.51 %, 20.36 are govt. and privately managed, respectively. Government and privately managed schools at secondary stage account for 57.29 %, and 42.33 %, respectively, and for senior secondary, it is 61.97 % and 33.73 %, respectively. Below 1 percent of schools were managed by central govt. and wakf/madrassa boards after primary stage of education. However, a rise in the share of privately managed schools at secondary as well as senior secondary stage has been observed, to which Kingdon (2007;172) called, "lucrative level of education".

Empirical studies have found that public schools are ill resourced, lack accountability, have high teacher absenteeism, low reputation, low recognition, low achievement of students, economic and educational reforms in the form of privatisation, extension as well as decentralisation of education (Leclercq, 2002; Rani, 2004; Muralidharan & kreemer, 2006; Kingdon, 2008b, Little & Levin, 2011, Kingdon, 2017).

Figure 1 & 2. Progression of Schools and GER in Jammu and Kashmir.



Source: UDISE (2012-13 to 2018-19), Number of school Ministry of School Education & Literacy, Ministry of Education, Govt. of India, accessed on May 4, 2021.

Note: Number of schools includes schools run by Deptt. Of Education, Govt. aided, Private unaided, unrecognised, Kendriya Vidhyala's (KV's), Jawahar Navodaya Vidhyalas (JNV's), Madrasas un/recognised by Wakf.

The overall enrolment growth at school education stage (I-XII) from the year 2012-13 to 2018-19 has been found negative in J&K. It has decreased -6.54 % during the said period (2400075 in 2012-13 & 2252700 in

2018-19). Primary school enrolment has decreased -9.21 %, receding from 12.1 million in 2012-13 to 1.10 million in 2018-19; Upper primary enrolment -9.37 % receding from 0.64 million (2012-13) to 0.58 million (2018-19). However, at secondary education stages, the increasing trend of school enrolment has been found. The enrolment growth at the secondary stage has increased 10.72 % from .33 (2012-13) to 0.36 million (2018-19) and 12.02 % i.e., from .21 million (2012-13) to .23 million (2018-19) increase has been recorded in enrolment at senior secondary level during the said period, which is highest as far as other school education stages are concerned.

Taken into account gender, the aggregate girl's enrolment of Jammu and Kashmir at school education (I-XII) has fallen by -4.62 %, i.e., from 1.12 million to 1.07 million from the year 2012-13 to 2018-18 and that of boys, fell by -7.47 % i.e., 1.27 million to 1.18 million during the same period, displaying more decline in case of boys. Analysing gender enrolment at school education stages from the year 2012-13 to 2018-19, the girl's enrolment declined by -8.41 % and boys was -14.61 % at primary stage and dipped -8.17 % in case of girls and -10.43 in boys at upper primary stage. Secondary stage witnessed 2.1 % rise in girl's enrolment and a decline of -2.03 % boy's enrolment. The highest percentage increase of 19.31 % girl's & 6.26 % boy's enrolment was seen in senior secondary stage. There has been a declining trend up to the upper primary stage in both genders. Moreover, the enrolment trends of both genders witnessed a steep rise from secondary to senior secondary stage except boys at secondary stage. Taking into account the percentage share of both genders in school education (I-XII), the girls share still remains below 47 % (47.52 % in 2018-19 & 46.77 % in 2012-13). Similarly, the girls share in total enrolment at the four stages of education from 2012-13 to 2018-19 observed marginal changes and remained below 47 percent in case of girls and above 52 percentage in case of boys. The decline of percentage enrolment of girls at initial stages, a steady increase at later stages, and marginal increase in percentage share of girls in

Jammu and Kashmir at school education during the said has been observed.

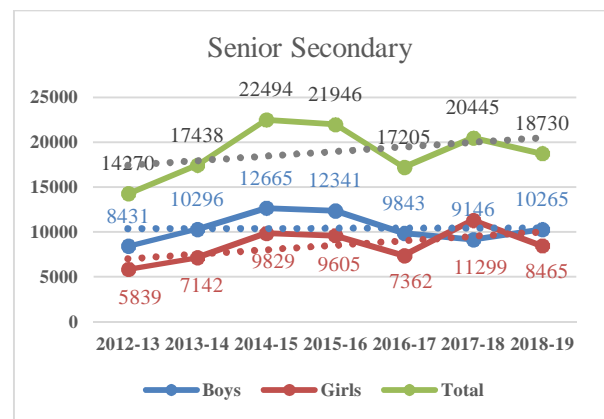
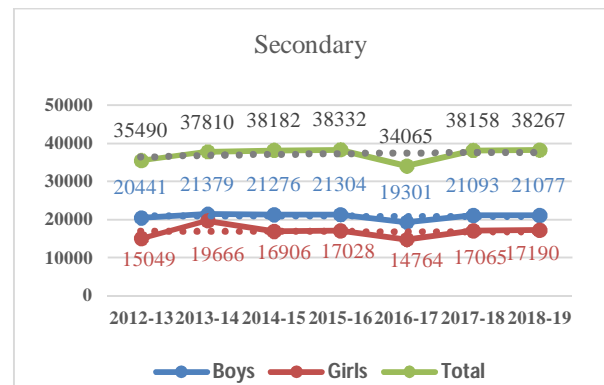
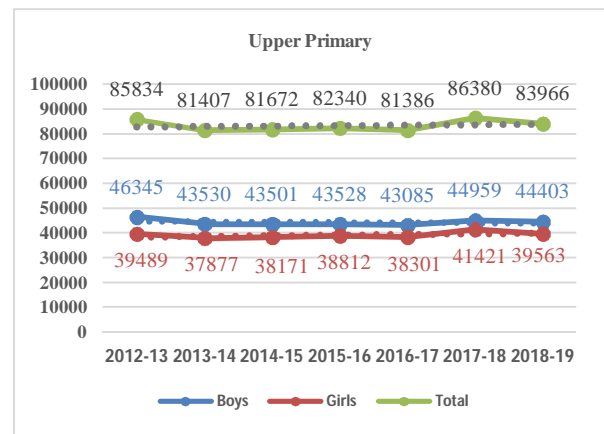
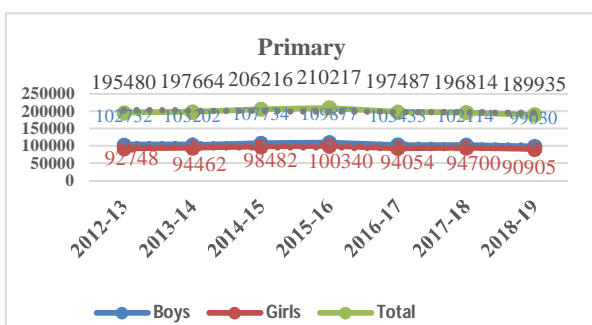
Analysing Gross Enrolment Ratio of Jammu and Kashmir (GER) at various school education stages, the aggregate GER at primary stage for the year 2012-13 and 2018-19 is 83.90 (83.37 Boys & 84.50 Girls) and 85.39 (83.6 Boys & 87.4 Girls) respectively, depicting marginal increase of 1.58 % during the said period. Moreover, the girls GER has increased by 3.43 % at this stage. Moving forward to the upper primary GER ratio's, it fell by -11.51 % (75.47 in 2012-13 to 66.78 in 2018-19) has been observed. Furthermore, the decline has been more in the case of boys (-13.25 %) compared to girls (-9.53 %) during the said period. The declining trend further continues at the secondary stage, the overall GER at this stage fell by -.311 % from the year 2012-13 (59.94) to 2018-19 (58.07). For boys, it has decreased by -5.91 % and for girls, marginally increased by 0.41 %. The senior secondary stage GER rates were promising compared to the previous three stages of school education. The aggregate GER increased by 7.93 %, i.e., from 39.2 in 2012-13 to 42.31 in 2018-19; the girls GER rose from 36.12 to 42.01 showing a surge of 16.30 % and GER of boys remains at 42.04 and 42.43 respectively. The date depicts stage and gender-wise disparity in GER of Jammu and Kashmir. The decline trend has been observed in GER up to secondary stage of school education. Although, it has increased at senior secondary stage of school education but it is below 43 which is very low. The gloomy picture of GER is due to low transition rate and elevated dropout.

Mehta (2019a) also found steep declining patterns of enrolment in recent years at national as well as state level at primary school education stage and predicted its effect on subsequent stages. Jammu & Kashmir (10.34 %) figures among states with higher declining percentage along with along with Arunachal Pradesh, Jharkhand, Sikkim, and Lakshadweep with 16.24 %, 11.52 %, 10.58 % & 5.13 % decline. Mehta cited, "low efficiency of the primary education system", "low retention", "low transition" and "high dropout" are mainly responsible for such declining trend.

Scheduled Tribe Children of Jammu and Kashmir: Enrolment Progression and Gross Enrolment Ration (GER)

Empirical studies and reports have clearly indicated the surge in enrolment of scheduled tribe children at school education stage since independence at national level. However, over the past few years, a steep decline in enrolment patterns of all as well as scheduled tribe children has been observed while analysing U-DISE data (Mehta, 2019b). In this regard, Jammu and Kashmir is not an exception, from the years 2012-13 to 2018-19, the aggregate tribal enrolment at primary stage also decreased by -2.83 % of which boys and girls decreased by -3.60 % and -1.98 %, respectively. At the upper primary stage, it fell by -2.29 % (aggregate), of which boys and girls also fell by -4.19 % and -2.29 %. The increase in tribal enrolment at the last two stages has been impressive. The secondary stage tribal enrolment improved by 7.82 % (boys 3.1 % & girls 14.22 %). Similarly, their enrolment at the terminal stage of school education also improved significantly by 31.25 % (boys 21.75 % & girls 44.49 %). In the last two stages of school education, the tribal girl's enrolment figures have shown a steep upswing in comparison to boys. The policy of establishing Kasturba Gandhi Balika Vidyalaya's (KGBV's), Residential, Ashram, Madrassa, and Eklavya Model schools for educationally backward children of various marginalised communities like scheduled tribes, castes and other backward classes (OBC) has proved to be fruitful in enhancing enrolment (Centre for Budget & Policy Studies, 2015)

Figure 3, 4, 5, 6. Showing enrolment trend of Tribal Children of J&K at school education stages.



Source: UDISE plus (2012-13 to 2018-19) accessed on 22-25 April 2021

Analysing GER of scheduled tribe children of Jammu and Kashmir from the year 2013-14 to 2018-19, the continuous improvement has been observed at all school education stages. At the primary stage, the aggregate GER of tribal children in 2013-14 and 2018-19 has been 92.35 & 94.3, showing an increase of 2.11 % and at the upper primary stage, increased by 4.14 % (52.35 in 2013-14 & 70.1 in 2018-19). In the terminal stages of school education, it shows a steep decline as secondary GER of tribal children fell by -8.34 % while as senior secondary GER fell by -6.98 % during the said period. There has been a continuous improvement in tribal enrolment

and GER figures when compared to overall enrolment and GER figures during the said period. Project Approval Board, MoE and Secretary School Education, J&K in a meeting reported, “the total enrolment decline across classes is nearly 1.75 lakh in 2019-20” and the reasons cited are poor basic school facilities, poor retention, elevated dropout rates at all stages, low achievement score (Majid, Sept. 18 2020).

Gender Parity Index (GPI) among school going Scheduled Tribe Children of Jammu and Kashmir

The GPI of tribal children of J&K at primary stage from the year 2013-14 to 2015-16 has remained stagnant at 0.98, which is low compared to all categories of children (1.02, 1.05 and 1.06). At the upper primary stage, it is 0.98, 1.00 & 1.02 for the years 2013-14, 2014-15 & 2015-16, respectively, but still figure below (1.02, 1.01 & 1.02) for all categories of children except for the year 2015-16 where GPI of both tribal and all categories of children are same. The GPI data of tribal children of J&K at secondary and senior secondary stage shows improvement over five year time period, of 2013-14 to 2017-18. GPI at secondary stage improved and were 0.88 (2013-14), 0.91 (2014-15), 0.92 (2015-16), 0.88 (2016-17) & 0.99 (2017-18). However, they are very low compared to 0.94 (2013-14), 0.96 (2014-15), 0.97 (2015-16), 0.96 (2016-17) & 0.99 (2017-18) for all categories of children except, for the year 2017-18. At senior secondary stage, the tribal GPI in 2013-14 is 0.80 and in 2017-18 it is 0.9. For all categories of children, the GPI for the same period also were 0.88 (2013-14) to 0.98 (2017-18). At all the four school education stages, the GPI of tribal children is significantly below all other categories of children. However, significant improvements in GPI have been observed over the past few years. The GPI of tribal and non-tribal children at terminal stages are low compared to the initial stages of school education. It can be said that over the past few years, the constant dip in the gender gap of tribal boys and girls at school education stages is a clear indication of the progression towards achieving the much-cherished goal of gender

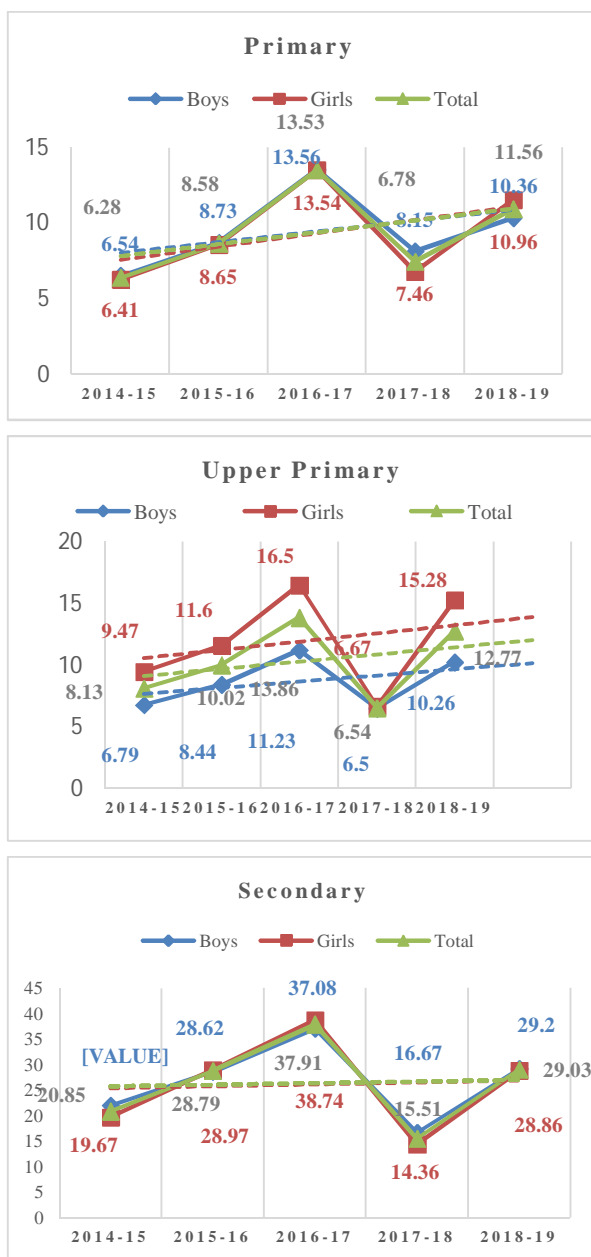
equity. Arun & Kumar (n. d.) in their study also observed the qualitative progress in GPI at national level.

At primary and upper primary stage, gender parity is above 01, indicating higher girl enrolment compared to boys, hence, GPI for all categories of children in Jammu and Kashmir is achieved. In the case of tribal children, GPI is yet to be achieved at primary, secondary, and senior secondary stage, however, at the upper primary level it has been achieved. Provision of educational access to female children alone does not eliminate gender disparities. Empirical studies have clearly stated that the attendance patterns and retention rates of enrolled girls in school education are low compared to their counterparts. As intra-household prejudice regarding their enrolment in school and expenditure of education (Kingdon, 2005); school location, TP ratio, socio-cultural environment, single teacher schools (Ramachandran & Chatterjee, 2014); early marriage, poverty (Tribal Research & Cultural Foundation, n.d.; “Polygamy Still Prevalent,” 2015); sibling care (Bhasin, 2007); unsatisfactory meal patterns and health issues (Badyal, 2002); domestic affairs (Dabla, 2007); shortage of female toilet & classroom (Kumar & Gour, 2017); religious cum cultural belief and dogmas (Rather, July 6, 2020); household income (Quayes & Ramsey, 2015); war & conflict (Ravinder, 2005); preference of sons (Kholi & Jasrotia, 2014) restrict access and survival of girls in education thereby, causing gender disparity.

Dropout Rates Among Scheduled Tribe Children of Jammu and Kashmir

Dropout or exit from school is a matter of grave concern in school education and need to be looked thoroughly and curbed at the earliest. The problems of dropout persist more among scheduled tribe children along with other types of disadvantaged children. The dropout rate of scheduled tribe children of Jammu and Kashmir at school education level are much higher compared to national average. It is ironic that even after 7 decades of Indian independence, the incidence of high dropouts is shocking.

Figure 7, 8, 9. Showing the trend in dropout rates of scheduled tribe children of J&K



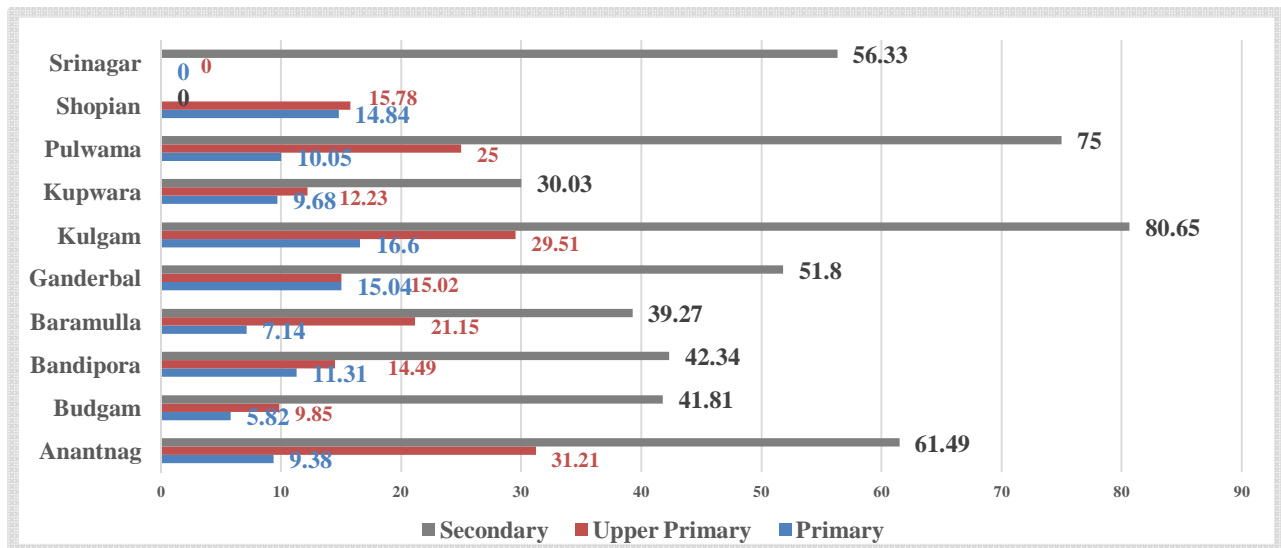
Source: UDISE plus accessed on 30-04-2021.

Figure 7, 8 & 9 clearly shows an increasing trend in dropout rates of tribal children at primary, upper primary, and secondary

educational stages. The dropout rates of tribal children of Jammu and Kashmir at primary stage have steeply increased from 6.41 % (Boys 6.54 % & Girls 6.28 %) in 2014-15 to 10.96 (Boys 10.36 % & Girls 11.56 %) in 2018-19. The upper primary stage dropout rates were even higher than the earlier stage, the rates increased from 8.13 % (Boys 6.79 % & Girls 9.47 %) in 2014-15 to 12.77 (Boys 10.26 % & girls 15.28 %) in 2018-19. At the secondary stage, dropout rates were the highest and were increasing at a very fast rate, from 20.85 % (boys 22.03 % & girls 19.67 %) to 29.03 % (boys 29.20 % & girls 28.86 %) in 2018-19. The dropout rate of girls at the initial two stages of girls is more over these years compared to their counter parts. However, the boy's dropout was more at the secondary stage than girls. The dropout rate increases with each passing stage of school education. The tribal dropout rates over these years (from 2014-15 to 2018-19) are very much above compared to the overall categories of children.

Analysing district-wise dropout rates of tribal children in Kashmir division of Jammu and Kashmir (see figure 10.), the district with the highest ST dropout rate 16.6 % for the year 2018-19 at primary stage is Kulgam, followed by Ganderbal with 15.04 %. At the upper primary stage, the districts figuring at high among ST dropout rates are Anantnag and Kulgam with the rate of 31.21 % and 29.51 %, respectively. The district with the lowest tribal dropout rate at the initial two stages of school education is Srinagar. The district Kulgam figures at the top with 80.65 % tribal dropout rate at the secondary stage, followed by Pulwama with 75.00 % and the district Kupwara has the lowest tribal dropout rate of 30.03 % at the same stage.

Figure 10. Showing District wise dropout rates of scheduled tribes of Kashmir division.



Note: UDISE plus (2018-19) accessed on 30-.4-2021.

Note: The dropout rates of ST’s of Shopian District at secondary stage were not available.

Variation in the magnitude of dropout rates have been found when location, gender, and social categories were taken into consideration (Joshi, 2010). To find the reasons of dropout, galore of empirical studies have found poor attendance, academic performance, gender discrimination, sibling care, lack of interest in studies (Bashir Khan & Vaida, 2014); early marriage & cost of education (Farooq, 2013); disability, orphanhood, child labour (Ngwakwe, 2014); parental reluctance & domesticated labour (Kotwal, Kotwal & Rani, 2007); lack of work experience (Khan, 1987), economic status, occupation of parents, teachers qualification (Govindaraju & Venkateshan, 2010); educational costs, uninterest in studies, absenteeism (Tas et al., 2013); nomadism, seasonal migration, cattle rearing (Sharma, 2009; Tufail, 2014; The Inter-Agency Regional Analysts Network, 2016); need achievement (Khan, 1994); domestic work, push (school related)/pull (student related) or fallout (circumstantial) factors (Doll, Eslami & Walters, 2013); child marriage, poor achievement, Physical disorders cum mental retardation (Kishore & Shaji, 2012); social intelligence (Lone & Khan, 2018); drugs, alcohol abuse, absence of parental monitoring (Fernández-Suárez, 2016); mental health (Khan & Lone, 2017); Poor accommodation, parental illiteracy, irregular teaching by

teachers, Parental reluctance (Koka, 2019); large size of family, remote accessibility, absence of guidance, non-affordability (Maningba, Jeyaseelan & Stephen, 2020); adverse cultural norms, belief and practice (Colclough, Rose & tembon); corporal punishment, distance from school (Ampiah & Adu-Yeboah, 2009); cultural norms, rituals customs and material culture (sabara, 2010); absence of curriculum in mother tongue (Bhat & Khan, 2020); sibling care (Chaudhari & Roy, 2005); adjustment (Bhat, 2020); are mainly responsible for dropout. These factors determine to a great extent the enrolment, retention and high dropout drop-out rates of tribal children in school education.

Conclusion & Suggestions

The tribals of J&K are the incredibly disadvantaged and marginalised communities across the state as far as their education, SES, and health are concerned. On human development indicators (HDI), their position is appalling and very much below compared to other communities of the state, which has devastating effects on their education in general and minimal school participation, transition, survival and significant school dropout in particular. Stage and gender-wise variation have been observed among tribal enrolment, GER, GPI & dropout rates during the said period. Increasing school

accessibility within 1 km distance has significantly contributed towards impressive tribal enrolment, which is reflected by rising enrolment trends at initial two stages. However, the terminal two stages have shown a declining trend from 2012-13 to 2018-19. During the same period, tribal GER at primary & upper primary stages declined due to clubbing or merging of more than 2406 schools since 2015, which is against National Policy on Education-1986 and SSA norms ("2406 Schools Merged," 2016, June 02); "The Curious Case of Abandoned School," (2018, July 09) while as, at later two stages, have shown upward trend. The tribal gender parity index at primary stage remains unchanged, however, the next stage, it is more than one, and at the last two stages, the gender parity gap widens further. Tribal children of J&K fail to complete the full cycle of school education as they dropout school due to the factors mentioned above. The tribal dropout rates have shown an upward trend during the said period. The dropout rates widen further in the terminal stages of school education and girls have been at the receiving end as they have to leave the school for one reason or the other. The stage-wise dropout rates of ten districts of Kashmir division show alarming and disparate dropout rates which are very much higher than national average and tribal dropout rates at national level. The secondary stage dropout rates are extremely higher in all districts compared to earlier stages of school education.

Various government initiatives and intervention schemes from time to time have significantly increased the access to schooling to the children of scheduled tribes. Certain internal and external factors, poverty, illiteracy of parents, low SES, seasonal migration, hereditary occupation, cultural inertia, cattle rearing, socio-cultural norms and beliefs, child marriage, domestic and agricultural labour, cost (direct & indirect) of education, alien curriculum and language, act as barriers in their retention in schools and these barriers not only vary from one tribal community to other but also from region to region. Hence, there is a need for community and region-specific policies and intervention programmes, exclusively meant for their

welfare. The retaining capacity of the school education system is challenged on account of their language policy, curriculum contents, teacher, and their training. The prevalent school education system of Jammu and Kashmir mainly meets the needs of dominant communities and school education curriculum and pedagogy appear alien to tribal communities. The study suggests that an improvement in the quantum of school and adequate infrastructure facilities of playground, drinking water, electricity, washrooms, libraries, and mid-day meals.

The tribals of J&K, particularly Gujjar & Bakarwal tribes, face educational, social, and economic exclusion. Although educational policies support "mother tongue" as a medium of instruction (MOI) at the primary stage, tribal languages like Gojri is/are being excluded from the educational system as well as J&K Official languages Bill 2020, even though, Gojri is the 3rd most spoken language after Kashmiri and Dogri (Census, 1971). Equitable measures in designing curriculum and pedagogy must be taken, ensuring the inclusion of tribal languages and local contents in the school and varsity curricula. Rahi (March 7, 2009) tribal researcher, activist, writer, demanded Gojri as a separate subject and inclusion of Gojri textbooks in schools. Gojri have been recognised by Ministry of Education, India; Academy of Arts, Culture and Languages (JKAACL), Jammu & Kashmir; Centre Institute of Indian Languages, Mysore and Sahitya Akademi, as "independent literary language" ("Include Gojri," 2020, Oct. 05). There is an urgent need to start PG department of Gojri in Universities of Jammu and Kashmir for its progress and development. There is a need to employ more community/tribe-specific teachers, especially female teachers in their respective regions as the lingual barrier between teachers, students, and parents can be mitigated and healthy interaction among them can be initiated. The engagement of female teachers in such regions would benefit to a great extent in addressing the girl's dropout rate. Teachers from the same community develop "we feeling" have a positive impact on parents in accepting suggestions and decisions regarding future

prospects of students. Moreover, teachers from other communities serving in different tribal regions must be provided necessary awareness about the concerned tribes, their language, culture, life style, etc. Furthermore, tribal language-specific training programmes for such teachers must be conducted.

Those tribal children who leave school on account of poverty, low SES of parents should be provided incentives, scholarships, and timely monetary assistance to meet their educational expenditures. Establishment of more special mobile schools for migratory transhumant tribes, mobility, specific infrastructure, employment of more teachers from the same community as well as their accountability will ensure their hereditary occupation will not impede them in school retention and dropout.

Child tracking mechanisms must be made mandatory in schools and annual dropout surveys must be conducted to locate dropouts, enquire the reasons of their dropout so that necessary measures can be taken before hand. Literacy campaigns, adult education programmes for parents and elderly

community members are the need of the hour, as only educated parents can realise the necessity of educating their children. Non-formal, vocational and technical education for children who could not attend school either due to special ability or labour will be of great help in engaging them in educational endeavours and preparing skill-oriented labour force.

The study suggests the establishment of numerous residential schools in tribe-specific locations managed and supervised by the concerned tribal communities. The school dropout issues need to be discussed with local communities and jirga councils and their opinions and suggestions to some extent will provide an insight and solution to the problem. The study suggested tribe specific micro-level research studies and surveys to get an understanding of their cultural & social setup, occupational patterns, life style, socio-economic status, attitude towards education of children, and other forces that impede the educational enrolment, retention and dropout of tribal children.

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GIFAATAA FESTIVAL OF WOLAITTA IN ETHIOPIA

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ABSTRACT

The objective of this article is to explore the issues of Gifaataa Festival in Wolaitta. The study conducted through qualitative research method. Gifaataa is new year festivity in Wolaitta based on lunar system of indigenous calendering. It reflects traditions, belief and faith of Wolaitta community in its celebration. It has various activities and ceremonies. Gifaataa Festival explains the practices that occur on calendrical cycles. Gifaataa usually feature ceremonies honoring cultural practices. It renew the bonds between ancestors and their progeny, emphasize cyclical time, and keep track of the community's legacy and orientation by carrying forward its predecessors' memories. Gifaataa festival brands Wolaitta Culture in all forms, preserve its identity. It is vital for socio-cultural and economic development of the community. This study is identified Gifaataa Festival as indigenous cultural practice that symbolize unity, love, peace and optimism of Wolaitta.

Keywords: Festival, Gifaataa, Indigenous Culture, Wolaitta, Ethiopia

1. Introduction

Wolaitta is an Omotic people live in Southern Ethiopia. Wolaitta borders Gamo in south, Dawuro in northwest Hadiya and Arisi in east, Sidama in southeast and Kambata-Tambaro in the north. Wolaitta have various physical features. The land features of Wolaitta are hills, mountains, flat plain, steep slope and rift valley. The climate includes garra (hot lowland) bargua (moderate midland) and gezia (cold highland). People in Wolaitta practice mixed agriculture and trade. Craft technology such as pottery, tannery, smith and weaving practices are common. Wolaitta is one of the most densely populated areas in Ethiopia. The total population of Wolaitta within its administrative unit is nearly five million and large number of population live elsewhere in the country. In Wolaitta administrative unit, there are twenty-two districts, among them six are town administrations. In Wolaitta, ninety-nine percent of the population live in rural area and rest are live in urban areas.

Wolaitta is the name of the area, ethnicity and the language. Wolaitta is representation of the people, the land and language. Wolaitta have the clans of malla and dogalla. Malla clan had political authority where as dogalla clan had religious authority. The state of Wolaitta was politically organized well from ancient time to present. A written records on Wolaitta started in the 13th century which found in Act

of Abun Tekle-Haymanot, and connected the baptism of kawo (king) Motolomi as Fissaha in the evangelical activities of Abun Tekle-Haymanot. Kawo Motolomi was powerful and expansionist king of Wolaitta and linked with Abun Tekle Haymanot. At this time Wolaitta territory vast beyond ten times the current administrative territory.

Wolaitta had three dynasties. The first was Wolaitta-Malla dynasty. This dynasty ruled in remote past and replaced by Arujjia dynasty. In addition, sources confirm that Arujjia lived for very long in the area. Nevertheless, Arujjia dynasty became was unpopular by the society. For this reason, it was considered as dictator and ugly. For this reason, Wolaitta-Malla dyansty was restored and controlled power for the second time. Wolaitta-Malla dynasty ruled beyond present Wolaitta territory. The third and well-remembered dynasty was Tigre dynasty in Wolaitta. This dynasty stayed on power until the conquest Wolaitta by Menelik in 1894. The conquest of Wolaitta by Menelik brought many socio-economic and political changes.

Post conquest Wolaitta introduced new administration style and some socio-cultural and economic changes. The second reason discouraged the Wolaitta culture was misinterpreted teachings of the protestant missionaries, and the globalization influence. During Italian rule, some cultural traits of Wolaitta were restored that gave a few reliefs to the community members to enjoy their

culture. Hence, the people welcomed Italian rule. Even though the Italian rule encouraged traditional way of life in Wolaitta, the restoration of Haile Sellassie in 1941 to 1991 brought other socio-economic change on the people which had similar aspect on Wolaitta which mentained post Menelik development in Wolaitta. There are material and non-material cultures of Wolaitta which are highly influenced by various factors.

The culture of Wolaitta was highly discouraged post Menelik conquest and other subsequent socio-cultural developments. From 1991 to present the opportunity top reserve and practice their culture appeared. In this period, there were a lot of advantages given to the community to practice their culture but it was not fully materialized. However, the post 1991 government order witnessed.

Traditional cultural practices of Wolaitta reflect values and beliefs held by members of a community, spanning generations. Wolaitta have specific practices and beliefs which often have strong cultural benefit. Hence, in fighting, change should be advocated for without posing threatsor bymaking people feel they should abandon what is important in their cultures. Tangible are toys such as pottery, musical instruments, traditional and contemporary dresses, food, drink, sports and its equipment, artwork; tools, household materials, war materials, agricultural tools, housing artifacts and the like are one of the heritages in Wolaitta. Intangible cultures such as dance, music, language, literary styles/genres, socio-cultural institutions, folklore, cultural games, funeral, marriage, religious and spiritual retuals, traditional medical treatment practices, forms of artistic expression, culinary practices, political institutions, housing and construction, governance, leadership, conflict resolution, power relationships, everyday life practices, other practices, indegenous knowledge system and others are still practiced in Wolaitta.

This study focus on celebration of Gifaataa festival. It is fair to define what festival mean in broad context. A definition given to the word “festival” by Merriam Webster dictionary is that “a festival is a day or time

of the year when people have a holiday from work and celebrate some special event”. Another similar definition for a festival given is that a festival is a periodic celebration or program of events or entertainment having a specified focus. Among many indegenous cultural practices, Gifaataa (Wolaitta New Year) is vital intagible heritage of Wolaitta is point of this study and its practices not promoted as per its value to the community. Gifaataa is the first festival and New Year of Wolaitta that connects all Wolaitta people regardless of their socio-cultural practices. It is celebrated based on the indigenous calendar of the Wolaitta which belongs to lunar counting system by indigenous knowledge system. Besides, social institutions like garuwa (Wolaitta palace), gutaraa (socio-political institution and decision squares, Dubushaa/ the annual blessing places, kasha/ sacred forests which are the acting temples of pre-christianity footprints in Wolaitta and others are heritages of Wolaitta.

However, in Wolaitta, there occurred a paradigm shift in indigenous cultural identity development of cultural pratices with the down fall of Derg government in 1991 and Wolaita culture and identity as a whole has got fertile opportunity to restore its cultural practices. Among this cultural practices, Gifaataa is a unifying festival of Wolaitta people. The study of Gifaataa became the issue of scholars and the issue of Gifaataa is/wasn't documented as per its significance and value due to lack of written language, subjectivity, less attention & other socio-political developments. The need of studying Gifaataa is valuable to local and national communities. The hypothesis of the study is a claim that the issue of Gifaataa is not promoted and festivity is endangered due to religious practices in which the religious groups considered the practice of Gifaataa festivity as paganism. That is why this study was intended to study the issues of Gifaataa to be preserved for socio-cultural and economic benefits of the community and the nation at large.

2. Methodology

2.1. Approach of the Study : This study used qualitative approach. This approach is used because the researcher investigated the issue of Gifaataa in Wolaitta by qualitative means. To obtain information for the this study, knowledgeable elders on Gifaataa festival were targeted. Thus, interview and focus group discussion (FGD) were employed. Besides, observation and document analysis were conducted.

2.2. Description of the Research Setting: Wolaita is found south Ethiopia which is 320 kilometers in southwest from the national capital, Addis Ababa. Wolaitta is known for its indigenous cultural practices and historical facts.

2.3. Sampling Technique: This study the used purposive sampling technique to collect oral information. Thirty-five elders were selected purposively for interview and focus group discussion (FGD) from five districts (seven elders from each district), and ten elders (two elders) from these five districts were used for FGD.

2.4. Tools of Data Collection : In order to achieve the intended research objectives by gathering valid, relevant and reliable data from the pertinent sample of the target population, this study used observation, interview and focused group discussion (FGD).

2.5. Data Analysis : Qualitative method of data analysis was used. The data collected through interview, FDG and document search were analyzed using qualitative method of data analysis. The information obtained were analyzed through triangulation. Then, the issue of Gifaataa as intangible heritage is presented in a systematic approach by describing, analyzing and interpreting the data.

3. The Nature of Gifaataa Festivity

Gifaataa is defined as the withdrawal from the old year and transition to the first month of the new year. This transition from old to new year is based on Wolaitta calendering known as wodiya-qoda/agina-qoda. The calender uses moon (lunar) system of by identifying the counting of day and night as tuma (dark nights), pouwa (light nights),

teruwa (the beginning of a particular or new month) and gobana (the end day of a particular month). Thus, Gifaataa meaning first or elder (bayira). Gifaataa is well known festival that unifies all Wolaitta people in which all the community members owns it. Its preparation starts from June with the ceremony known as guliya-gosha (binding tree) and end with the farewell of the festival in October with the ceremony known as gollo-igeta (Gifaataa farewell). However, its public ceremony of accepting a new year is celebrated in every Sunday between September 24 to October 11 in every year. It is the most well-known festival that has been celebrated annually in the month of September in the above mention date of Sunday. This Sunday, according to Wolaitta calendering is the beginning of the new year known as Shuha-Woga. Gifaataa is the socio-cultural festival. Gifaataa is not religious festival.

Gifaataa is a common festival of whole Wolaitta community. It, often referred to as the Festival of Peace, Love and Unity, is one of the best known festivals of Wolaitta in Ethiopia. Gifaataa festival is centered around the hot economic activities and preparation of food and drinks, wearing of new clothes, musical sounds, conflict resolution, building and maintaining of the new houses, marriage, circumstances, hunting, recreations and other joyful practices.

The fun part involves the last week of the old year and the two weeks of the new year in which people refresh themselves. In these weeks, Gifaataa ceremony is accompanied various colorful socio-cultural practices of the community and the entertainment of the individuals. Eventhough changes were occurred, it is said that the coronation of Wolaitta kings before Meneliks conquest was associated with Gifaataa festivity in which new kings coronate their crown with Gifaataa festivity, though he had throned one of the months in old year. Asho (raw meat), butter, honey, local beer and other types of beef are hugely consumed during Gifaataa celebrations. It is a very carefree festival that's great joy and optimism appears. It is for this reason Wolaitta proverb states: "Gifaatay ubbawuka Gifaataa, Gifaatay kapuwawuka

Gifaataa, Gifaatay manquwasssikka Gifaataa duriysssika.” Litrary means Gifaataa is for all, Gifaataa brings happyness for birds too (including other animals), Gifaataa is equal for the poor or rich (equal for all individuals).

Gifaataa manifestations/elements are gulyia (Onakooy awa biide shafane gulyiaa gochchees, gugiyaa ankoy dafess, Anhay karitta nagees), uta production, amuwa/ariya, keeping of ox, constructing various heritages, marriage, circumcison, arbitration and peace-building, ready to be free from any burdens, keeping grass for animals, unique markets (hare-hayiko, boboda, goshsha and qa'ia), wood and grass preparation, other home related preparation from last two weeks and last four days of old year, Pichatta-Oruwa, Kosseta-Shaaga, Suli'a-Bizza, Bachira-Qeera, Shuhaa-Wogaa (1st date of Wolaitta Calender, known as New Year). Thus, Gifaataa is the first day of the new year and also the name of the first month. In this order Gifaataa, Goluwa, Barata, Dubala, Shacha, Longiya, Bulala, Gaba, Labosha, Gulyia, Calijuwa and Kusha are the twelve months in Wolaitta calndering system.

Feeding; gulyia-firing; various songs and dance (eg. gaziya and various musical instruments); colouring of womans (wosoluwa-oyittiyogaa-Ta kushshe kula kurchuch kurachiya wassa dentete, aginne xeera boljojje); tama-sagaa (fried Monday); cishsha-gattuwa (Gift Tuesday)korima was/is the typical flower of Gifaataa; gaziya; tookki-xeellaa; gooloigetaa; oroy-offintta; and other sociocultural and economic affairs.

The typical elements in Gifaataa ceremony indegenous calendering system, Gulyia, korapuwa (saving of money sometimes), utaa hashsheta (preparation of false banana), amuwaa/ariyaa (association for ox), oyissa-shupuwaa (saving butter and), renewal of house ans environments, preparation for marriage, circumistition, conflict resolution/aribtriation, paying debbt, specific Gifaataa markets, preparation of cloth and other materials for family members, food and preparation at home, pre-Gifaataa day (shuhawogaa)preparaions, Shuha-wogaa (New Year) and bonfire of gulyia, feeding, songs and plays, wosoluwa-oitiyoga (decoration of

females with colored plants), tama-sayino/sagaa (Firing of meat on Monday), Cishsha-makisayinno (Gift giving Tuesday), gaziya kassa (songs, dances and other plays), toki-xela (the ending of Gifaataa ceremony), goolo-igetaa (farewell of Gifaataa ceremony) and others activites found in Gifaataa ceremony. Each of the above activities has various ceremonial activities in their respective function.

Gifaaataa is used as an instrument for social bondage. Since a long period of time, the celebration of Gifaataa was vital to interconnect Wolaitta community and Wolaitta with its neibours. Gifaaataa have the chained the values of treating various community members as one family, warm-hearted interaction, linking yougs with due respect to elders or other clan members, and celebrating every events or elements of Gifaataa festivity with a great color of enjoyment and togetherness. Such a wide gathering with full hue and light can hardly be seen onece in year. People have highly restricted themselves in social interaction due to Gifaataa. The interaction in the present generation is highly diplomatic considering the indegenous value of Gifaataa for social bodage. Eventhough the individuals loss social values and cheerful blessing of togetherness during despute, the festival of Gifaataa aviods any of such confrontations. The present generations are happier celebrating Gifaataa rather than any community festivals.

However, new developmets on some social developments, acculturation, modernization, globalization, religious thinking and other factors are denting the Gifaataa festival. Large scale acculturation and a religious teaching-the product of globalization-is dispersing Gifaataa celeration across Wolaitta, leading to a unified Wolaitta acculturation. There was a time when Wolaitta used to cheers each other with Gifaataa ceremony; but nowadays many community adhere themselves to religious views than displaying their indegenous cultural paractice such as celebrating Gifaataa. It's an issue of changing preferences.

The joint celebration system of Gifaataa, which has been appreciated among the community, is breaking up, paving the way for only to individual celebration approach. Most community members now like an independent life due to globalization. There are old-age homes and senior communities everywhere, in the communities. And what's a real worry is that many of these community members are getting further divided because of strained relations between partners. Traditionally, life partners were searched from local communities, usually within the same clan. Inter-clan relationship is now common to celebrate Gifaataa because of westernized outlook, lifestyles, poverty and the like.

Globalization is affecting the Gifaata space too. Work is forcing a Gifaataa separate lives, away from each other over a long time. Gifaataa festival haven't changed a lot as yet, though some influences can be found. Many festivals have gone in Wolaitta though time. Many Wolaitta and others attend Gifaataa festival as well, and get to learn about its events. But here's a change within the country that's quite a surprise. We are celebrating many more Gifaataa events. These events were not promoted in Ethiopia. Cultural practices in Wolaitta is changing and integrating with the induced cultural practices. In Wolaitta tradition, Gifaataa festival is centuries old, and while this avoid the risk of taking a backseat in an increasing global space, and the technology and the internet services plays a big part in preserving Gifaataa that may otherwise have been forgotten.

The position of technology in Gifaataa celebration has positive aspect for its development. In other words, are there some criteria for using technology and how it quality Gifaataa Festival. Few technological records speculate about the use of technology for quality of Gifaataa Festival. Today any forms of records have paramount importance to promotion and sustainability of Gifaataa. The technological records have become a means to preserve Gifaataa festivity. People use records on Gifaataa just for using it and to get a sense of belongingness.

Thus, for long Wolaitta have been celebrating Gifaataa till 1894 dynamics especially, Gifaataa was amalgamated with meskel in post 1960s. In the pre-1894 era kings celebrated also Gifaataa in kawo-garo/kawo-zanaqa (palace convention) as national festival but in post-1894 political developments changed its nature.

Gifaataa is an occasion where various socio-cultural and economic activities fulfilled. Some of the achievements of Gifaataa include:

- It brings renaissance to life of community and individuals
- It instigates new spirit to work and other plans of the year
- It develops the spirit of unity, love and peace among family level and the community
- It brings strong bondage at relatives and family and societal level
- It is the occasion where men and women practice their indigenous knowledge system
- It was the time where some social ceremonies (marriage, circumcistation, and others) conducted
- It brings arbitration and recoucilation
- It is the period of vacation when people refresh themselves
- It creates opportunity to help the poor and those are in need of help
- It creates either female or male to expose their skill and k/dge to public

However, all Gifaataa elements were taken by the meskel celebration due to the shift of the Gifaataa celebration to specific date of meskel which is Meskerem 17 (September 27/28). Contrary, to this Gifaataa is celebrated in Shuha-Wogga of every Sunday of September 24 to September 30 based on Wolaitta calender. In 1960s, Gifaataa ceremony was amalgamated with the date of meskel which is the dominant festival of Ethiopian Orthodox Church. The meskel ceremony adapted all Gifaataa practices, and Gifaataa ceremony was covered and shadowed by meskel. Despite such amalgamation, the whole community celebrate Gifaataa up to present. It is clear that Gifaataa is celebrated by all community members as their indigenous Festival, where

as meskel is dominantly celebrated by adherants of Ethiopian Orthodox Church. Besides, Gifaataa and meskel has no historical and socio-cultural link in all its matters. For instance, Gifaataa was socio-cultural and economic ceremony while meskel is religious ceremony. Secondly, the duration of Gifaataa ceremony starts from 9th month of old year to second month of the new year with various activities and ceremonies while meskel was only for two days. Thirdly, the ceremony of guliya in Gifaataa and Demera in meskel are different with various ceremonial reasons. Fourth, The date of Gifaataa is always on Shuha-Woga (Sunday) but meskel is on fixed date of Meskerem-17 which is any date from Monday to Sunday. Gifaataa has accompanying social ceremonies (marriage, circumcision and other were linked to Gifaataa) but not to meskel.

Gifaataa has various socio-cultural and economic benefits for individuals and the community at large. Each individuals has their own plan of activities based on the age and sex, and they also enjoy various advantages. Each individuals in the family, such as father, mother, children, servants has his/her own duties for Gifaataa celebration. Since the long time, Gifaataa had its benefit for Wolaitta. Gifaataa symbolizes peace, unity, respect, love and optimism in all aspects of life.

The long existing socio-cultural and economic ceremony of Gifaataa has been facing various challenges. This is due to unrelated religious teachings and thoughts, linking indigenous cultural practices in general and Gifaataa in particular due to meskel ceremony, modernization and globalization, acculturation, ignorance and negelegence, loss of social memeory, lack of confidence on past glory, poverty and more focus on economy than identity, lack of awareness to indigenous knowledge and the like. Thus, for the preservation of Gifaataa its facts and figures, profile, its link to the

community's life and its benefit to the society are given less attention. For this reason, dicussing the matter of Gifaataa in community, promoting and publicising, awaring and clarifying Gifaataa as the a community and national festival, incorporating it in a curriculum and other academic arena, preserving the its ceremonial places such as garuwa, gutura, mitaa and others is essecential for sustainabilty and attainment of Gifaataa as a living intangible heritage.

4. Conclusion

In concluusion, Gifaataa have been celebrated for hundreds of years. Gifaataa is the symbol of oneness, unity, love, peace and optimism of Wolaitta people. There are different aspects of Gifaataa festivity. Each aspect is practiced by people and everyone believes Gifaataa as the pillar of Wolaitta identity and indegenous knowledge system. It is one of the an indenenuous traditional cultures and everyone of the community has their opinion towards Gifaataa. It is a national resource and contributes for national consensus. Gifaataa is unique and has various socio-cultural and ecoomic practices. It is obvious that young generation are highly influenced by golobalization, golobalization and other western practices, however, many comunity youths are interested in Gifaataa Festivity. Gifaataa aspects are frequently practiced but if it is not preserved and taught, tomorrow's generation is going to leave the its celebration. It has to be preserved as national and world-heritage. The elements and the ceremony of Gifaataa is incredibly complex and incoporates various socio-cultural and ecoomic activities. Gifaataa festival also brands Wolaitta Culture in all forms, preserve its identity that create potential for tourism. Therefore, governmental and non-governmental bodies, individuals and any concerned bodies must work to suitability and development of Gifaataa.

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GREEN HRM PRACTICES IN INDIAN ORGANIZATIONS**K. Siddiqui**Mangalayatan University

ABSTRACT

Green HRM has been gaining importance at a rapid pace in companies recently. With priority and emphasis of top management on ecological maintainability, green practices are being incorporated and companies today are developing human resource policies for encouraging sustainability initiatives. Before the success of company was greatly dependent on promotion of economic value. However today, companies have to give utmost importance to practices which helps to keep our environment safe, which will in turn effect the financial factor of the organization. The objective of the paper is to study the green practices followed by a few Indian organizations. The paper also explains why organizations which follow Green HRM practices are better than the counterparts. The study comes at right time, as at the present scenario we need to focus on environmental issues and take measures to overcome the increasing pollution. Hence, the paper will highlight various Green HRM Practices and give recommendations to make it more effective.

Keywords: *Green HRM, Practices, Indian organizations*

Introduction

Wehrmeyer (1996) made an attempt to connect the two fields of environmental management and human resource management. Milliman and Clair (1996) were among the first to present an overview of the role of Human Resource. Green human resource management is turning the activities of HR into green, making all the practices of human resource environment friendly. Going green is crucial for the organization and understanding its importance is very vital. Green HRM major role is to enhance each employee's mindfulness towards the issue of sustainability. Green HRM is essential at individual and hierarchical level. Organizations which participate in green management competitions are assessed by the authorized agency "India Green manufacturing Challenge (IGMC)" which is an awarding platform for organizations. Renowned organizations in India had been honoured at "India Green manufacturing Challenge (IGMC)". This organization appeals industry for setting SMART goals in green initiatives which will raise awareness and inspire other industries to join activities relating to green initiatives, ultimately developing a GHRM (Pardhi and Chaudhary, 2019).

Due to the rapid rise in industrialization, it is affecting our environment badly which is why it is essential for companies to build sense of

awareness among their employees about need of Green HRM. By adopting Green HRM many of the corporate world have changed Human Resource concept into Green human resource concept. It is universal truth that, no change is possible without employee's participation and involvement including change in human resource management to Green HRM.(Pardhi and Chaudhary,2019). Presently, existence of green concept in the organization is becoming a standard (Margaretha & Saragih, 2013) as well as in the field of management, the scope of research is increasing day by day on the literature of green marketing, its accounting, environmental management and green human resources management (D. W. Renwick, Redman, & Maguire, 2013). Furthermore, there is developing requirement for the assimilation of green management in the field of human resource which is also called green or environmental human resource (Dutta, 2012; Margaretha & Saragih, 2013). On the other hand, it is noticeable that this field is still on the infancy stage and most of the research studies on green human resource management is still on theoretical stage (Jabbour, 2013). Today, companies are realizing the need of strong grip of social moral sense and responsibilities towards green sense, building brands and having all essential tools for it as it is not the only responsibility, development in other areas is

also very necessary for business (Sathyapriya, 2013).

Literature Review

Wehrmeyer (1996) made an attempt to connect the two fields of environmental management and human resource management. The author demonstrated that there is lack of incorporation of environmental management and human resource management. This lack of integration is detrimental to the economic success of organizations, as it negates the opportunities that can be achieved from a more ethical and participative view to environmental and personnel management. "The most important advantages—namely, increased motivation of the workers, lower turnover, increased job satisfaction, more innovations and improved customer services—are due not to improved technology but people" (Wehrmeyer, 1996, p. 28)

Milliman and Clair (1996) were among the first to present an overview of the role of Human Resource Management in environmental management. The researchers proposed a model of environmental human resource management practices incorporating four crucial steps. At first, a company needs to establish an environmental vision as a guide for designing its strategy. Second, representatives must be prepared to incorporate the company's understanding of ecological vision in its objectives and procedures. Third, employee's green performance should be evaluated utilizing a proper evaluation framework depending on these objectives. Four, reward system should be established, relating to the environmental activities achieved in the work environment.

First this review addresses the meaning and interpretation of green HRM. According to Renwick et al, (2008), the integration of corporate environmental management into human resource management is termed as green HRM. They also stated that human resources aspects of environmental management are green HRM. These scholars broadly specified that distinguished policies in the field of recruitment, performance management and appraisal, training and development, employment relations and pay

and reward are considered as powerful tools for aligning employees with an organization's environmental strategy. According to Jabbour et al, (2010), the „greening“ of functional dimensions of human resource management such as job description and analysis, recruitment, selection, training, performance appraisal and rewards is defined as green HRM. In 2011, Jabbour again defined green HRM as “the level of greening of human resource management practices” in terms of functional and competitive dimensions of HRM. Green HRM is referred to “all the activities involved in development, implementation and on-going maintenance of a system that aims at making employees of an organization green. It is the side of HRM that is concerned with transforming normal employees into green employees so as to achieve environmental goals of the organization and finally to make a significant contribution to environmental sustainability. It refers to the policies, practices and systems that make employees of the organization green for the benefit of the individual, society, natural environment, and the business” (Opatha, 2013; Opatha and Anton Arulrajah, 2014). As far as the above definitions are concerned, the very latest definition provides a comprehensive meaning and understanding about what green HRM is in the context of organisational setting.

HRM practices are the actual human resource programs, processes and techniques that actually get implemented in the organisation or business unit (Gerhart et al, 2000; Huselid and Becker, 2000). Similarly, green HRM practices are the actual green HRM programs, processes and techniques that actually get implemented in the organisations in order to reduce negative environmental impacts or enhance positive environmental impacts of the organisations. The ultimate aim of green HRM practices is to improve the organisation's sustainable environmental performance.

Various contemporary scholars have augmented the understanding and studies on Green HRM in recent years (Berrone & Gomez-Mejia, 2009; Jabbour, Santos, & Nagano, 2010; Massoud, Daily, & Bishop, 2008; Renwick, 2008;

Stringer, 2009). Green HRM depends on the unique and identifiable patterns of green decisions and behaviors of HR managers (green signatures; Jackson, Renwick, Jabbour, & Muller-Camen, 2011).

Growing awareness of sustainability and corporate social responsibility has led to the mounting importance of human resource in most of the organization along with financial, legal and other aspects of cleaner production in business. While finance is widely accepted as the 'lifeblood of businesses. (Renwick et al, 2008)

The study of this paper is based on HRM practices and specifically one practice of recruitment and selection. The objective of this paper is to find out various greening activities towards sustainability. This paper is more focused on policies of recruitment and selection could be integrated with practices of green factor where it can enhance employee outcome. A survey was conducted by distributing questionnaire to 20 students of Post graduates to find the perception towards green recruitment and selection and updated practices. (Aditi Singh ,2019)

The paper provides systematic review of Green Recruitment and Selection. How do organizations select candidates in line with their pro-environmental stance? What impact do company's practices have on attracting pro-environmental job seekers? GRS is an emerging concept of GHRM that is attracting increasing attention of researchers. This review provides some key insights. First, both the pro-environmental employer and a pro-environmental job seeker look for the option that matches other party's environmental needs. (Pham D.D and Paille, 2020)

Objectives

- 1) To understand how integration of Green takes place in Human Resource Management.
- 2) To analyse how Green HRM Practices are being implemented in few organizations of India.

Integration of Green Concept with Human Resource Management

1. Recruitment and Selection

Green recruitment and selection are widely recognised as important concept of green human resource management. Green recruitment is paper-free recruitment with minimal environmental impact. Applications are invited online like mail, video-based interviews are conducted. Recruitment is the process of searching prospective employees to apply for job posting in the organization and selection is the process of choosing appropriate applicants among the job applicants. (Singh et al,2017) Successful recruitment and selection practices are key components at the entry point of human resources in any organization. Effective recruitment and selection strategies result in improved organizational outcomes (Naveen & Raju, 2014). This has been proved by a number of empirical studies. The study of Mustapha, Ilesanmi and Aremu (2013) which examined the impacts of well-planned recruitment and selection process on corporate performance in Nigerian banking industry found that there is a significant relationship between recruitment and selection based on merit and organizational performance; that effective recruitment and selection is a key to organizational commitment; that a well-planned recruitment and selection contributes to organizational performance.

2. Training and development

Green training and development is the process of equipping employees with working approaches that have lesser negative impact on the environment. Green training and development educate employees about the value of EM, train them in working methods that conserve energy, reduce waste, diffuse environmental awareness within the organization, and provide opportunity to engage employees in environmental problem-solving (Zoogah, 2011). Ramus (2002) in a survey of managers, on best management practices concluded that environmental training and education, along with establishing a favourable environmental culture for the employees where they feel that they are the part of environmental outcomes, were the most important HRM processes that

facilitate the achievement of environmental goals.

3. Compensation and Rewards

This is the most important step of Human resource management through which employees are rewarded for the performance. These are most effective activity which links individual's interests with the organization's interest. The efficacy of green rewards and compensation was best observed in a study conducted by Berrone and Gomez-Mejia (2009) on 469 US firms operating in high-polluting industries. They found that the firms having eco-friendly performance paid their CEOs more than non-eco-friendly firms. They also concluded that long-term company results in accordance to pay were associated with greater pollution prevention success. Literature review reveals that incentives encourage executives to use accounting and other works to achieve short-term results and enrich themselves (Benz & Frey, 2007; Denis, Hanouna, & Sarin, 2006).

4. Green Employee Relations

Employee relation is that aspect of HRM which is concerned with developing amicable employer-employee relations. An important way in which employee involvement and participation can be encouraged within the organization is to seek entrepreneurs within the company who are socially or ecologically oriented known as eco-entrepreneurs (Mandip, 2012, p. 246). The scope of employee relations should be broadened by initiating a suggestion scheme within the organization, wherein each and every employee from top most to the lowest level gets an opportunity to contribute to the scheme.

Green HRM Practices in Indian Organizations

1. HCL

It is an Indian global IT services company. HCL Technologies has "Employees first, customer second" strategy. At HCL employees are given opportunity to develop innovative ideas. The company has won international recognition for ground-breaking "Employee-first" management philosophy. In

the year 2013 HCL won the Asia-Pacific Enterprise Leadership Award (APELA). This award recognizes and honours the achievements of companies in the areas of sustainable development and corporate responsibility. HCL runs a multi-layered corporate program "Go Green" to drive its sustainability initiatives. It has green processes across facilities & in the areas of travel, IT and events. The company commits to compliance with ISO 14001 standards. It runs campaigns to initiate individual action towards environmental issues. HCL views green initiatives enterprise wide and understands that green goals can be set at an organization strategy level and then top-down approach could be adopted for its implementation, which would create green business processes and green workplace for employees. Recently HCL has been honoured with the 'Global Sustainability Leadership Awards 2014' under the category 'Best Community Action' at the World CSR Congress. The award recognizes Best Practices & Outstanding Individuals engaged in Corporate & Social Responsibility (Sharma and Gupta, 2000). HCL follows a three-phased methodology to provide Green DC solutions. The first phase is the assessment phase, in this phase green score-card is developed. The second phase is designing and planning phase. In this phase a detailed roadmap for specific for green initiatives is taken. HCL Technologies has been leading the green revolution in Indian IT industry. HCL has developed a holistic strategy of involving everyone into the green HRM practices. It also has a "women connect group" this program is for development of women. It provides counselling to aspiring young women and experiences regarding work-life priorities.

2. Infosys

Has taken a great step towards sustainability by participating actively in national and international forums. Green innovation cell is being created for innovating new ideas for Going green. They monitor and verify information regularly. They launch new special schemes. It has taken great efforts towards sustainability. They have made

special websites for educating about sustainability. There is a engaged global workforce that is willing to make a change. The education sites include webinars, classrooms, certificate programmes etc.

The major steps taken by Infosys are as follows:

India water tool (IWT). They are assisting the World Business Council for sustainable development.

Sankalp is a platform aimed for children fighting against diarrheal deaths in India.

Infosys is partnering with India Post to develop applications that distribute social benefits through its country- wide postal network.

They have built database for rural development program covering 620,000 households in 22 districts of Andhra Pradesh.

Infosys has also helped Indian Income Tax department for e-filing of tax returns. (Infosys sustainable report 2012-13)

3) TCS

It is a global leader in IT services and business solutions with a large network of innovation and delivery centres. They have adopted various measures for generating sustainability such as by saving energy by using energy efficient LED lighting, building design for automatic cooling, reducing water wastage, harvesting rain water, reduction in the use of paper, car-pooling. TCS has also

received certificate for its 3 branch offices of GREEN BUILDING. The company also procures those products and services that are less harmful to the environment. TCS has brought rapid transformation by converting all manual works into digital such as electronic filling, virtual interviews, telecommuting, teleconferencing, online training etc. TCS has significant steps towards 12.5% reduction in energy consumption (Selvarani,2019).

Conclusion

It can be stated that Green HRM is the call of time. More organizations should try to implement them. Training their employees and making an awareness about green HRM will be the very first step taken towards sustainability. India is still at a nascent stage as compared to Western countries. In this paper we have clearly discussed how to merge the concept of green with human resource management. We highlighted the major steps taken into Green HRM by 3 big organizations. The future of Green HRM is promising for academicians, employees, employers etc. We can conclude HR has the major role to play in promoting, training, educating the activities of Green HRM. It is recommended more companies should adopt the activities of Green HRM which will give them a competitive edge.

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SEEKING FORGIVENESS: DEFINITION AND SOURCES OF REALIZATION**V. Mahanot¹ and M. Chauhan²**^{1,2}Department of Psychology, G. D. Goenka University, Gurugram¹vidhisinghvi@gmail.com , ²meenakshi.chauhan@gdgu.org¹ORCID- 0000-0003-0406-8830**ABSTRACT**

The topic of seeking forgiveness has been sparsely studied, this study aims at defining seeking forgiveness and at exploring the various sources that contribute to the realization of the offensive incident for which offender seeks forgiveness from the offended. Qualitative data being subjective and descriptive in nature, in this study, data was methodologically gathered by interviewing people who had lived through a seeking forgiveness experience in order to gain insight into their perspectives regarding the question in hand. On analysis, several themes defining seeking forgiveness were identified along with the various sources that contributed to the offender's realization of the hurt inflicted on the offended; which served as the starting point in the process of seeking forgiveness.

Keywords: Seeking forgiveness, Realization.

Introduction

Thompson et al., (2005, p. 318) defined forgiveness as “the framing of a perceived transgression such that one’s responses to the transgressor, transgression, and sequelae of the transgression are transformed from negative to neutral or positive. The source of a transgression, and therefore the object of forgiveness, may be oneself, another person or persons, or a situation that one views as being beyond anyone’s control (e.g., an illness, fate, or a natural disaster).”

There are dual sides to the process of forgiveness, one who seeks forgiveness (the wrong doer) and the other who grants forgiveness (the offended). Scientific studies on forgiveness have advanced since the 80’s (Worthington et al., 2005) with a lot of research on interpersonal forgiveness (McCullough et al., 1997); (Karremans et al., 2010); (Wieselquist, 2009), self-forgiveness (Snow, 1993); (Mullet et al., 2005); (Wohl et al., 2008), granting forgiveness (Witvliet et al., 2001); (Molden et al., 2010) and benefits of forgiveness (Sapmaz et al., 2016); (Raj et al., 2016).

The current study is a qualitative study on seeking forgiveness as there are only few studies that can be referred from the past on seeking forgiveness, and exploring the processes and factors that lead to the same would help in its in-depth understanding and conceptualization.

Review of literature shows that the perspective and standpoint of the wrong doer needs more exploration, seeking of forgiveness has received scant attention. As per Sandage et al. (2000) seeking forgiveness as a concept has been neglected and scarcely explored. A look at the handbook of forgiveness (Worthington et al., 2005) that consolidates a wide range of research and reviews on the science of forgiveness shows how sparse the work on seeking of forgiveness has been in contrast to granting of forgiveness. The role of the offender’s communicative behaviour, precursors and outcomes in the process of forgiveness is under studied (Witvliet et al., 2002). Sandage et al.(2000) and Bassett et al. (2006) also had pointed that the exploration of the concept, the factors and components involved in the process of seeking forgiveness is little, hence needs to be investigated.

According to Sandage et al., (2000, p. 22) “Seeking forgiveness is a motivation to accept moral responsibility and to attempt interpersonal reparation following relational injury in which one is morally culpable”. It involves interpersonal awareness and action. Seeking forgiveness has a remarkable role to play in interpersonal relationships between couples (Kelley et al., 2005) and inter-country relationships from a socio-political angle (Neto et al., 2007) as it leads to re-union between the conflicting parties involved and restoration of damaged relationship. Riek,

Luna & Schnabelrauch (2014) asserted that the determinants of seeking forgiveness would overlap that of granting forgiveness such as proximity of relationship, responsibility and severity. Witvliet, Ludwig & Bauer (2002) found that being forgiven after seeking forgiveness, led to increase in basic and moral emotions. According to Sandage et al., (2000) those who don't seek forgiveness may feel distress and low self – esteem as they lack the skills to maintain relationships in a health manner, may experiencesocial isolation and inability to relate to others. Anger, resentment, lack of agreeableness and openness were linked to inability to seek forgiveness (Chiaromello et al., 2008); on the other hand, seeking forgiveness reduces anger and leads to forgiveness (Stouten et al., 2009). Guilt (Riek. et al., 2014) and shame were found to be the motivations and the lack of taking responsibility and having the belief that the victim deserved the harm were the obstacles to seeking forgiveness (Harter, 2012). Training in mindfulness were found to increase seeking forgiveness attitudes and behaviours among young adults (Jeter et al., 2017).

This paper is a part of a study which aims at exploring the factors that lead to seeking forgiveness and its benefits. The main objective of the current study was to define seeking forgiveness and to explore the various sources that contribute to the realization of the commitment of an offense and how people who have gone through a seeking forgiveness experience, perceive and comprehend them.

Method and Procedure

Design

This was an exploratory research design; wherein qualitative study was used to understand and explore the experiences of people who have sought forgiveness and to get insightful information into the participant's thoughts and feelings.

Sampling Technique

Primarily purposive sampling was used in this study, wherein participants who have gone

through a seeking forgiveness experience were selected. The existing participants recommended useful potential participants for the study which led to snowballing in sampling (Marshall, 1996). The size of the sample was determined on the basis of theoretical saturation, with no further interviews from participants were found to emerge aspects and properties of a concept (Glaser et al., 1967).

Participants

37 adults ranging from age 23 years to 52 years participated in the study. They were predominantly females, 9 out of 37 were males and all participants spoke English fluently. All the participants had gone through a lived experience of seeking forgiveness from the one they had hurt intentionally or unintentionally and had vivid memories of the same.

Participants who sought forgiveness were recovered alcoholic; recovered from coma; went through a rough divorce; those grieving the loss of a loved one. Participants had sought forgiveness for various intense and impactful reasons: for plagiarism, infidelity, for being physically and verbally abusive, for being accused of molestation, for breaking long-term relationships.

Study Procedure

Following informed consent participants were interviewed on a call due to the ongoing COVID19 pandemic. It included giving consent for recording the interview, analysing the data and violating confidentiality to the extent of publishing verbatim extracts from the interview anonymously without revealing the name, age, location etc. The participants were given the option to exit the interview at any point of time they felt uncomfortable.

All the interviews were recorded by using mobile phone recording device and the interviews were transcribed which were thereafter approved by the respective participants. The participants were asked to provide demographic details of their respective age, sex and location. Interviews were conducted on dates and time mutually decided by the interviewer and interviewee to explore the perspectives of the participants.

Data Analysis

Interviews were audio recorded, notes and memos were written during the interview session for analysis and coding. The recordings were transcribed by identifying personal details and removing them to maintain anonymity and the approved transcripts were used for further analysis. The data was analysed inductively by identifying and reporting patterns with respect to the aim of the study and codes were created by using thematic analysis method.

Based on the objective of the study which was to explore and understand the participants point of view on what seeking forgiveness is and how they realized the mistake they had committed; the properties of the data were sorted systematically and initial codes were generated by the researcher. In addition, following initial assimilation and familiarisation with the transcripts the NVivo software (QSR International Pty Ltd, 2018) was also used for browsing coding and interpreting data by summarizing phrases and sentences. As per Zapata-Sepúlveda et al. (2012), this software facilitates the construction of qualitative themes by coding and analysis of data and promotes validity and reliability of studies. These codes were then plotted in the form of a thematic chart and thereafter placed under relevant potential themes leading to the development of a thematic map wherein similarities and differences of basic themes were logically structured by reviewing and refining them, then further defining and refining the themes resulted in the establishment of the final themes. Thematic analysis is a practical and flexible method for qualitative research in and beyond psychology (Braun et al., 2006).

Result

All participants as per their experience of seeking forgiveness, communicated what seeking forgiveness is for them. Hence, the definition of Seeking Forgiveness is “when the offender realizes and reaches out to the offended by acknowledging and taking responsibility for the hurtful action, apologising profoundly for it and making amends to not repeat the same action again. It

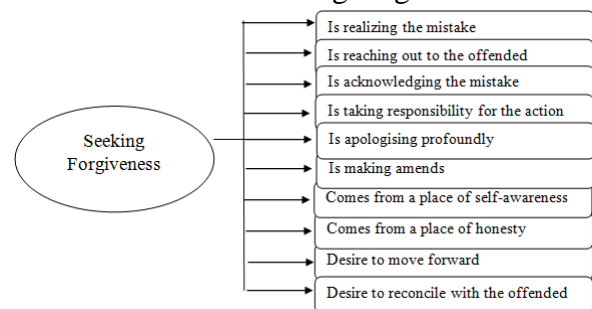
comes from a place of self-awareness and honesty with a desire to move forward and reconcile.”

Themes

The following themes were identified in relation to the question **what is seeking forgiveness?**

The properties of the data obtained from the interview were sorted systematically and themes were generated and plotted in the form of a thematic chart as shown in figure 1: Figure 1

Themes – What is Seeking forgiveness



Seeking forgiveness is the when the offender realizes and reaches out to the offended

Participants expressed seeking forgiveness starts with the realization that originates from within the offender, of the wrong done to the offended. The realization drives one to reach out and communicate to the hurt one and sincerely apologise for the hurt caused intentionally or unintentionally. P (Participant) 7 expressed: “Seeking forgiveness is you know a realisation that you have hurt somebody I suppose it could be anybody it does not have to be a big thing it could be a small thing like it could have been something like bumping into somebody on the road. Yeah, the role that you would have played in disrupting a proper flow of somebody and the realisation of that and to then go ahead and seek forgiveness with respect to the same and hope that the person is not too damaged.” (P {Participant} 7)

On the point of reaching out and communicating P1 and P8 said, “it is basically when I reach out to somebody and I ask forgiveness for some behaviour that I have shown to that person” (P1) “when you try to go back and reach out to a person with

the realisation that what you did was wrong and it was hurtful” (P8)

Seeking forgiveness is the when the offender realizes and reaches out to the offended by acknowledging and taking responsibility for the hurtful action-

Seeking forgiveness involves the offender completely accepting and admitting the transgression committed along with taking responsibility for the hurt inflicted on the offended. For instance, P2 and P26 shared: “seeking forgiveness is where I acknowledge that my action or my speech was wrong or hurtful to the other person and I must acknowledge that the, acknowledge to myself that I have done something that has hurt someone” (P2). “I think forgiveness for me is like seeking forgiveness is about accepting that you have committed a mistake taking full responsibility for it and acknowledging the pain and the hurt that the mistake might have caused and then working towards providing relief or some compensation and if need be, then one can make amends weather in themselves or in their surroundings so as to make it possible for the person to forgive them.” (P26)

Seeking forgiveness is the when the offender realizes and reaches out to the offended by acknowledging and taking responsibility for the hurtful action, apologising profoundly for it and making amends to not repeat the same action again

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Furthermore, seeking forgiveness entails apologising genuinely along with the willingness to bring about changed in the offender’s behaviour such that the hurtful action is not repeated in the future. P20 and P27 for instance shared: “I am making a mistake if I am trying to seek forgiveness from someone, what we usually do is we just say sorry and we don’t mean it but that’s not right it should be from the heart always that yes you are meaning that sorry” (P20). “So for me it is about acknowledging that you made a mistake and your judgement is wrong about something that you reacted in a wrong way and you admit that to the person you were you behaved wrongly with and sort of

let them know that they are important to you and you feel bad about what you have done and you will not repeat it.” (P27)

Seeking forgiveness is the when the offender realizes and reaches out to the offended by acknowledging and taking responsibility for the hurtful action, apologising profoundly for it and making amends to not repeat the same action again. It comes from a place of self-awareness and honesty –

Seeking forgiveness comes from within the offender as a result of being self-aware, emotionally present and honest to one’s own thoughts and feelings. P3 and P9 expressed in the interview: “being aware or present to your own feeling, being present with your emotions” (P3). “I think about seeking forgiveness it has to come from a place of honesty and truth, every time I sort of said sorry, I realise they’re even when I say sorry there are so many connotations and places where our sorry comes from” (P9)

Seeking forgiveness is the when the offender realizes and reaches out to the offended by acknowledging and taking responsibility for the hurtful action, apologising profoundly for it and making amends to not repeat the same action again. It comes from a place of self-awareness and honesty with a desire to move forward and reconcile. –

The offender is inclined to move on by letting go of negative emotions and aspires to mend the relationship that got damaged due to the offensive incident. P5 and P30 conveyed: “My understanding is, basically acknowledging that I was wrong and an effort to mend the relationship that was temporarily broken, and an effort to move forward, it’s an acknowledgement of my mistake” (P5). “Seeking forgiveness would be I think when I am deeply aware of my action and its impact on other person and I mean I cannot undo the past but wanting to at least reconcile or address the harm intentionally or unintentionally done.” (P30)

Sources of Realization of the offensive incident leading to Seeking Forgiveness

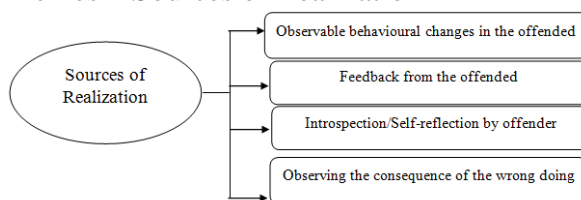
All participants as per their lived experience of seeking forgiveness shared, how they realized that a mistake has been committed by them which initiated the process of seeking forgiveness from the offended.

Themes

The following themes were identified in relation to the question **How did you realize a mistake has been committed by you?**

The properties of the data obtained from the interview were sorted systematically and themes were generated and plotted in the form of a thematic chart as shown in figure 2: Figure 2:

Themes – Sources of Realization



Observable behavioural changes in the offended

Significant behavioural changes in the offended assisted the offender in realizing that a mistake has been committed by them. There was a shift in the day-to-day behaviour of the offended. P18, for instance shared, “we used to spend time with each other the way we used to have that Vibe with each other that was missing so when I felt that absence of that vibe so when I felt the absence of that warmth and presence of you know my husband being around me that is when I felt that ok something is missing”. The change in the relationship dynamics was also an indication, “the base of a relationship which was commitment was taken away from me, for good 6 months we were we were together but there was no commitment for future, nothing that was promised, and I realised that worth of that particular foundation when I actually lost it”. (P14)

Feedback from the offended

Another source that contributed to the offender’s realization of the wrong doing was the feedback given by the offended on the offensive incident. P1 and P3 shared in the interview, “Ya, she would tell me that she

doesn’t like it and she would say that you are saying the same thing again and again. She would also get angry.” (P1) “Okay it happened when my boss called me out of a sudden to generally have a scheduled talk and said that this is not going anywhere, I see that this is the pattern being followed and you have been asking for sometime.” (P3) Direct communication by the offended helped the offender realize and understand of their wrong doing. “So he found out about my relationship and he confronted me.” (P24) “Yeah because for the first time he was very firm with me, he said to me that he can’t do this.” (P13)

Introspection/Self-reflection by offender

Wondering about past actions and behaviour while self-reflecting and introspecting was a significant source of realization of past mistakes for the offender. “yeah, it was the things that 'A' would tell me and I would obviously think about it, I obviously thinking about it more as I grew up because initially I was still distant, so it was a couple of factors growing up that lead me to the realisation and in general more awareness.” (P8) “So yeah, it was just in back and forth of a lot of self-reflection and being in the right space because you are working with people around people who are doing honest self-reflection”. (P28) “After a point of time I realised, when I became close to myself, in the lockdown period you got that amazing opportunity to become close to yourself that point of time I realise that this is not who I am.” (P11)

Observing the consequence of the wrong doing

Watching the end result and repercussion of an action was another source of realization of the hurtful incident for the offender. “I started realising when my other colleague stopped getting work, then I realised it basically her career got compromised.” (P10) “that’s when you realise it or when there is evidence in front of you actually realise, when I actually saw the evidence that I have really screwed up”. (P19)

Discussion

As communicated in the interview by the participants who have had an experience of seeking forgiveness and the themes generated from the same: Seeking forgiveness is “when the offender realizes and reaches out to the offended by acknowledging and taking responsibility for the hurtful action, apologising profoundly for it and making amends to not repeat the same action again. It comes from a place of self-awareness and honesty with a desire to move forward and reconcile.”

The participants who were also the offenders shared, that seeking forgiveness is the explicit expression of that realization of the wrong doing by reaching out to the offended with an intent to communicate and apologise genuinely and sincerely. It involves acknowledging, accepting and taking responsibility for the hurt that was caused by the offender as well as making amends to not repeat the hurtful behaviour in the future. Seeking forgiveness as shared by the participants is an internal process, the realization of the wrong done comes from self-awareness which involves introspection on the action. It comes from a place of honesty and truth with an intent to feel better within of having done the right thing to clear one's own conscious.

Seeking forgiveness has been expressed as an action word by some participants, which begins with the realization of offending another person. The realization is a result of self-reflection of the damage done which is followed by the willingness to not repeat the same mistake again. It entails understanding and accepting the offender's role in committing the mistake as well as taking full responsibility for the impact of the same. The offender, when seeking forgiveness desires to let go of the negativity and move forward with a hope to reconcile and mend the broken relationship.

Factors involved in the realization of the offense committed by the offender were: observing behavioural changes in the one who was offended such as talking less or stopping all communication with the offender, change in day-to-day behaviour, loss of interest and detachment from the offender, change in body language and

emotional reactions of irritation and anger were some of the ways in which the offender realized that a mistake has been committed. Realization also happened for the offender when the offended clearly communicated in words and gave feedback on the hurt that they felt after the offensive incident took place. This along with self-reflection and introspection on the part of the offender, over the incident which caused pain and hurt to another also led to the realization of the offense. Additionally, being able to witness the consequence of the mistake committed quickly led to the realization of the wrong done which was followed by a need to seek forgiveness from the one who was offended.

The offenders introspected over the offensive incident of the past, becoming more self-aware along with understanding oneself more deeply as they kept growing with time, was a significant source of realization. The understanding that the offender in hindsight, could have handled the situation in a better manner with the one who was wronged; respecting boundaries and not taking relationships for granted; the recollection of memories from the past with offended and realizing how the precious relationship was now damaged; also the awareness that the negative emotions within the offender was unhealthy and it is important to let go off it, in order to move forward were some of the ways in which the offender reached the realization by introspection and self-reflection, of the inflicted hurt to another for which they need to seek forgiveness.

The realization of the offense is crucial to starting the process of seeking forgiveness as without knowing of the offensive incident the offender wouldn't be able to comprehend what went wrong in a relationship or in a situation. Hence the sources that lead to this realization is of critical importance as it directs the offender to the realization of the wrong doing. Seeking forgiveness commences the process of receiving and granting forgiveness which facilitates mending of distorted relationships (Toussaint et al., 2008). In all important relationships people hurt each other intentionally or unintentionally and relationships wouldn't last without endurance which is possible by

granting forgiveness for the hurt one goes through and seeking forgiveness for the hurt one inflicts.

Strengths and Limitations

To the authors knowledge, this is the first study to explore and understand the perspective of those who have gone through a seeking forgiveness experience. The use of a qualitative approach facilitated a nuanced understanding of relevant factors that contribute to defining seeking forgiveness and to the offender's realization of the wrong doing towards the offended.

A second strength of this study is the use of purposive sampling technique in selecting participants which enabled a diverse sample with a range of rich experiences and viewpoints on the lived seeking forgiveness experience and how they perceive the act of seeking forgiveness and sources that led to the realization of the hurtful incident which commenced the process of seeking forgiveness.

A limitation in the study is that since the participants were self-selected, to be aware that perhaps all relevant factors contributing to the factors that define seeking forgiveness and the factors that contribute to the offender's realization of the wrong doing may not have been identified.

Another limitation of this study was that due to the running COVID19 pandemic, face to face interviews could not be taken and hence the body language and other non-verbal communication of the participants could not be observed during the interview which could have contributed to the analysis of the result.

Implications

The themes identified in the research could be further explored and studied in-depth by using focussed qualitative methods like case study with one or two subjects or using unstructured interviews.

The findings of this study could be the base for a quantitative research where in the future researchers could, on the basis of the themes and sub-themes, construct an objective questionnaire and run a survey with a large sample.

Plenty of studies have been conducted on apology; those relieving offender from shame and guilt (Wang, 2020); those on correlation between high and low self-control and apologetic behaviour (Guilfoyle et al., 2019). However, seeking forgiveness has not been explored much, as per the handbook of forgiveness (Worthington et al., 2005) that has assimilated a wide range of studies on the science of forgiveness, showing how scant studies on the seeking forgiveness has been in comparison to granting of forgiveness.

Conclusion

Several themes defining seeking forgiveness were identified in this study, along with the various sources that contributed to the offender's realization of the hurt inflicted on the offended; which served as the starting point in the process of seeking forgiveness. The findings are likely to be valuable for researching and exploring the subject of seeking forgiveness and will stimulate additional theoretical and empirical research.

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We would like to thank all the participants who generously shared their time and experience for the purpose of conducting this study.

Data Availability

The datasets generated and analysed during the current study are not publicly available as that would be a breach in confidentiality with the interviewee. Some of the interview statements without the violation of confidentiality has been made available in the Result section of this manuscript and the analysis on excel sheet has been attached along with the manuscript. The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Ethics Statement

We confirm that the manuscript adheres to ethical guidelines specified in the APA Code

of Conduct as well as authors' national ethics guidelines. The research was conducted ethically, results are reported honestly, the submitted work is original and not (self-)plagiarized, and authorship reflects individuals' contributions.

Conflict of Interest Statement

There is no Conflict of Interest, relationship, financial or otherwise, that influenced the author's objectivity. We have no conflict of interest to declare whatsoever.

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INVESTIGATION OF CYBER SECURITY CHALLENGES AND ITS EMERGING TRENDS ON LATEST TECHNOLOGIES

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ABSTRACT

Network protection assumes a significant part in the field of data innovation. Securing the data have gotten probably the greatest test in the current day. At whatever point we consider the network protection the main thing that rings a bell is 'digital violations' which are expanding tremendously step by step. Different Governments and organizations are taking numerous actions to forestall these digital wrongdoings. Other than different measures network safety is as yet an exceptionally huge worry to many. This paper basically centers around difficulties looked by network safety on the most recent advancements. It additionally centers around most recent about the digital protection procedures, morals and the patterns changing the essence of network protection.

Keywords: *cyber security, cyber crime, cyber ethics, social media, cloud computing, android apps.*

1. Introduction

Today man is able to send and receive any form of data may be an e-mail or an audio or video just by the click of a button but did he ever think how securely his data is being transmitted or sent to the other person safely without any leakage of information?? The answer lies in cyber security. Today Internet is the fastest growing infrastructure in every day life. In today's technical environment many latest technologies are changing the face of the man kind. But due to these emerging technologies we are unable to safeguard our private information in a very effective way and hence these days cyber crimes are increasing day by day. Today more than 60 percent of total commercial transactions are done online, so this field required a high quality of security for transparent and best transactions. Hence cyber security has become a latest issue. The scope of cyber security is not just limited to securing the information in IT industry but also to various other fields like cyber space etc.

Even the latest technologies like cloud computing, mobile computing, E-commerce, net banking etc also needs high level of security. Since these technologies hold some important information regarding a person their security has become a must thing. Enhancing cyber security and protecting critical information infrastructures are essential to each nation's security and

economic wellbeing. Making the Internet safer (and protecting Internet users) has become integral to the development of new services as well as governmental policy. The fight against cyber crime needs a comprehensive and a safer approach. Given that technical measures alone cannot prevent any crime, it is critical that law enforcement agencies are allowed to investigate and prosecute cyber crime effectively. Today many nations and governments are imposing strict laws on cyber securities in order to prevent the loss of some important information. Every individual must also be trained on this cyber security and save themselves from these increasing cyber crimes

2. Cyber Crime

Cyber crime is a term for any illegal activity that uses a computer as its primary means of commission and theft. The U.S. Department of Justice expands the definition of cyber crime to include any illegal activity that uses a computer for the storage of evidence. The growing list of cyber crimes includes crimes that have been made possible by computers, such as network intrusions and the dissemination of computer viruses, as well as computer-based variations of existing crimes, such as identity theft, stalking, bullying and terrorism which have become as major problem to people and nations. Usually in common man's language cyber crime may be defined as crime

committed using a computer and the internet to steal a person’s identity or sell contraband or stalk victims or disrupt operations with malevolent programs. As day by day technology is playing in major role in a person’s life the cyber crimes also will increase along with the technological advances.

3. Cyber Security

Privacy and security of the data will always be top security measures that any organization takes care. We are presently living in a world where all the information is maintained in a digital or a cyber form. Social networking sites provide a space where users feel safe as they interact with friends and family. In the case of home users, cyber-criminals would continue to target social media sites to steal personal data. Not only social networking but also during bank transactions a person must take all the required security measures. technology and healthcare executives nationwide, Silicon Valley Bank found that companies believe cyber attacks are a serious threat to both their data and their business continuity.

- 98% of companies are maintaining or increasing their cyber security resources and of those, half are increasing resources devoted to online attacks this year
- The majority of companies are preparing for when, not if, cyber attacks occur
- Only one-third are completely confident in the security of their information and even less confident about the security measures of their business partners.

There will be new attacks on Android operating system based devices, but it will not be on massive scale. The fact tablets share the same operating system as smart phones means they will be soon targeted by the same malware as those platforms. The number of malware specimens for Macs would continue to grow, though much less than in the case of PCs. Windows 8 will allow users to develop applications for virtually any device (PCs, tablets and smart phones) running Windows 8, so it will be possible to develop malicious applications like those for Android, hence these are some of the predicted trends in cyber security.

Table I

Incidents	Jan- June 2012	Jan- June 2013	% Increase/ (decrease)
Fraud	2439	2490	2
Intrusion	2203	1726	(22)
Spam	291	614	111
Maliciouscode	353	442	25
Cyber Harassment	173	233	35
Contentrelated	10	42	320
IntrusionAttempts	55	24	(56)
Denial ofservices	12	10	(17)
Vulnerabilityreports	45	11	(76)
Total	5581	5592	

The above Comparison of Cyber Security Incidents reported to Cyber999 in Malaysia from January–June 2012 and 2013 clearly exhibits the cyber security threats. As crime is increasing even the security measures are also increasing. According to the survey of U.S.

4. Trends Changing Cyber Security

Here mentioned below are some of the trends that are having a huge impact on cyber security.

Web servers

The threat of attacks on web applications to extract data or to distribute malicious code persists. Cyber criminals distribute their malicious code via legitimate web servers they’ve compromised. But data-stealing attacks, many of which get the attention of media, are also a big threat. Now, we need a greater emphasis on protecting web servers and web applications. Web servers are especially the best platform for these cyber

criminals to steal the data. Hence one must always use a safer browser especially during important transactions in order not to fall as a prey for these crimes.

Cloud computing and its services

These days all small, medium and large companies are slowly adopting cloud services. In other words the world is slowly moving towards the clouds. This latest trend presents a big challenge for cyber security, as traffic can go around traditional points of inspection. Additionally, as the number of applications available in the cloud grows, policy controls for web applications and cloud services will also need to evolve in order to prevent the loss of valuable information. Though cloud services are developing their own models still a lot of issues are being brought up about their security. Cloud may provide immense opportunities but it should always be noted that as the cloud evolves so as its security concerns increase.

APT's and targeted attacks

APT (Advanced Persistent Threat) is a whole new level of cyber crime ware. For years network security capabilities such as web filtering or IPS have played a key part in identifying such targeted attacks (mostly after the initial compromise). As attackers grow bolder and employ more vague techniques, network security must integrate with other security services in order to detect attacks. Hence one must improve our security techniques in order to prevent more threats coming in the future.

Mobile Networks

Today we are able to connect to anyone in any part of the world. But for these mobile networks security is a very big concern. These days firewalls and other security measures are becoming porous as people are using devices such as tablets, phones, PC's etc all of which again require extra securities apart from those present in the applications used. We must always think about the security issues of these mobile networks. Further mobile networks are highly prone to

these cyber crimes a lot of care must be taken in case of their security issues.

IPv6: New internet protocol

IPv6 is the new Internet protocol which is replacing IPv4 (the older version), which has been a backbone of our networks in general and the Internet at large. Protecting IPv6 is not just a question of porting IPv4 capabilities. While IPv6 is a wholesale replacement in making more IP addresses available, there are some very fundamental changes to the protocol which need to be considered in security policy. Hence it is always better to switch to IPv6 as soon as possible in order to reduce the risks regarding cyber crime.

Encryption of the code

Encryption is the process of encoding messages (or information) in such a way that eavesdroppers or hackers cannot read it.. In an encryption scheme, the message or information is encrypted using an encryption algorithm, turning it into an unreadable cipher text. This is usually done with the use of an encryption key, which specifies how the message is to be encoded. Encryption at a very beginning level protects data privacy and its integrity. But more use of encryption brings more challenges in cyber security. Encryption is also used to protect data in transit, for example data being transferred via networks (e.g. the Internet, e- commerce), mobile telephones, wireless microphones, wireless intercoms etc. Hence by encrypting the code one can know if there is any leakage of information.

Hence the above are some of the trends changing the face of cyber security in the world. The top network threats are mentioned in below Fig -1.

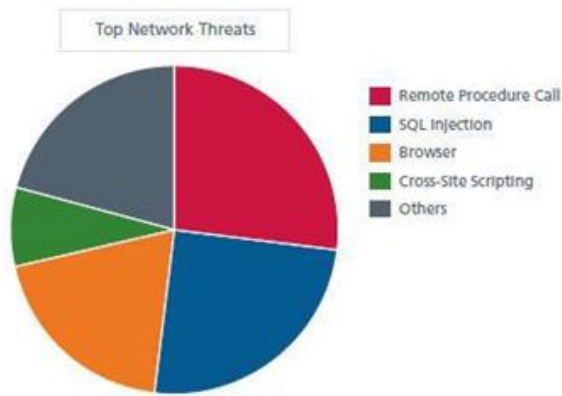


Fig -1

The above pie chart shows about the major threats for networks and cyber security.

5. Role of Social Media in Cyber Security

As we become more social in an increasingly connected world, companies must find new ways to protect personal information. Social media plays a huge role in cyber security and will contribute a lot to personal cyber threats. Social media adoption among personnel is skyrocketing and so is the threat of attack. Since social media or social networking sites are almost used by most of them every day it has become a huge platform for the cyber criminals for hacking private information and stealing valuable data.

In a world where we're quick to give up our personal information, companies have to ensure they're just as quick in identifying threats, responding in real time, and avoiding a breach of any kind. Since people are easily attracted by these social media the hackers use them as a bait to get the information and the data they require. Hence people must take appropriate measures especially in dealing with social media in order to prevent the loss of their information.

The ability of individuals to share information with an audience of millions is at the heart of the particular challenge that social media presents to businesses. In addition to giving anyone the power to disseminate commercially sensitive information, social media also gives the same power to spread false information, which can be just being as damaging. The rapid spread of false information through social media is among the emerging risks identified in Global Risks 2013 report.

Though social media can be used for cyber crimes these companies cannot afford to stop using social media as it plays an important role in publicity of a company. Instead, they must have solutions that will notify them of the threat in order to fix it before any real damage is done. However companies should understand this and recognise the importance of analysing the information especially in social conversations and provide appropriate security solutions in order to stay away from risks. One must handle social media by using certain policies and right technologies.

6. Cyber Security Techniques

Access control and password security

The concept of user name and password has been fundamental way of protecting our information. This may be one of the first measures regarding cyber security.

Authentication of data

The documents that we receive must always be authenticated before downloading that is it should be checked if it has originated from a trusted and a reliable source and that they are not altered. Authenticating of these documents is usually done by the antivirus software present in the devices. Thus a good antivirus software is also essential to protect the devices from viruses.

Malware scanners

This is software that usually scans all the files and documents present in the system for malicious code or harmful viruses. Viruses, worms, and Trojan horses are examples of malicious software that are often grouped together and referred to as malware.

Firewalls

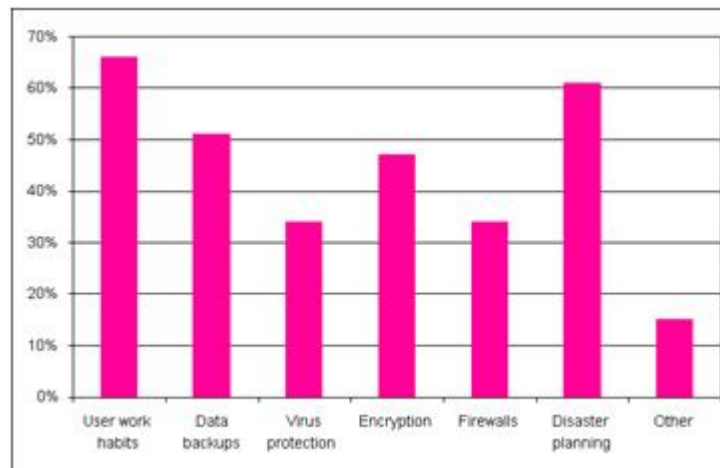
A firewall is a software program or piece of hardware that helps screen out hackers, viruses, and worms that try to reach your computer over the Internet. All messages entering or leaving the internet pass through the firewall present, which examines each message and blocks those that do not meet the specified security criteria. Hence firewalls play an important role in detecting the malware.

Anti-virus software

Antivirus software is a computer program that detects, prevents, and takes action to disarm or remove malicious software programs, such as viruses and worms. Most antivirus programs include an auto-update feature that

enables the program to download profiles of new viruses so that it can check for the new viruses as soon as they are discovered. An antivirus software is a must and basic necessity for every system.

Table II: Techniques on cyber security



7 Cyber Ethics

Cyber ethics are nothing but the code of the internet. When we practice these cyber ethics there are good chances of us using the internet in a proper and safer way. The below are a few of them:

- DO use the Internet to communicate and interact with other people. Email and instant messaging make it easy to stay in touch with friends and family members, communicate with work colleagues, and share ideas and information with people across town or halfway around the world
- Don't be a bully on the Internet. Do not call people names, lie about them, send embarrassing pictures of them, or do anything else to try to hurt them.
- Internet is considered as world's largest library with information on any topic in any subject area, so using this information in a correct and legal way is always essential.
- Do not operate others accounts using their passwords.
- Never try to send any kind of malware to other's systems and make them corrupt.
- Never share your personal information to anyone as there is a good chance of others

misusing it and finally you would end up in a trouble.

- When you're online never pretend to be the other person, and never try to create fake accounts on someone else as it would land you as well as the other person into trouble.
- Always adhere to copyrighted information and download games or videos only if they are permissible.

The above are a few cyber ethics one must follow while using the internet. We are always taught proper rules from our very early stages the same here we apply in cyber space.

8. Conclusion

Computer security is a vast topic that is becoming more important because the world is becoming highly interconnected, with networks being used to carry out critical transactions. Cyber crime continues to diverge down different paths with each New Year that passes and so does the security of the information. The latest and disruptive technologies, along with the new cyber tools and threats that come to light each day, are challenging organizations with not only how they secure their infrastructure, but how they require new platforms and intelligence to do

so. There is no perfect solution for cyber crimes but we should try our level best to

minimize them in order to have a safe and secure future in cyber space.

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REWEAVING RITUALISTIC RELIGIOUS ROOTS IN PANDEMIC HEMISPHERE: HINDRANCES-HOPE-HUMANITY

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ABSTRACT

In the religious history of mankind the divine message proclaims Life itself is Religion. In the words of Swami Vivekananda "True religion comes not from teaching of men or the reading of books; it is the awakening of the spirit within us, consequent upon pure and heroic action". Religion gives identity to people to follow a specific fundamental set of beliefs and practices to lead their lives. The twenty first century religious norms, freedoms and rituals have been traumatized by the unprecedented waves of pandemic across the globe. In the current scenario it is quite imperative to reorient the religious doctrines prescribing the glorified life-line guidelines for all generations of the global hemisphere. The paper unfolds notion of religious freedom, effect of religious holidays, regulating religious liberty, reviving religious behavior, regaining regions festivals, rethinking religious shrines as cite of salvation amidst present fluctuating unwanted crisis situation. The purpose of the study aims in analyzing and formulating prominent domains and research methodology will be qualitative through review of literature on related arena. The paper makes a realistic attempt in interlinking religious concerns and humanity dominated by the present pandemic turmoil. The overall approach of the study is theoretical epitomizing humanity as the face of religion claiming "The essence of religion is to serve humanity".

Keywords: Religion, humanity, pandemic, mankind

Rediscovering Religious Roots

Indian subcontinent has resources to satisfy the needs of the people. Various tradition, culture and living habit make India one of the unique nations on this planet. Unity in diversity is exhibited across Indian states. India is the home for few religions that have been shaping the minds, hearts and looking after the spiritual needs of its people. The religion suggests performing of various rituals from time to time for smooth running of life and to bring joy and happiness to one's life journey. Life is a beautiful journey between life and death. During these phases while looking in depth into the ideologies of life and awareness of our actions, beliefs and faiths are born out of inner commitment - the very essence of religion and is the call of the hour. Human life may be viewed as a conglomeration of empathy, spiritual bent of mind and bridged content of self consciousness all paying the pathway towards richest ideals of religion. Through ages Indian religion have evolved as a valuable treasure filled with enriching moral values, universal philosophies of worldwide practices of peaceful coexistence- the epicentre of human enrichment. Amidst dualistic and holistic perspective of religion, the

fundamental essence is the prayers of the masses in crisis or stress. Prayers bestows the religious person the conviction about the sovereignty of God over the challenge, which is expressed in the way religious people relate to their stress or anxiety: it is all for the best; ultimately God is in control, and that God is supporting him or her through the problem. India is a spiritual enriched nation glorified with religious architectures in the forms of temples and monuments and allows all kind of religion to flourish, prosper and exist in harmony. In the Indian context as highlighted by Adi Shankarachariya who established the four corners of the country to be united as one soul in four decades comprising Badrinath in the North symbolising the "Satya Yuga", Rameshwaram in the South symbolising "Treta Yuga", Dwarka in the West symbolising "DwaparYuga" and Jagannath Puri in the East symbolizing the "Kali Yuga". The holy rivers, countless sacred shrines epitomize the purity of man and the seed of religion building craft, faith, values for wellness and welfare of the masses. The religious wisdom propagates the interconnectedness of religious ethos that illuminates the mind and soul, liberates from the fetters of ignorance. In the present era amidst waves of challenges of urbanization,

industrialization, globalization, digitalization, mechanization and pandemic-centric environment the moral ideals, values and potentials of religion has gradually started reaching the doorway towards degradation and erosion. Religion being one of the dominant spots of cultural performances always draws attention to its rituals and traditions in broader outlooks. In the sacred texts of the Upanishads *religion has been regarded as such a cosmetic force which makes a man attractive; religion is the teacher of all teachers; in foreign land it helps and supports as you friend and relative; it has God like power of fulfilling all your desires; a person without religion is no better than an animal.* At the outset of covid 19 pandemic the religious soul and self confronts catastrophic barriers like uncertainty, ambiguity and dilemma, sowing the seeds of mistrust, meanness, envy, maliciousness and failing to realize the true responsibility for human survival. The paper attempts to analyse the religious practices from pandemic perspective by focusing on the varied aspects of religious spectrums and extravaganza and leading the pathway of life mission in search of good-conduct-good-heart, good-will, good-words and a good-world worth living it.

Objectives of the Study

The purpose of the study aims in analyzing and formulating prominent domains in tune with religious practices in the pandemic platform. The specific objective of the paper can be understood in terms of the following detailed objectives of this paper:

- To define the domains.
- To define items relating to each domain on the basis of the literature review.

Literature Review

Sphere of Religious Liberty in Pandemic Hemisphere

The grasp of coronavirus pandemic resulted a unprecedented crisis at the religious platform worldwide. The stringent stay-home orders banned any large public gatherings by most states amidst which religious services also miserably struggling to strive in the pandemic hemisphere. The very root of this highly

contagious pathogen induced almost every nations to follow the footsteps of complete shutdown process with vast majority of governors issuing orders for people to stay at home as much as possible. The emergency regulations extended an indefinite ban on religious gatherings restricting in-person gatherings in specific numbers. The houses of worship have been converted to places of isolation prohibiting large accumulation of people as the propensity of surges of the devastating virus has forced to impose and re-impose the restrictive measures on any indoor gathers including worship services in many of the developing countries. Studies reveal that super-spreader events are the prime contributory factor for Covid 19 surge and it is found that approximately 20% of Covid 19 cases arise out of social gatherings which lead to 80% of the transmission of the delay virus. Due to such high risk probability of the Covid 19 it is quite imperative and justified that sincere initiative should be undertaken to curtail such high risk social and religious gatherings leading threat to human lives. It is quite unfortunate and undesirable fact that religious rituals, worship services and holy congregation are the prominent high risk activities adding multiple coronavirus outbreaks across the world. These outbreaks endanger not only those who attend the religious services but also affects the attendees later when they come into contact in any situations. The doctrine of essentiality in attending the religious rituals examines that worship services may convert as super-spreader events on the contrary shopping trips do not. Amidst uncertain pandemic environment the constitutional doctrine need to be evaluated in the respect of neutrality and applicability as the question of public health crisis and safety guidelines need to be prioritized in the present climate.

Nonetheless the notion of essential versus Non-Essential, Essential as necessary to life, Essential as no alternative available all has to be taken into consideration as worship services are equally “essential” in terms of religions centrality to people’s lives. People may pray to God on their own choice and willingness at home or outside and at the same time certainly

most worship houses support a continual life-line connection to meet their most desired religious need and aspirations. Bans and restrictions on mass gathering is undoubtedly one of the righteous, sensible and constitutional act in the midst of pandemic. At the outset the right and the desire of fulfilling the religious wishes is quite justified but not at the cost of human lives, after all without life, there can be no liberty or quest of happiness.

Religious Festival Celebration: Perspectives from Covid 19 Pandemic

Over the decades India has evolved at the birthplace of religious festivities showcasing the dimensions, diversification and magnitudes of belief, faith, culture and purity. The cradle land of India has been characterized by sacred places the hub of religious importance and festivities. India is religion enriched nation treasured with religious architectures in the forms of temples, monuments and shrines and allow all kind of religion to flourish, prosper and exist in harmony. India is a land of festivals and occasions with the age-old beliefs, emotions and devotion. The Ambubachi Mela of Kamakshya known as Aamity or Aamuri is the biggest religious congregation in the north east India. At the same time Durga Puja, the worship of the divine goddess spreading the message of conquering evils is communicated in the eastern province of the country. Going with the panorama of festivals arrive the colourful festival of chariot known as Rathayatra popularly known as Chariot festival witnessing the spectacle festival of Lord Jagannath every year. More than a religious festival, it is the love, compassion, equality and fraternity. The northern land of the country celebrates Mahashivratri worshipping the Adi divine or the supreme Lord Shiva. Studies reveal that this festival has been a part of Hindu religion before 5000AD with the home land of the supreme Lord at Varanasi. The north western and north west province of the country celebrate hundreds of earthen lamps in the name of Deepawali - the festival of lights whereas the entire country is drenched by the colourful, colour to celebrate the festival marking the good over evil in the name of Holi. Ganga Dusshera – the festival of river Ganges where goddess Ganges is being

worshipped as the goddess provides facility, prosperity and happiness. The festival is celebrated with floating lamps in the river Ganga aarti praying for bliss and peace for this global habitat. The Idd celebration of the Muslim community and Christmas Festival of the Christians add colourful and cultural extravaganza in religious festivities in India. It is widely accepted that massive religious festivities celebrations encourage the faster spread of any pandemic such as Covid-19 resulting prime indicator of spread levels of any pandemic everywhere and anytime. The national spread levels of infectious diseases risk from massive religious festivities need to be formulated, monitored, regulated and controlled of any pandemic in real sense of the term at this juncture. Special governmental task force required to be set up to examine the substantial restrictions on social interactions, group and mass gatherings in order to prevent families from celebrating together. Moreover religious festivities celebrations' main problems lies on the line of informal reunions among relatives, close friends and neighbours from same religion resulting a substantial impact in the increment of covid 19 surge worldwide.

Significance of Religious Holidays with Covid 19 Protocols

In the wake of the covid 19 pandemic there has been a paradigm shift in the behavioural patterns in adhering social and religious norms in the context of changing scenario. Religious-based norms primarily counteract with newly formulated health preserving behavioural guidelines for mammoth share of population across nations. The human emotion, belief and faith are bounded by religious knots engulfed with religious events and encircled with religious holidays throughout the year. Religious holidays have emerged as a considerable event in the live and livelihood of people worldwide. In the present global environment the dominant vibes of pandemic has posed a significant effect of change in social norms due to religious holidays and imposing mandatory compliance of health behaviour. Research reveals that a religious holiday celebration has raised argument for the role of social norms and subsequently the

efficacy in observing the guiding behavior regardless of fear, anxiety and hesitation. The risk perceptions and trust in authority have played an integral element in executing religious holiday centric behavior. It has been observed that behavioral patterns viz. staying home, avoiding crowds, avoiding physical greetings, avoiding going to religious places as well as other socio-demographic attributes often persist in compliance behavior. It is important to realize the element of optimum bias, risk perception, perceived competence of the government translates in involving religious holiday celebrations. Religious holiday affecting strong norms of behavior namely travelling to visit family members and close friends, embracing each other with greetings, attending prayers, sharing food and drink, giving and receiving gifts, wearing new cloths all constitute typical evidences of behavioural norms with reduced compliance. With the onset of covid 19 adherence to distancing rules and simultaneously understanding the realistic aspect would pave the way towards compliance of religious norms with guiding behavior for better life, better health and better world.

Crux of Government Covid 19 Regulations and Religious Community: An Outlook

The world population comprises multiple combinations of religious communities and groups waiting for the finest hour towards sharing the religious aspirations. The emerging trends of the ongoing worldwide pandemic has mounted inconsistency, political acquiescence, protest movements among religious fraternity seeking optimistic solutions, fair treatment and religious sovereignty from the government authorities. The initial and protective measures taken by the authorities to combat the grasping force of the pandemic focus on treating religious communities as essential autonomous associates who are striving and seeking in achievement of the most desired goal of religious self attainment. The catastrophic collapse campaign of the government bodies

has triggered a concern in the minds of the people including religious houses and platforms across nations. It is quite evident that SARS pandemic exposed the vulnerabilities of the global system and massive share of religious population comprises senior citizens belonging to vulnerable section of the population. It devastating SARS virus is unnerving, more contagious, massive surge capacity with high risk fatality rate all induced the authorities to implement strict vigil, surveillance and compliance of the public health protocol measures to fight and protect human lives against the deadly catastrophic effect. The government and the religious authorities collective effort in the present pandemic situation need to be examined in order to resist the rising discontentment of certain religious communities at large. Religious practice is an integral part of identity and human dignity of the religious community. Amidst alarming threat of pandemic danger the government policy, motives, measures and initiatives should be reframed and duly addressed to appropriate problem areas in order to appreciate the voices of the religious group and the chances of landing somewhere safe. The crucial piece of the epidemiological puzzle foretells the understanding that public are required and the rationale of such action would dramatically safeguard live of thousands and more. Transformation of ‘shelter of prayer’ to ‘shelter of peace’ has to be the key concern of government authorities for wellbeing, wellness and welfare of the human population worldwide. With collective measures authorities pursued policies that were intended to defend public health from the perceived threat of covid 19 and may be characterized as the finest hour of collaboration in true sense of the term.

Findings and Discussion

From the literature explicated in the paper, clear attempt can be made to identify the broad domains and items within revealed from the study.

Findings I

Domains	Description of the Domain
Domain A	Upholding Religious Festival Celebration in Pandemic Climate
Domain B	Advocating Government Covid 19 Regulations for Religious Community

Domain C	Assessing Sphere of Religious Liberty in Pandemic Hemisphere
Domain D	Managing of Significance of Religious Holidays with Covid 19 Protocols

Findings II

Domains	Description of the Items
Domain A	<ul style="list-style-type: none"> • Enrichment of diversified religious festivals • Religious festivals ensure faster spread of pandemic • Monitoring & Controlling level of festivities • Informal gathering of religious festivals
Domain B	<ul style="list-style-type: none"> • Multiple combination of religious community • Protective measures taken by the government • High fatality of SARS virus is a matter of government concern • Collective measures of government to combat pandemic
Domain C	<ul style="list-style-type: none"> • Banning of religious gatherings • Emergency regulations at religious service places • Propensity of high risk in religious gathering • Essentiality of religious freedom
Domain D	<ul style="list-style-type: none"> • Religious holiday impact life and livelihood of the people • Impact of Risk perception and behavioural factor • Compliance of religious norms & guiding behaviour • Interlinking health protocols and religious based norms

Implications of the Study

The threats that are hovering over the world about the spread of coronavirus has shaken the religious foundation of the world and in turn forced to restrict the religious practices for the sake of human and humanity. The severity of the impact of COVID-19 has resulted in a situation wherein nations are also creatively and methodologically engaging religions to invest in prayers and also pass laws that are potentially inimical to the future of religious freedom. As the virus threatens to exact a heavy toll on the human race, one of the potential institutions of societies – religion may be deployed as a strategic resource to combat against the disastrous virus. The essence of the paper focuses on the notion that how COVID-19 is transforming our religious activities and redefining the state-religion relationship along with enforcing precautionary measures to overcome the damaging effect of the virus. The world is grappling with as ‘invisible enemy’ in the shade of devastating virus on one hand and on the other hand coronavirus is spreading and the danger it possesses to life has brought in religion to limited boundaries of public sphere posing question in bringing awareness of human finiteness and consciousness. The countries across the world have started

preparedness agenda of how religions are making sense of the lockdown and reinventing religious practices to alleviate the anxiety of religious adherents. On the onset vibes of passing legislative rules have been initiated in the heat of the pandemic which has the potential to reorient, restructure and redesign the future of religious worldwide. The paper has made a modest attempt to visualize religion as a potent weapon in minimizing the anxiety and distress of people through waves of reconfiguration of religious beliefs and practices and the employment of religion to enforce compliance to the protocols of COVID-19 and glorifying the true spirit of humanity. The divine religious hymn of Upanishad may prevail in this global habitat eradicating pain, sorrow and distress and enlightening hope-happiness-humanity in the prayers of

“Asoto ma Sadgamaya
Lead me from the unreal to real
 Tamoso ma Jyotirgamaya
Lead me from darkness to light
 Mritur ma Amritangamaya
Lead me from death to immortality
 Om Shanti Shanti Shanti Hi
May peace, peace and peace be everywhere”

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STATISTICAL INTERPRETATION OF ESTIMATED METALS UNDER METEOROLOGICAL INFLUENCE IN SOIL PROFILES AT AN INDUSTRIAL CITY, KOTA, INDIA

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ABSTRACT

To evaluate the potential sources of metal pollution within alkaline soil in Kota city India a case study was performed, wherein, a total of 900 samples in requisite amount of soil are collected depth wise at various sampling sites and assessed in the study during winter, rainy and summer seasons of 2012-13. Seasonal variation in deposition patterns of selected metals down soil profiles seems to be controlled by meteorological parameters. Anthropogenic metal concentrations are observed to be greater in winter and less in summer. The concentrations level of crustal and anthropogenic metals deposited on top soil decreases spectacularly in rainy season owing to washout phenomenon of upper layer of soil. top soil characterized with lower pH is found to have elevated metal levels because of their increased mobility which decreases on going down the soil profile due to complexation at higher pH found in clay rich bottom layer. Principal component analysis and positive correlations for Cu, Cd, Zn and Pb showed their similar origin in the city and particularly can be related to point source coal based thermal power plant besides other industrial activities and traffic load. However, Ca, Mg and Fe have mostly crustal origin.

Keywords: Seasonal variation, crustal metal, anthropogenic metal, principal component analysis.

Introduction

Heavy metal compounds emitted into the atmosphere after binding to aerosol particles reach the surface of the soil through dry out (gravitational settlement) & wet out (precipitation) and then deep into the soil. Soils thus become contaminated by the accumulation of heavy metals and metalloids through emissions from the rapidly expanding industrial areas, mine tailings, disposal of high metal wastes, leaded gasoline and paints, land application of fertilizers, animal manures, sewage sludge, pesticides, wastewater irrigation, coal combustion residues, spillage of petrochemicals, and atmospheric deposition [1, 2]. Their total concentration in soils persists for a long time after their introduction [3]. Changes in their chemical forms (speciation) and bioavailability are, however, possible [4]. Heavy metal contamination of soil may pose risks and hazards to humans and the ecosystem through: direct ingestion or contact with contaminated soil, the food chain, drinking of contaminated ground water, reduction in food quality via phytotoxicity, reduction in land usability for agricultural

production causing food insecurity, and land tenure problems [5-7].

Being chemically attached to soil particles, [8], the behaviour of contaminants in the soil is decided by soil properties (pH, clay mineral and humus content). The majority of heavy metals become biologically inactive under conditions of high pH, humus and clay mineral content, as the soil binds them in forms which are not reachable to plants. However, heavy metals, easily available in the soil, can reach the ground water or into the human nutrition chain. Besides, acidic soils having less humus and clay mineral content are not active in getting bound to heavy metals. Hence, the soil, owing to its components and properties, influences solubility, mobilization and deposition of toxic metals, caused by anthropogenic activities [9 - 10]. The effect of the soil characteristics can be observed over the relative distribution of the heavy metals in different soil profiles [11].

Though, plants and animals require most of the heavy metals in small quantities, significantly higher concentrations are toxic for the living creatures. Besides a large number of emission sources, both natural and anthropogenic,

endangering the urban environment by heavy metal pollution, the climate and meteorological conditions are other important factors owing to their influence on erosion, weathering and pedogenic processes affect intensity and distribution of metallic elements in the environment [8, 12].

Huge amount of fly ash, a homogeneous mixture of various metal oxides, is generated by Kota Super Thermal Power Station (KSTPS) in the atmosphere of Kota city. The heavy metal load in the atmosphere is further increased by various industries (small and large scale) including Kota stone factories.

Keeping this view in mind, this work has been carried to evaluate the concentration and distribution of heavy metals (readily extractable contents) in the soil samples at various depths collected in all zones of study area of Kota city during research period.

Soil in Kota City

Alluvium soils of Kota district range in depth from shallow to very deep with lime concretion or lime encrusted gravels at varying depths. The soils, in general, are clay loam to clay in texture and moderately to less permeable and developing cracks in dry season.

The distribution of heavy metals in soil is affected by the processes of sorption/desorption, precipitation, dissolution, redox reaction and incorporation in the solid components of soil [13]. An increased tendency for the absorption and migration of metal compounds is found for the soil environments having clay minerals with a high density of negative surface charges (high CEC values), high surface areas (small sizes) and also weak vander Waals forces between the structural layer [14 - 15].

Physico-chemical analysis of a surface soil sample of a chosen sampling site of zone 1 (being nearest to the point source) has been shown in Table 1.

Table 1: Some physico-chemical characteristics of soil.

S.No.	Soil properties	Values
1	pH	7.5
2	ECe (dSm ⁻¹)	0.67
3	Bulk density (mg mg ⁻³)	1.35
4	Colour	Brownish-black
5	Sp-gravity	2.57
6	Type	Clay-clay loam
7	Sand (%)	25
8	Silt (%)	26.2
9	Clay (%)	48
10	CEC	46.01
11	O. C. (g/kg)	6.5

* The physico-chemical analysis of soil is performed by soil and water laboratory, Chambal Krishi Kendra, CAD, Nanta Farm, Kota (Raj.).

Materials and Methods

A. Sampling sites

Using some criteria laid earlier [16] the sampling sites were chosen. These criteria were: i) distance from point source; ii) prevailing direction of wind blow; iii) the distance from obstacles causing interference in sampling; and iv) strategy.

Location of different zones of Kota city and their characteristics has been shown in Figure 1 and Table 2.

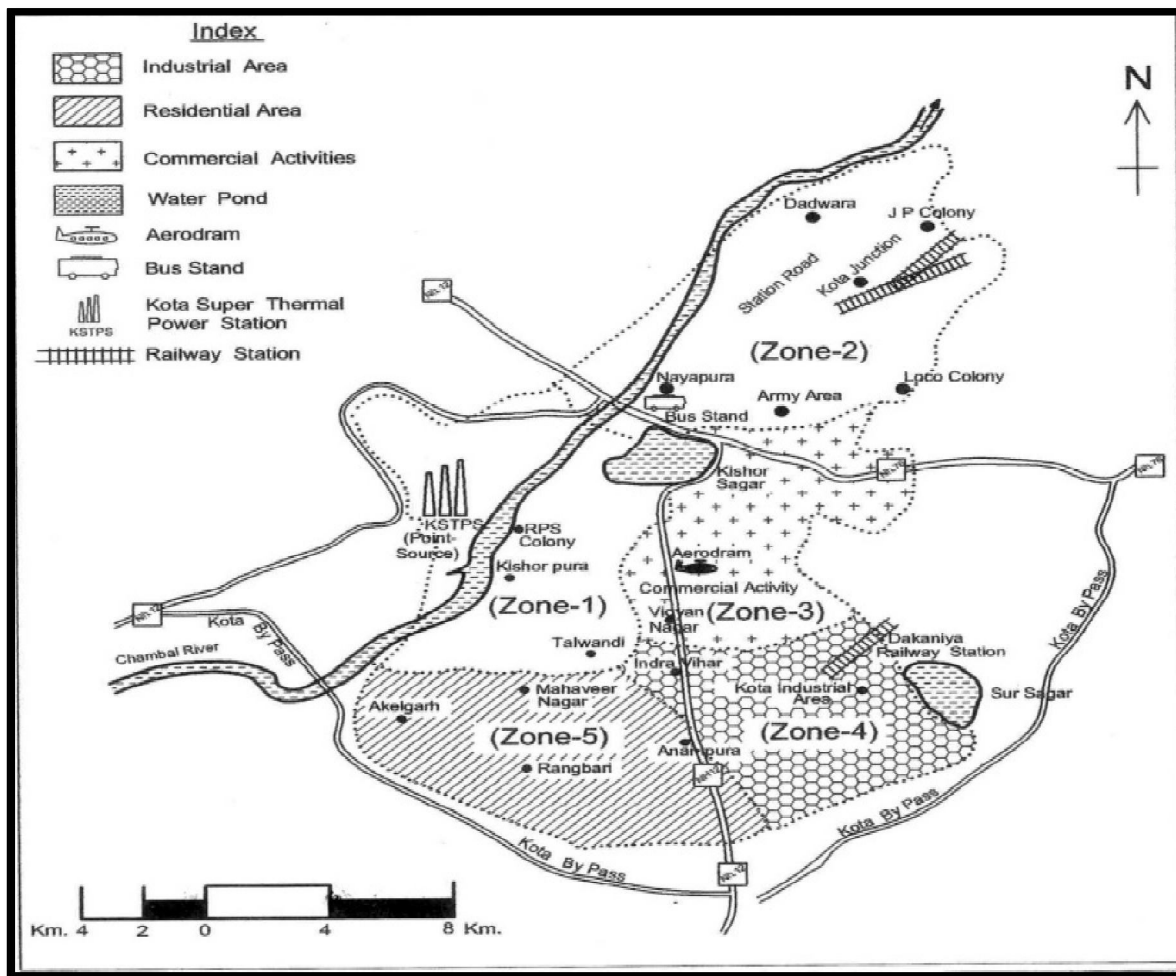


Figure: 1. Kota city map. (Source: www.mapsofindia.com)

Table 2: Location of different zones of Kota city and characteristics.

Zone No.	Location with reference to point source (KSTPS)	Characteristics
Zone-1	Within 2 Km. radii surrounding KSTPS	Coal dust and Fly ash emission from KSTPS; Soil; High population density and traffic
Zone-2	2-10 Km. towards North-east direction from KSTPS	Fly ash blown through wind; Soil dust; Traffic dust
Zone-3	2-7 Km. towards East direction from KSTPS	Fly ash; Soil and High traffic dust; Commercial activities; High population density
Zone-4	2-12 Km. towards East-south direction from KSTPS	Fly ash; Soil and High traffic dust; Various industries; High population density
Zone-5	2-8 Km. towards South direction from KSTPS	Fly ash and Soil; Residential and Stone mining

B. Sampling methods and Chemical Analysis

During winter (January, February, November & December), rainy (June, July August & September) and summer (March, April, May & October) seasons of 2012-13, a total of 900 samples in requisite amount of topsoil (0-10 cm), mid soil (10-20 cm) and bottom soil (20-30 cm) samples were collected from sampling sites in each zone of study area. After passing through the sieves with 300 BSS openings (< 53µm) all the dried and crushed

samples of soil were subjected to extraction (to get water soluble fraction) and then analysed for their metal content through Direct Air – Acetylene Flame method [AAS – Shimadzu 6300 (Fe, Zn, Cu, Cd, Mg & Pb)] and Flame Photometer -128 (Ca).

Results and Discussion

This work analyses the results of metals (crustal and anthropogenic origin) distribution in top (0-10 cm), middle (10-20 cm) & bottom layer (20-30 cm)

while going down the vertical profile in soil along with soil pH in winter, rainy & summer season of 2012-13 along with their evaluation with respect to meteorological observations and discussions based on general evidence related with this research. Statistical analysis (Pearson’s correlation coefficient and factor analysis) also has been performed.

A. pH and Metal Analysis of Crustal and Anthropogenic Origin

Depth wise concentrations of analysed heavy metals in soil are presented in Tables 3 to 5.

Table 3: pH, concentrations of crustal and anthropogenic metals (mg/L) in soil at five zones in Kota city collected during winter season, 2012-13.

Zone	Depth	pH	Ca	Mg	Fe	Pb	Zn	Cu	Cd
Zone 1 (n=60)	0-10 cm	6.83	95.97	4.8632	4.2321	0.5522	0.3895	0.3368	0.0218
	10-20 cm	7.18	93.72	4.8735	4.1215	0.5213	0.3612	0.3178	0.0216
	20-30 cm	7.19	84.78	4.0062	3.7815	0.5136	0.3566	0.3125	0.0215
Zone 2 (n=60)	0-10 cm	6.82	101.24	5.1132	4.8225	0.5218	0.1675	0.1375	0.0109
	10-20 cm	7.11	100.68	5.1003	4.4295	0.4866	0.1523	0.1302	0.0105
	20-30 cm	7.15	99.75	4.7252	4.3665	0.4725	0.1314	0.1299	0.0101
Zone 3 (n=60)	0-10 cm	6.81	118.96	5.1122	4.1125	0.1822	0.2832	0.2596	0.0112
	10-20 cm	7.18	110.02	4.8832	4.0192	0.1622	0.2732	0.2432	0.0111
	20-30 cm	7.20	95.76	4.4462	3.8221	0.1576	0.2432	0.2318	0.0109
Zone 4 (n=60)	0-10 cm	7.50	128.78	5.3295	4.8832	0.1896	0.0395	0.0318	0.0091
	10-20 cm	7.61	121.12	5.1135	4.7225	0.1699	0.0342	0.0311	0.0079
	20-30 cm	7.84	102.56	5.0662	4.5662	0.1678	0.0332	0.0301	0.0076
Zone 5 (n=60)	0-10 cm	8.12	151.12	5.6629	5.5132	0.0966	0.0246	0.0199	0.0046
	10-20 cm	8.44	142.14	5.4221	5.3129	0.0942	0.0219	0.0198	0.0044
	20-30 cm	8.48	112.25	5.4225	5.2139	0.0912	0.0218	0.0197	0.0042

*n = Number of samples.

Table 4: pH, concentrations of crustal and anthropogenic metals (mg/L) in soil at five zones in Kota city collected during rainy season, 2012-13.

Zone	Depth	pH	Ca	Mg	Fe	Pb	Zn	Cu	Cd
Zone 1 (n=60)	0-10 cm	6.76	81.32	4.0025	3.1284	0.5032	0.3218	0.2896	0.0118
	10-20 cm	7.12	100.18	4.1251	3.3669	0.5125	0.3246	0.2917	0.0119
	20-30 cm	7.15	101.14	4.2256	3.4255	0.5213	0.3329	0.3031	0.0123
Zone 2 (n=60)	0-10 cm	6.81	87.12	4.2695	3.6229	0.5419	0.3178	0.2656	0.0111
	10-20 cm	7.18	102.29	4.4582	3.7393	0.5605	0.3232	0.2756	0.0114
	20-30 cm	7.22	114.21	4.5295	3.8665	0.5631	0.3224	0.2878	0.0115
Zone 3 (n=60)	0-10 cm	6.78	102.18	4.1295	3.4885	0.1488	0.2938	0.2988	0.0099
	10-20 cm	7.22	122.15	4.6632	3.5925	0.1492	0.3012	0.2991	0.0101
	20-30 cm	7.26	124.29	4.7119	3.6669	0.1576	0.3119	0.3018	0.0102
Zone 4 (n=60)	0-10 cm	7.29	111.56	4.8866	4.6259	0.1578	0.2033	0.0197	0.0067
	10-20 cm	7.42	128.34	5.1235	4.7232	0.1632	0.2153	0.0199	0.0071
	20-30 cm	7.43	131.18	5.2269	4.8113	0.1796	0.2246	0.0201	0.0072
Zone 5 (n=60)	0-10 cm	8.11	109.48	5.1228	5.5295	0.0838	0.1146	0.0168	0.0040
	10-20 cm	8.35	147.12	5.4199	5.7281	0.0846	0.1153	0.0169	0.0042
	20-30 cm	8.39	148.53	5.4932	5.8223	0.0869	0.1278	0.0175	0.0044

*n = Number of samples.

Variation of heavy metal concentrations down the soil profile is related to different properties of the soils and individual metal species. Distribution of heavy metals in vertical soil profile indicates that concentration of metals in the soil decreases with depth due to formation of some metal complexes

with increasing pH. During the dry season (winter & summer) the average concentration of metals on the surface layer of soil is higher than that in the wet season (rainy). Metals from the upper layer of soil are flushed out to some extent because of seasonal rainfall, dilution and other run-off during

the wet season, and hence concentrations of metals are less in this season than those in dry season.

Crustal metals are found in higher concentrations than those of anthropogenic metals because of their plentitude in nature being structural component of soil. Winter, rainy and summer seasons have highest average concentration levels of crustal metals (Ca, Mg & Fe) in Z5 while lowest in Z1. Erosion and disturbance of upper layer of earth crust caused by the activities in the residential areas of zone 5 lead to higher concentrations of crustal elements in this zone while these activities are lower in Z1 resulting in their reduced levels. On looking at the trend of distribution for anthropogenic metals (Cu, Cd, Zn and Pb), it is observed to be reverse i.e. owing to the presence of coal based Thermal Power Plant in zone 1 is found to have their highest average concentrations while zone 5, a residential area having fewer anthropogenic sources, bears lowest average concentrations.

In addition to these anthropogenic factors, toxic metals concentration levels in soil of different zones are affected by meteorological parameters. Wind blow in North and North-east direction carrying these metals through fly ash emission from KSTPS mainly towards Z1, Z2 & Z3, result in their escalated depositions on soil.

From the point of view of seasonal difference of distribution pattern of anthropogenic metals in all the zones, concentrations of heavy metal species viz. Cu, Cd, Zn and Pb are found to be increased in winter and decreased in summer. This difference can be explained by difference in meteorological conditions. Low average temperature, higher relative humidity and low wind speed leading to higher levels of anthropogenic metal species in ambient air was witnessed by Kota city during the sampling period in winter, while high average temperature, low relative humidity and high average wind speed causing erosion and disturbance of upper layer of soil resulting in decreased concentration of these metal species were witnessed during summers as given in Table 6.

Table 6: Meteorological conditions of Kota city.

Parameter	Winter	Summer
Temperature ($^{\circ}$ C)	19.0 \pm 2.1	30.0 \pm 4.24
Humidity (RH) (%)	39.3 \pm 7.27	21.0 \pm 8.71
Wind speed (km/h)	2.0 \pm 0.8	5.2 \pm 2.98
Rain fall (mm)	0.0	34.4

pH and chemical composition of soil also considerably affect the concentration of heavy metals in soil. It is to be noted that the highest concentration level of toxic metals are found in

upper most layer (0-10 cm) of soil followed by middle (10-20 cm) and bottom layer (20-30 cm), respectively.

Results indicate lower average pH values at the upper horizon of soil in the investigated area while higher values at lower horizon of soil, therefore, resulting in higher concentration at surface in comparison to bottom layer of soil where they are bound to soil possibly due to precipitation of hydroxides, carbonates or formation of insoluble organic complexes, thereby resulting in their decreased levels. Same trend of metal distribution is observed down the soil profile [17 - 18].

Thus, anthropogenic activities mainly fly ash emission from KSTPS along with vehicular emissions and other industrial activities, have a significant role in the increased pollution burden besides soil pH and meteorological parameters (temperature, relative humidity, wind direction and speed).

Data Analysis

A. Correlation Analysis

The degree of association of chemical elements in soil is evaluated by Pearson's correlation during sampling periods (Tables 7 to 9).

Significant positive correlations are found between Mg and Ca ($r = 0.710$); Mg and Fe ($r = 0.789$); Ca and Fe ($r = 0.873$) in winter season. For the rainy season, following values are reported: for Mg and Ca ($r = 0.854$); Mg and Fe ($r = 0.848$); Ca and Fe ($r = 0.746$) respectively. Summer season witnessed following values: Mg and Ca ($r = 0.832$); Mg and Fe ($r = 0.810$); Ca and Fe ($r = 0.768$) respectively. These significant positive correlations indicate that these metals have a common source, possibly natural soil.

Similarly, significant positive correlation are found between Cu and Cd ($r = 0.792$); Cu and Zn ($r = 0.798$); Cu and Pb ($r = 0.413$); Cd and Zn ($r = 0.806$); Cd and Pb ($r = 0.527$); Zn and Pb ($r = 0.433$) in winter season. For the rainy season, following values are reported: for Cu and Cd ($r = 0.723$); Cu and Zn ($r = 0.716$); Cu and Pb ($r = 0.563$); Cd and Zn ($r = 0.790$); Cd and Pb ($r = 0.720$); Zn and Pb ($r = 0.655$) respectively. Summer season witnessed following values: Cu and Cd ($r = 0.760$); Cu and Zn ($r = 0.787$); Cu and Pb ($r = 0.750$); Cd and Zn ($r = 0.739$); Cd and Pb ($r = 0.614$); Zn and Pb ($r = 0.659$) respectively. Thus a common origin for these metals i.e. point source KSTPS along with earlier vehicular emission dust beside other industrial activities is indicated by these significant positive correlations.

Table 7: Correlation coefficients between concentrations values of analyzed metals in surface soil in Kota city during winter season of 2012-13 (*significant at 5% level).

Metal	Mg	Ca	Fe	Cu	Cd	Zn	Pb
Mg	1.000	0.710*	0.789*	-0.495	-0.549	-0.387	-0.416
Ca		1.000	0.873*	-0.572	-0.535	-0.479	-0.352
Fe			1.000	-0.666	-0.549	-0.557	-0.328
Cu				1.000	0.792*	0.798*	0.413*
Cd					1.000	0.806*	0.527*
Zn						1.000	0.433*
Pb							1.000

n=100

Table 8: Correlation coefficients between concentrations values of analyzed metals in surface soil in Kota city during rainy season of 2012-13 (* significant at 5% level).

Metal	Mg	Ca	Fe	Cu	Cd	Zn	Pb
Mg	1.000	0.854*	0.848*	-0.708	-0.625	-0.604	-0.515
Ca		1.000	0.746*	-0.437	-0.508	-0.468	-0.502
Fe			1.000	-0.727	-0.667	-0.672	-0.487
Cu				1.000	0.723*	0.716*	0.563*
Cd					1.000	0.790*	0.720*
Zn						1.000	0.655*
Pb							1.000

n=100

Table 9: Correlation coefficients between concentrations values of analyzed metals in surface soil in Kota city during summer season of 2012-13 (* significant at 5% level).

Metal	Mg	Ca	Fe	Cu	Cd	Zn	Pb
Mg	1.000	0.832*	0.810*	-0.639	-0.650	-0.668	-0.493
Ca		1.000	0.768*	-0.512	-0.544	-0.665	-0.362
Fe			1.000	-0.548	-0.520	-0.659	-0.438
Cu				1.000	0.760*	0.787*	0.750*
Cd					1.000	0.739*	0.614*
Zn						1.000	0.659*
Pb							1.000

n=100

A. Principal Component Analysis (PCA)

PCA is a statistical procedure using an orthogonal transformation to convert a set of observations of possibly correlated variables into a set of values of linearly uncorrelated variables called principal components. The factors whose eigenvalue is greater than 1 are taken into consideration [19 - 21].

PCA results show that only two eigen values are >1 which explains over 60.04%, 62.02% & 60.38% of variance in both winter, rainy & summer season of 2012-13 respectively In the

present study, the results in rotated component matrix (Table 10) show that all the seven metal species analyzed are explained by two factors (varimax factors 1, 2).

The first factor (VF 1), which explained over 31.59%, 32.66% & 30.97% in winter, rainy & summer of 2012-13 of variance, show high loading of the heavy metals such as Pb, Zn, Cu and Cd indicating the influence of anthropogenic activities mainly coal combustion. VF 2 that account for 28.45%, 29.36% & 29.41% in winter, rainy & summer of 2012-13 of the layout variance show high loading of Ca, Fe and Mg indicating the influence of crust contribution. Anthropogenic

activities seem to affect the crustal metals to a little extent. Natural phenomena, such as a rock weathering and a chemical processes in soil are

their sources and lithology determines their distribution in all the three layers of soil.

Table 10: Varimax rotation of PCA results showing loading of seven variables with 2 independents varimax factors (VF) of soil in winter, rainy and summer season during 2012-13.

Variables	Component					
	Winter season		Rainy season		Summer season	
	VF 1	VF 2	VF 1	VF 2	VF 1	VF 2
Ca	-0.248	0.778	-0.202	0.815	-0.336	0.838
Mg	-0.269	0.755	-0.255	0.842	-0.309	0.896
Fe	-0.205	0.702	-0.212	0.826	-0.243	0.878
Pb	0.679	-0.241	0.638	-0.324	0.658	-0.328
Zn	0.721	-0.218	0.651	-0.303	0.715	-0.314
Cu	0.658	-0.255	0.678	-0.212	0.687	-0.297
Cd	0.724	-0.115	0.706	-0.344	0.722	-0.240
% of variance	31.59	28.45	32.66	29.36	30.97	29.41
Cumulative (%)	31.59	60.04	32.66	62.02	30.97	60.38

Conclusion

Anthropogenic input through fly ash emission from KSTPS under the influence of prevalent wind direction and soil characteristics is evident from the atmospheric deposition of heavy metals in topsoil in all the studied zones. The average concentrations of all anthropogenic metal species (Cu, Cd, Zn and Pb) are highest in the zone which is in closer vicinity of point source KSTPS while distant zones lying in opposite direction of wind blow, having comparatively low traffic load faced less metal burden in both winter and summer seasons. Higher level of Pb is due to previous vehicular emission apart from other contributing sources.

Meteorological parameters seem to control seasonal difference in the distribution patterns

of heavy metals in soil. Concentrations of anthropogenic metal species are found higher in winter and lower in summer. It is to be noted that in rainy season, due to washout phenomenon of upper layer of soil, the concentrations level of crustal and toxic metals deposited on top soil decreases spectacularly. The higher level of metals at top soil with lower pH can be understood by their increased mobility which decreases on going down the soil profile due to complexation at higher pH found in clay rich bottom layer.

PCA and positive correlations for Cu, Cd, Zn and Pb showed their similar origin in the city and particularly can be related to point source coal based thermal power plant besides other industrial activities and traffic load. However, Ca, Mg and Fe have mostly crustal origin.

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AN ADAPTIVE APPROACH FOR EXAMINING HOLLOW STEEL FOR SQUARE, RECTANGULAR AND CIRCULAR SECTION

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ABSTRACT

The casting of concrete in concrete-filled Steel tube, via the confinement effect of the Steel tube, significantly increase the ductility of the concrete and, in the case Self Compacting Concrete, alleviate the shortfall in ductility of the SCC. This kind of structure is gaining popularity but its behavior is quite complicated. In axially loaded tubular sections, the confinement is uniform and equi-biaxial (isotropic within the cross-section). A parametric study was carried out with hollow steel for square, rectangular and circular Section to cover a wider range of member cross sections to examine the structural behavior and failure load.

Keywords: - SCC, CFT, ductility, Concrete

1. INTRODUCTION

Due to the excellent composite action between the steel tube and concrete, concrete-filled steel tubular (CFST) columns are becoming increasingly popular and used in various structures throughout the world. Extensive experimental and analytical studies have been conducted to understand the behaviour of the composite columns mainly from the 1960s [1]. From these investigations, different design codes have been formulated to reflect the design philosophies and practices in the respective countries, such as Australia, China, Japan, USA and European countries [2]. In recent few decades, finite element (FE) technique is becoming increasingly popular for modelling CFST columns thanks to the existence of many commercially available software, such as ABAQUS and ANSYS. FE analysis allows the direct modelling of the composite action between the steel and concrete components, and different factors, such as local and global imperfections, residual stresses and boundary conditions, can be considered more precisely. The prediction accuracy of a FE model, however, is greatly affected by the input parameters, especially by the selection of a suitable concrete model. Nowadays, high-performance construction materials, such as high-performance concrete and steel, are being increasingly used in engineering structures as a result of the continued advancement of materials technology. These high-performance materials often exhibit high strength as well. As far as CFST columns in real structures are concerned, the highest cylinder compressive strength and yield strength reported so far are 130 MPa and 690 MPa for the concrete and steel, respectively [3,4].

FE analysis is now used routinely for design and research problems. To embrace the development of materials, new FE models may need to be developed to improve the prediction accuracy. To serve this purpose, sufficient test data need to be collected and used to verify the prediction accuracy.

In the past, numerous tests have been conducted on CFST stub columns. A database was used by Tao et al. [2] to check the applicability of different codes in calculating the strength of CFST columns. In that database, 484 test results for circular stub columns and 445 test results for rectangular stub columns (square sections mainly) were included. Only ultimate strength, however, was reported in the literature for the majority of these test results. It is worth noting that different authors might give different definitions of the ultimate strength. This may affect the magnitudes of the ultimate strength, especially for those columns without softening post-yield response [5]. Meanwhile, the capacity of predicting full-range load–deformation curves is also very important in evaluating FE models. In this paper, only test results of axial load (N)–axial strain (ϵ) or axial shortening curves reported are collected and used to make consistent comparisons. Among many FE models, the FE model developed by Han et al. [6] has been widely used to simulate CFST columns, where the concrete damaged plasticity model in ABAQUS was adopted.

2. Literature Review

Self-compacting concrete (SCC) invented in Japan and spread to South America and Europe. A good SCC mixture must have the ability to flow through dense reinforcement under its own weight and fill all voids without isolation or excessive bleeding

and without the need for vibration or other mechanical consolidation. This type of concrete can maintain its stability and symmetry, while still achieving good compaction. For these reasons, SCC is used in many applications successfully where normal concrete would be difficult to install, or through the places in the limited access due to a multitude of reinforcements. (Siddique et al. 2011). SCC was originally used for concrete slabs and beams, but due to its self-compaction ability, higher load capacity, inherent ductility, and durability when used as columns in buildings, it has been increasingly used in concrete-steel composite elements that since turn of the century. Composite members will also save a lot of money on supplies and raise the net floor area. The most popular composite column section shapes in the past were square, rectangular, and circular. However, due to their exciting future, elliptical hollow sections have only recently been introduced to either the construction sector, and their use is growing in popularity in modern building design.

The behavior of hollow concrete section tubes filled with ordinary concrete has been the main focus of high-level research investigations. It has been found that the strength of concrete increases with the effect obtained from the steel tube, and the restrained effect of concrete results in the localization of the steel wall and Global buckling has been delayed. (Yu et al. 2008 & Giakoumelis and Lam, 2004).

In terms of increasing the structure's strength and stiffness, the alignment of the steel and concrete sections in the structural segment small segment is critical. The steel section is placed on the outside perimeter, where it works best in stress and bending moments. Furthermore, since the steel portion has a higher modulus, the concrete column's stiffness is improved of

Due to the fact that the steel segment is located farthest from the cross-centroid, section's it has more elasticity and a larger moment of friction than concrete members (Gourley et al., 2001). The findings of circular and rectangular tube columns made with SCC were compared to those made with standard concrete, and the results were similar. SCC-filled has been studied by a small number of scholars.

Steel tube columns with an elliptical shape Elliptical hollow sections (EHS) can be more efficient than circular hollow sections, particularly when eccentric loading (creating a bending moment around a certain axis) is present or when the two main axes have different end constraints or bracings (Zhao and Packer, 2009). Unfilled elliptical columns have recently been used in a

variety of structures, including Heathrow Terminal 3 in the United Kingdom, the Sword Airside project in Ireland, and Bern's main train station are only a few examples. However, no structural architecture code currently covers the elliptical hollow section.

The using is of the elliptical tube segment is currently incompletely defined. The data on elliptical hollow parts is currently incomplete, and there is very few experimental data on elliptical tube columns filled with concrete (CFT). The majority of elliptical column analysis has concentrated on short columns, with just a few studies focusing on long columns. The confinement effect is a problem that must be solved, particularly in light of its impact on the steel segment. In particular for slender columns, the relationship between local and global buckling must be studied. The mechanical behavior of elliptical CFT columns is highlighted in the analysis discussed in this study. Understanding the reaction of elliptical tubes in the composite structure and the interactions between individual materials in the structure is needed before understanding the behavior of elliptical CFT columns. In addition, the potential and benefits of using hollow segment columns in the composite column have been identified. Thus, the expertise obtained from the experiments and FE analysis, as well as the failure mechanism in the columns, are important for adding information that helps both the researcher and the engineers.

3. Self-Compacting Concrete (Scc)

Self-compacting concrete (SCC) has recently become popular due to its improved workability, reliability, power, flexibility, and cost. Self-compacting concrete (SCC) is a unique category of concrete that has a high fluidity without segregation and can fill any nook and cranny of formwork and congested reinforcements using only its own weight. SCC has been discovered through a variety of studies and realistic findings. Self-consolidating concrete is another term for self-compacting concrete. SCC stands for self-compacting concrete, which does not require mechanical vibration for compaction and can flow under its own weight without coarse aggregate segregation, but preserving uniformity The health effects of concrete construction are eliminated by avoiding vibration (white hand syndrome, hearing loss, noise disruptions for neighbors), as well as the ease of placement procedures, transport-placement, longer formwork life, energy savings, improved aesthetics, and improved surface finishing. SCCs also gradually gained popularity among architects by allowing them to experiment with complex volumes. SSC uses both mineral and chemical

admixtures to greatly improve the flow ability and ease of concrete. SCC priorities consistent consistency, high performance, and increased dependability.

During the placement of concrete, there is no bleeding or segregation, and the concrete stays in the plastic stage. Using pozzolanic products like GGBS, limestone powder, and fly ash improves the flow of the SCC. Due to its high resistance strength and fluidity of segregation, SCC can be pumped over longer distances. SCC not only reduces building time but also guarantees efficiency and reliability. (Sa, Ghorpadeb, & Raoc, 2016).

Self-Compacting Concrete (SCC) is one of the most significant breakthroughs in concrete production in the last two decades. Numerous uses have been closely studied by researchers and development experiments in the brief period of self-compacting concrete. However, in Japan's building sector, the steady decline in the number of skilled employees has resulted in a similar reduction in the quality of construction jobs. SCC met all of the requirements for concrete, including heat of hydration, drying and shrinkage, density after hardening, and other properties.

4. Proposed Work

4.1 Concrete-filled steel tube Specimen Details modeled by ANSYS

In order to investigate the behavior of different shapes of concrete filled steel tubes, finite element analysis was conducted by using three dimensional program ANSYS (Version 15) software package. The cross sections of the CFTS columns in the numerical analysis Values are shown. The columns will be modeled by using ANSYS workbench and results will be presented. The mechanical properties for all the specimens are listed in Fig (1) (2) (3) for steel, concrete and self-compacting concrete respectively. The midpoints on the outer steel tube and inner steel tube at section L/4, where the local buckling occurred, were selected and the corresponding lateral stresses were extracted, as shown. With an increase in the longitudinal

displacement of the Eccentric compression specimen, the lateral stress development of the specimen can be divided into two stages:

(I) Elastic stage. With compressive loading, the steel tubes and concrete work together and interact. The concrete has tensile stress on the outer steel tube and compressive stress on the inner steel tube. Owing to the support of the Normal concrete, the outer steel tube can only buckle outward, and the inner steel tube can only buckle inward. The stress of the outer and inner steel tube increases gradually, and the lateral stress of the inner steel tube grows rapidly. This means that at this stage, the concrete mainly compresses the inner steel tube, and the force acting on the outer steel tube is minimal. With the gradual expansion and deformation of the concrete, the lateral compressive force of the concrete acts on the inner steel tube and begins to decrease, while the lateral tensile stress on the outer steel tube increases accordingly. In addition, as a result of setting stiffeners on the outer steel tube, the stiffness of the outer steel tube of T2 was strengthened, so the lateral tensile stress on the outer steel tube is lower than that of the unstiffened specimen. However, the concrete has a great force on the inner steel tube owing to its lower rigidity. This is why the lateral stress of the inner steel tube of the stiffened specimen develops faster than that of the unstiffened specimen.

5. Result and Discussion

5.1 Finite Element Results

Finite element models were analyzed by ANSYS V.15 software in order to validate the results and find Total deformation and Von-mises stress. Also, a parametric study was carried out with hollow steel, CFTS with normal concrete and CFTS with SCC for square, rectangular and circular Section to cover a wider range of member cross sections to examine the structural behavior and failure load.

L/D and D/T Ration for CFTS with Hollow Steel for Square, Rectangular and Circular Section

Table 1. Hollow steel parameters for different tubular sections

Sr.No.	CFTS with Hollow steel							
	L/D	Circular	Square	Rec	t/D	Circular	Square	Rec
1	4	241.2	240	200	0.050	3.015	3	2.5
2	6	-	-	-	0.060	-	-	-
3	8	-	-	-	0.070	-	-	-
4	10	-	-	-	0.080	-	-	-
5	12	-	-	--	0.090	-	-	-

5.2 Circular CFT

The typical mesh with elements and the deformed shape of the circular column are shown in Figure (1). The variation of stresses of circular CFT at the ultimate load level illustrate in Figure (2). Also, the

load-deflection behavior is shown in Figure (3-5). Above 100k can be noticed that the Finite element model more stiff than the experimental curve. The finite element solution is in acceptable agreement with the experimental results throughout the entire range of loading.

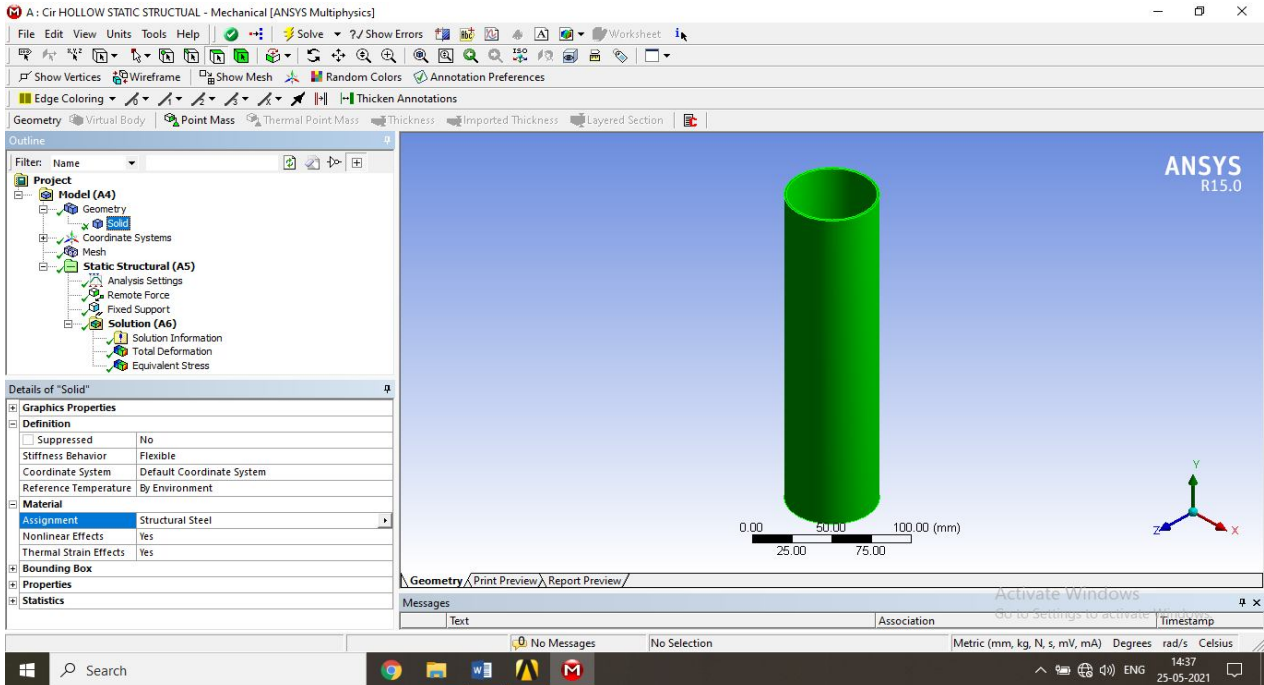


Figure 1. Modeling of steel tube Circular section in Ansys

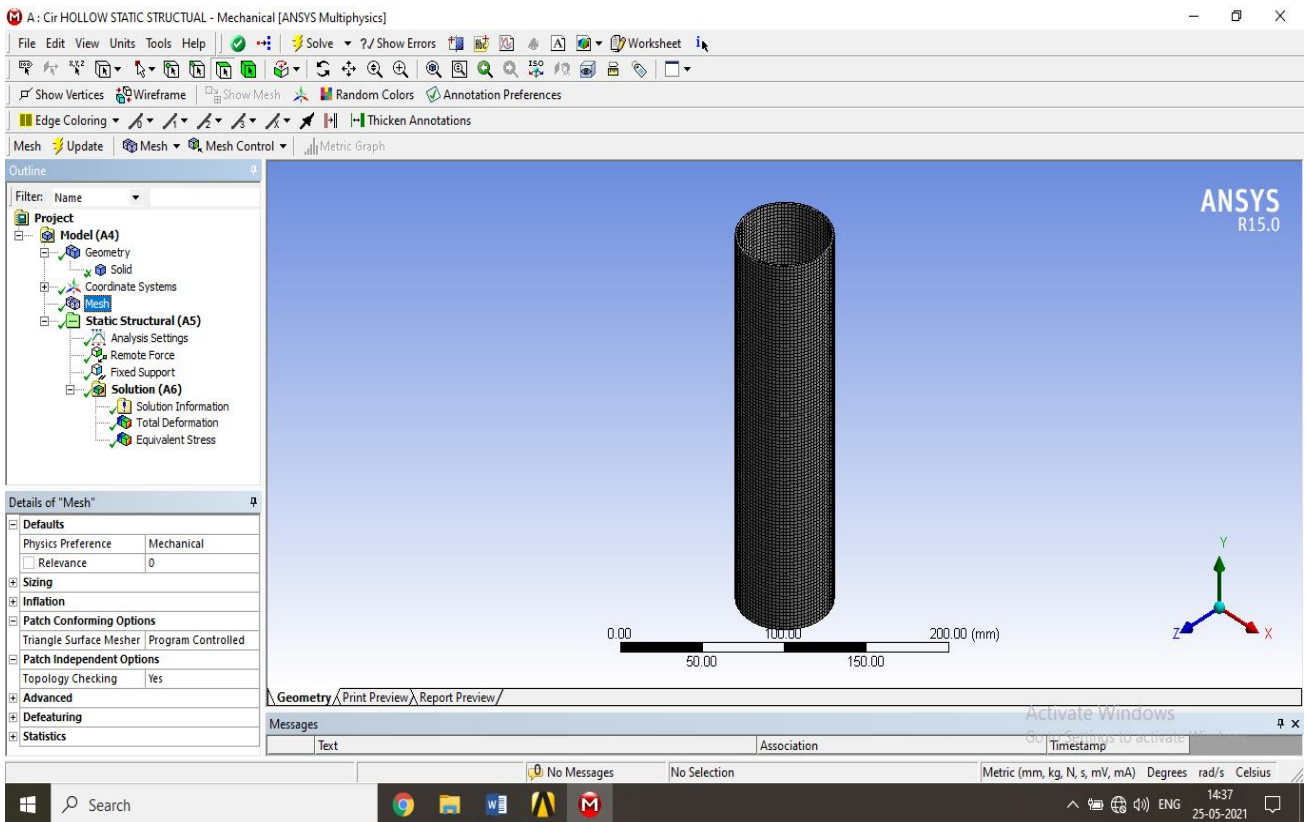


Figure 2. MESH of steel tube Circular section in Ansys

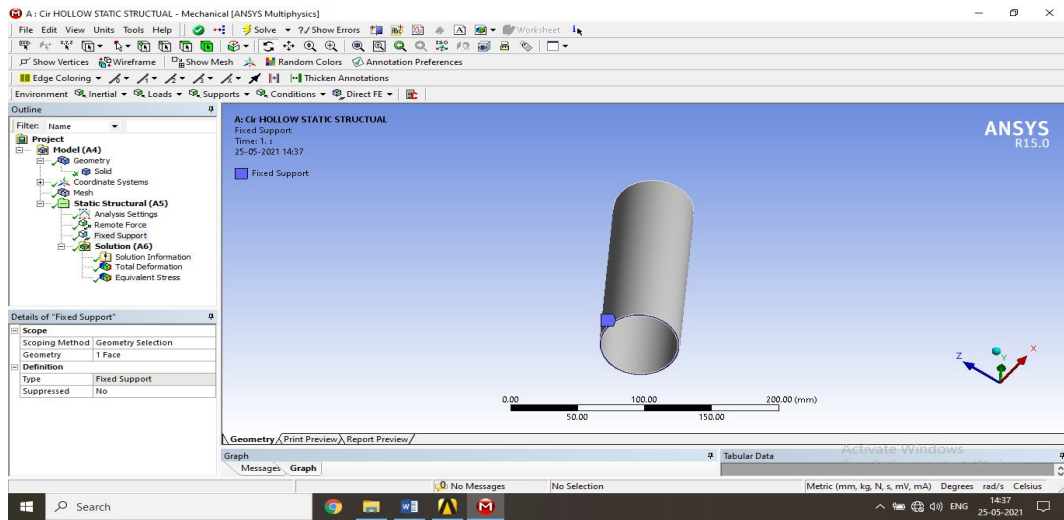


Figure 3. Boundary conditions of steel tube Circular section in Ansys

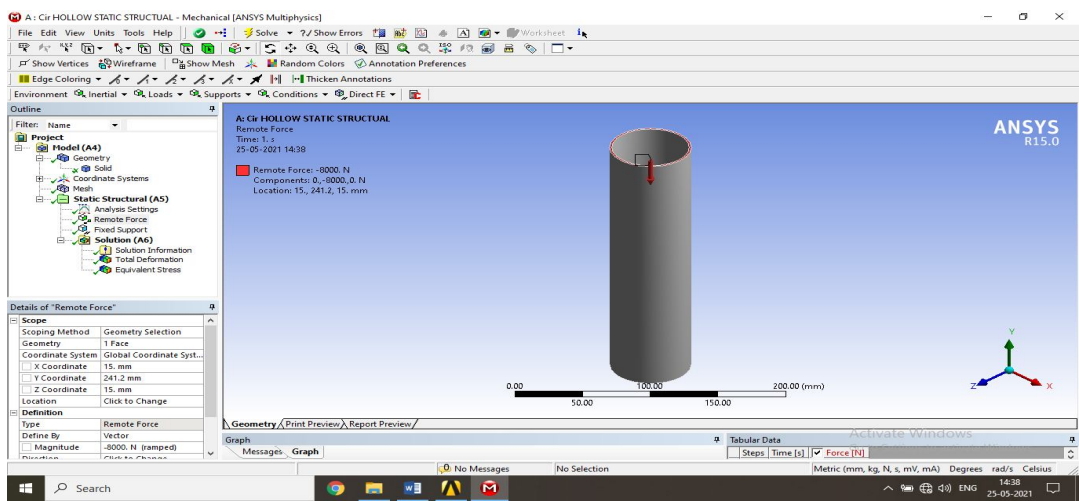


Figure 4. Loading conditions of steel tube Circular section in Ansys L/4 ratio

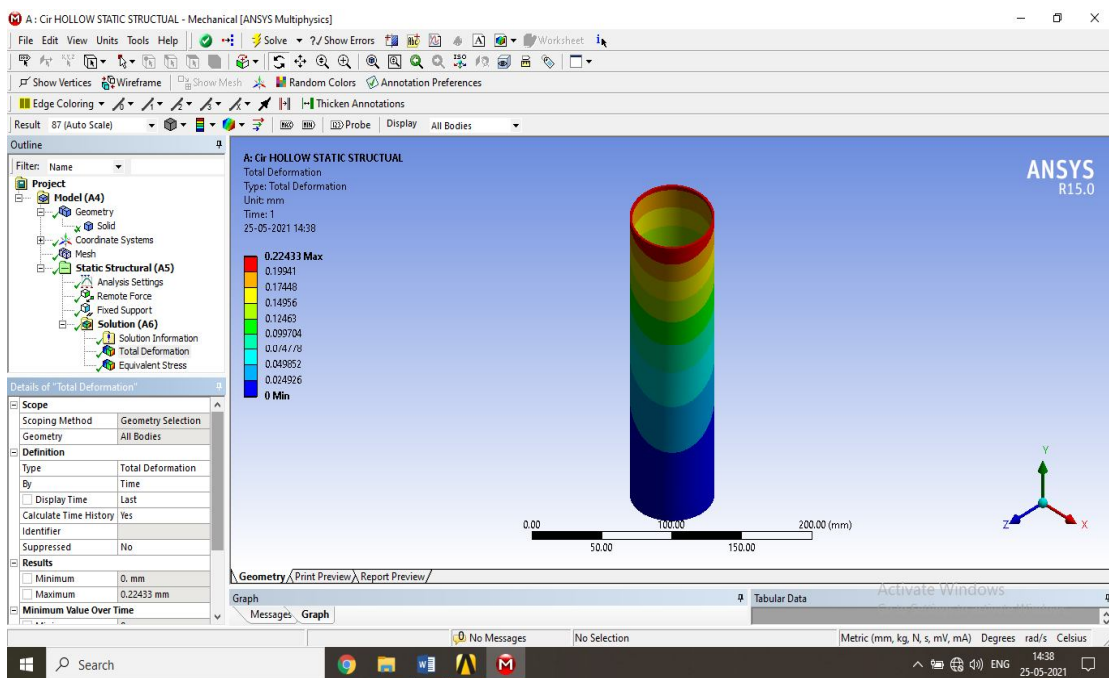


Figure 5. Total deformation of steel tube Circular section

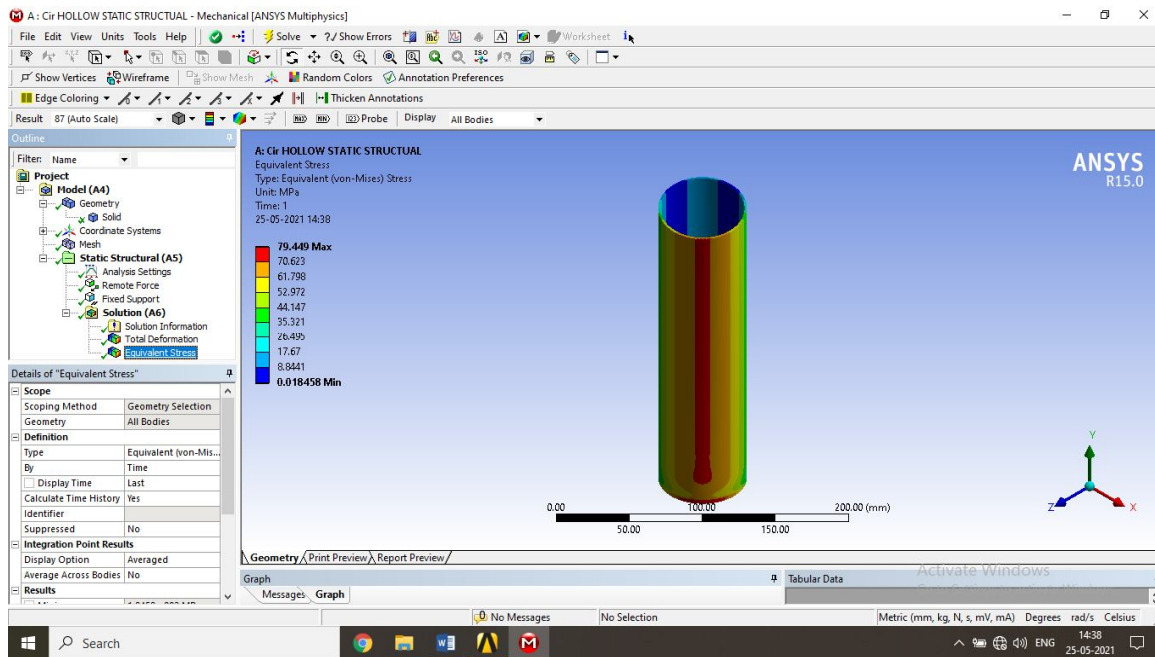
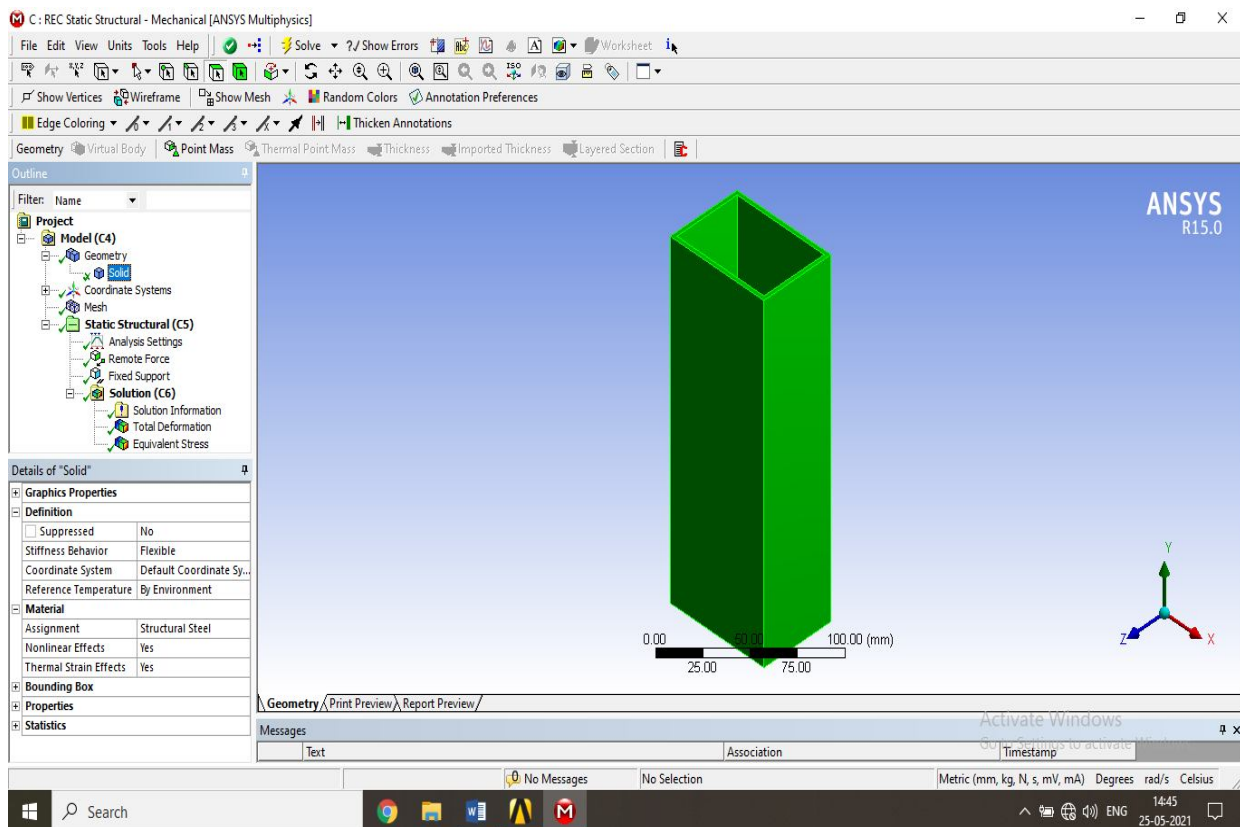


Figure 6. Maximum principle (Vonnises) stress of steel tube Circular section

5.2 Rectangular CFT

The typical mesh with elements and the deformed shape of the circular column are shown in Figure (7). The variation of stresses of CFT at the ultimate load level illustrate in Figure (8, 9). Also, the load-deflection

behavior is shown in Figure (10, 11). Above 100k can be noticed that the Finite element model more stiff than the experimental curve. The finite element solution is in acceptable agreement with the experimental results throughout the entire range of loading.



Figur 7. Modelling of steel tube Square section in Ansys

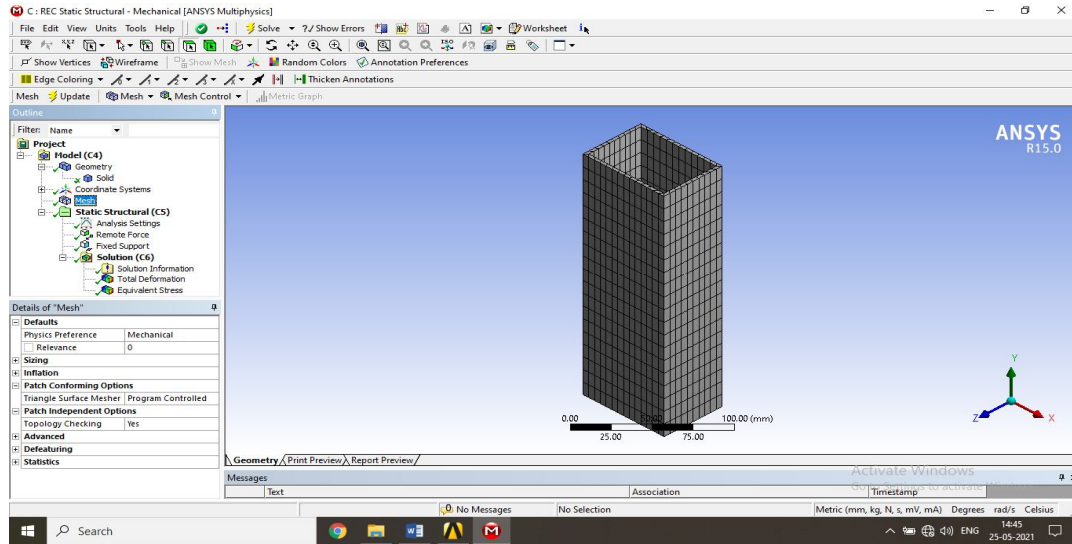


Figure 8. MESH of steel tube Square section in Ansys

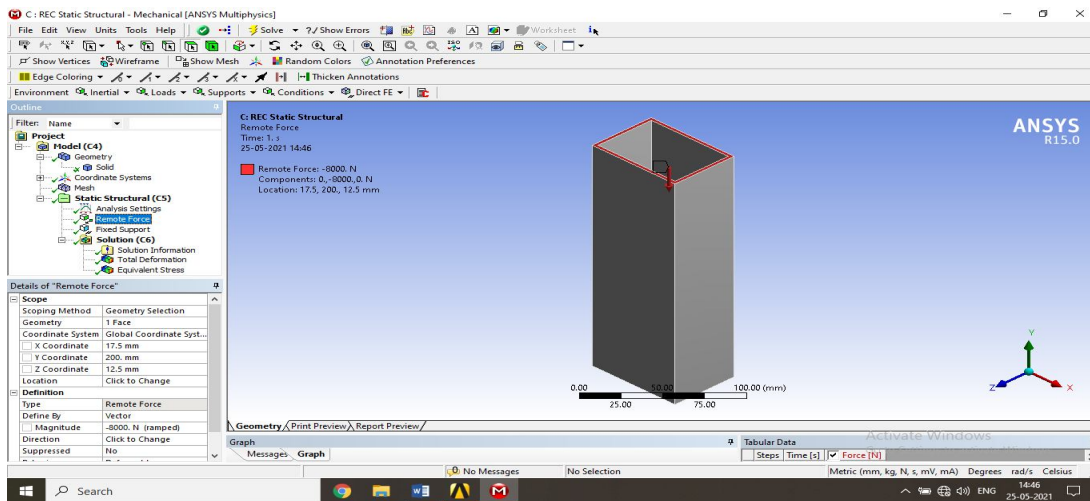


Figure 9. Loading conditions of steel tube Square section in Ansys L/4 ratio

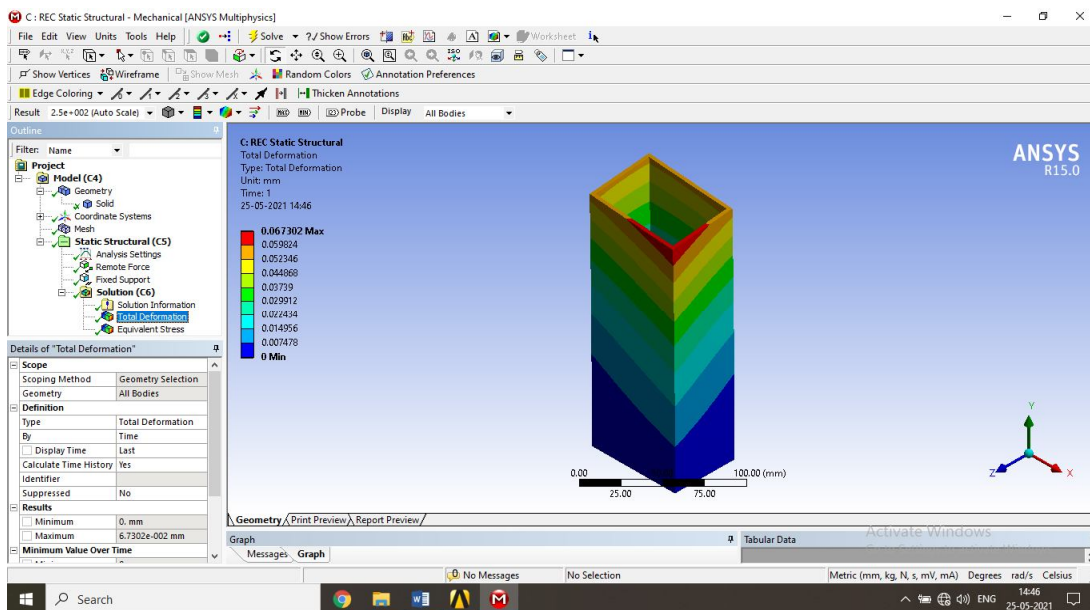


Figure 10. Total deformation of steel tube Square section

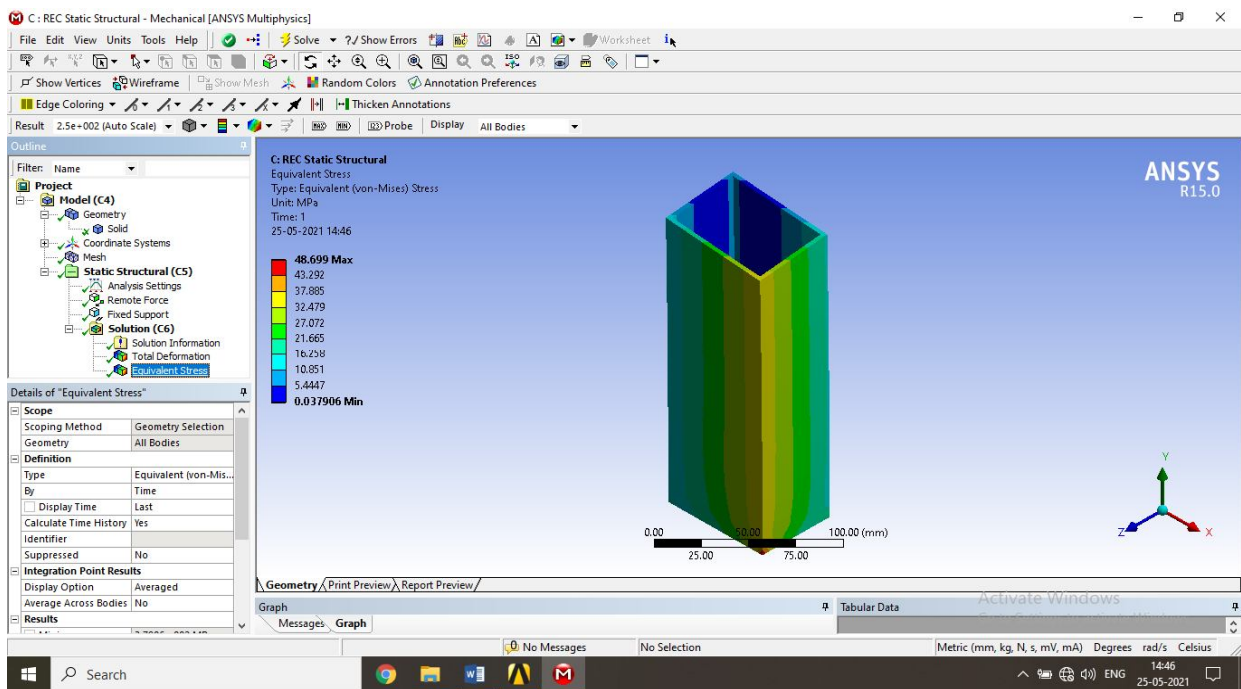


Figure 11. Maximum principle (Vonmises) stress of steel tube Square section

5.3 Square CFT

The typical mesh with elements and the deformed shape of the circular column are shown in Figure (12). The variation of stresses of Square CFT at the ultimate load level illustrate in Figure (13-15). Also, the load-

deflection behavior is shown in Figure (16, 17). Above 100k can be noticed that the Finite element model more stiff than the experimental curve. The finite element solution is in acceptable agreement with the experimental results throughout the entire range of loading.

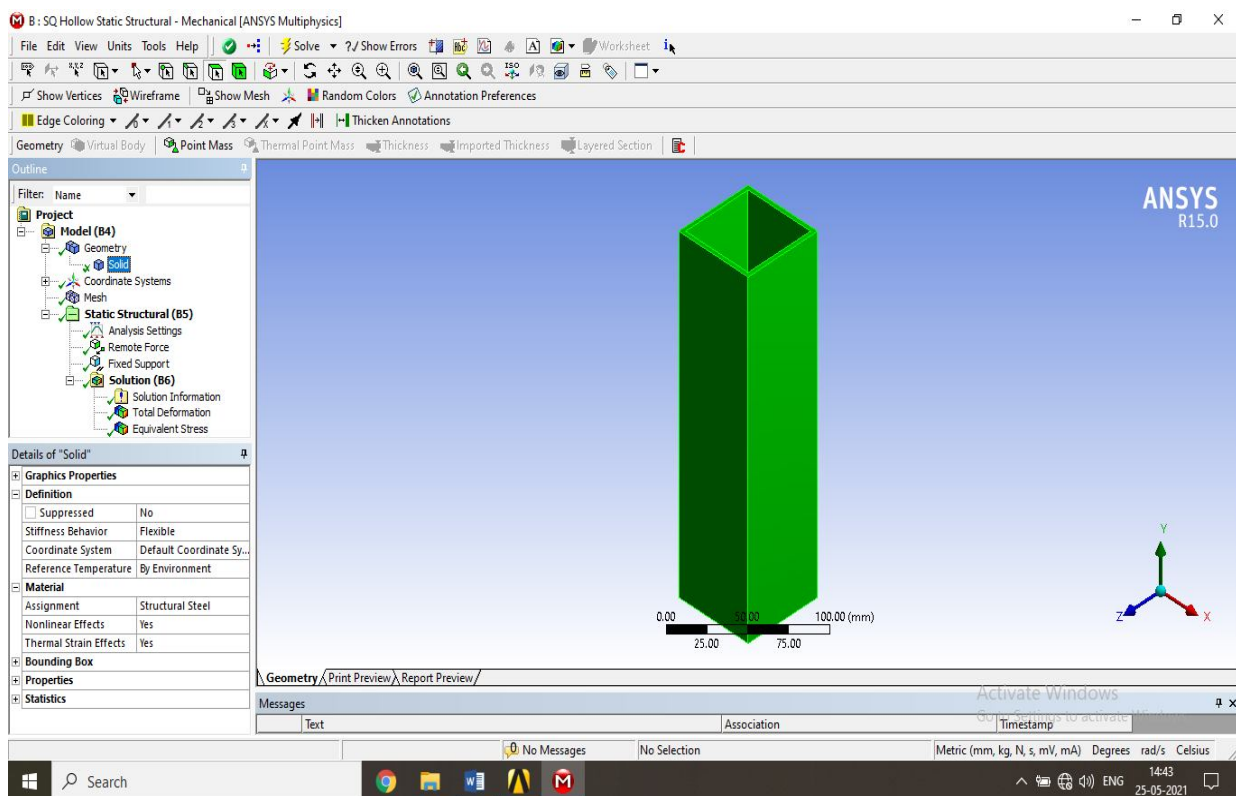


Figure 12. Modelling of steel tube REC section in Ansys

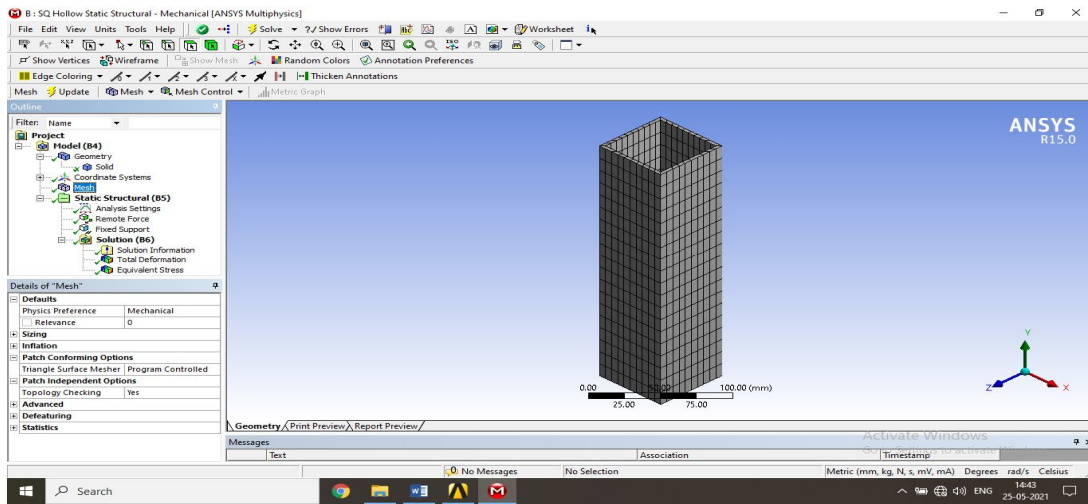


Figure 13. MESH of steel tube REC section in Ansys

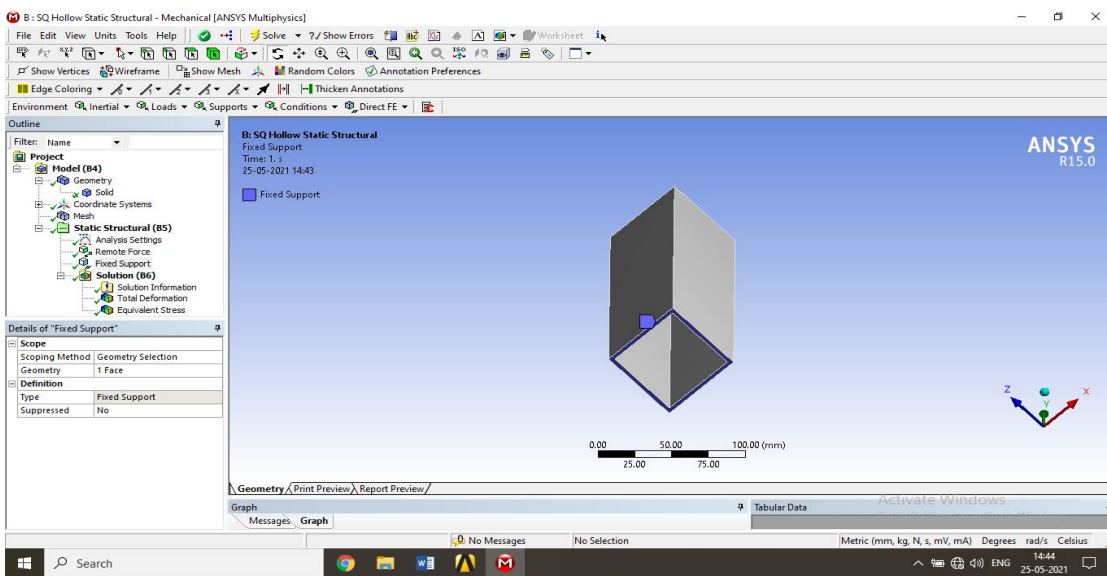


Figure 14. Boundry conditions of steel tube REC section in Ansys

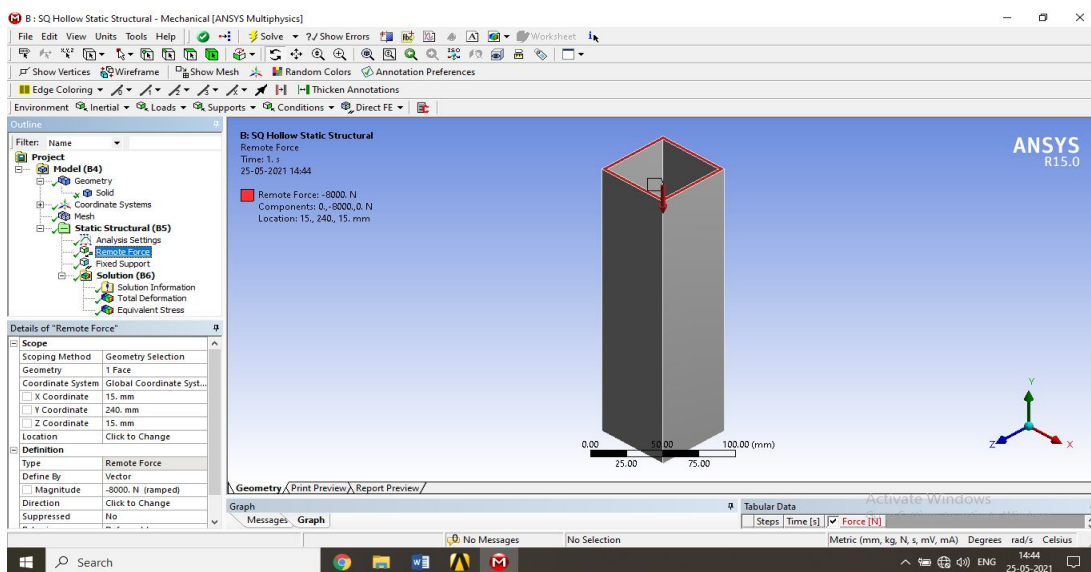


Figure 15. Loading conditions of steel tube REC section in Ansys L/4 ratio

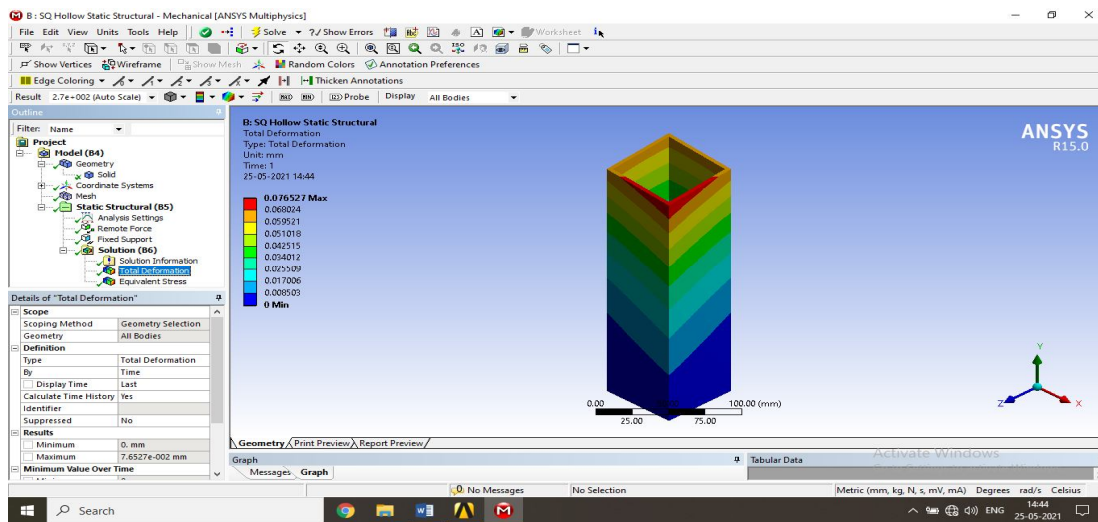


Figure 16. Total deformation of steel tube REC section

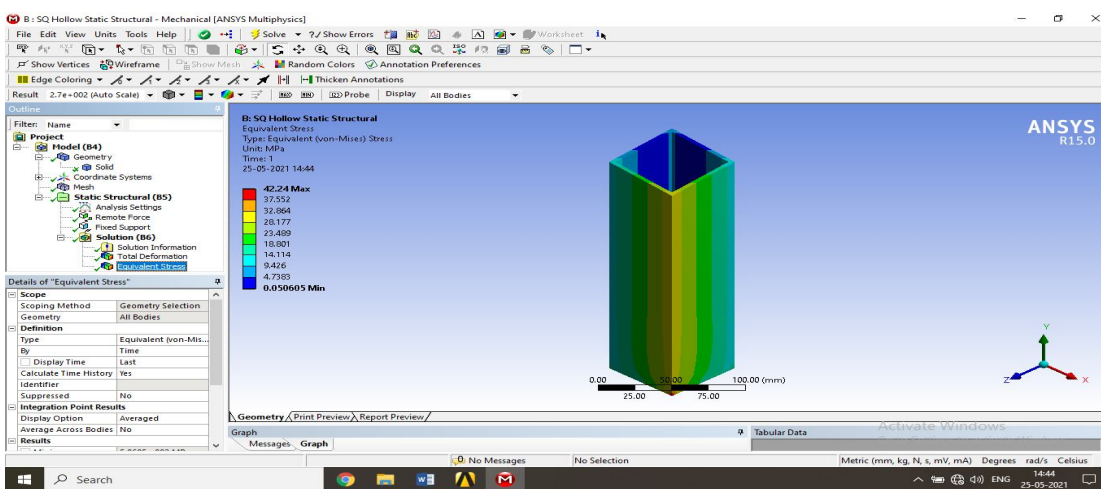


Figure 17. Maximum principle (Vonmises) stress of steel tube REC section

Table 2. Results of deflection and Stress for circular, Square and Rectangular section with L/D and t/D ratio

	L/D	t/D	Circular	Square	Rec
Total deflection (mm)	4	0.05	0.224	0.076	0.067
Total principle stress (MPa)			79.449	42.24	48.699

6. Conclusion And Future Work

In this paper, after analysis the earlier methods, to avoid those issues we have created the new prototype called as privacy preserving and energy efficient multilayer cluster for mobile WSN. In the network we concentrated here on the AODV protocol. AODV protocol is one

among the reactive routing protocol which is based on (on-demand) function. This protocol is designed in a hop by hop model where the neighbor hop node decides the path of packets where it has to be forwarded next...

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VOLUMETRIC AND VISCOMETRIC ANALYSIS OF ARGININE IN AQUEOUS FRUCTOSE SOLUTIONS AT DIFFERENT TEMPERATURES

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ABSTRACT

Experimental values of density, viscosity and speed of sound were carried out on the ternary mixtures of (5%) of Fructose in water + L-Arginine at 303K, 308K & 313 K by an oscillating-tube densimeter and Viscometer. The related and relevant parameters correlated to our present study like adiabatic compressibility (β), apparent molal compressibility (ϕ_K), apparent molal volume (ϕ_V), limiting apparent molal compressibility (ϕ_K^0), limiting apparent molal volume (ϕ_V^0) and their associated constants (S_K , S_V), Falkenhagen Coefficient(A) and viscosity B-Coefficient of Jones-Dole equations are calculated. The results are interpreted in terms of possible interionic interactions such as solute-solvent and solute-solute interactions and structure making / breaking ability of solute within the solvent.

Keywords: Adiabatic Compressibility, Limiting apparent molal compressibility, Apparent molal volume, and Viscosity B-Coefficients.

Introduction

The physicochemical properties of amino acids in aqueous solutions provide valuable information on solute-solute and solute-solvent interactions [1-6]. Polyhydroxyl compounds play a very vital role in stabilizing the native conformations of proteins and enzymes [7-9]. In living organisms, interactions of carbohydrates with proteins play a key role in a wide range of biochemical processes in the body system. The studies on carbohydrate-protein interactions are very important for the field of immunology, biosynthesis, pharmacology, and medicine. Since Proteins are large complex molecules, the direct study of protein interactions is difficult. Therefore, one useful approach is to investigate interactions of the model compounds of proteins, e.g., amino acids, in aqueous and mixed-aqueous solutions [10-14]. L-Arginine is an essential amino acid with anabolic and immune system supportive effects, and it stimulates the production of growth hormone. L-Arginine is very popular for its muscle building and fat burning effect among athletes [15]. Human seminal fluid is rich in fructose and sperms utilize fructose for energy [16]. These considerations led us to undertake the study of L-Arginine (with positively charged R group) in aqueous- Fructose solutions.

However, to the best of our knowledge, no report is available in the literature on the thermo acoustical solutions of L-Arginine in aqueous-Fructose.

In the present work, experimental results of density, viscosity and ultrasonic velocity behaviour of L-Arginine with 5% of fructose in water at three different temperatures 303K, 308K, and 313 K were measured. From these experimental values, the acoustical parameters adiabatic compressibility (β), apparent molal compressibility (ϕ_K), apparent molal volume (ϕ_V), limiting apparent molal compressibility (ϕ_K^0), limiting apparent molal volume (ϕ_V^0) and their associated constants (S_K , S_V), Falkenhagen Coefficient(A) and viscosity B-Coefficient of Jones-Dole equations have been calculated. These parameters have been used to discuss the solute-solute and solute-solvent interactions in these systems.

Materials and Methods

Analytical reagent grade L - Arginine and Fructose, were purchased from Sd fine chemicals. Water utilized in the experiments was deionized and distilled before to making solutions. Solutions of amino acid in aqueous fructose were prepared by mass on the molality scale with an accuracy of 0 to 0.1 g. The density of the solution was measured by 10 ml specific gravity bottle calibrated with double distilled water and acetone. The ultrasonic

velocity was measured by a single crystal interferometer (M-81, Mittal Enterprises, India) with an accuracy operating at a frequency of 2MHz . The viscosity was measured by Ostwald’s viscometer. An electronically operated constant temperature water bath is employed to circulate water through the double walled measuring cell made up of steel containing the experimental solution at the desired temperature. The density, viscosity and ultrasonic velocity of the varying molality of amino acid at different composition were measured at 303, 308 and 313K, the measurements density, viscosity and ultrasonic velocity were performed a minimum of three times for each composition, were found to be repeatable within the precision limits.

Theory

The apparent molal volumes (ϕ_v) for L-arginine in aqueous fructose was calculated from density and speed of sound using the relation

$$\phi_v = (M/\rho) - 1000 (\rho - \rho_0) / m \rho \rho_0 \quad (1)$$

The apparent molal Compressibility (ϕ_K) can be calculated as follows

$$\phi_K = \beta M / \rho + 1000 (\beta \rho_0 - \beta_0 \rho) / m \rho \rho_0 \quad (2)$$

where m is the molal concentration of the solute (L-arginine), ρ and ρ_0 are the densities of the solution and the solvent (aqueous-fructose), respectively; M is the molal mass of the solute (L-arginine), β and β_0 are values of the adiabatic compressibility of the solution and the solvent (aqueous- fructose), respectively, calculated using the relation

$$\beta = 1 / (\rho U^2) \quad (3)$$

The Limiting apparent molal volume ϕ_v^0 , and the slope S_v , Limiting apparent molal compressibility ϕ_K^0 , and the slope S_K , have been obtained using method of linear regression of ϕ_v and ϕ_K Vs m curves from the following relations [17]

$$\phi_v = \phi_v^0 + S_v m \quad (4)$$

$$\phi_K = \phi_K^0 + S_K m \quad (5)$$

Where the intercepts, ϕ_v^0 / ϕ_K^0 , by definition are free from solute–solute interactions and therefore provide a measure of solute–solvent interactions, whereas the experimental slope, S_v / S_K provides information regarding solute–solute interaction.

Results and Discussion

Table 1 Density, Viscosity and Ultrasonic Velocity of 5% fructose dissolved in aqueous L - Arginine with varying molality at different temperature

Molality of L-Arginine	Temp. (K)	Density (ρ) (Kgm ⁻³)	Viscosity (η) (10 ⁻³ Nsm ⁻²)	Ultrasonic Velocity (U) (ms ⁻¹)
0	303	1021.57 ± 1.65	0.8009±0.0099	1491.91±0.93
	308	1010.56 ± 6.20	0.7487±0.0190	1516.21±1.00
	313	1007.29 ± 1.02	0.6904±0.0012	1545.64±.03
	P Value	0.0081	0.0001	<0.0001
	F value	11.936	59.726	2226.8
0.21	303	1024.67±1.06	0.8573±0.0595	1494.53±1.44
	308	1021.05±0.58	0.7564±0.0056	1521.64±1.55
	313	1016.33±0.88	0.6959±0.0007	1556.32±1.99
	P Value	<0.0001	0.0035	<0.0001
	F value	70.447	16.751	1023.4
0.42	303	1026.90 ± 0.82	0.8577±0.0352	1502.52±4.09
	308	1022.53 ± 0.21	0.7908±0.0216	1524.76±0.39
	313	1018.58±0.54	0.7309±0.0049	1562.18±4.23
	P Value	<0.0001	0.0020	<0.0001
	F value	154.63	20.937	235.28

0.63	303	1029.13±0.86	0.8992±0.0201	1508.44±0.87
	308	1023.69±0.68	0.8024±0.0196	1530.01±1.00
	313	1019.83±0.64	0.7564±0.0003	1566.84±0.98
	P Value	<0.0001	0.0001	<0.0001
	F value	121.91	60.662	2888.3
0.84	303	1031.84±0.70	0.9476±0.0367	1511.84±0.72
	308	1028.63±1.00	0.8496±0.0118	1534.54±0.67
	313	1021.70±0.31	0.7587±0.0060	1569.46±1.42
	P Value	<0.0001	0.0002	<0.0001
	F value	152.40	52.771	2541.2
1.05	303	1035.50±1.28	0.9699±0.0301	1527.81±0.85
	308	1030.14±1.02	0.8676±0.0198	1539.01±1.00
	313	1022.87±0.96	0.7650±0.0016	1583.00±1.51
	P Value	<0.0001	<0.0001	<0.0001
	F value	100.45	`	1913.7

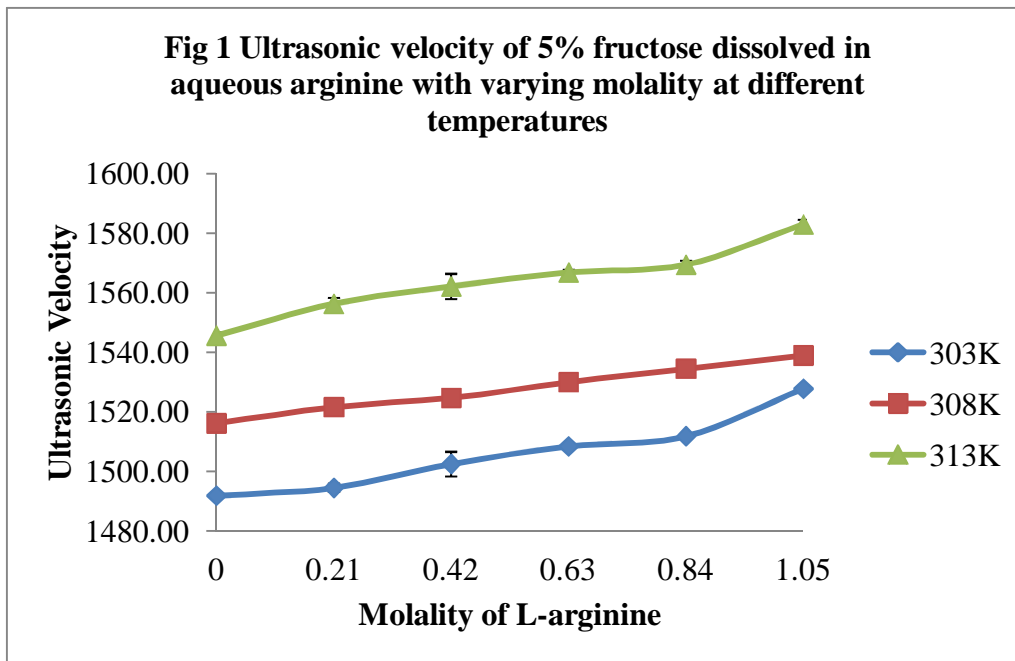


Table 2 Apparent molal Volume (ϕ_V) and Apparent molal Compressibility (ϕ_K) of 5% fructose dissolved in aqueous L - Arginine with varying molality at different temperatures

Molality of L-Arginine	Temperature (K)	Apparent Molal Volume ϕ_V m ³ mol ⁻¹	Apparent Molal Compressibility ϕ_K X 10 ¹⁰ m ² N ⁻¹
0	303	-	-
	308	-	-
	313	-	-
0.21	303	-31.653	-3.0519
	308	-36.366	-3.6777
	313	-39.475	-4.8356
0.42	303	-26.886	-2.2022
	308	-29.273	-2.55495

	313	-32.035	-3.5408
0.63	303	-19.45	-1.5296
	308	-21.72	-2.5277
	313	-25.575	-2.973
0.84	303	-17.957	-1.2041
	308	-18.957	-2.3969
	313	-21.202	-2.9835
1.05	303	-12.45	-1.0208
	308	-15.75	-1.9995
	313	-18.375	-2.7504

Table 3 Limiting Apparent molal Volume (ϕ_V^0) and slope (S_V) of different fructose concentration dissolved in aqueous L - Arginine at different temperatures

Percentage of Fructose	Temperature (K)	Limiting Apparent molal Volume ($\phi_V^0 \times 10^{10} \text{ m}^2 \text{ N}^{-1}$)	Slope ($S_V \times 10^{10} \text{ m}^2 \text{ N}^{-1}$)
5 %	303	-14.9094	-29.287
	308	-16.746	-31.9718
	313	-18.33214	-33.2217

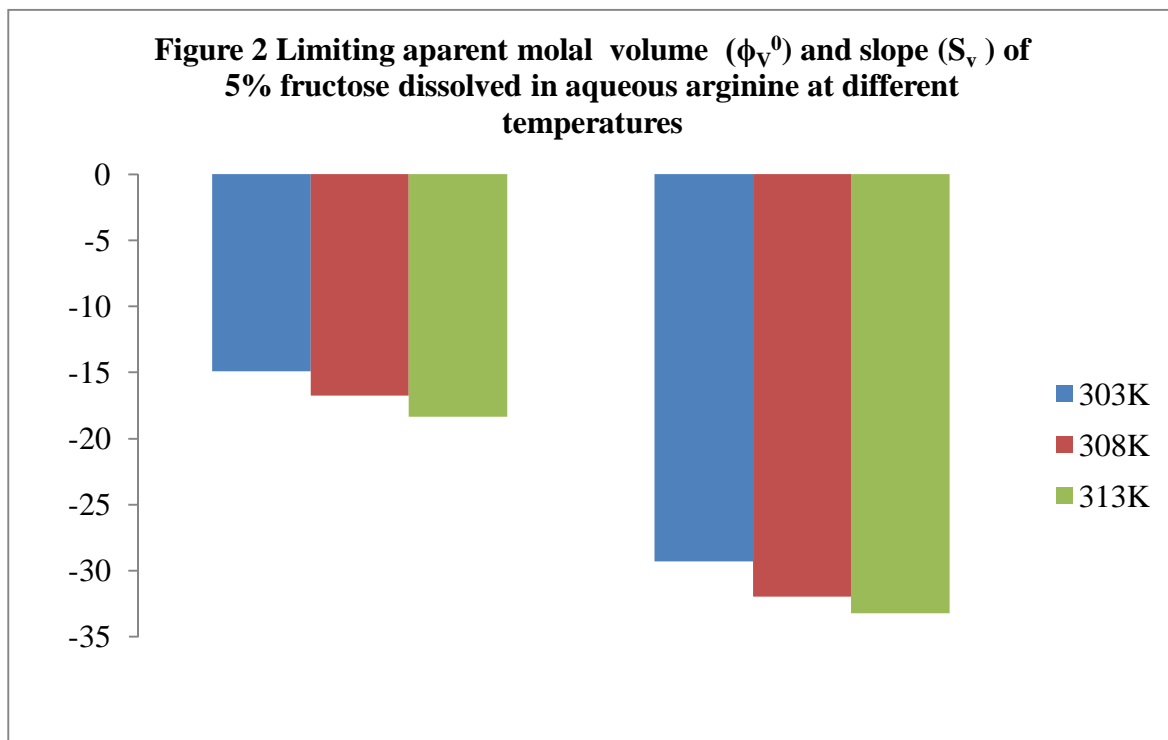


Table 4 Limiting Apparent Molal Compressibility (ϕ_K^0) and slope (S_K) of different fructose concentration dissolved in aqueous L - Arginine at different temperatures

Percentage of Fructose	Temperature (K)	Limiting Apparent Molal Compressibility ($\phi_K^0 \text{ m}^3 \text{ mol}^{-1}$)	Slope ($S_K \text{ m}^3 \text{ Kg}^{1/2} \text{ mol}^{-3/2}$)
5 %	303	-14.374	-1.3899
	308	-27.369	0.48436
	313	-31.252	0.6465

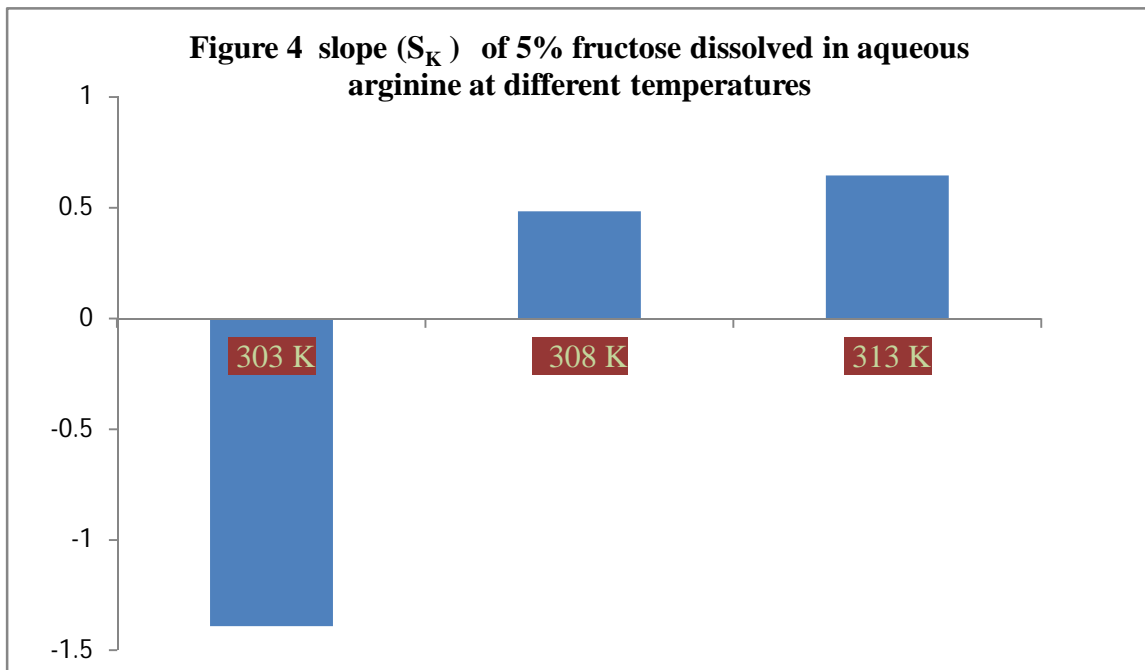
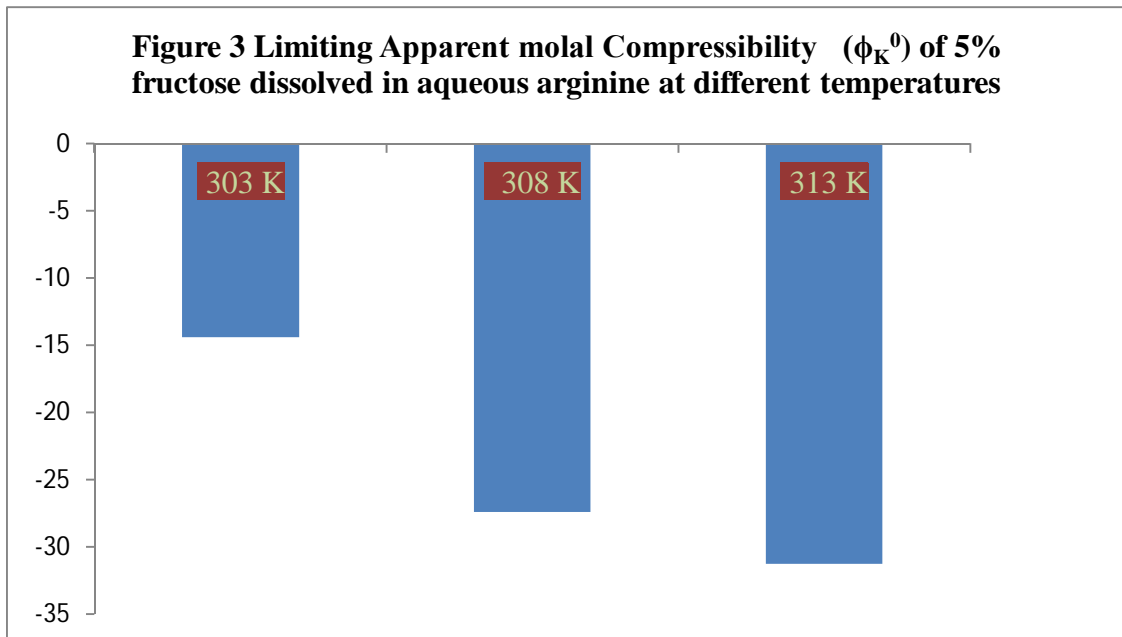
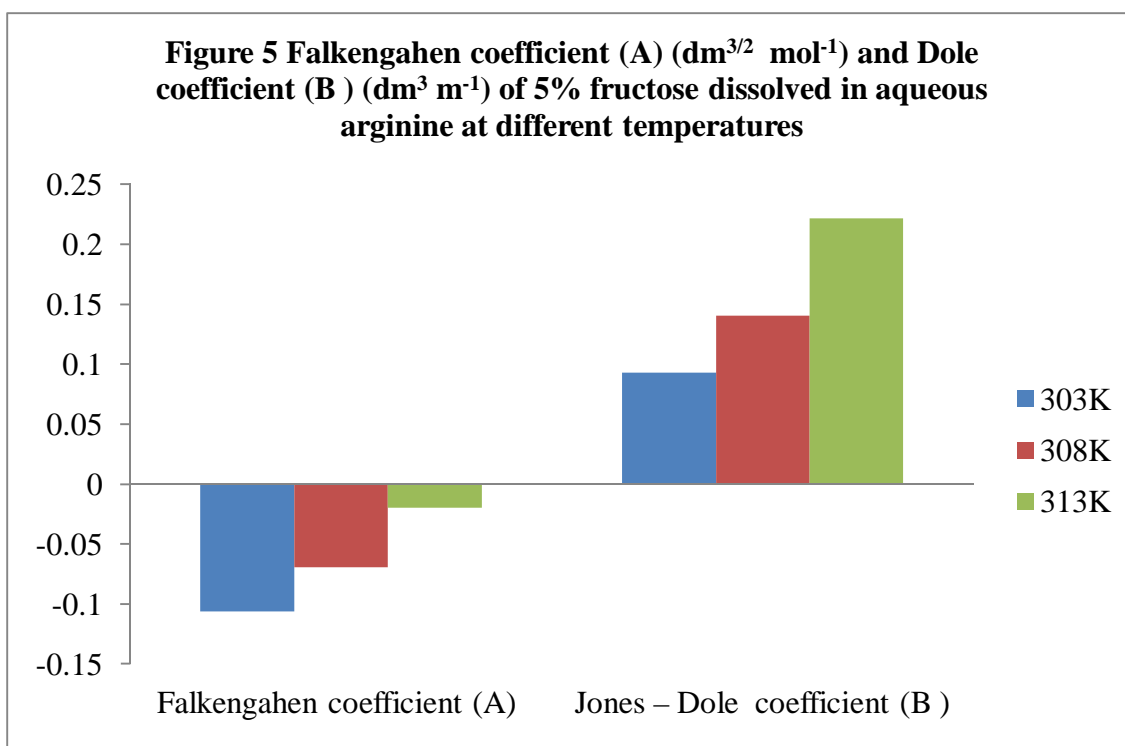


Table 5 Falkengahen coefficient (A) and Jones – Dole coefficient (B) of different fructose concentration dissolved in aqueous L- L - Arginine at different temperatures

Fructose %	Temperature (K)	Falkengahen coefficient ($A \text{ dm}^{3/2} \text{ mol}^{-1}$)	Jones – Dole coefficient ($B \text{ dm}^3 \text{ m}^{-1}$)
5	303	-0.106	0.0933
	308	-0.0694	0.1406
	313	-0.0196	0.2216
10	303	0.0099	0.1101
	308	0.0987	0.1696
	313	0.1206	0.2512
15	303	0.0457	0.1601
	308	0.1706	0.3527
	313	0.2373	0.3938



Discussion

Density (ρ) could be a measure of solvent-solvent and ion-solvent interactions. Increase of density with concentration indicates the rise in solvent-solvent and solute-solvent interactions. As observed in Table-1, an increasing trend of density values could also be interpreted to the structure-making behavior of the solvent because of added solute [18]. Viscosity is another important parameter to know the structure and interactions occurring within the solutions. Viscosity variations are attributed to structural changes as shown in Table 1, the viscosity increases with increasing solute (L-arginine) concentration and reduce with increasing temperature. This increasing trend indicates the existence of molecular interactions in these mixtures [19]. As shown in Fig-1, it's found that the ultrasonic velocity increases with increase in concentration of L-arginine and it increases with increase in temperature. The rise in ultrasonic velocity values of L-Arginine, aqueous fructose solution could also be attributed to the overall increase of cohesion brought about by solute-solute, solute-solvent and solvent-solvent interaction in solution

Adiabatic compressibility, β_{ad} may be measure of intermolecular association or dissociation. The values of adiabatic compressibility (β),

which are found to be decreased with increase in molar concentration of solute (amino acids) similarly as mass percentage of fructose content. The decrease in β_{ad} with concentration is also attributed [20, 21] to the structure making or breaking properties in these mixed systems. Such a decrease in adiabatic compressibility observed in solvent (aqueous fructose solution) could even be attributed to weakening of chemical bond (hydrogen bond) within the solution. The decreasing trend of adiabatic compressibility for amino acids in aqueous fructose solution at all temperatures generally confirms the conclusion drawn from the sound speed data. The increasing electrostrictive compression of water round the molecules finally ends up in a large decrease in the compressibility of solutions. The decrease in the compressibility implies that there are enhanced molecular associations during this system with increases in the solute content, as the new entities (formed because of molecular association) become compact and less compressible [22, 23]

A perusal of Table (3) shows that the values of ϕ_K are negative in the systems, which signify [24] the loss of compressibility of the encircling water molecules because of strong

electrostrictive forces within the vicinity of ions of mixed systems causing electrostrictive solvation. The values of ϕ_K are negative for arginine aqueous- fructose solutions, indicating that the water molecules around ionic charged groups of amino acids are less compressible than the water molecules in the bulk solution [25]. The values of the (ϕ_K) and (ϕ_V) are all negative over the complete range molality of amino acids. Further, the negative values of (ϕ_V) altogether the systems indicate the presence of solute-solvent interactions. The decreasing value of (ϕ_V) is due to strong ion-solvent interaction and vice-versa. The Limiting apparent molal compressibility (ϕ_K^0) values provide information regarding the solute- solvent interaction and its related constant (S_K) of the solute-solute interaction within the solution.

A perusal of Table (4) reveals that the values of ϕ_K^0 , S_K are negative for Arginine in aqueous-fructose solutions indicating the presence strong solute-solvent interactions in these systems. The trends observed in ϕ_K^0 and ϕ_V^0 values can be due to their hydration behavior [26- 30] which comprises of following interactions in these systems:

a) the terminal groups of zwitterions NH_3^+ and COO^- of amino acids were hydrated in electrostatic manner whereas, hydration of R group depends on its nature (hydrophilic, hydrophobic or amphiphilic); the V_0 ϕ values increase due to drop in the electrostriction at terminals, whereas it

declines due to interruption of side group hydration by that of the charged end.;

b) COO^- group has 10 times smaller electrostriction than NH_3^+ group; and

c) volume change ensues as the hydration co-spheres of terminal NH_3^+ and COO^- groups and adjacent groups overlap.

The values of ϕ_K^0 increase with increase in temperature, indicating release of more water molecules from the secondary solvation layer of Arginine zwitterions into the bulk, thereby, are making the solutions more compressible. The intercept A gives pivotal information regarding solute-solute interactions [31]. The coefficient B is thought to be the real hydrodynamic volume of the solvated ion/solute which is administered by the ion-solvent interactions, i.e., the structure of the solvent in the solution [32,33].

Conclusion

In this paper, density, speed of sound and viscosity data is reported for ternary mixtures of L-Arginine in aqueous fructose (5%) at different temperatures.. From the experimental data, various parameters, viz., Φ_V , Φ_V^0 , Φ_K , Φ_K^0 , A and Jones-Dole coefficient were calculated. The results indicate that there exist strong solute-solvent (hydrophilic-ionic group and hydrophilic-hydrophilic group) interactions in these systems, which increase with increase in fructose concentration. It's also observed that L-arginine acts as structure-maker in these aqueous-fructose solvents.

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ATTENUATION OF CNS DEFICITS IN DIABETIC RATS ON METFORMIN TREATMENT

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ABSTRACT

Diabetes' worldwide epidemic burden is growing by the day. The prevalence of Type II Diabetes, in particular, has been steadily rising over the world. For normal brain physiology, glucose metabolism must be tightly regulated. In Type II diabetes, hyperglycemia can lead to a variety of CNS complications, including depression, anxiety, and cognitive impairment. The aim of this study was to assess the potential function of Metformin in modifying CNS impairments in an animal model of Type 2 Diabetes, as well as the underlying pathways that may be linked to diabetic complications. Metformin's effect on behavioural despair, CNS depression, motor coordination and memory problems in diabetic rats was studied, and it was discovered that treatment with metformin for four weeks resulted in a considerable improvement in these CNS abnormalities. Thus Metformin has the potential to prevent Type II diabetes-related CNS impairments.

Introduction

Hyperglycemia causes a plethora of issues, including CNS challenges. Neuroenergetics, neurotransmission, energy storage, biosynthesis, and oxidative defence are all affected by glucose metabolism. Hyperglycemia and oxidative stress associated with diabetes mellitus have been demonstrated to have negative effects on the brain and may contribute to behavioural deficits, mental depression, motor incoordination and cognitive impairment. [1,2,3]. The central nervous system (CNS) is known to be affected by hyperglycemia-related metabolic and vascular abnormalities, increasing the risk of stroke, seizures, diabetic encephalopathy, and cognitive impairment [4]. Diabetes-related neurodegeneration was thought to be multifactorial, with hyperglycemia playing a key role [5].

Type 2 Diabetes (T2D) has been shown in animal models to interfere with adult neurogenesis, resulting in complications such as neuropathies, cognitive decline, and dementia [6,7]. Some anti-diabetic medicines were employed to slow the onset of such problems due to their effectiveness in achieving the necessary glycemic and metabolic control. Metformin (1,1-dimethylbiguanide), the most generally prescribed medicine for treating T2D, is an affordable, well-tolerated oral anti-diabetic medication that is suggested as a first-line oral therapy in conjunction with lifestyle change

(i.e., diet and physical activity). It enhances insulin sensitivity, lowering insulin resistance, which is common in Type 2 diabetes.

Metformin, in addition to being highly successful in improving glycemic control, has a low risk of hypoglycemia. This anti-diabetic medication can be used alone or in conjunction with sulfonylureas and other secretagogues, thiazolidinediones, and insulin at any stage of T2D progression. Metformin has a unique effect on the central nervous system since it can penetrate the Blood Brain Barrier (BBB). Metformin lowers Phospho-AMPK levels in the brain and Metformin's metabolic reprogramming may have a neuroprotective impact. [8].

The Nicotinamide + STZ model takes advantage of the partial protection provided by appropriate doses of nicotinamide against the cytotoxic effect of streptozotocin (STZ) to create a new experimental diabetic syndrome in adult rats that appears to be closer to Type II Diabetes in terms of insulin responsiveness to glucose and sulfonylureas than other available animal models. Nicotinamide is an antioxidant that protects pancreatic beta cell mass from the cytotoxic effects of STZ by scavenging free radicals. As a result, this model is viewed as a useful tool for testing of insulin tropic agents in the treatment of type-2 diabetes [9].

Materials and Methods

Adult male albino Wistar rats, weighing between 200-250 gm, maintained in standard laboratory conditions, at temperature $25 \pm 1^\circ\text{C}$ and relative humidity $55 \pm 5\%$ with a 12-hour light/dark cycle. The animals were fed with standard diet and had free access of water. The experimental protocol (RBVRR 1328/04/2019) was approved by Institutional Animal Ethics Committee of RBVRR Women's College of Pharmacy, Barkatpura, Hyderabad. Diabetes was induced by STZ (60 mg/kg), 15 min after the intraperitoneal administration of nicotinamide (120 mg/kg). After induction 20% glucose is provided to the induced animals for 24 hrs to prevent hypoglycemic shock in the animals.

Experimental design

These rats are randomly divided into six groups (n=6). Diabetes was induced in all the groups except for the control group. Diabetes was induced by the above method. After 72 hrs of induction, rats showing fasting blood glucose levels $> 200\text{mg/dl}$ were considered diabetic and included in the study. The diabetic rats (Group III) received the Metformin for four weeks via oral gavage according to the following protocol. Body weight changes and behavioral assessments were carried out before the start of the treatment. Various parameters like behavioral despair, locomotor activity (actophotometer test), motor coordination (rotarod test) were measured in all animals.

Group I: Control (Vehicle treated)

Group II: Diabetic (STZ+NAD)

Group III: Metformin (100mg/kg/day p.o) for 28 days (Diabetes+Metformin)

Estimation of Body weights and Fasting Blood glucose

Body weights and blood glucose levels were assessed on weekly basis. Blood glucose was measured by a drop of blood collected from the tail, using glucometer (Accu-chek, Roche) after 12 hrs fasting each time.

Effect of Metformin on lipid profile after 28 days treatment

A capillary tube was used to obtain blood samples via an orbital puncture. The plasma was separated by centrifugation at 2000 g for 10 minutes at 4°C after the blood was collected in EDTA coated tubes. The lipids

were calculated using the separated plasma. Using a commercially available kit, total cholesterol and HDL were determined using the cholesterol oxidaseperoxidase (C H O D P O D) method. The glycerol phosphate oxidasepaminophenazone (GPOPAP) method was used to calculate serum triglyceride by adding enzyme from the reagent kit. The Friedewald equation was used to determine the concentrations of VLDL and LDL in the blood[10].

Evaluation of behavioral despair using forced swim test

Individual rats were forced to swim in a rectangular glass jar measuring $25*12*25\text{ cm}$ and holding 15 cm of water kept at 23-25 degrees Celsius. The first is a 15-minute exposure. The second, conducted 24 hours later, is a 5-minute exposure. Immobility time is recorded during the second 5-minute test. The animal floated passively in a slightly bent but upright position, with nose above the water surface, after an initial 2-3 minutes of frenetic activity. A stop watch was used to track the overall amount of time spent immobile and also time spent for climbing. Water was changed after testing each animal as used water.[11]

Evaluation of Locomotor Activity using Digital Actophotometer

The animal locomotor behavior was monitored using actophotometer. Animals were placed in actophotometer individually, and basal activity score was recorded over the period of 5 min. Each animal was treated with respective drug, and activity score was recorded after 30 min. Decreased activity score was taken as index of CNS depression.[12]

Evaluation of motor coordination using Rotarod

The Rotor-Rod test is used in rat models of CNS diseases to evaluate sensor motor coordination and motor learning. The animals are positioned on a spinning rod that rotates in either a clockwise or counter-clockwise direction. The latency to fall is recorded. Subjects learn to balance on a stationary rod and later on a spinning rod at 10 rpm during training[13].

Object recognition test

The object recognition test is now among the most commonly used behavioral tests for Rats. A rat is presented with two similar objects during the first session, and then one of the two objects is replaced by a new object during a second session. The amount of time taken to explore the new object provides an index of recognition memory. The recognition or preference index is the time spent exploring the novel object divided by the total time. This protocol reduces inter-individual variability with the use of a selection criterion based on a minimal time of exploration for both objects during each session [14].

Results and Discussion

Effect of Metformin on weight and Blood glucose

After 4 weeks there was a increase in Body weights of control animals and Metformin treated diabetic rats but there is a decrease in body weights of diabetic rats. Fasting blood glucose levels came to normal in diabetic animals treated with Metformin for a period of 28 days. The hyperglycemia was existing even after 28 days in untreated diabetic rats. The values were shown in Table 1.

Table 1. Effect of Metformin on weight and Blood glucose

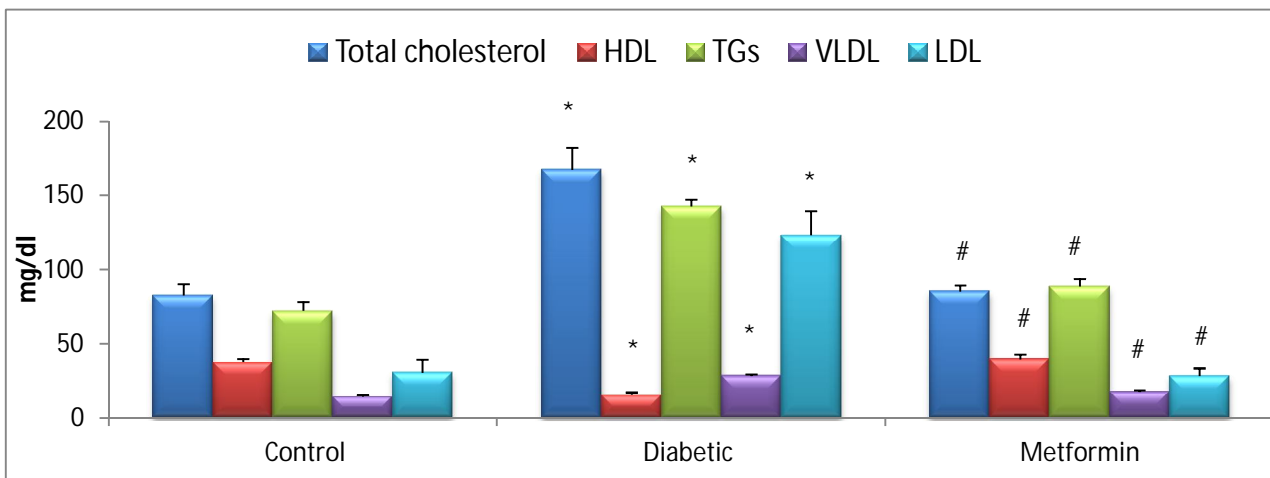
Groups	Initial weight in grams	Final weight in grams	Initial Blood glucose mg/dl	Final Blood Glucose mg/dl
Control	191.42±09.2	206.70±4.7	87.53±02.89	98.24±03.31
Diabetic	190.56±2.42	143.30±3.13	301.00 ± 26.75 *	281.00 ± 11.8*
Metformin	193.00± 5.67	200.10±9.21	320.00 ± 09.10*	97.17 ± 07.46#

Values are expressed in Mean±S.E.M (n=6). * significantly different from Control. # significantly different from Diabetic (p<0.01)

Effect of Metformin on lipid profile after 28 days treatment

Diabetic rats showed elevation in plasma lipoprotein levels. Significant rise in Total

cholesterol (102.34%), TG(97.65%), VLDL(97.58) and LDL(306.3%) was observed and there was a significant reduction in HDL levels(58.45%). Metformin treatment caused a decline in dyslipidemia. The effect of Metformin treatment on lipid profile was shown in Figure 1.



Values are expressed in Mean ± S.E.M (n=6). * significantly different from normal control. #significantly different from Diabetic Control (p<0.01)

Figure 1. Effect of Metformin on lipid profile

Evaluation of behavioral despair using forced swim test

In this test the diabetic animals were immobilized for more period than control and

Metformin treated animals' time of immobilization and climbing time were comparable to control animals. The results were shown in Figure 2

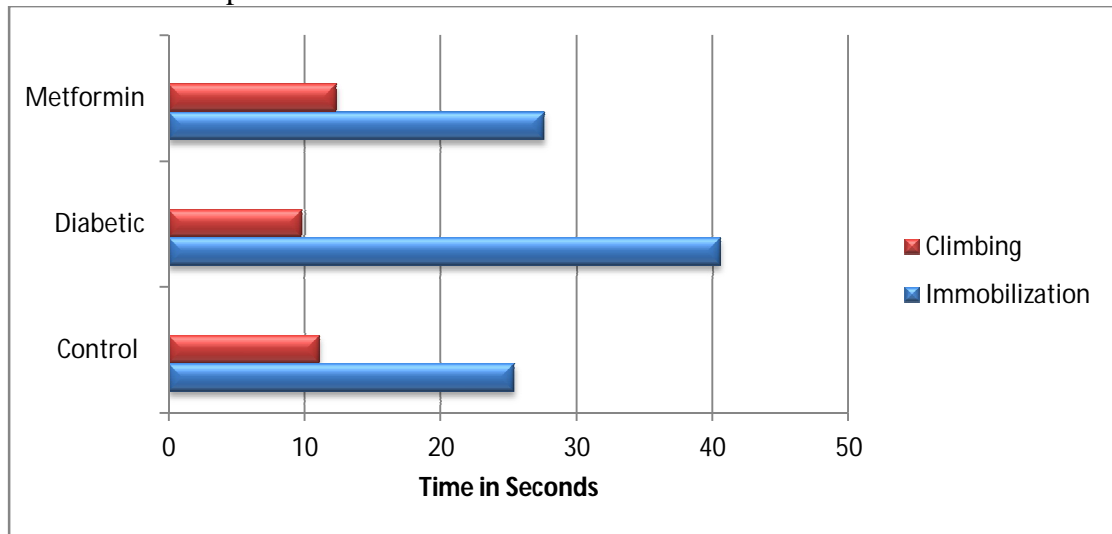


Figure 2: Effect of Metformin on immobilization period and Climbing time

Evaluation of Locomotor Activity using Digital Actophotometer

In this test, the normal group and metformin-treated rats were found to be more active than the diabetic group. Diabetic animals had lower locomotor activity, which was restored after treatment with metformin. The results were shown in Table 2.

Evaluation of motor coordination using Rotarod

Diabetic animals shown reduced retention times on Rotarod compared to normal rats indicating impaired motor incoordination of diabetic rats. Metformin treatment prevented the motor deficits caused by Diabetes. Results were shown in Table 2.

Table 2: Effect of Metformin treatment on locomotor activity and Retention time

	Normal Control	Diabetic	Metformin Treated
Locomotor Count	221.5±17.49	77.49±4.64*	176.65±8.96 [#]
Retention time	7.80±1.68	1.47±0.20*	6.22±1.21 [#]

Values are expressed in Mean±S.E.M (n=6). [#] significantly different from normal control. * significantly different from Diabetic Control (p<0.01)

Object Recognition Test

When compared to control (0.78) and Metformin-treated diabetic rats (0.83), diabetic animals had the lowest recognition index (0.056).

Discussion

The pathophysiology of diabetes-related CNS problems is thought to be mostly influenced by hyperglycemia-induced ROS [15,16]. Increases in brain glucose levels were accompanied by increases in osmolytes and ketone bodies at the

initiation of hyperglycemia (acute state), all of which remained consistently high throughout the chronic condition of almost 10 weeks of hyperglycemia[17]. Clinical and experimental evidence correlate neurotransmitter abnormalities to the negative impact on cognitive processes, in addition to the behavioural changes linked with altered glucose metabolism [18]. Hyperglycemia is a key factor in the development of diabetes-related cognitive dysfunction[19]. Lipid changes have been observed in Alzheimer's brains with neuronal death and deafferentation as prominent hallmarks. Hypolipidemic medicines may play a role in neuroprotection, although the specific

mechanism is unknown. In the present study metformin improved the dyslipidemia.

Metformin treatment reduced the duration of immobility and improved the duration of climbing in diabetic rats, reducing depressive-like behaviour, according to the current study. Its antidepressant properties were also demonstrated by a high locomotor count that was comparable to that of the control group.

Our study demonstrates, also, that treatment metformin has protective effects against the development of cognitive decline by improving the working memory. The data we obtained are consistent with earlier studies that reported the protective effect of metformin against learning and memory deficit [20]

Metformin inhibits mGPDH, reprograms brain bioenergetics from highly efficient mitochondrial oxidative phosphorylation to wasteful glycolysis pathway, lowers ATP production rate, activates AMPK signaling, and therefore impacts brain functions at clinically relevant therapeutic concentrations/doses[21].

Metformin has recently been shown to benefit neurodegenerative disease models. The hypothesised mechanisms behind metformin's neuroprotective effects in disease models, however, are unknown. Metformin lowered metabolic enzyme phosphorylation while increasing mitochondrial protein phosphorylation. Metformin treatment resulted in a significant decrease in phosphorylated-synuclein[22]. Metformin has been shown in cellular and animal models to reduce CNS

inflammation, protect primary cortical neurons from apoptosis, and increase neurogenesis, making it a promising therapeutic for damaged or degenerating neural systems[23].

Conclusion

In the present study there was an decrease in retention time on Rota rod and decreased locomotor activity on actophotometer in diabetic rats. The object recognition index and climbing time in the forced swim test also decreased in Diabetic rats. This shows there is a CNS deficits are common in Diabetic rats. Metformin is an antidiabetic drug, might be reducing the CNS vulnerability to hyperglycemia there by preventing the oxidative damage of CNS or it might be having a direct neuroprotective action. Metformin treatment prevented the development of this CNS deficits in Diabetic rats which was evident from increased retention time on Rota rod , decreased locomotor activity in actophotometer , increased climbing time /decreased immobility and increased recognition index of Object recognition test. Thus, from present study it was found that Metformin treatment prevents the CNS deficits of diabetes. Metformin may exert beneficial actions against cognitive decline and depression in diabetic condition. These results could open interesting perspectives for clinical practice. Further studies are required to clarify the direct and indirect molecular mechanisms involved in the neuroprotection of Metformin.

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FAMA & FRENCH FACTOR MODELS IN INDIA: A LITERATURE REVIEW

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ABSTRACT

Academicians & Practitioners in the area of finance are entrenched on Asset Pricing Models i.e. Capital Asset Pricing Model (CAPM) & Fama French Factor Models for ages. Fama & French put forth Fama French Three Factor model, an extension of CAPM offering outperformance tendencies adjustment making it more flexible. Abundant literature is available concerning Fama French Three factor model catalysing global as well as Indian evidence. Later on recognising the model's inability to explain some anomalies & cross sectional variation in expected returns specifically related to Profitability & Investment, Fama & French develop five factor model adding these two factors. Sufficient global & specifically Indian evidence is non-existent with respect to Fama French Five Factor Model. This study is targeted to conduct a review of Indian studies covering Fama French Factor Models' empirical testing. Main aim of the study is to find out literature gap in addition to understand methodologies adopted by different studies providing diverse results & findings. Relevant papers were retrieved from web search engines namely www.scholar.google.com, www.researchgate.net, www.elsevier.com/en-in and www.semanticscholar.org in September 2020.

Keywords: CAPM, Fama French Models, Asset Pricing Models, Expected returns, Fundamental Factors.

Introduction

Asset pricing & portfolio management theories & models have evolved over a period of time trying to explain, describe & predict stock returns wholly. Capital Asset Pricing Model (CAPM) developed by Sharpe, 1964 and Lintner, 1965 which postulates a positive and linear relation between market beta and security returns underpinning all asset pricing models. It hypothesizes that the relevant risk is measured by beta systematic in nature.

However subsequent empirical research detected that much of the variation in expected return is not explained by market beta and various company characteristics/fundamentals such as size, book to market equity, earnings to price and leverage and prior return patterns affect stock returns. Major CAPM anomalies are firm size, book equity to market equity (Stattman, 1980), (Banz, 1981), price earnings (Basu, 1983), reversal (De Bondt and Thaler, 1985), firm leverage (Bhandari, 1988) and momentum returns (Jegadeesh and Titman, 1993).

Consequently, it has been indispensable to develop multifactor asset pricing models. Fama & French (1993) developed a three-factor asset pricing model which proposes that expected returns on a portfolio in excess of the risk-free rate is function of market beta, size and value factors. The additional risk factors i.e. size and

value have empirically exhibited a remarkable power in explaining anomalies of the CAPM i.e. size, book to market, earnings to price, leverage. With passage of time, Three Factor model's inefficiency in explaining few more anomalies such as profitability & investment get uncovered. As a result, Fama French (2015) extended three factor model by adding two more variables viz. Profitability & Investment. This paper presents a detailed examination of Fama French Three Factor model (FF3F), Fama French Five factor model (FF5F) Indian literature that has been published in various journals, books and as part of conference proceedings from 1998 to 2020.

Factor Models

Fama-French Three-factor Model

The Fama-French Three-factor Model is an extension of the CAPM. FF3F model aims to describe stock returns through three factors: (1) market risk, (2) the outperformance of small-cap companies verses large-cap companies, and (3) the outperformance of high book-to-market companies relative to low book-to-market companies.

$$R_{pt} - R_{ft} = \alpha_p + \beta_M (R_{Mt} - R_{ft}) + \beta_S SMB_t + \beta_H HML_t + \epsilon_t$$

Where: R_p = Expected rate of return

R_f = Risk-free rate

βM = Factor’s coefficient (sensitivity)

$(RM - Rf)$ = Market risk premium

SMB (Small Minus Big) = Historic excess returns of small-cap companies over large-cap companies

HML (High Minus Low) = Historic excess returns of value stocks (high book-to-price ratio) over growth stocks (low book-to-price ratio)

Fama-French Five Factor Model

The theoretical starting point for FF5F model is the dividend discount model as the model states that the present value of a stock is dependent upon future dividends. Fama and French use the dividend discount model to get two new factors from it, investment and profitability (Fama and French, 2014).

$$R_{pt} - R_{ft} = \alpha p + \beta M (RM_t - R_{ft}) + \beta s SMB_t + \beta h HML_t + \beta r RMW + \beta c CMA + \epsilon t$$

Where additional two factors,

RMW = Historic excess returns of most profitable firms over least profitable firms.

CMA = Historic excess returns of firms that invest conservatively over firms that invest aggressively.

Three Factor Model

Connor & Sehgal (2001) find that cross-sectional mean returns are explained by exposures to three factors viz. market, size & value, & not by the market factor alone. Though reasonably consistent with the FF3F model, the empirical results do not find any reliable link between the common risk factors in earnings and those in stock returns. They establish evidence that all three factors had a pervasive influence on random returns in the

Review of Literature

Fama - French Three Factor Model

This part of literature review deals with Indian studies conducted for empirical testing of Fama French Three Factor Model. Factors: Market beta, size & value.

Size

Vipul (1998) find that size had considerable effect on the systematic risk of the company. Pitabas Mohanty (2002) document that small firms have generated an annual excess return of 70% over the large firms. To explain his finding, he applied Fama & French (1993) multi factor model & concluded that size indeed is a proxy for the risk. But at the same time he cannot reject hypothesis of market inefficiency. Abbilash et al (2009) find the existence of size effect in Indian market. Asheesh Pandey & Sanjay Sehgal (2015) confirm the presence of strong size effect & find that returns decreasing almost monotonically with firm size except penny stocks.

Indian evidence regarding size as an important factor is quite compelling.

- **Data & Data Analysis used by different studies covering size factor:**

Author	Statistical Techniques & Methods Applied	Sample & Unit of study	Time period
Vipul (1998)	*	114 companies listed on BSE.	July 1986 – June 1993
Pitabas Mohanty (2002)	Time series & Cross Sectional Regression.	762 – 1971 companies. Monthly portfolio returns.	Sept 1991 –Mar 2000
Abbilash et al (2009)	Cross sectional regression	non-financial firms of BSE100	*
Asheesh Pandey & Sanjay Sehgal (2015)	Time series & Cross Sectional Regression.	NSE 500 companies.	Oct 2003 – Jan 2015.

Indian stock market. Kumar & Sehgal (2004) conclude that there was a significant size effect and weak value effect for the Indian stock market returns. Rahul Kumar & Dr. Chandra Prakash Gupta (2006) provide an evidence of the pervasiveness of the Fama- French three-factor model in explaining the cross sectional differences of stock returns. The empirical results show that the Indian equity market exhibits a strong size effect and value effect. Sharma and Singh (2006) reveal that EPS and book value per share were important

determinants of share prices while size was found to be insignificant in the determination of share prices of stock returns. Overall results of CAPM tests are very poor. Dr. Vanita Tripathi (2008) find that market capitalization has statistically significant negative effect on equity returns while book equity to market equity ratio has statistically significant positive impact on equity returns. Fama-French three factor model explains cross sectional variations in equity returns in a much better way than the single factor CAPM. T Manjunatha and T Mallikarjunappa (2009) find that intercept term cannot be proved significantly different from zero. In case of bivariate study, size & book equity to market equity ratio elucidates the variation in security returns under both log and percentage returns series. Beta and book equity to market equity ratio, Beta and risk premium, size and earning to price ratio & earning to price ratio and book equity to market equity ratio reveals the variation in security returns when log return series is used and the combination of beta and risk premium describes the variation in security returns when percentage return series is used. With reference to portfolio analysis, beta and risk premium elucidates the variation of portfolio returns when formed with market value weights under both log and percentage returns and beta and book to market equity ratio describe the portfolio percentage returns when market value weights are utilised. Kushankur Dey & Debasish Maitra (2009) confirm that intercept is significantly different from zero and the combination of size, book to market equity ratio, $(P/E_i - P/E_m)$ do not explain the variation in security returns under both log and percentage return series while $(d_i - R_f)$ shows very dismal result. The combination of beta, book to market, $(P/E_i - P/E_m)$, size & $(d_i - R_f)$ cannot elucidate the variation in security returns when log return series is used and the combination of beta, book to market equity, size also cannot describe any variation in security returns when percentage return series is utilised. However, beta alone, when considered separately in two parameter regressions and also multi-factor model, cannot explain the variation in security/portfolio returns. This raises doubt on the validity of extended and standard CAPM. Kiran Maheta &

Ramesh Chander (2010) indicate that the three factor model given by Fama and French is more powerful, than its other variants of taking one or two factors in explaining the variability in the returns of all six portfolios.

T. Manjunatha T Mallikarjunappa (2011) indicate that intercept is not significantly different from zero & beta in combination with, excess market returns and company factors like size, earnings to price ratio and book-to-market ratio significantly explain the returns in three factor model. Chawla & Basu (2012) conclude that Fama French Three factor model is not a good fit over a chosen Sample period as result indicates a number of discrepancies. The regressions find many coefficients insignificant & in some cases show negative relationships between excess returns & the size & value premiums. The value premiums predominantly appear negative for lower beta portfolios casting doubt on the stability of the variable across beta values. The regressions signify high explanatory power but similar to what literature provides, this may be attributable to survivor bias or data snooping. Yash pal taneja (2012) show that applicability of Fama French Model, for being a good predictor, cannot be overlooked in India but either of the two factors (size and value) might improve the model as a high degree of correlation is revealed between the size and value factor returns. Renuka Sharma & Kiran Mehta (2013) reveal that the use of three factor model is more significant in explaining the return behaviour of various portfolios based on size & value parameters during all phases in comparison to other variants of the model. Saumya Ranjan Dash and Jitendra Mahakud (2013) empirically studied three alternative unconditional multifactor models to explain the cross-sectional stock return behaviour whose results show that three factor proposed by Fama and French (1993) can significantly explain the cross section of stock return for test asset portfolios constructed beyond size and book-to-market equity characteristics. Tariq Aziz Valeed Ansari (2014) confirm the presence of noteworthy size & value premiums in the Indian stock market for the sample period. The three factor model performs better than the CAPM as the GRS test is unable to reject it. Sanjay Sehgal et al (2014) test

prominent equity market anomalies for six emerging markets & found that the size anomaly is present in India. In addition to this, the four factor liquidity augmented FFM found to be a superior descriptor of asset pricing compared to CAPM and FFM only in the Indian context. Paresh Kumar Narayan & Deepa Bannigidadmth (2015) assert that some predictors are important than others and some industries and portfolios of stocks are more predictable and, therefore, more profitable than others as predictability is not homogenous though holds both in in-sample and out-of-sample tests. They also found a mean combination forecast approach delivers significant out-of-sample performance which survived a battery of robustness tests. Zankhana Atodaria (2015) put forward that Fama and French three factor model captures the returns of 23 out of 49 stocks considered in study. Although, there should be some other factors that would explain return variation among various Industries. Asheesh Pandey & Amiya Kumar Mohapatra (2017) check the robustness of the model in two ways i.e. by using alternative measures of size viz. market capitalization, enterprise value and total assets

& dividing the total period into two sub periods -pre subprime & post subprime crisis. They confirm strong return explanatory power of both size and value factors, along with market as compared to standalone Market factor. Dr. Rupinder Katoch (2018) observe that three portfolios S/L, B/M, B/H depict significant negative SMB beta. Similarly, S/M, S/H, B/M, B/H depict significant positive LMH beta. However, these results do not support findings of Fama & French model. Smita Dutta & Anindita Chakraborty (2018) provide evidence that the Fama-French three factor model can be applied to the Indian financial services sector. Except few studies, empirical evidence is supporting better explanatory power of Fama French three factor Model than CAPM in Indian context, over & above cross sectional validity of the three factor model. All three factors are strongly related to expected returns & can facilitate determination & prediction of expected returns.

• **Data & Data Analysis used by different studies covering Fama - French Three Factor Model:**

Author	Statistical Techniques & Methods Applied	Sample & Unit of study	Time period
Gregory Connor and Sanjay Sehgal (2001)	Correlation , Cross Sectional Regression ,GRS test	364 Indian companies from CRISIL-500. Yearly & Monthly portfolio returns	June 1989-Mar 1999
Kumar and Sehgal (2004)	Cross Sectional Regression.	364 Indian companies from CRISIL-500. Monthly portfolio returns	July 1989-Mar 1999
Rahul Kumar & Dr. Chandra Prakash Gupta (2006)	Time series regression	Companies from S&P CNX 500 , Monthly portfolio returns.	August 1990 - March 2006
Sharma and Singh (2006)	*	160 companies	2001-2005
Dr. Vanita Tripathi (2008)	Correlation ,Cross sectional regression	455 companies from S&P CNX 500 ,Monthly portfolio returns	June 1997 - June 2007
T Manjunatha and T Mallikarjunappa (2009)	Time series & cross sectional regression.	66 companies part of BSE Sensex from time to time. Daily security & portfolio returns.	1978-79 to June 30, 2005
Kushankur Dey & Debasish Maitra (2009)	Cross sectional regression.	S&P CNX NIFTY companies. Daily security returns	1999 - March 31, 2009
Kiran Maheta & Ramesh Chander (2010)	Fama French Cross sectional regression. Kruskal Wallis H test ,t-test & one way ANOVA (F test).	219 Non-Financial companies listed under the BSE 500, Monthly portfolio returns	Feb 1999 - December 2007

T. Manjunatha T Mallikarjunappa (2011)	Time series & Cross sectional regression.	Security & portfolio returns.	*
Chawla & Basu (2012)	Time series & Cross sectional regression.	S&P CNX Nifty companies. Daily & weekly security returns. Weekly portfolio returns.	Jan 2003 –Feb 2008
Yash pal taneja (2012)	Correlation. Time series & Cross sectional regression.	187 companies of S&P CNX500. Monthly portfolio returns.	June 2004 – June 2009
Renuka Sharma & Kiran Mehta (2013)	Cross sectional regression. Kruskal Wallis H test , t-test & one way ANOVA (F test).	290 Non Financial companies of S&P CNX 500 Index. Monthly security & portfolio returns.	April 2003 - March 2013.
Saumya Ranjan Dash and Jitendra Mahakud (2013)	Time series regression. Panel data regression	582 Non financial companies listed on National Stock Exchange. Monthly security returns.	Sep. 1995- March 2012
Tariq Aziz Valeed Ansari (2014)	Correlations ,Cross sectional Regression, GRS test.	296 to 496 companies of BSE 500.Monthly portfolio returns.	2000-2012
Sanjay Sehgal, et al (2014)	Cross sectional regression.	493 companies of BSE 200.(India is one of 6 emerging economies).Monthly portfolio returns.	Jan 1994-Dec 2011
Paresh Kumar Narayan, Deepa Bannigidadmath (2015)	Predictive regression model. ADF unit root test, Autocorrelation test, AR model ,ARCH model, Within sample & Out of sample Predictability test.	1515 stocks. Monthly portfolio returns.	July 1992 -June 2014
Zankhana Atodaria (2015)	Time series regression.	49 stocks of Nifty 50. Daily Security returns.	June 2009 - June 2014
Asheesh Pandey & Amiya Kumar Mohapatra(2017)	Cross Sectional & Time series regression.	BSE 500 companies.	July 2001 – Jan 2015.
Dr. Rupinder Katoch (2018)	Time series regression.	96 companies of S&P BSE 500.Monthly portfolio returns.	Nov 2012 – Nov 2017
Smita Dutta & Anindita Chakraborty (2018)	Correlation & Time series multiple regression (OLS).	Firms comprising CNX-finance index & CNX-auto index	June 2009- June 2014

Fama - French Five Factor Model Profitability

Srividya Subramaniam (2016) indicate that a profitability anomaly exists within the CAPM framework with a negative relationship with returns. Market beta for less profitable stocks is higher than the stocks that are more profitable. Size and value factors of the Fama French model absorb the profitability anomaly unexplained by CAPM. Less profitable firms are found to be relatively distressed and smaller in size. Size and value factors of the Fama French model however do not bear significant relationship with pay-out ratios.

Data & Data Analysis used by study covering Profitability factor:

Author	Statistical Techniques & Methods Applied	Sample &Unit of study	Time period
Srividya Subramaniam (2016)	Cross Sectional Regression.	493 companies listed on BSE.	1996-2010

Five Factor Model

Ramnath Balasubramanian and Sandeep Bharatwaj (2003) through factor analysis show that a five factor model is suitable in

explaining the returns generation process in India & the multi factor is significantly better than the single index model in explaining returns of small stocks. T Manjunatha & T Mallikarjunappa (2012) show that the combination of β , Size, (E/P), (BE/ME) and $R_m - R_f$ variables explain the variation in security returns and market value weighted portfolio returns. Though, intercept is not significantly different from zero. Moreover, this combination does not explain the variation in equal weighted portfolio returns.

• **Data & Data Analysis used by study covering five factors:**

Author	Statistical Techniques & Methods Applied	Sample & Unit of study	Time period
Ramnath Balasubramanian and Sandeep Bharatwaj (2003)	Principal Component Factor Analysis	BSE 100 Index Equities. Weekly Stock Returns.	Nov 1999 - Oct 2002

Comparison of Factor Models

This part of literature review deals with Indian studies conducted to compare various asset pricing factor models.

Bahl (2006) confirm that the Three Factors Model (R^2 -87%) captures common variation in the stock returns better than the Capital Asset Pricing Model (R^2 -76%). Davis (2006) show that a Three Factor Model which explicitly controlled the firm size and book to market equity explained the variances of portfolio better than the CAPM. A high level of Correlation between the size and value factor returns has been observed. It implies that either of the two factors would serve the purpose. Sanjay Sehgal & Balakrishnan A. (2013) find that FF model performs better than CAPM by describing the returns on most of the portfolios constructed based on company characteristics. The different versions of FF model are robust in elucidation of the returns on various characteristics sorted portfolios. Supriya Maheshwari & Prof. Raj S. Dhankar (2014) supported the multi-dimensional nature of risk and suggest the usage of multifactor asset pricing models in investment decisions. Fama and French three factor model is proved to be

superior than traditional one factor CAPM. Harshita et al (2015) find that the three factor model performs better than the CAPM in all the cases. For portfolios formed based on investment factor, the five factor model performs better than the other models. However, except such cases, the four factor model (without an investment factor) is a more parsimonious model. Neharika Sobti (2016) find that Fama French Three Factor Model is a better model than one factor CAPM. A non-linear relationship was found between excess returns and beta (systematic risk) for CAPM contradicting the previous studies. Size effect still prevails in Indian equity market whereas value effect is not discernible for the current period. Empirical tests conducted by Ritika Aggarwal (2017) support the FF3F model in explaining the variation of stock returns & find it better than the single factor CAPM. Pankaj Chaudhary (2017) find that though CAPM is able to capture the cross section of average returns both in India and US, still the three factor model with size and value factor can do the job better and hence is useful in pricing the financial assets of both developed and developing countries. Neharika Sobti (2018) find evidence of size and value effects & confirm that the FF3F model does better job than CAPM. Dr Nenavath Sreenu (2018) confirm the intercept to be statistically insignificant in CAPM framework, upholding theory, for both individual securities and portfolios. Though, the tests do not essentially provide validation against CAPM and Fama. A. Balakrishnan et al (2018) find that average return pattern clearly depicts that Indian stock market is strongly influenced by size, value, profitability and investment factors. FF3F model sticks to its efficiency at capturing the average returns on portfolios, while FF5F does a reasonable job. Deeksha Arora & Divya Verma Gakhar (2019) find that the three factor model performed better than the other models in elucidating average stock returns.

The studies covering comparison of asset pricing models altogether support superiority of FF3F over CAPM in explaining expected returns. Except two of studies covered above (proving weak value effect), all studies confirm size & value as significant factors in detecting expected returns variation. Only two of the

studies cover comparison of FF5F model with other competing models, one of which strongly validate superiority of Fama French Five Factor Model over other models.

• **Data & Data Analysis used by different studies covering comparison of Factor Models:**

Author	Statistical Techniques & Methods Applied	Sample & Unit of study	Time period
Bahl (2006)	Time series & cross sectional regression. GRS test. Residual Diagnostic.	79 companies of BSE 100 index monthly returns.	2001-2006
Sanjay Sehgal & Balakrishnan A.(2013)	Time series & cross sectional regression.	465 companies of BSE 500 index monthly returns.	1996-2010
Supriya Maheshwari & Prof. Raj S. Dhankar (2014)	Time series Regression. Residual Diagnostic.	470 companies listed on BSE monthly returns.	1997-2013
Harshita et al (2015)	Correlation & Time series regression.	431 companies of CNX 500 monthly returns.	1999-2014
Neharika Sobti (2016)	Correlation & Two pass regression.	498 companies of S & P CNX 500 monthly returns.	2005-2015
Ritika Aggarwal (2017)	Time series & Cross sectional regression.	396 companies of NSE 500 monthly returns.	2009-2015
Pankaj Chaudhary (2017)	Time series regression.	CNX NSE 500 monthly returns.	2006-2015.
Neharika Sobti (2018)	Correlation & Time series regression.	740-1530 companies listed on NSE monthly returns.	1996-2016.
Dr Nenavath Sreenu (2018)	Cross sectional regression.	54 companies listed on NSE daily returns.	2010-2016
A. Balakrishnan, et al (2018)	Time Series Regression	491 companies of BSE 500 monthly returns.	1999-2015
Deeksha Arora & Divya Verma Gakhar (2019)	Four step Hierarchical multiple regression ,VIF test (Degree of multicollinearity.)	CNX 500 companies	2001-2016

Research Methodology adapted in estimation of factor pricing models

Share Price, Return calculation, Risk free rate proxy & Market Proxy

Share Price data used in Amiya Kumar Mohapatra (2017) has been adjusted for stock dividends, right issues and stock splits for percentage returns calculation. For rest of the studies, the price data has been adjusted for capitalization changes such as bonus, rights, stock splits & not for dividends as companies in India exhibit very low dividend yields. Ramnath Balasubramanian and Sandeep Bharatwaj (2003) & Chawla and Basu (2012) did return calculation through natural logarithm of price relatives. Analysis covered in all other studies are based on arithmetic returns. T Manjunatha and T Mallikarjunappa (2009)

consider weighted average yields of the Government of India (GOI) securities, Kushankur Dey & Debasish Maitra (2009) average yields of Government of India (GOI) securities, Dr. Rupinder Katoch (2018) 10-Year Indian Bond Yield as risk free rate proxy. Except these three studies, all other studies covered yield on 91-day T bill. Few studies choose index covering less number of securities than sample & few others covering more number of securities than sample as market proxy.

Size

Market capitalization (stock price*number of shares outstanding) alternatively called Market Equity has been used to mimic size. T Manjunatha & T Mallikarjunappa (2009) & Sanjay Sehgal et al (2014) use natural

logarithm of market capitalization as size. Kumar and Sehgal (2004), Sanjay Sehgal & Balakrishnan A. (2013) & Asheesh Pandey & Amiya Kumar Mohapatra (2017) check the robustness of the size variable through alternative measures of size namely Total Assets & Enterprise value. For SMB (small minus big) factor calculation, majority of the studies divided all stocks in two groups i.e. small & big based on median value of size which then used for double sorting against value, profitability & investment leading to six portfolios in each group. Few studies bifurcated securities in either three, four, five or ten equally weighted portfolios called single sorting, majority of the times used as dependent variable in various studies. Most of the studies choose June end break point for sorting purpose. The firms have a timespan of six months after the end of accounting year to publish their accounting data. Creating a portfolio without providing for this time gap would mean that the results would be affected by look-ahead bias. Thus, many studies choose September end stock prices for grouping of companies based on size. Finally, SMB factor emulate an average returns of smallest portfolio minus average returns of largest portfolio.

Value

Book Equity to Market equity ratio has been employed to mimic value in number of studies. Many other studies covered Price to Book value ratio (nearly inverse of BE/ME) for analysis. T Manjunatha & T Mallikarjunappa (2009) utilize natural logarithm of BE/ME ratio & Earning to Price ratio. Kumar and Sehgal (2004) & Sanjay Sehgal & Balakrishnan A. (2013) check the robustness of the value through alternative measures of value viz. E/P(P/E) & Past Sales Growth. Kushankur Dey & Debasish Maitra (2009) & Renuka Sharma & Kiran Mehta (2013) include P/E ratio & E/P ratio in addition to BE/ME ratio respectively. For HML (High minus Low) factor calculation, majority of the studies divided stocks in three groups high, medium, low based on either BE/ME ratio or P/BV ratio. Majority of the studies cover 30% of securities with high BE/ME ratio or low P/BV ratio in High group, next 40% in medium group & rest 30% in Low group. Few studies include 33.33%, 33.33% &

33.33% as break points for HML. Few studies bifurcated securities in either three, four, five or ten equally weighted portfolios called single sorting, majority of the times used as dependent variable in various studies. As these ratio pertains to the accounting information of the company, March end values of each variable has been considered for respective ratio calculation. Finally, HML factor emulate an average returns on highest portfolio minus average returns on lowest portfolio.

Profitability & Investment

Fama French Five Factor Model Indian literature is scanty. Accordingly, countable number of studies only can be reviewed. Harshita et al (2015) define Profitability in line with Fama French (2015) as the ratio of earnings before taxes to book equity as on March end of a financial year. Investment has been defined as change in total assets from March end of previous year to March end of current year, divided by total assets at the March end of previous year. Whereas A. Balakrishnan et al (2018) define profitability & Investment as net income divided by common equity & annual growth of total assets respectively. Both the studies divided securities in three groups based on profitability & investment of which 30%, 40%, 30% has been break point for first study & 33.33%, 33.33%, 33.33% for the second one. Finally, RMW (robust minus weak) & CMA (conservative minus aggressive) has been calculated in line with SMB & HML.

Concluding remarks for future research

This study analyses previous literature on empirical evidence regarding Fama French Three Factor & Five factor Models. Fama French three factors have been proved significant in explaining expected returns. Moreover, Three Factor model has better explanatory power than CAPM. Fama French Five factor model has not been explored enough to conclude its validity & applicability in Indian context. Thus Future research can explore more on two additional factors namely Profitability & Investment. Only a few studies tested robustness of size & value factors through alternative measures. More studies should focus on this objective including

profitability & Investment alternative measures. In addition to this, more advanced statistical techniques & methods can be used to compare diverse asset pricing models.

Findings seems to be sensitive towards factor proxies & methodology chosen, specifically portfolio construction method. Can different or more number of factors (other than considered

by the well-established models) be incorporated in a model which can explain expected returns better in Indian context?

This study is going to be one stop search for academicians & practitioners in understanding whether these five factors can be useful in portfolio formation & in return generation process.

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FIXING LIABILITY IN A MEDICAL NEGLIGENCE SUIT AND ITS MEDICOLEGAL ASPECT WITH RESPECT TO MOHAMMEDAN LAW AND ENGLISH LAW: A COMPARATIVE STUDY

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ABSTRACT

A case of Medical Negligence starts with fixing the Liability upon the Doctor. While fixing liability as the primary legal premise of a malpractice suit, evidentiary value of not only the facts should be taken as a principle basis but the adduction should also be grounded solidly upon scientific basis. Bolam principle, as of now stands to have the most important standing in fixing liability not only in English common Law but also in India. Literature Survey however also reveals that the Mohammedan Law also has sound scientific reasoning to fix Liability. The present paper aims to study these facts which can be envisaged while setting the liability as envisaged in the Mohammedan Law as well as English common law

Keywords: *Islamic Law, Liability, Medical Negligence, Stratification*

Introduction

Literature Review reveals that while fixing Liability upon the doctor, The Islamic Law takes a well balanced scientific view which can be compared to the principles fixed by the English Common Law. Law first classifies the doctors into various strata and thereafter each strata, depending upon the level of expertise is fixated with liability issues. Scientifically devised, this strata of professional segregation gives a much needed transparency in the system rather than giving a single individual the complete freedom to act as he wishes. The First level comprises of those doctors who carry out their professional activity depending upon settled principles as outlined in the classical texts. The second level or stratum comprises of those professionals who are actually qualified according to settled practice but their practice of medicine is besotted with occasional acts of mistakes or at best misadventures or errors of judgment. The next level, also called stratum iii comprises of those individual practitioners who are prone to acts of negligence but is bereft of any criminal intent, and the Last level or stratum comprises of those medical service providers whose acts have elements of criminality either as *Mens Rea* or as *Actus Reus*. It has to be precluded that while taking into consideration to fix liability as the first step of imputing negligence, a wide variety of ideas and facts,

based solidly upon academic and scientific practices, which are also morally and ethically sound, have to be included not only into the investigating methodology but also in the judicial process. The principle of 'no fault' which is surmised upon 'first no harm' doctrine is inherently a strategically sound medical practice which has been inculcated not only in the English Bolam Doctrine but also is well entrenched in the Islamic principles of stratification of liability issues.

English Common Law Vis a Vis Islamic Law

When English Common Law is compared with Islamic law with specific reference to the various scientific steps which are adopted to impute liability we see a lot of similarity in both the Legal systems. Bolam Principle is the basic doctrine upon which the English common Law rests while legal responsibility upon a medical personnel is adduced. If we take the Bolam principle which is a hallmark English doctrine and compare it with the stratification doctrine of the Muslim Law we can safely presume that the first level approach of the Mohammedan law coincides with the basic Bolam Theorem. It can be safely deduced from the first level of stratification of Islamic Law wherein the test of liability rests upon the scientific assumption of basic medical qualification in the said field as a rule by justification regarding the correctness of the procedure being followed. The said rules is

said to have been satisfied in accordance with a settled principle of practice followed by a group of similarly qualified persons and thus a medical personnel can not be held liable, even if the act does not yield a desired result as encountered in a similarly based practice.

Level of Stratification in Consonance with Bolam Principle

It has been established through various adjudications that the 'is' theory of Bolam actually satisfies the stratification or classification needed to impute liability rather than the 'ought to be' theory of the Bolitho's approach. As per the Islamic Theory, when a qualified doctor undertakes a treatment under a said protocol and in the course of a treatment, a patient is harmed or even death occurs, no liability can be attached. This is because the said procedure is being performed by a person having attained qualification in the said field and had adequate training and is satisfying the duty owed to him being executed in a manner which satisfies the standard operating procedures and provided he has not overstepped his authorized position. This is an appropriate scientific approach to a legal query. Islamic Law is very straightforward and scientific when it clearly states that once a medical service provider satisfies a standard established by a group of similarly qualified and skilled personnel, he cannot be held liable as medicine states a set standard of protocol but neither guarantees result nor purports any success. Islamic statement of the fact that mere executing one's bound by the limits assigned and not transgressed neither guarantees safety nor success. Thus whenever a court needs to assign liability to a medical personnel, they should consider the scientific principle laid down in the Islamic Law also. When Islamic law, is seen in conjunction with the English Common Law it can be safely derived that both concur that an incompetent person deviating from a universally accepted mode of treatment actually attracts culpable liability under the Law of negligence.

Law of Consent, Islamic and English Law

Whether it is Islamic law, English Common Law or any other Legal system, consent of an individual is the first essential and settled

fundamental law needed to carry out a clinical examination, perform an investigation or initiate or even terminate a treatment. It is settled in all the branches of Law that a person is liable for battery and assault if he undertakes a diagnostic or a therapeutic procedure without taking the informed consent of the patient in a manner that it is understandable to the patient and in the said case he shall be liable under the Law of Negligence. Alternatively, if a medical service provider, has explained the procedural aspect of a diagnostic or a therapeutic procedure to the patient in the language understandable to him and having understood the same, the patient assents to the same, then even in the absence of the desired result or satisfaction the doctor shall not be held liable.

Events leading to liability

Mohammedan Law states that whenever an external intervention is attempted in a biological organism a floodgate of unpredictable events are unleashed and it is not proper to blame a professional or unnecessarily burden him with liability. This type of unpredictability in an action sequenced even in the most appropriate and scientific manner is not seen in any other profession as it is seen in the practice of medicine. It is said in medical parlance that the abdomen is a Pandora's box and one could expect the most unexpected in the most benign situation. A commonest example is the formation of a wound abscess which during a surgical intervention may actually turn out to be a totally different proposition and if while tackling such a happening, some untoward incidence occurs then the attending surgeon cannot be blamed or held liable. This is because the procedure unfolds the sequence of events which may not be completely under the control of the conductor. This can be compared with a mason (a skilled person by definition) or a plumber, whose work is defined and as such any deviant result is attributable to the negligent handling and he is hence held liable because such an act is completely within the limits of human competence. This in Mohammedan Law, has been proclaimed as the 'doctrine of transgression' and liability has to be affixed after duly taking into consideration the limits of transgression. It thus can be said that

Mohammedan Law actually law does not accept strict liability in computing negligence and the action for compensation arises in non physical injuries. The Islamic theory of Jurisprudence lays reasonable importance upon the reactions which are unforeseeable and hence unpredictable. This is because as per Islamic theory physical and biological entities are organizationally different, and howsoever one adheres to the procedural aspects as dictated by texts, it cannot be predicted that two dissimilar persons will react similarly to the same procedure or cure in case of an identical disease. In fact Islamic Law gives precedence to due diligence and interjects that when a person carries out a procedure under due diligence doctrine he has acted within the limits ascribed to him and hence liability cannot be imputed to him. He has followed all the principles in letter and spirit and therefore if the results are not conducive he is not to be held liable. So in unforeseen circumstances since there is no liability so there is no compensation also. Art 7(e) of the EC Product Liability Directive clearly concurs with the above paradigm of Mohammedan Law. It provides that "in case of the person whose wellbeing is in question with respect to any adverse reaction, one has to keep in mind that human body is the most complex structure and is under extreme pathological duress already at the time of treatment and hence rendering an unpredictable outcome of the treatment procedure."

Evolutional Risks With Respect to English Law and Mohammedan Law.

The United Kingdom Consumer Protection Act, 1987 dictates, "the defense of 'development risks' sits on the scientific fact that no product in use at that time has that specific scientific knowhow to discover the defect occurring at the time of execution". This is in concurrence with the "theory of progression" and the "theory of unforeseeability" of the Mohammedan Law. The practice of quality control in medical practice rests upon two important factors i.e., ability and skill of the person in question and consent of the patient to carry out the procedure. A Scholar of Islamic Law states that, "if a medical service provider carries out a

diagnostic or therapeutic procedure and acts in accordance with a practice carried out by a group of similarly qualified and skillful doctors in the same way and that those actions have benefitted a large number of persons, than not withstanding an untoward incidence or a negative outcome with regards to the practitioner in question, no liability can be assigned to him." Bolam doctrine also states that, "No Negligence can be imputed to a medical person if he carries out a procedure as a prudent man would carry out." It is proposed that a nearby thought of the Bolam/Bolitho system, of the sort is convenient and essential as liability forms the basis of a negligence suit and to impute liability one should adhere to very strict and rigorous investigations lest unnecessary and malafide intention creeps in the judicial proceeding. Thus unnecessary "names" might be signposts for attorneys, without legitimate outline, and they do not specially light up (on that point, Lord Bridge's reference to the "helpful names") the nearness and decency, with regards to demonstrating an obligation of care, which additional scientific evidence. Surely, Bolitho itself does not give much direction, and no case since has embraced that expository exercise either. Also, categorization of the Bolitho factors is imperative to keep the feeling that courts may essentially incline toward the patient's expert rather to the specialist's defense. However in certain conditions some unexpressed Bolitho factor has apparently been in charge of that inclination rather than taking on a more scientific outlook. In a few cases since Bolitho was passed on, that case has not been expressly alluded to, but rather the important Bolam doctrine has been marked down, for reasons which recommend that the Doctor's conclusion was not adjudged to be solid. In such manner, implied Bolitho factors don't improve the straightforwardness of the law. Thirdly, updates have been issued by the Court of Appeal in certain cases that reasons are to be given for a court's expressing that only one side's expert sentiment ought not be taken into consideration especially where contradictory opinions of supposition crops up. The law must be much clearer in depicting the right ambit of the Bolam/Bolitho structure than by the case. In any question including clinical expert

judgment to which Bolam appropriately applies, and in which the court leans upon the proofs provided by the plaintiff rather than considering scientific evidence favoring the doctor respondent, there must be an unmistakable enunciation concerning why that was passable. In the system administering Bolitho v. City and Hackney H.A., these various concerns were expressly tended to. Justice Browne-Wilkinson (with whom alternate individuals from the House concurred) expressed that, "in instances of analysis and treatment there are situations where, regardless of a collection of expert sentiment endorsing the respondent's lead, the litigant can legitimately be held at risk for carelessness ... that is on the grounds that, now and again, it can't be shown to the judge's fulfillment that the assemblage of feeling depended upon is sensible or mindful". This by far occurs in most of cases in a way because recognized specialists in the field are of a specific standing and their expertise in handling a situation cannot instinctively be called into question while drawing a conclusion. This more so occurs while deciding that the said specialist had weighed all the pros and cons of the procedure and had actually detailed it out thoroughly to the patient. Specifically, where there are inquiries of evaluation of the relative dangers and advantages of embracing a specific clinical practice, a sensible view essentially assumes that the relative dangers and advantages have been weighed by the specialists while coming at a conclusion. Be that as it may, if, in an uncommon case, it can be exhibited that the expert feeling is not equipped for withstanding sensible investigation, the judge is qualified to hold that the assemblage of conclusion is not sensible or dependable.

Systems in English and Mohammedan Law

Whenever there is a discordant note to decide the viability of imputation of a case of liability the two advance system as envisaged by the English Law comes to the rescue of the Judicial decision. The First advancement in the system comprises of the fact that whenever the action of a doctor is called into question to fix liability then not only the qualification and acquired skill of the physician is taken into

account but it is also noted that in the first place, whether the specialist acted as per a training acknowledged as appropriate for a customarily skilled specialist by a mindful collection of medicinal conclusion; Secondly, if the answer to the first system is "yes", then the second paradigm inculcates whether the training survived Bolitho legal investigation as being "dependable" or "legitimate". This two advanced system has been of late considered an affirmed suitable quotient of consideration before liability can be adduced. In French v. Thames Valley Strategic H.A stated, "This approach I, think has been portrayed in many English cases, and has been mostly accepted as "uncontroversial" and as the "right approach". This approach is considered to have more scientific basis and has likewise been said to have "significant power" in other non-medical cases as well. Justice Browne-Wilkinson's assertion in Bolitho itself that in case of respondent specialist's expert evidence the derivative conclusion will be rejected because in the first place it can be presumed that associate neglected to consider the dangers and advantages of the specialist's opinion and secondly of the direct consequence being suffered by the patient affirming the deficit which was bound to have been nullified had the advice being heeded to.

Advantage versus Disadvantages

In most of the cases before adjudicating a case of medical negligence, the judges should make beyond doubt investigation that the physician had taken into consideration the pros and cons of the individual procedure with respect to the perils weighed down by the benefits, had duly apprised of the said conclusion derived by himself, to the patient, had thoroughly applied his mind and with due consent had carried on with the procedure. Thus by pitting dangers against benefits, the judge before tolerating a collection of supposition as being capable, sensible or respectable, should fulfill the criteria that, in framing their perspectives, the specialists have guided their brains to the topic of similar dangers and benefits and have achieved a solid conclusion on the issue and cogency and consistency. Bolitho factor has a vital admonition, to endure in light of the fact that in a normal case, Bolam is the accepted

norm to import liability. However to apply the Bolitho doctrine trial of sensibility as well as fitting use of psyche is likewise fundamental. Normally, the assessment cited by the patient, with respect to what the specialist should have done by acknowledging the restorative practice, looks to advocate a strategy that would have limited or disposed of the hazard through and through. It is required of the Law at this juncture to understand that it should not judge as to what the inherent flaws of the system exist, but rather to exculpate that whether, within the existing parameters a sensible approach has been adopted or not. Thus if the patient puts forward his version of the course of action to lessen the danger vis a vis the benefit, Law should not automatically accept his proposition as this is not what the Bolitho situation warrants. It can be sometimes, however sensible to listen to what the patient proposes and then accordingly apply the sound clinical judgment to exercise a medical treatment, which, however does not presupposes that such an action can effectively lower the accepted rate of danger in the supposed situation (Garcia's case). It is likewise critical to welcome that there is an unpretentious distinction between what Bolam expects of the respondent specialist, and what Bolitho expects of the Expert Medical testimony. Unquestionably, the assessment in case of an expert testimony won't be authorized as being capable and faultless unless that feeling has measured the relative dangers and advantages of the treating specialist's opinion and what choices may have been accessible to him at that particular time to stay away from the unfavorable therapeutic result. To differentiate, the two, it is not required, under the Bolam test, that a specialist ought to expressly consider, ponder, and afterward dismiss the patient suggestion, the Bolitho exemption however will be conjured to overrule Bolam in a proven case where the respondent doctor did not attempt a similar hazard/advantage analysis of that specialist's direction and of any option course suggested by the patient that would likely have minimized the negative outcome, a strategic distancing from the antagonistic result. Be that as it may, the law won't demand a course of lead (by means of Bolitho) that totally wipes

out the dangers of an antagonistic result; and nor does the law require the specialist himself to have considered, and dismissed, every single option determination or medicines, keeping in mind the end goal to depend progressively. In any case, as observed by the previous examination in this Section, the categorization of Bolitho factors covers a scope of situations in which the expert testimonial was not faultless, and keeping in mind that some of those components (e.g., where the master supports a training that he or she by and by would "never rehearse") do relate to believability, others require a nearby examination of the reasons in the matter of why specialists (however prominent they may be) upheld certain clinical conclusion or treatment for that patient which have nothing at all to do with validity (e.g., the near weighing of dangers and It has regularly been said that the compulsion to treat an intolerably harmed understanding with sensitivity and knowledge of the past must be sternly opposed - thus as well, these must not trump a reliable piece of legitimate rule). In such manner, the exact importance to be labeled to Bolitho's advocacy cautions that in conditions where there is a difference of expert medicinal opinion, and the court is being solicited to incline toward that from the patient's side, it is treading a dangerous one sided path and requires relook and extreme caution. If the legal appraisal is to hold cogency and clarity successfully upon Bolam then different roads of medicinal treatment are open to the patient.

Scope of Mistake or Error in English and Islamic Law

As per Salmond's dictation, "In a civil law, a person who is otherwise adequately qualified and trained cannot site error as a valid defense as mistake of law is not admissible in a court of law." However Islamic Law states that, mistake by a competent person is segregated in a different bracket than negligence. This, however comes with the rider that the patient is eligible for a due compensation without harming the practitioner. In many judgments Judges of Higher courts have actually cited that mistake or error is not negligence and it would be counterproductive if doctors were to be hauled up in courts for errors of judgment

which are entirely different than negligence. This can be concurred with Taylor's statement wherein he specifies that judges have time and again cautioned from confusing error of judgment with negligence and it is high time that the fine line be defined thoroughly. Lord Denning (Hatcher v. Black, 1954) has stated that 'medicine is riddled with uncertainties inherently and if due to this draconian law if the doctor were to watch his back constantly for being pierced by this dagger while treating than indeed this would be a sad time.'

Mistake versus Omission or Commission in Islamic Law

Muslim law clearly states that error of judgment or mistake is different from an inadvertent act of deliberate commission or omission and when such a differentiation cannot be made than the benefit of doubt should be weighted in favor of the doctor. However the Law also states that the patient having suffered for no fault of his should also be reprimed by giving compensation. The Law makes a clear distinction between error and intention and in view of crime, i.e. intention plus malafide action Islamic law punishes it by Hadd, ta'zir or qisas (Qadri). According to Islamic view, gross or criminal negligence is considered an intentional crime and mostly it is punished accordingly. According to one school of thought if death of a patient occurs due to gross negligence of the medical service provider than the punishment can be retributive

unless the relatives forgive the doctor. But according to one school of thought, a medical practitioner can never be accused of a charge of murder.

Conclusion

Criminal intent in case of a medical mishap is something which is not only outlandish but also extremely exaggerated and whereas an intentional crime needs punishment but the same cannot be attributed to a medical person even in case of apparent negligence. It is because it is not possible to impute intention in such cases. However, in all the cases the intention should be free from malicious content i.e., an act with a negative result if has been carried out without malafide than it cannot be put under the category of criminal negligence and as such no liability can be imputed. However if the intention is fortified by malicious content, then the punishment has to be of an equal nature. The standard of gross negligence as stipulated by ash-shafi'i (Davies) is similar to what Lord Denning concurred when he interpolated it in the words as "An authorized physician who commits an error, the like of which can be committed by another of his peers is only liable for damages; but, should the error be gross and is not expected from one in his position then it is considered as an intentional crime." The punishment may be equitable or forgiveness if the aggrieved party is on board.

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ON THE TERNARY QUADRATIC DIOPHANTINE EQUATION $2x^2 + 5y^2 = 13z^2$

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ABSTRACT

The homogeneous ternary quadratic Diophantine equation represented by $2x^2 + 5y^2 = 13z^2$ is studied for finding its non – zero distinct integer solutions. The formulae for generating sequence of integer solutions based on the given solution are exhibited.

Keywords: Homogeneous Ternary Quadratic, Integral solutions

Introduction

Ternary quadratic equations are rich in variety [1-4, 17-19]. For an extensive review of sizable literature and various problems, one may refer [5-16]. In this communication, we consider yet another interesting homogeneous ternary quadratic equation $2x^2 + 5y^2 = 13z^2$ and obtain infinitely many non-trivial integral solutions. Also, the formulae for generating sequence of integer solutions based on the given solution are exhibited.

Method of Analysis

Let x, y, z be any three non-zero distinct integers such that

$$2x^2 + 5y^2 = 13z^2 \quad (1)$$

To start with, note that , (1) may be written in the form of ratio as

$$\frac{5(y + z)}{(2z + x)} = \frac{2(2z - x)}{(y - z)} = \frac{P}{Q}, Q \neq 0$$

Solving the above system of double equations, the corresponding integer solutions to (1) are given by

$$x = 2P^2 - 10PQ - 20Q^2,$$

$$y = -P^2 - 8PQ + 10Q^2, \quad z = -P^2 - 10Q^2$$

Now ,introducing the linear transformations

$$z = p + 5q, y = p + 13q, x = 2s \quad (2)$$

in (1), it leads to

$$p^2 = 65q^2 + s^2 \quad (3)$$

We present below different methods of solving (3) and thus, obtain different patterns of integral solutions to (1).

Method:1

Observe that (3) is satisfied by

$$q = 2uv, s = 65u^2 - v^2, p = 65u^2 + v^2$$

In view of (2),the corresponding values of x, y and z satisfying (1) are given by

$$x = 130u^2 - 2v^2$$

$$y = 65u^2 + v^2 + 26uv$$

$$z = 65u^2 + v^2 + 10uv$$

Method:2

Write (3) as the system of double equations as shown in Table 1 below:

Table 1: System of double equations

System	1	2	3	4	5	6
$p + s$	$65q^2$	$13q^2$	$5q^2$	q^2	$65q$	$13q$
$p - s$	1	5	13	65	q	$5q$

Solving each of the system of equations in Table 1, the corresponding values of p, s and q are obtained. Substituting the values of p, s and q in (2), the respective values of x, y and z are determined. For simplicity and brevity, the integer solutions to (1) obtained through solving each of the above system of equations are exhibited.

System :1

$$\begin{aligned} x &= 260k^2 + 260k + 16 \\ y &= 130k^2 + 156k + 46 \\ z &= 130k^2 + 140k + 38 \end{aligned}$$

System:2

$$\begin{aligned} x &= 52k^2 + 52k + 8 \\ y &= 26k^2 + 52k + 22 \\ z &= 26k^2 + 36k + 14 \end{aligned}$$

System:3

$$\begin{aligned} x &= 20k^2 + 20k - 8 \\ y &= 10k^2 + 36k + 22 \\ z &= 10k^2 + 20k + 14 \end{aligned}$$

System :4

$$\begin{aligned} x &= 4k^2 + 4k - 64 \\ y &= 2k^2 + 28k + 46 \\ z &= 2k^2 + 12k + 38 \end{aligned}$$

System:5

$$\begin{aligned} x &= 64k \\ y &= 46k \\ z &= 38k \end{aligned}$$

System:6

$$\begin{aligned} x &= 8k \\ y &= 22k \\ z &= 14k \end{aligned}$$

Method:3

(3) is written as

$$p^2 - 65q^2 = s^2 * 1 \quad (4)$$

Assume

$$s = a^2 - 65b^2 \quad (5)$$

Also, 1 is written as $1 = \frac{(9 + \sqrt{65})(9 - \sqrt{65})}{16}$ (6)

Substituting (5) and (6) in (4) and employing the factorization method, define

$$\sqrt{65}q + p = \frac{1}{4}(\sqrt{65} + 9)(\sqrt{65}b + a)^2$$

On equating the rational and irrational parts, the values of p and q are obtained. As our interest is on finding integer solutions, replacing a by 2A and b by 2B in the values of p, q & s and in view of (2), the corresponding integer solutions to (1) are given as below:

$$x = 8A^2 - 520B^2, y = 22A^2 + 1430B^2 + 364AB, z = 14A^2 + 910B^2 + 220AB \quad (7)$$

Note :1

It is to be noted that I on the R.H.S. of (4) may be expressed as follows:

$$1 = \frac{(\sqrt{65}2mn + 65m^2 + n^2)(-\sqrt{65}2mn + 65m^2 + n^2)}{(65m^2 - n^2)^2}$$

Following the procedure presented as above, another set of integer solutions to (1) is obtained.

Method:4

One may write (3) as

$$s^2 + 65q^2 = p^2 * 1 \quad (8)$$

Assume

$$p = a^2 + 65b^2 \quad (9)$$

Write 1 on the R.H.S. of (8) as

$$1 = \frac{(4 + i\sqrt{65})(4 - i\sqrt{65})}{81} \quad (10)$$

Substituting (10), (9) in (8) and employing the factorization method, define

$$s + i\sqrt{65}q = \frac{(4 + i\sqrt{65})(a + i\sqrt{65}b)^2}{9}$$

On equating the real and imaginary parts, the values of s and q are obtained

As our interest is on finding integer solutions , replacing a by 3A and b by 3B in the values of p ,q & s and sng (2), the corresponding integer solutions to (1) are given as

$$\begin{aligned} x &= 10P^2 - 26Q^2 \\ y &= 5P^2 + 26PQ + 13Q^2 \\ z &= 5P^2 + 13Q^2 + 10PQ \end{aligned}$$

$$(11) \quad x = 8A^2 - 520B^2 - 260AB, y = 22A^2 - 260B^2 + 104AB, z = 14A^2 + 260B^2 + 40AB$$

Note:2

It is to be noted that I on the R.H.S. of (8) may be expressed as follows:

$$1 = \frac{(i\sqrt{65}2mn + 65m^2 - n^2)(-i\sqrt{65}2mn + 65m^2 - n^2)}{(65m^2 + n^2)^2}$$

Following the procedure presented as above, another set of integer solutions to (1) is obtained.

Method:5

It may be noted that (3) , expressed in the form of ratio as

$$\frac{(p + s)}{13q} = \frac{5q}{(p - s)} = \frac{P}{Q}, Q \neq 0$$

is written as the system of double equations

$$Qp - 13Pq + Qs = 0, Pp - 5Qq - Ps = 0$$

The above system of equations is solved for p,q and s by applying the method of cross-multiplication .Substituting these values of p ,q ,s in (2) , the corresponding

integer solutions to (1) are given by

$$\begin{aligned} x &= 26P^2 - 10Q^2 \\ y &= 13P^2 + 26PQ + 5Q^2 \\ z &= 13P^2 + 5Q^2 + 10PQ \end{aligned}$$

Note:3

One may write (3) in the form of ratio as

$$\frac{(p + s)}{5q} = \frac{13q}{(p - s)} = \frac{P}{Q}, Q \neq 0$$

For this choice, the corresponding integer solutions to (1) are given by

Generation of Solutions

Different formulas for generating sequence of integer solutions based on the given solution are presented below:

Let (x_0, y_0, z_0) be any given solution to (1)

Formula: 1

Let (x_1, y_1, z_1) given by

$$x_1 = 8x_0, y_1 = 8y_0 + h, z_1 = h - 8z_0 \quad (12)$$

be the 2nd solution to (1). Using (12) in (1) and simplifying, one obtains

$$h = 10y_0 + 26z_0$$

In view of (12), the values of y_1 and z_1 are written in the matrix form as

$$(y_1, z_1)^t = M(y_0, z_0)^t$$

where

$$M = \begin{pmatrix} 18 & 26 \\ 10 & 18 \end{pmatrix} \text{ and } t \text{ is the transpose}$$

The repetition of the above process leads to the n^{th} solutions y_n, z_n given by

$$(y_n, z_n)^t = M^n(y_0, z_0)^t$$

If α, β are the distinct eigen values of M, then

$$\alpha = 18 + 2\sqrt{65}, \beta = 18 - 2\sqrt{65}$$

We know that

$$M^n = \frac{\alpha^n}{(\alpha - \beta)}(M - \beta I) + \frac{\beta^n}{(\beta - \alpha)}(M - \alpha I),$$

$I = 2 \times 2$ Identity matrix

Thus, the general formulas for integer solutions to (1) are given by

$$\begin{aligned}
 x_n &= 8^n x_0 \\
 y_n &= \left(\frac{\alpha^n + \beta^n}{2}\right)y_0 + 13\left(\frac{\alpha^n - \beta^n}{2\sqrt{65}}\right)z_0 \\
 z_n &= 5\left(\frac{\alpha^n - \beta^n}{2\sqrt{65}}\right)y_0 + \left(\frac{\alpha^n + \beta^n}{2}\right)z_0
 \end{aligned}$$

Formula: 2

Let (x_1, y_1, z_1) given by

$$x_1 = h - 7x_0, y_1 = h - 7y_0, z_1 = 7z_0 \quad (13)$$

be the 2nd solution to (1). Using (13) in (1) and simplifying, one obtains

$$h = 4x_0 + 10y_0$$

In view of (13), the values of x_1 and y_1 are written in the matrix form as

$$(x_1, y_1)^t = M(x_0, y_0)^t$$

where

$$M = \begin{pmatrix} -3 & 10 \\ 4 & 3 \end{pmatrix} \text{ and } t \text{ is the transpose}$$

The repetition of the above process leads to the n^{th} solutions x_n, y_n given by

$$(x_n, y_n)^t = M^n(x_0, y_0)^t$$

If α, β are the distinct eigenvalues of M, then

$$\alpha = 7, \beta = -7$$

Thus, the general formulas for integer solutions to (1) are given by

$$\begin{aligned}
 x_n &= 7^{n-1}((2 + 5(-1)^n)x_0 + 5(1 - (-1)^n)y_0) \\
 y_n &= 7^{n-1}(2(1 - (-1)^n)x_0 + (5 + 2(-1)^n)y_0) \\
 z_n &= 7^n z_0
 \end{aligned}$$

Formula: 3

Let (x_1, y_1, z_1) given by

$$x_1 = 5x_0 + 2h, y_1 = 5y_0, z_1 = h - 5z_0 \quad (14)$$

be the 2nd solution to (1). Using (14) in (1) and simplifying, one obtains

$$h = 8x_0 + 26z_0$$

In view of (14), the values of x_1 and z_1 are written in the matrix form as

$$(x_1, z_1)^t = M(x_0, z_0)^t$$

where

$$M = \begin{pmatrix} 21 & 52 \\ 8 & 21 \end{pmatrix} \text{ and } t \text{ is the transpose}$$

The repetition of the above process leads to the n^{th} solutions x_n, z_n given by

$$(x_n, z_n)^t = M^n(x_0, z_0)^t$$

If α, β are the distinct eigen values of M, then

$$\alpha = 21 + 8\sqrt{26}, \beta = 21 - 8\sqrt{26}$$

Thus, the general formulas for integer solutions to (1) are given by

$$\begin{aligned}
 x_n &= \left(\frac{\alpha^n + \beta^n}{2}\right)x_0 + 13\left[\frac{\alpha^n - \beta^n}{4\sqrt{26}}\right]z_0 \\
 y_n &= 5^n y_0 \\
 z_n &= \frac{1}{2\sqrt{26}}(\alpha^n - \beta^n)x_0 + \left(\frac{\alpha^n + \beta^n}{2}\right)z_0
 \end{aligned}$$

Conclusion

In this paper, an attempt has been made to obtain non-zero distinct integer solutions to the ternary quadratic Diophantine equation $5y^2 = 13z^2 - 2x^2$ representing homogeneous cone. As there are varieties of cones, the readers may search for other forms of cones to obtain integer solutions for the corresponding cones.

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EXPLORING THE ANTHROPOMETRIC AND PHYSIOLOGICAL VARIABLES OF WRESTLERS AND JUDOKAS

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ABSTRACT

The main objective of this study was to analyse the anthropometric and physiological variables of wrestlers and judokas. To achieve the purpose of the study data was collected from total of eighty players, forty players from each game. They have represented Karnataka state in wrestling and judokas. The age of the subjects were ranging from 18-25 years. The data collected was treated with the statistical technique 't' test and found there is a significant difference in the selected anthropometric variables such as speed, strength and physiological variables lean body mass and vital capacity of wrestlers and judokas.

Keywords: Anthropometry, physiology, vital capacity and lean body mass.

Introduction

Sports by their nature are enjoyable, challenging absorbing and require a certain amount of skill and physical conditions. In the order of human values conquest in field of sports hold a unique place. It is a combination of success, victory, triumph and domination of some over other team mates and friends.

Sports hold a prominent place in modern life. Millions of people participate in sports activities, watch and hear about them and spend billions of dollars actually on sports related activities and equipment's. This has led to the competitive element in sports, as now sportsman participate to win and achieve laurels for them as well as for their country contrary to earlier philosophy of participation in sports competition for participation's sake.

The winning approach has overtaken the pleasure of participation. The joy of play, the guts, amity entirely degenerated into tussle between charming or behind. Today we have focus more on these issues. Modern expertise employ knowledge not only to improve performance.

Making the players fittest, strongest and more talented of doing work out can make this possible. Competitive sports make remarkable demand on the physical condition, vitality, patience and mental power of the participant. The athlete is in the extreme condition, they withstand the wear and tear of season.

The measurement of man dates back to earliest civilization and is the oldest form of dimensions. For measuring the measurements

of man, a French Mathematician used the term 'Anthropometrical' or 'Anthropometries'. In Egypt, a study was undertaken to find out whether one part or component of the body that would envisage or become a common measurement of all body part.

The anthropometrical characteristics and body compositions of athletes has been the subject of many investigations as many researchers have hypothesized that practicing athletes might be expected to exhibit structural and functional characteristics that are specifically favorer blew for their specific sport. Since each sport has its own specific demands.

In Latin root *physio*- generally means "physical", so human physiology deals with just about everything that keeps us alive and working, and other physiology specialties do the same for other animals and for plants. To do anything serious in the field of health, you've obviously got to know how the body's organs and cells function normally. Physiology used to be considered separately from anatomy, which focuses on the body's structures; however, it's now known that structure and function can't easily be separated in a scientific way, so "anatomy and physiology" are often spoken of in the same breath.

Wrestling

Wrestling is a exhausting sport and a hard one to perfect, kusti as a sport is very trendy and has legions of fans that follow it frequently. However, the moves which wrestling stars do

in the ring, take years of practice to do carefully. In order to become a good wrestler, you need to perform a few basic techniques. These are imperative for all beginners to perfect, in order to avoid injuries while wrestling, and making a collision inside the ring.

Wrestling is oldest sport of the world. The fighting is man's birth instinct thus it is not related with particular country or period yet it is very essential to know the origin and development of this popular sport

Wrestling is one of the most challenging competitive and anaerobic sports because of its stress on metabolic systems. Therefore, the intensity of the wrestling match can determine muscle energy resources and the amount of all three resources consumed.

Lokesh Thani said that "It originated in ancient Greece is one of the oldest Known sports. It is one of the finest forms of exercise brining into use all the muscles of the body and is also a wonderful mental stimulant.

Judokas

Judo is a dynamic, high-intensity intermittent sport that requires complex skills and tactical excellence for success. As judo athletes have to perform a great number of actions during each match, the physical, physiological demand of a single match is high. Typically, judo medalists perform five to seven matches during international competitions.

Judo trainers and judokas should have a solid knowledge about physiological responses to competitions and physiological adaptations to

training in order to design an adequate training session and season. A combination of high demands of training and rapid weight loss before competition could induce muscle damage and increase the risk of damage in other tissue. The cumulative effect of weight changes along a complete season together with intense training load could be even more harmful and put judokas' health at risk.

Objective of the Study

The main objective of this study was to explore the Anthropometric and Physiological Variables of Wrestlers and Judokas.

Methodology

To achieve the objective of the study, data was collected from eighty players, forty from wrestling and forty from judo players and they have represented their respective states in wrestling and judo game at national level. Subjects were randomly selected, and the age of the subjects was ranging from 18-25 years. The anthropometric & physiological variables are speed, strength, lean body mass and vital capacity.

Statistical Technique

The collected data was analyzed by using 't' statistical technique with the help of 21st version of SPSS.

Results

The data collected was treated with 't' test and the results are presented in the following tables.

Table 1. Shows Mean, standard deviation and 't' value of Right handgrip between wrestlers and judokas

Sl. No.	Players	Sample Size	Mean value	Standard deviation	't' value
1.	Wrestlers	40	39.99	6.82	1.009
2.	Judo	40	41.49	7.73	

* Significance at 0.05 level.

The above table 1 depicts the mean value, standard deviation and 't' value of Right **handgrip**. The result reveals that there was

a significant difference in Right hand grip between wrestlers and judokas. The judo players are more handgrip than wrestlers.

Table 2. Shows Mean, standard deviation and 't' value of left handgrip between wrestlers and judokas

Sl. No.	Players	Sample Size	Mean value	Standard deviation	't' value
1.	Wrestlers	40	40.76	6.53	1.228
2.	Judo	40	42.95	6.61	

*Significance at 0.05 level.

The data obtained from the table reveals that there was a significant difference in left

handgrip. Here the judo players are more handgrip than wrestlers.

Table 3. Shows Mean, standard deviation and ‘t’ value of Speed between wrestlers and Judokas

Sl. No.	Players	Sample Size	Mean value	Standard deviation	‘t’ value
1.	Wrestlers	40	4.93	0.317	2.85
2.	Judo	40	4.54	0.306	

* Significance at 0.05 level.

The table 3 states the mean value, standard deviation and ‘t’ value of wrestlers and judokas

players in speed. In this, wrestlers have shown significant difference than the judokas. Here wrestling players are having good speed than judokas.

Table 4. Shows Mean, standard deviation and ‘t’ value of vital capacity between wrestlers and judokas

Sl. No.	Players	N	Mean	Standard deviation	‘t’ value
1	Wrestlers	40	2.63	0.50	2.19
2	Judo	40	2.97	0.46	

*Significant at 0.05 level.

The table 4 states the mean value, standard deviation and ‘t’ value of wrestlers and judokas

vital capacity. In this also wrestling players have more vital capacity than the judokas.

Table 5. Shows Mean, standard deviation and ‘t’ value of lean body mass between wrestlers and judokas

Sl. No.	Players	N	Mean	Standard deviation	‘t’ value
1	Wrestlers	40	51.4418	3.75	2.635
2	Judo	40	49.5385	3.12	

*Significant at 0.05 level.

The mean value, standard deviation and ‘t’ value of wrestlers and judokas lean body mass. In this also wrestlers have shown significant difference than the judokas. Wrestling players are having good lean body mass than judokas.

Discussion on Findings

According to results of table 01 & 02 The Judoists are having more handgrip strength than wrestlers due to judokas are experts in unbalancing opponent players and have few powerful submissions holds they could add to the take downs that make them more lethal. Chokes and arm locks to the shoulder and elbow joints are the best examples. So, in short Judoists are allows for better finish compared to wrestlers.

As per the result of table 03 Complex action of conditioning capacity neuro mechanical of the locomotor system neuro mechanical of the locomotor system in solving a task that requires quick in solving a task that requires quick response on the part of the athlete. i., e. judoists are better then as compared to wrestlers due to lack of flexibility of wrestlers as their training made them stiff compared to judokas.

Seeing the result of table 04 again judokas have more vital capacity means oxygen carrying capacity high during to their game depends of timings as judokas has to maintain strength endurance for 04 min continuously but in wrestling we have breaks between bout so this might help judokas to enhance their performance.

Results of table 05 says that wrestlers having lean body mass as compared to judokas due to

dietary supplements and nutritional' aspects might affect wrestlers.

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A REVIEW ON: DIGITIZATION OF LIBRARIES**M. Pandey**Managalayantan University Uttar Pradesh, Aligarh
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ABSTRACT

This study looks at the notion of digitization, its aims and the digitalization process of library materials. It acquires all domains of knowledge including libraries due to the enormous improvements in the field of information communication technology (ICT). Bibliography and library companies have developed from traditional library services to current library services, such as digital or e-libraries. In library and information centers, digitization is now quite popular. New difficulties and new opportunities for information professionals have been brought forth by the digital revolution worldwide. Developing countries' information professionals deal with challenges such as insufficient infrastructure, shortage of experienced workers, financial in the implementation of information and communication technology in libraries and digitization of information resources etc. Professional literature on the assessment of digital libraries reflects the increased interest both in increasing user experience and in justifying numerous stakeholders' construction of digital collections. Some essential themes in digital library are explored in this essay. This article describes the necessity of digital libraries to be used in university by exploring the benefits offered by digital libraries, and the problems facing them in using digital libraries as an educational infrastructure. A literature review of certain empirical study materials was conducted for this work.

Keywords: Digitization of Libraries, ICT, Digital Library.

1. Introduction

Computing revolution worldwide has led libraries, which are seen by many commentators and scientists as library infrastructures, to combine Information and Communication Technologies (ICTs) to support and enable users to select, order, acquire, process, organize and disseminate massive resources available in library for repackaged, organized or speeded users.

Increased impact on libraries and communities is the development of ICT and its subsequent integration into the library and information field (Mohammed 2005). The creation of digital library to increase services, one of the numerous benefits university libraries can profit from the ICC. Having gladly reported, Adamowicz, Louviere and Swait (1998) have progressively increased interest in digital libraries, there have been several organisations with a high interest, including archives and museums. Chisenga, in her own passion, (2004) also stressed that faster adoption and application of ICTs contributed to the globalisation of knowledge resources and information. Users are constantly available with bibliographic databases, full-text texts and digital library collections. This is perhaps because of this; various agencies in both the

public and private sectors are increasingly implementing digital libraries. (The University Bibliothèques included). Amongst other considerations, the push is that digital libraries may make research for academics easier and can also reduce economic limitations in connection with print resource purchases. In addition, the digital library can solve preservation issues or allow libraries to extend collections to new media. Automatic document digitization technology is the most important activity among all automated activities. Because the most conventional materials to record human existence and history are text documents like newspapers, magazines, books, and other publications. Indeed, while building digital libraries, an essential task is not to transfer current digital documents, it also transforms large paper documents into a digital one (Xiaoqing Ding, 2004). It is acknowledged, in particular due to the development of ICTs, that libraries around the world are undergoing transformations. Traditional libraries are becoming more and more digital libraries and new libraries are being created. Consequently, there is broad interest and, as a result, many research and development activities in this area are undertaken throughout the world. Many institutions are also developing digital libraries

in India and many researchers and practitioners perform digital library research (G. Mahesh, 2008). The establishment of institutional repositories, digital collections that capture and preserve the intellectual production of university communities, is a related development in academic libraries (Crow, 2002). A depository is regarded as an institutional repository established by a specific college or other academic organization. It can collect and preserve the intellectual performance of an institution in digital form including: PhD theses, master's theses, preprint (a written paper, particularly a contribution to an academic journal, printed and frequently distributable in a preliminary form before publication of a formal paper), postprints, papers and technical report.

2. Literature Review

Beatrice Ayodeji Fabunmi et. all (2006) The article has shown that digitization in modern libraries is a vital effort. To meet current difficulties, a library must offer services online, i.e., digital services. This will ensure that endangered library resources are preserved, information search processes are improved and access to library resources improved.

Venkatesh S K et. all (2016) In libraries in the 21st century, digitization is a vital undertaking. In this information explosion era, it is becoming more and more important. The new libraries benefit from the latest technology and are given the opportunity to be led into the online world through the goodwill of established library companies.

Md. Saiful Alam (2008) Bangladesh is lagging behind digitization and the creation of digital information systems compared with other sectors. The country is still in the early stages of its technology-based library and information systems. It is tough, costly and long-term to establish such systems. Because of budget limits, many organizations find it difficult to provide the financial support needed for initial set-up.

Elizabeth Joan Kelly et. all (2014) The majority of the digital library assessment scholarship uses usability and Web statistics for the collection of information, although

literature includes studies on altmetrics, reuse of digital library material, cost-benefit analysis and a holistic assessment of digital libraries. Based on the success and deficiency of the previously completed project, the exploration of digital library literature enables libraries to construct efficient and sustainable evaluation models.

Irsa Arma Perdana et. all (2019) Digital libraries offer a number of advantages that consumers might benefit in many respects. The existence of a digital library surely assists educational scholars to obtain resources for learning. Easy access, infinite space and time, and conservation of materials are major advantages of digital libraries. The status of conventional libraries is not replaced by several advantages afforded by digital libraries. While the digital library offers numerous advantages, it nevertheless has certain disadvantages. These problems would subsequently become a difficulty for managers of education. These obstacles are non-supporting facilities, challenges in the digitization of library collection, problems in the management and operation of digital libraries by human resources, copyright protection challenges and funding challenges.

Ahmed Mohammed et. all (2016) In conclusion, the Nigerian university libraries are struggling to meet the opportunities and problems presented by the ICTs in order to allow them to take steps in order to digitise their resources to the benefit of their users from the universities of their sisters overseas. Many obstacles, such as the limited financial resources, infrastructure, poor telecommunication status, a continued country-wide power failure, network shortages and inefficient Internet connectivity are threatening this noble intent, action and vision, prohibitive purchasing expenses of infrastructures needed and lack of employees with ICT skills. The only way to solve all these problems is to properly review and implement the solutions presented in this paper.

3 Purposes of digitization of library resources

There are three main motivations for digitizing: (i) preserving endangered library resources, (ii)

improving data search efficiency, and (iii) digitization improving access to library resources. Many libraries digitize items that may be lost in the future, such as old manuscripts, investigative projects, photographic pictures, analogue maps, non-live musical registrations, official government journals and various other records. In order to preserve valuable resources, digitalization is useful. The electronically available production of high-quality digital photographs will lessen the usury of fragile products.

3.1 Digital Library

Digital Library is a library, which digitally stores material from outside information sources in order to deliver information to users who are both registered as customers and the community in its entirety, or meet their information demands in digital form. Digital libraries are identical to traditional libraries, but the supplied material is digital. The digital library definition and features can be described at different points as: (a) digital libraries are those which digitally encode newspapers, books, and data. (b) Text and images collection, etc., encoded, to be saved, recovered and read with the help of the computer. (c) A digital library is a representation digital collection with the support of library services for material, hardware, software and staff. (d) the integrated capturing, cataloguing, stocking, looking for, protecting and recovering information services. (e) vast collection of digital objects comprising all kinds of materials and media that are stored and accessed via national computer networks in distributed information repositories. (f) Large digitally stored collection of information. Digital libraries may contain documents, photographs, sound and information from current events (eg continuous photos from weather satellites). (g) Digital libraries may include the World Wide Web reference material or resources. A digital library may also incorporate digital sections of library collections or original web-manufactured material.

There are several characteristics of digital libraries, namely as follows:

1) Use a computer to manage.

2) Use electronic channels to connect information providers with information users.

3) Make use of electronic transactions.

4) Use electronic facilities to store, manage, and convey information to users.

Digital library is an innovation from conventional library that very closely related to the use of technology. The core of a digital library is library materials that are not physical but digital.

4. Reasons for Digitization

Digitalization of archives and records has also been driven by the split in electronic information, the shrinking budget for acquisition of library inventories, a desire to access materials in remote locations, efforts for collaboration, partnerships and sharing of resources, as well as an ever-growing cost for the conservation of similar materials etc. The purpose of digitizing library resources is to preserve and enable any user or researcher to access them easily. Digitalization enhances library resource access. By digitalizing library collections, information is available to everyone rather than a handful of scholars. Digital projects enable users to quickly and fully search for collections from all around the world. Invisible to be visible is through digitization. Many users can access the same material without obstruction at the same time. The barrier of distance is also removed, as users do not have to visit a library with hard copies of library documents before accessing and using these products. This means that the digital library is open for consultation of content at all times. Materials uploaded to the site are always available for consultation, except for deletion by the administrator of the site. In particular, library items which may be lost in future and which will be largely historical and useful, should be maintained for future purposes, especially the former manuscripts, picture pictures, theories and music recording. But the biggest challenges for academic libraries are to choose which resources to digitize and how to digitize them. The physical condition of the material, the access and value of content, the demand on materials, intellectual rights, the infrastructure necessary, and the funding sources shall be the

primary criteria when we examine digitalization material. The capacity to search for an item online is one of the advantages of digitization. It should be highlighted that you may search quickly on electronics and locate what you're looking for in seconds rather than browse the table of contents in a book or journal. It saves time for scientists, students and businesses. That means that several users can simultaneously access a single material.

5. Recommendations

On the basis of the difficulties outlined above, the following proposals for possible improvements have been made, among other things:

1. The University Authority should give universities and their libraries with a large budget to support digitization and other ICT-related projects for improved services delivery.
2. The lack of a policy on consulting literature has not shown its existence in the majority of libraries until now.
3. Authors, publishers and corporate organizations who are their works could be asked to grant copyright authorization, which must be digitized by the library to deliver effective services.
4. By assisting libraries to finance digitization projects, the government should assist in this direction through entities such as the Education Trust Fund (ETF) and the Petroleum Technology Development Trust Fund (PTDF). Technical know-how training of employees. Although concerted efforts were being made in various ICT library projects, commendations must be redoubled.

6. Management of Digital Libraries

The administration of the digital library is vital after it is developed. Including hardware management, software management, management of collection, conservation/archiving and financial management, Gupta and Singh focus on the management and strategies of digital library companies (2006). Substantial planning is required to develop digital libraries. In particular, Lakshmi and Suma (1998) focus on the creation of digital libraries, IT

infrastructure planning and financial planning. Das and Dutta (2004) talk about the requirement of digital library systems auditing and control. The authors outline the audit and control components that improve digital library capacity and efficiency. Finally, in terms of their utility and cost efficiency, Ravi, Chandra and Sharma (2000) examine developing trends and the future of digital libraries.

7. Digitization Basic Methodology

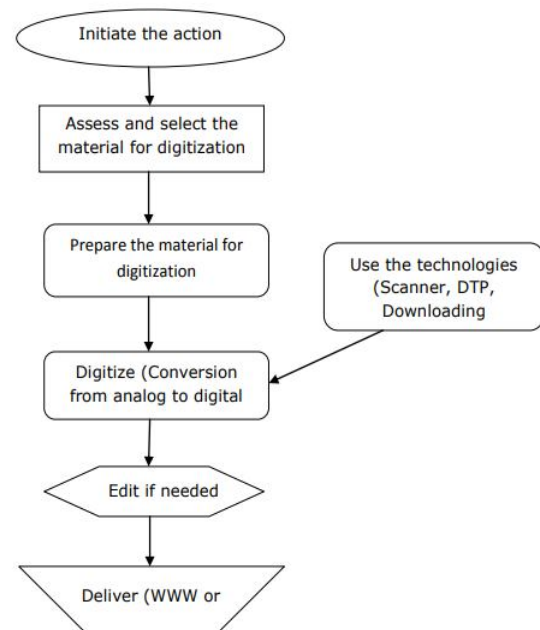


Figure: 1 Basic Flow Chart of Digitization Process

8. National Policy on Digital Library

A valuable recommendation has been made by the National Task Forces on IT and Software Development (2003), to develop DLs in the country in the context of the development of a pilot project in the field of digital libraries, the maintenance of an extensive wealth of traditional Indian knowledge and the digitization of Indian thesis and dissertations. However, national policy on digital libraries is not clearly restricted. Digital library efforts in India require national policies to provide framework and best practises for the development of digital libraries in all areas. Preservation policies, IPR policies for the development of material, collecting policy, the rigidity of digital publishing information policy, and data formats etc, are also necessary.

9. Conclusion

Digital libraries offer a number of advantages that consumers might benefit in many respects. The existence of a digital library surely assists educational scholars to obtain resources for learning. Easy access, infinite space and time, and conservation of materials are major advantages of digital libraries. The development of digital libraries was lopsided in India. Copyright laws must be amended according to the modern environment. Few institutions have initiated digital library and digital technology workshops. India is an active participant in the digital library movement through the digitization and free access of the traditional knowledge, century-old publications and rare documents, thesis and dissertations, journals available in Indian libraries through the provision of advanced

Information and Communication Technologies (ICTs) and information infrastructure. One of the main initiatives in the creation of a really digital library is the Indian digital library. In order to optimize their efficiency, digitization has opened up new library audiences and services and needs to be integrated into any institution's goals and policies. For academic libraries in the 21st century, digitization is a crucial feature. In other words, in contemporary libraries it is a crucial task. A complicated digital effort is needed to create a digital library. Digitization has been an excellent way of making cataloguing and indexing work easier for libraries and archival institutions. In this paper we review digitization process its advantages and some other factors that's directly relates to digitization of libraries.

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NEED OF EDUCATION AND TRAINING IN COOPERATIVE URBAN SOCIETIES

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ABSTRACT

Various organisations around the world, including cooperatives, have set themselves the goal of improving organisational efficiency. The provision of education and training to facilitate the execution of daily activities is one of the most important strategies for improving different types of performance in organisations. Cooperatives, including Urban co-operative societies, need to provide ongoing education and training to their Managers, employees, shareholders and management members in order to develop the capacity required to meet the desired needs and expectations. The newly developed co-operative education and training framework has proven to be an effective tool for building co-operative capacity to achieve desired outcomes, such as improved service delivery to members. This paper is based on a study conducted in 10 Pune-based urban co-operative credit societies. The paper focuses on the need and importance of co-operative education and training as a foundation for improving performance in urban credit cooperatives.

Keywords: Co-operatives, Co-operatives education and Training, Cooperatives Development, Performance

Introduction

A co-operative is defined as “an autonomous association of people who have joined together voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly owned and democratically controlled enterprise.”

They are organisations comprised of freely joined members who contributed assets, and the resulting organisation operates.

Cooperative education and training are critical for instilling in member’s cooperative skills, knowledge, and attitudes. It imparts relevant management knowledge, business and entrepreneurial skills to employees and committee members in order to improve the efficiency and effectiveness of services provided to co-operative members.

It could also be argued that providing training and education allows for the development of enlightened and responsible leadership capable of directing and ensuring effective control of co-operatives for the benefit of members and the continued prosperity of the Co-operative movement and the larger population. It also helps to Future leaders' leadership skills should be taught and should be available on a permanent basis.

Importance of Education and Training for different stakeholders of Co-operatives

According to the International Co-operative Alliance, this is the fifth cooperative concept. It

is unsurprising that education was included in the initial set of seven Rochdale principles and has remained so after numerous ICA-led revisions. As it is practical also too given proper training to improve performance of every stakeholder of cooperative

1. Members:

Member education must be a priority for co-operatives, and it entails more than simply informing co-operative members about the business and encouraging trading loyalty – though it must do both. However, it must first provide opportunities for members to learn about co-operative identity and values, as well as the global co-operative family to which their co-op belongs.

Member education should help members better appreciate their membership rights and obligations, including the importance of exercising their democratic rights.

Member education will assist in ensuring an active and educated membership, as well as ensuring that elected officials and leaders share their vision and goals for the co-success cooperative's and possess the requisite skills to carry out their responsibilities.

Manager and Staff

Managers and workers of cooperative organisations should be able to recognise the unique essence of the organisation and the needs of its members through co-operative education and training programmes.

This is especially important for those transitioning to the co-operative sector from more conventional business models, where the needs of shareholders which vary significantly from those of co-operative members.

Since more managers and employees are moving from the private and public sectors to co-operatives as a result of globalisation, managers and employees in co-operatives should undergo induction training that covers the unique essence of co-operatives and their values.

Representatives who were Elected

Building good governance has always been inextricably connected to cooperative education.

The quality of those elected to serve on the various committees and bodies that make up the democratic structure is based on an active and well-informed membership and the quality of those elected to serve on the various committees and bodies that make up the democratic structure. As co-operatives have increased in size across the world, the number of elected positions has decreased, and more complex structures have emerged.

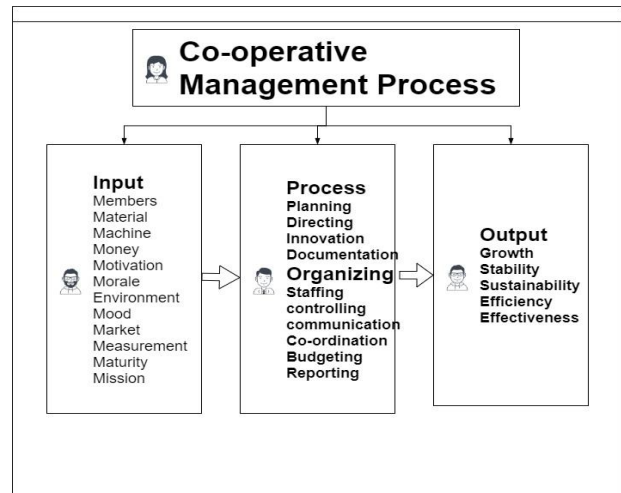
The quality of those elected to serve on the various committees and bodies that make up the democratic structure is based on an active and well-informed membership and the quality of those elected to serve on the various committees and bodies that make up the democratic structure. As co-operatives have increased in size across the world, the number of elected positions has decreased, and more complex structures have emerged.

Performance or failure is essentially determined by the decisions taken by elected officials at every level, from the smallest co-operative to the largest. As a result, it's important that elected officials have the expertise, experience, and understanding necessary to make decisions that benefit the cooperative and its members in the long run.

The election process does not guarantee competence. Training and growth, based on cooperative principles, will assist elected representatives in developing skills that allow them to pose constructive challenges to executives, and it should be a key component of co-operative education programmes.

Co-operative Management Process

Management is a distinct mechanism that entails preparing, coordinating, acting, and managing in order to establish and achieve stated goals through the use of human and other resources. The management process entails deciding on goals and putting them into effect. The procedure can be visualised in the diagram below:



Need of Training, HRM Practices in Urban Cooperative Societies

The failure in many cooperative societies has been attributed to a lack of professionalism in human resource management. If well-defined human resource management concepts are implemented in critical areas such as recruiting, career preparation, training, and selection, the organization's performance can improve. Many cooperatives struggle to succeed despite massive financial support from the federal and state governments. This is proof that sound financial support is not the only reason for a successful society. Many urban cooperative societies are forced to close due to large losses and mounting Non Performing Assets (NPA), which are related to the societies poor human resource management. Such a controversy arose from a lack of expertise in recruiting and putting the right person in the right position and inadequate knowledge of allotted work.

Following analysis is based on the online survey of 10 co-operatives societies from Pune district employee and managers and directors. It has been observed that, Placement and Recruitment Within 40-45 days of starting their new job, 26% of new employees quit. Poor

results and a bleak outlook are among the causes. Another major problem for acquisition managers is the retention of new employees. Within the first 24 months of employment, 48 percent of new employees struggle and are fired. Just 15% of these are due to a lack of talent, while 75 percent are due to psychological factors such as motivation and grasping ability. After three years, new employees who go through a formal on boarding programme are 56 percent more likely to stay with the organisation. A long-term acquisition process damages an employer's reputation and ruins the applicant experience.

Employee Retention and Engagement

Employers believe their workers have a big engagement and retention issue, according to survey 73 percent of them. Employees often change jobs. Unsatisfactory work roles, a lack of experience, and poor pay and incentive are the main factors. Looking to improve employee engagement policies and focusing more on employee retention so that workers do not pursue a "Work Switch" as a means of advancing their careers. Since the cost of recruiting and training top talent is high, the safest option is to avoid losing them in the first place. Official employee engagement services result in a 26 percent increase in annual earnings for businesses compared to those that do not. Control of performance Daily check-in system is now tracked to achieve person and team success in order to avoid incompetence in assessments Instead of doing so once a year, the check-in process ensures that managers and staff review priorities and exchange input on a regular basis. 1 out of 4 workers believe their bosses don't care about the assessment until they bring it up One out of every 4 workers is unsure whether or not their boss can provide daily, constructive feedback. Being remembered motivates 72 percent of workers in their employment. Employee turnover is 15 percent lower in co-operatives that provide daily input than in co-operatives that do not provide feedback A grave circumstance could have been addressed so carefully if appropriate human resource management practises, strategies, and methods had been practised in the organisation.

Role of Human Resource Management in Employee Retention and Engagement

HRM is critical in avoiding such circumstances because it focuses on "How one must be hired?", "Who must be hired?", and "Where the one hired must be placed?" When two groups of people join hands, their tendencies are amplified, creating fertile ground for conflict. A good human resource management system will help you deal with such a situation effectively Members or workers hired in cooperative sectors are often from rural backgrounds, and they do not understand modern business methods. In such cases, an effective HR manager serves as a mediator. In order to survive in today's competitive market, cooperative sectors must also abandon outdated techniques Cooperative sectors must educate their workers and make them aware of the current business situation in order to compete with the giant cooperative conglomerates. All of this falls under the umbrella of training and development, a key component of human resource management. Communication breakdown and employee resistance are the top two challenges faced during major organisational changes.

Rewards and Compensation

One of the major challenges of cooperative sectors are the rewards and monetary packages offered to the employee. An individual work for better living standards, often cooperative sectors fail to offer sound perks and monetary benefits to its employees. Employee retention is aided by compensation. Because of the low wage structure, urban cooperative societies are unable to recruit skilled and highly trained candidates. A pay structure based on the expertise, ability and position is essential. Reward and compensation has become the foremost part of organisation. In cooperative sectors there is a crucial requirement to have the structure of reward compensation in place that will entice, identify and retain the talent in cooperative sectors on the lines comparable with other business conglomerates. Following institutes are involved in cooperative training:

National Level

- National Council for cooperative training
- National centre for cooperative Education
- Institute of Rural development
- Regional training colleges, etc.

State Level

- Agricultural cooperative staff training institutes
- Integrated training institutes
- Regional institute of cooperative management
- Institute of Cooperative Management, etc.

Above institutes continuously arrange various training session and workshops for the different stakeholders of cooperative sector. So it is the duty of authorities to motivate and allow the stakeholders to attend various training programme and even every unit should arrange personalized training programme considering the need of their stakeholders to increase involvement.

Conclusion

A cooperative society is a self-directed group of people who have come together voluntarily to meet their shared economic, social, and cultural needs through a collectively regulated,

jointly-owned company. The Eleventh Fifth Year Plan emphasised skill development, which must be important to rural India's emerging inclusive economic growth.

The role of cooperative education and training in improving cooperative management and administration at all levels is critical. Cooperative education and training do more than just raise awareness about these topics; it also helps to cultivate personality, positive attitudes, self-confidence, broaden expertise, and managerial skills.

In today's fast-changing environment, problem-solving skills, financial handling techniques, strategy writing skills, Human Resource managerial skills, and government relational approaches must all be improved. Cooperative societies are organisations established by ordinary people for the benefit of ordinary people. Since their inception, there has been a need to raise awareness about the value of everyone's position.

If we provide the necessary training to all stakeholders, the cooperative societies will see a significant improvement in terms of quality and benefit, as well as the growth of our economy.

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AVAILABILITY OF ESSENTIAL MEDICINES IN THE STATE OF PUNJAB : SITUATION IN THE PUBLIC AND PRIVATE MEDICINE STORES

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ABSTRACT

The price of the medicine is a fundamental determinant of medicine adherence. If the medicine is provided at cheaper rates, but its availability is inadequate then the cheap prices will not serve the purpose. Adequate availability of essential medicines is of utmost importance and is one of the key components of universal health coverage. This paper is devoted to study the availability of essential medicines in the state of Punjab. In the present paper, essential medicines listed in the Punjab Essential Drug List (2016-17) have been used in the analysis of medicine availability. The data have been collected for 132 medicines from 18 Jan Aushadhi Kendra (JAKs) / Generic Drug Stores and from 29 private pharmacies. Overall the availability of essential medicines was low (less than 50%) across the sectors.

Keywords: Essential Medicines, Availability, Public sector JAKs, Private Sector Pharmacies

Introduction

Health standard of population is considered as an important indicator of economic development but quantitatively inadequate health services (**Planning Commission, 12th five year plan**) and heavy burden of diseases lead to thirty two and a half million people to fall below the national poverty line in a single year. (**Garg & Karan, 2005**). According to the **WHO Medicines Strategy (2004)** for households in low-income countries, medicines constitute 50%-90% of out-of-pocket spending on health and hence, a large proportion of treatment expenditure is being spent on the purchase of medicines. According to the 68th round NSS household consumption survey (2014) medicines accounted for nearly 80% of out-patients medical expenses in India. The burden of disease is high due to large-scale poverty, developmental disparities between states, gender discrimination, growing aged population and failure of government policies. (**Gupte et al., 2001**). The concept of essential medicines emerged in 1970s and **WHO (2004)** defines them as those medicines that fulfill the healthcare needs of the majority of the population and are selected with due regard to disease prevalence, evidence on efficacy and safety, and comparative cost- effectiveness. This concept has further evolved to include product quality, sustainable supply chains, equity in access, efficiency and appropriateness of medicines use and affordability for both

households and health systems. (**Bigdeli et al., 2014**) According to essential medicine definition essential medicines should be 100 per cent available at all times in all the facilities. (**Kotwani et al., 2007**) The role and relevance of medicines, vaccines and other supplies are critical, as these are considered to be important elements of health care-system. (**Bigdeli et al., 2012**)

Data and Methodology

In the present study, 132 medicines listed in the Punjab Essential Drug List (2016-17) have been used in the analysis of medicine availability. The data has been collected from 18 Jan Aushadhi Kendra / Generic Drug Stores and from 29 private pharmacies. In the case of private sector pharmacies data have been collected for Most Sold Branded medicines (MSBs) and their Lowest Priced Generic equivalents (LPGs). The Jan Aushadhi Stores are established under the 'Prathan Mantri Bhartiya Jan Aushadhi Pariyojana' to improve the access to medicine and at the time of the study, 39 Jan Aushadhi Kendras were working in Punjab.

Availability Analysis: The availability of individual medicines is defined as the proportion of pharmacies in which the medicines were available at the time of the survey and the mean availability was calculated as the average percentage value from all medicines. (**Bertoldi et al., 2012**) In this study, the following ranges given by **Gelders et al.**

(2006) have been used for describing availability:

< 30% very low 50–80% fairly high
 30–49% low >80% high

Z-Test for Two Proportions (Afthanorhan et al., 2015) has been used to know the statistical difference between the medicine availability of both the sectors.

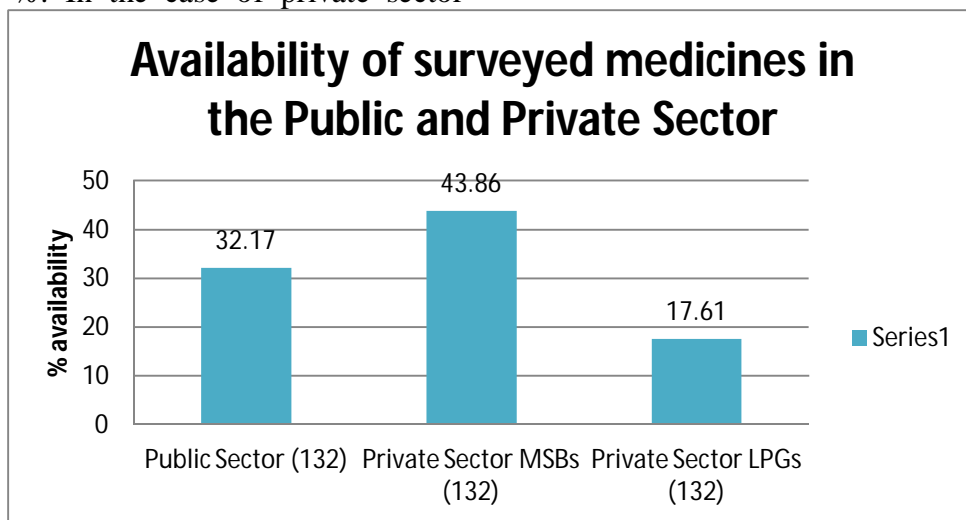
Findings

Availability of medicines: An overview

The average availability of medicines was suboptimal / inadequate in all the sectors. Medicine availability in the public sector was only 37.12 %. In the case of private sector

medicine availability, it was 43.86% for Most Sold Brand products (MSBs) and only 17.61 % for Lowest Priced Generics (LPGs). (Figure no. 1) It was observed that the availability of MSBs and LPGs was 43.86 and 17.61%, respectively. (Table no.2, Figure no. 1) The availability of MSB products was significantly higher than LPGs (z value = 24.34) and medicines found in the Public Sector (z value = 5.24). Public Sector availability was also significantly higher than the LPGs (z value = 17.24).

Figure No. 1 : Availability of surveyed medicines in the Public sector JAKs and Private Sector MSBs and LPGs in Punjab



Source: Field survey

Reasons for Low Availability of Medicines

- Generally private medicine outlets do not keep the Psychotherapeutic medicines.
- The availability data refers to the day of collection at each surveyed outlet (public or private) and do not reflect the average monthly availability of that particular outlet. But it has been pointed out by Kotwani and Holloway (2013) that since the survey is conducted in several outlets over a period of time thus the data provide

a reasonable estimate of the overall situation and is indicative of the real-life situation faced by the patients on a daily basis.

Availability of medicines/items in different forms: In this section the medicine availability has been reported under different type of medicine forms such as Injections, IV Fluids, Ear/ Eye/ Nasal drops, tablets or capsules, creams / solutions and syrups / suspensions. (Table no.2)

Table No. 2 : Availability of medicines in different forms

Section/ Categories		Medicine availability in Public Sector		Medicine availability in Private Sector	
		No. of Medicines	% Availability	% Availability MSBs	% Availability LPGs
1.	Injections	33	18.69	29.89	3.45
2.	I.V. Fluids	08	11.81	34.05	16.81
3.	Ear/ Eye / Nasal	02	36.11	29.31	12.07

	Drops				
4.	Tablets / capsules	71	47.18	49.20	21.37
5.	Creams / solutions	07	40.48	52.71	17.24
6.	Syrups / suspensions	11	42.94	56.11	24.76

Source: Filed survey

(I) Availability of Injections: This part included 33 injections that can be divided into fifteen different therapeutic categories. The mean availability of injections was found to be very low in both the sectors. Overall the availability of Injections was significantly higher in the OB than the LPGs and Public Sector. Fairly high i.e. more than 50% availability was observed for only one item- Injection Human Insulin in the OB form. No injection was available for the Psychotherapeutic category in any private sector/ medicine outlet visited/ surveyed.

Availability of Injections in the Public Sector: One injection related with 23rd (Muscle relaxants and cholinesterase inhibitors) category was not available /encountered in any public sector medicine outlet.

Private sector availability of Injections as MSBs (Most Sold Brands) or OBs (Originator Brands) or in the OB form- The injections related with Blood products and Plasma substitutes (11th) and Psychotherapeutic medicines (27th) were not found in the private sector.

Private sector availability of Injections as LPGs or in the LPG form: 7 injections under Blood products and Plasma substitutes (11th), Hormones, other endocrine medicines and contraceptives (21st), Muscle relaxants and cholinesterase inhibitors (23rd) and Psychotherapeutic medicines (27th) categories were not available in the LPG form. The rest of the injections were very poorly available in the LPG form.

(II) I.V.Fluids : This category includes 11 items for private sector and 8 for the public sector that can be divided into 4 categories. The availability of these fluids was very low/ poor across the sectors. 4 of them in the public sector and 3 in the LPG form were not at all available. Only Dextrose 5% was available at a fairly high level in the OB form. The overall

availability was low for the public sector and very low for the private sector. Overall the availability of I.V. Fluids was significantly higher in the OB than the LPGs and Public Sector.

(III) Ophthalmological medicines: There were only two and three items under this division/ part/ category for the Public and Private sector respectively . The availability of Xylometazolino nasal drops was at fairly high level in the public sector but very low in the private sector. Gentamycin eye/ear drops were comparatively more available in private OB sector than others. Overall availability of these items/products was low for public sector and very low for the private sector. Overall the availability of Injections was not significantly different in the Public Sector and Private sector OB form.

(IV) Availability of Tablets and capsules: This section includes 95 tablets and capsules that can be divided into 18 categories for the private sector. Tablets/capsules can be divided into 18 categories. In the case of Public sector there were 71 tablets/ capsules categorized in 16 parts. Overall the availability of tablets /capsules was low (less than 48%) across the sectors. Overall the availability of tablets and capsules was significantly higher in the Public Sector than the Private Sector OB form.

Public Sector: In the case of 6 categories (Anticonvulsants / Antiepileptic, Antineoplastic / immunosuppressives and medicines used in palliative care, Antiparkinsonism medicines, Muscle relaxants and cholinesterase inhibitors, Oxytocics and Antioxytocics and Psychotherapeutic medicines) consisting 18 tablets / capsules were available at a very low level. For two categories namely Anti-infective medicines and Vitamins and minerals consisting 25 tablets and capsules

the availability ranged between 30 to 49%. Only for 27 tablets and capsules under 7 categories (Analgesics, antipyretics, NSAIDs, gout and rheumatoid disorders, Anti-allergics and medicines used in anaphylaxis, Cardiovascular medicines, Diuretics, Gastrointestinal medicines, Hormones, other endocrine medicines and contraceptives and Medicines acting on respiratory tract) the availability was fairly high or above 50 percent. Only one medicine (Tab. Folic Acid under the category of Medicines affecting blood) was more than 80% available.

Private OBs: In the case of Antineoplastic/ immunosuppressives and medicines used in palliative care , Cardiovascular medicines and Vitamins and minerals the average availability was low (below 50%). For the remaining 10 categories consisting 59 tablets and capsules the availability was fairly high.

Private LPGs: The availability of LPG tabs/caps was very poor (less than 18%). For 86 tablets and capsules which can be divided into 15 categories, the average availability was very poor (less than 30%). Only for one category namely Anti-allergics and medicines used in anaphylaxis (3rd) the availability was fairly high (65.52%).

(V) Availability of Solutions, Creams and Applications: The private sector medicine availability analysis included 18 items, that can be divided into five categories. In the case of the public sector only 7 items under 3 categories were included. The overall availability was low for the private sector OBs and medicines found in the public sector and very low for LPGs. Overall the availability of these items was not significantly different in the OB and Public Sector.

Public Sector: The availability was low (less than 45%) for all the 7 items.

Private Sector OB form: In the case of Disinfectants and antiseptics, Vitamins and minerals and Others categories the availability was very low in the private sector OB form. For 9 items under the category of dermatological medicines the availability was low (below 50%). The fairly high availability was observed only for Anesthetic agents.

Private Sector LPG form: In the case of LPGs the availability was very low for all these categories.

(VI) Availability of Syrups/Suspensions: In the case of private sector analysis, there were 21 items that can be divided into 9 categories. For the public sector 11 items were included for the analysis that can be divided into 6 categories. The overall availability was very low for LPGs. For OBs and the medicines found in the public sector the availability was low (less than 46%). Overall the availability of Syrups/Suspensions was not significantly different or higher in the in Public Sector than the OBs.

Public Sector: For 4 syrups/suspensions under the Anti-infective category the availability was very low. For Gastrointestinal medicines, Medicines acting on respiratory tract and Others the availability was 50%.. Fairly high availability was observed only for Analgesics, antipyretics, NSAIDs, gout and rheumatoid disorders and Anti-allergics and medicines used in anaphylaxis. In the case of 3rd and 32nd category, the availability was relatively higher in the case of public sector than the private sector.

Private OBs: For Other medicines the availability was very low. For 15 items under the Anesthetic agents, Anti-infective medicines, Medicines affecting blood, Ear, nose and throat medicines and Medicines acting on respiratory tract consisting, the availability was low. The fairly high availability was only observed for the second category.

Private LPGs – Items related with Analgesics, antipyretics, NSAIDs, gout and rheumatoid disorders and Other medicines were available at low level. Rest of the items was available at a very low level.

Discussion

Kotwani et al. (2007) evaluated the price and availability of common medicines at six sites in India and observed lesser (availability of core medicines ranged between 0 to 30%) availability of medicines in the public sector. A similar study (Swain et al., 2015) conducted for child specific medicines in Odisha revealed that the mean medicine availability for public

sector and private sector LPGs was only 17% and 38.5%. Another study meant for children's medicine in Chhattisgarh (KR et al., 2012) observed that the mean availability in the public and private sector retail pharmacies and other profit-making outlets was suboptimal (17%) and inadequate (46 and 35%), respectively. A study (Pujari et al., 2016) has also been concerned with the availability and affordability of 10 essential child specific medicines in Uttar Pradesh. It observed that the mean availability in the public sector and NGO/mission was less than 22% (17 and 21.8%, respectively). It was also low for private sector high-priced (10.8%) and low-priced (38.5%) medicines. A study conducted in Maharashtra (Patel et al., 2006) revealed that the median medicine availability in the survey area was 15.8% for public procurement sector and 2.1, 50 and 57.3% for private sector branded, most sold and lowest priced medicines. Similar study conducted in Rajasthan (Kotwani et al., 2003) revealed that public sector median medicine availability was low (40%) however the most sold and lowest priced generics were considerably more (72.5 to 95%) available in the private and co-operative sector. Another study conducted in West Bengal (Tripathi et al., 2005) found that the median availability of private sector Innovator brands, most sold and lowest priced generics was 40, 70 and 77.1%, respectively. Prinja et al. (2015) observed the mean availability of medicines related with more than 21 therapeutic categories was 45.2 and 51.1 % available in the public health facilities of Punjab and Haryana, respectively. Similarly Tripathi et al. (2018) examined the access and availability of prescribed medicines in the public sector health facilities of Chhattisgarh and found 58% of these medicines available on the day of data collection.

Studies conducted in other countries such as Shanghai (YE, L., 2005), Malaysia (Baber et al., 2007) and Hubei (China) (Yang et al., 2010) reported similar public sector generic availability as the present work. Similarly analysis conducted by Cameron et al. (2008) and Bazargani et al. (2014) showed that in the public sector medicine availability in 36 developing and middle income countries and

23 countries respectively, was similar to the present study.

However the public sector medicine availability in the present study was lower than the studies conducted in south-east Nigeria (for Bamako-Initiative drugs, Uzochukwu et al., 2002), Syria (Sallouta et al., 2003), Tunisia (UNAM, 2004), Malaysia (Saleh and Ibrahim, 2005), Tajikistan (for 17 drugs, DICPZ, 2005), Peru (Cornejo, E.M., 2007), Ethiopia (Carasso et al., 2009), Sudan (Cheraghali and Idries, 2009), Sudan (Elamin et al., 2010), Peru (Madden et al., 2010), Brazil (Bertoldi et al., 2010 for lowest priced similar medicines and 2012), South Western Ethiopia (Abiye et al., 2013), Lao PDR (Syhakhang, L., 2014), Sudan (for generic medicines, Kheder and Ali., 2014), Sri Lanka (Dabare et al., 2014), Swaziland (Mhlanga and Suleman, 2014), Iran (for most sold and lowest priced generics, MoHI, 2015), South Wollo Zone (Ethiopia) (Hussien and Tafese, 2015), Tanzania (Kamuhabwa and Twaha, median availability for pediatric antibiotics, 2016), Western part of Ethiopia (essential medicines for children, Sado and Sufa, 2016), Malawi (Antimalarial and antibiotic medicines, Khuluza and Heide, 2017), Kathmandu (Nepal) (for non-communicable diseases, Shrestha et al., 2017), Ethiopia and Tanzania (for locally produced and imported medicines, Ewen et al., 2017), rural Sri Lankan district (in primary and secondary health care institutions, Rathish et al., 2017), Uganda (for lifesaving medicines for reproductive and maternal health, Kibira et al., 2017), Mongolia (Dorj et al., 2018), Tehran province (Iran) (for LPG Cardiovascular medicines, Farahani et al., 2018), Jiangsu province (China) (for LPG children's medicine, Sun et al., 2018), Jordan (Alefani et al., 2018), Shaanxi province (Western China) (for insulin products, Li et al., 2018), Tigray region (northern Ethiopia) (for life saving used for under-five children, Abrha et al., 2018). Tripathi et al. (2018) observed that around 68.89% of the medicines being prescribed were generic drugs in the public health facilities whereas only 58.28% of these medicines were available in public health facilities and overall 64.45% of all the prescribed medicines (generic as well as branded) were found to be available in these facilities.

In the case of Pakistan (Kiani et al., 2006), six low and middle income countries (Mendis et al., 2007), Lao PDR (Odermatt et al., 2007), Vietnam (Nguyen et al., 2009), a comparative analysis of 36 countries (van Mourik et al., 2010), Builsa district (Ghana) (Nyanwura and Esena, 2013), Haiti (Chahal et al., 2013), Shaanxi (China) (Jiang et al., 2013 and Wang et al., 2014), Punjab (Pakistan) (for OB and LPG anti-cancer medicines, Saqib et al., 2018) the public sector medicine availability in the present study was higher.

In the private sector of six low and middle income countries (for chronic diseases) (Mendis et al., 2007), Peru (Madden et al., 2010), a comparative analysis of 36 countries (van Mourik et al., 2010), Shaanxi (China) (Jiang et al., 2013 and Wang et al., 2014 (for Paediatric medicines)), 23 countries (Bazargani et al., 2014), Sudan (for generic medicines, Kheder and Ali., 2014), lesser Innovator Brands and more LPGs were available than the present study.

However the private sector overall medicine availability in the present study was higher than the studies conducted in China (for orphan drugs used in rare diseases, Gong et al., 2016), Uganda (for lifesaving medicines for reproductive and maternal health, Kibira et al., 2017), Malawi (for Antimalarial and antibiotic medicines, Khuluza and Heide, 2017), Tigray region (northern Ethiopia) (for life saving used for under-five children, Abrha et al., 2018) and Jiangsu province (China) (for OB and LPG children's medicine, Sun et al., 2018).

In the case of a study conducted by Sado and Sufa (2016) in Western part of Ethiopia, the private sector availability of essential medicines for children was similar to the present study.

Policy Recommendation

- 1. Ensure and maintain sufficient supply of medicines** :It is quite evident that the supply of medicines is not sufficient in the public sector health facilities, so when medicine is not available patients have to buy them from private chemists / pharmacies at higher rates which will ultimately impact the vulnerable sections of the population and push them below the poverty line. It is very evident that the

expenses made on medicines can be eradicated by dispensing sufficient medicines in public health facilities. Quality of services at government facilities should be timely evaluated and monitoring mechanisms should be used to keep track of the stock and use of drugs. This will improve the functioning of public health facilities as well as reduce the medicines' bill and hence, the chances of incurring catastrophic health and medicine expenditure will also decline to a significant extent. As we have discussed earlier that incomplete stocking of essential medicines and poor supply chain management leads to frequent stock-outs in public health facilities. In the case of Punjab, medicine is procured by primarily decentralized, government owned entity Punjab Health Systems Corporation (PHSC). (Singh et al., 2021) Here, for procurement of essential drugs, rate contract tenders are floated with validity of rate contract for one or two years. (Government of Punjab, 2019) In the centralised model of pooled medicine procurement, the distribution is managed centrally and the onus of the procurement agency is to ensure availability at the user institutions. However, the public health centres in Punjab are at the mercy of the suppliers, owing to their decentralised purchasing model, whose supply is often sporadic due to various reasons like delayed payments, lack of proper planning, etc. This impacts availability at the time of need and could potentially lead to wastage. (Singh et al., 2013) The state government of Punjab can use the adopt schemes that has been proved beneficial in other states. For example, an efficient and reliable medicines supply chain model is present in the state of Tamil Nadu since the establishment of an autonomous body - Tamil Nadu Medical Services Corporation Limited (TNMSC) on 1st July, 1994 that has been instrumental in improving access to medicines in the frontline facilities in the state. (Revikumar et al., 2010) (Singh et al., 2013). The state of Kerala, had also taken many progressive steps in its drug procurement in 1994 and waited for years

studying on the TNMSC model, finally formed a corporation styled as Kerala Medical Services Corporation Ltd (KMSCL) in November 2007. (Revikumar et al., 2010) The Tamilnadu model has been replicated by State Government of Rajasthan in India. Rajasthan government has introduced the Mukhyamantri Nishulk Dawa Yojana (MNDY; Chief Minister's free medicine scheme) by establishing the Rajasthan Medical Services Corporation (RMSC) in May 2011. The scheme was launched on 2 October 2011 with the primary objective of procurement and distribution of generic medicines and surgical and diagnostic equipment to all patients visiting public healthcare facilities. One encouraging outcome of the initiative is that the patient load in public health-care facilities has risen since the introduction of MNDY. The household OOP payments have declined from 85% in 2004–2005 to nearly 75% in 2011–2012. Poverty caused by high household OOP expenditure on medicines appeared to have been reduced from 3.2 to 2.1%. (Selvaraj et al., 2014) The RMSC procures medicines and surgical items through an open tender (two bid) system and also procures high-end medicines for cancer and other complex diseases directly from the importers. Supply chain management is carried out through "e-Aushadhi", a web-based application developed for continuous monitoring and smooth functioning of the organization (medicine management system), and by the establishment of one medicine warehouse in each district, which is linked to public health-care facilities.

2. **Greater investment in Public Health Facilities** : Given that the government spends only 1 percent of GDP on health in India, and the minimum required to prevent the people of a country from CHE is 5-6 percent (Xu et al., 2010), this current level is low. Therefore, the medium-term goal of policy should be to raise this expenditure to 5 percent of GDP, bringing in more institutions and better quality. According to a recent study conducted in rural Punjab,

is has been advocated that the OOP expenditure on health care may possibly be brought down by strengthening public health facilities. (Singh et al., 2018) It has also suggested to improve drug availability in the public system for increasing the utilization of health care services. Provision of quality health care in public sector and the financial protection from out of pocket expenses are intertwined aspects of Universal Health Coverage. The recent National Health Policy, 2017 include both these aspects and is aimed to increase the central government spending on health from the current level of 1.15% to 2.5% of GDP and also to reduce the proportion of households incurring catastrophic health expenditure from the current level by 25%, by the year 2025. The policy envisaged to attain the highest possible level of health and well-being for all at all ages and to provide affordable and universal access to good quality health care services without anyone facing financial catastrophe. (Ministry of Health and Family Welfare, 2017)

Conclusion

The average availability of medicines was suboptimal / inadequate (below 45%) in all the sectors. Only 12(9%) medicines had fulfilled WHO's criteria of optimal availability (Ewen et al., 2019) that is they were more than 80% available in the public sector. 34 medicines (approximately 26%) had the availability between 50 to 80%. Tab. Metformin 500mg was available in every public medicine outlet visited. For the private sector MSBs, only 6 medicines had the availability of more than 80% however 56 had the availability between 50 to 80%. Highest medicine availability was noticed for Tab. Ranitidine 150 mg (93.1%). For the private sector LPGs, not a single medicine was available at high level (more than 80%). Highest level of medicine availability as a generic equivalent was observed for Tab. Levo Cetrizine 5 mg (65.52%). So medicine supply should be efficiently maintained and greater investment in the health sectors should be made.

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COMPARATIVE ACCOUNT OF UV ANALYSIS OF FOUR DIFFERENT BRANDS OF ACYCLOVIR TABLETS

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ABSTRACT

Objective: 1. To analyse the physicochemical properties of four brands of Acyclovir tablets purchased from western region of Maharashtra. 2. To investigate the content of four brands of Acyclovir tablets purchased from western region of Maharashtra. **Method:** Drug samples were subjected to determination of Uniformity of weight, Hardness, Friability, and Melting point and content was determined using UV spectrophotometric method. **Result:** 1. All tablets were complied with IP specification for Uniformity of weight. 2. Crushing strength (Hardness) value of drug was found to be 4.5 kg/cm. 3. Friability value were less than 1% and Melting point of sample ranges between 255 °C to 256 °C. **Conclusion:** Four brands of Acyclovir tablets, named Sample A (Zoster 400 DT) Sample B (Acivir-400 DT) Sample C (Ocuvir-400 DT) and Sample D (HERPIKIND-400 DT) passed since all of them are within the limit specified by the I.P.

Keywords: Acyclovir, spectrophotometry, hardness, friability

1. Introduction

Acyclovir, 9-[(2-hydroxyethoxy)-methyl]-guanosine, is an acyclic guanosine derivative which exhibits a selective inhibition of herpesviruses replication with potent clinical antiviral activity against the herpes simplex and varicella-zoster viruses [1,2]. The structure of acyclovir can be seen in Figure 1. Acyclovir is crystal powder, white to almost white with solubility soluble in dilute hydrochloric acid, difficult to dissolve in water, insoluble in ethanol [3].

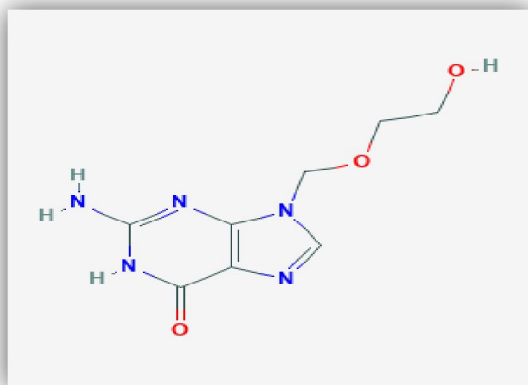


Fig 1. Structure of Acyclovir [4]

Acyclovir is an active antiviral drug for treating Herpes Simplex Virus (HSV) types 1 and 2. This drug is also useful in the treatment of infections due to varicella-zoster virus. Acyclovir preparations on the market are in the form of tablets, ointments, or intravenous injections. This review article discusses the

acyclovir analysis method in pharmaceutical preparations and biological matrices. Several spectrophotometric, voltammetry, capillary electrophoresis analysis methods, and thin-layer chromatography are used to determine acyclovir in raw materials, and pharmaceutical preparations. Also, high-performance liquid chromatography (HPLC) and mass spectrophotometry (MS) methods can be used to analyse acyclovir in various pharmaceutical dosage forms [5].

The partition coefficient value in n-octanol at 22°C is -1.57, at 25°C with a pH of 6.8 is -1.8 and the acyclovir pKa value at room temperature is 2.16 and 9.04 at 37°C [5]. Acyclovir is a synthetic analogue of the purine nucleoside, guanosine, with potent antiviral activity against herpes simplex viruses type 1 and 2, varicella-zoster virus and other viruses of the herpesvirus family. After conversion in vivo to the active metabolite acyclovir triphosphate by viral thymidine kinase, acyclovir competitively inhibits viral DNA polymerase by incorporating into the growing viral DNA chain and terminating further polymerization [4].

As an Acyclovir is an important antiviral drug, some of the analytical methods have been reported related to the analysis of Acyclovir in both quantitative & qualitative manner & in both pure compounds and pharmaceutical preparations as well. Till date, many analytical

methods have been developed for quantitative determination related to acyclovir levels.

2. Need and Objectives

The pharmacopeia compliance with regard to uniformity of weight of each brand studied is important since the uniformity of dosage unit can be demonstrated by either weight variation or content uniformity study ^[5]. These either reflect indirectly or measure directly the amount of drug substance in the tablets ^[6].

Following are the objectives:

- To procure different brands of Acyclovir tablets from western region of Maharashtra.
- To analyse the physicochemical properties of four brands of Acyclovir tablets purchased from western region of Maharashtra.
- To investigate the content of four brands of Acyclovir tablets purchased from western region of Maharashtra.

Sr. No.	Sample	Brand Name	Manufacturer	Country of Origin	Expiry Date	Batch No.
1.	A	Zoster 400 DT	Leeford Healthcare Ltd.	India	09/2022	5870005
2.	B	Acivir-400 DT	CIPLA Ltd.	India	09/2023	5NO1938
3.	C	Ocuvir-400 DT	FDC Ltd.	India	10/2022	070K015
4.	D	HERPIKIND-400 DT	LIFESTAR Pharma Ltd.	India	09/2022	B7ALT025

Table No. 2: Brands of Acyclovir tablets used in the study.

4.1.2. Analysis of physicochemical properties for commercially obtained tablets:

● Uniformity of Weight:

Twenty tablets were randomly selected from each brand and weighed individually using the electronic weighing balance. The weight (mean \pm SD) was calculated.

● Hardness Test:

The crushing strength was determined by diametric compression of each of ten tablets per sample using a Monsanto hardness tester. The mean \pm SD were calculated.

● Friability Test:

The weight of ten tablets per sample was determined on the electronic balance. The tablets were then placed in the drum of a friabilator (INDOSAT) revolving at 25 r/min which exposed the tablets to rolling and repeated shock resulting from free fall within the apparatus. After 4 min, the tablets were

4. Experimental

4.1 UV Spectrophotometric Analysis of Acyclovir in Pharmaceutical Dosage Forms (Tablet):

Acyclovir can be assayed by quantitative estimation using UV Spectrophotometry.

4.1.1 Sample Collection

The samples (Table 2) studied were purchased from pharmacies across the Karad city. Brands available in each pharmacy were selected to make up the four brands studied. The samples were obtained together with their packs and receipt.

Pure Acyclovir drug powder was gratefully received as a gift sample from Cipla Pharmaceuticals, Mumbai, Maharashtra, India.

All other reagents were of analytical grade & water was double distilled.

removed from the friabilator and dusted and reweighed. The weight loss was obtained from the differences between the initial weight and final weight. The friability was calculated as the percentage weight loss



Fig No. 4 : Determination of Friability using INDOSAT Friabilator

● Melting Point

A tablet randomly selected from each brand was used for the determination. The Acyclovir tablet was crushed to powder using a mortar and pestle. The crystals were packed into a capillary tube and tapped on a hard surface to form a column at the bottom of the capillary tube. The tube was inserted into a heating block of a melting point apparatus and already maintained at a temperature of 70 °C. The temperature of the heating block was raised at 0.5 °C per min until the sample melts. The melting temperature was recorded as the melting point. Triple determinations were carried out in per brand.

● **In Vitro Disintegration Time**

The test was performed using disintegration apparatus. A tablet was placed in each of the six tubes of the apparatus and one perforated plastic disc was added to each tube. The time in seconds taken for complete disintegration of the tablet with no palatable mass remaining in the apparatus was noted ^[9].

● **Dissolution Studies**

The dissolution profile of Acyclovir tablet was determined using USP XXII type 2 apparatus. 900ml of distilled water maintained at a temperature of 37±0.5°C was used as dissolution medium. Paddles were rotated at a speed of 100rpm. Aliquots of 5ml were withdrawn at specific intervals of 0.5, 1, 2, 4, 6, 8, 10 min and same volume was replaced with distilled water. Absorbance was measured at 249nm. Percent cumulative drug release was plotted against time in minutes to obtain dissolution profile ^[9].

4.1.3. UV Assay

The tablets were assayed spectrophotometrically using the following procedure:

Instrument: Spectrophotometer Shimadzu UV 1900

Software: UV-Win

● **Preparation of stock solution of commercially obtained Tablets:**

1. The average weight of tablet from each sample was determined by weighing ten tablets and dividing the result by ten.
2. Ten tablets were then crushed using a clean pestle and mortar (i.e. from each sample).
3. For each sample, powder containing 0.05g (50mg) of Acyclovir was accurately

weighed and transferred into different 100ml volumetric flasks. All the 4 samples were labelled using a pen and a masking tape.

4. To Each volumetric flask, 100ml of distilled water were added, and sonicated for few minutes to dissolve the drug molecule. After sonicating, the volume was made to 100ml with distilled water.
5. The mixture in each flask was then mixed well and filtered through a filter paper into clean beakers.
6. From the filtrate, 10ml was taken using a pipette and transferred into a 100ml volumetric flask; distilled water was then added to make up the volume.
7. From the resultant solution above (6), 10ml was taken with a pipette into a 100ml volumetric flask and distilled water was then added and make up the volume.
8. This stock solution was further diluted to obtain desired concentration such as 0.005 mg/ml, 0.004 mg/ml, 0.003 mg/ml, 0.002 mg/ml and 0.001 mg/ml.

● **Preparation of standard stock solution (Standard Acyclovir drug):**

1. The same procedure was repeated for the standard using 100mg of the powdered standard, and absorbance determined, which was used to calculate the percentage content (in mg) of Acyclovir from each brand.
2. This stock solution was further diluted to obtain desired concentration such as 0.005 mg/ml, 0.004 mg/ml, 0.003 mg/ml, 0.002 mg/ml and 0.001 mg/ml.

● **Assay procedure:**

1. The absorbance of each sample was determined at 254 nm, by putting small amount of the sample into a cuvette, and the cuvette was put into the machine.
2. The concentration of each sample was also determined using Beer Lambert's law according to IP.

4.1.4. Results

4.1.4.1. Results for analysis of physicochemical properties for commercially obtained tablets

The Table No. 3 shows some physicochemical parameters of the various brands of Acyclovir tablets.

The weight uniformity test on the tablets indicated no significant differences ($P > 0.5$) in the weights of tablets from the different brands, hence conformed to the BP specification, i.e. that not more than two of the individual weights should deviate from the average weight by more than $\pm 5\%$ and none should deviate by more than $\pm 10\%$ ^[7]. Table No. 3 also shows that the mean tablet crushing strength (Hardness) for the samples ranged from 4.5-4.6 kg/cm.

Sr. No.	Sample Code	Weight (mg)	Hardness (kg/cm)	Friability (%)	Melting Point ($^{\circ}\text{C}$)
1.	Sample A (Zoster 400 DT)	710 ± 0.25	4.5 ± 0.76	0.25 ± 0.22	256.5 ± 0.32
2.	Sample B (Acivir-400 DT)	699.5 ± 0.48	4.5 ± 0.59	0.25 ± 0.16	255.5 ± 0.60
3.	Sample C (Ocuvir-400 DT)	999.5 ± 0.55	4.5 ± 0.50	0.25 ± 0.06	256.5 ± 0.34
4.	Sample D (HERPIKIND-400 DT)	705 ± 0.64	4.5 ± 0.64	0.25 ± 0.02	256.0 ± 0.16

Table No. 3: Results for analysis of physicochemical properties for commercially obtained tablets.

4.1.4.2. Results for UV Assay

The absorbance and % content of different brands of Acyclovir tablets of different

concentrations are evaluated by using the UV spectroscopy and results obtained are tabulated in following tables:

Although friability is a non-official test, it is related to the hardness of the tablet and it is the tendency of tablets to powder, chip, or fragment. It can negatively affect the elegance, appearance and consumer acceptance of the tablet. All the samples showed friability values below 1%. According to Pharmacopoeial specifications, disintegration time of the fast disintegrating tablet should be less than 3 minutes and Dissolution profile of Acyclovir tablet should show 100% drug release within 10 minutes^[9].

Sr. No.	Concentration (mg/ml)	Absorbance	% Content	Content (mg)
1.	0.001	0.078	90.16	710
2.	0.002	0.174	92.06	710
3.	0.003	0.238	92.24	710
4.	0.004	0.311	91.20	710
5.	0.005	0.402	90.95	710

Table No.4: Showing the Results Obtained Using Uv Method Sample A (Zoster 400 DT)

Sr. No.	Concentration (mg/ml)	Absorbance	% Content	Content (mg)
1.	0.001	0.079	93.89	700
2.	0.002	0.178	94.17	700
3.	0.003	0.240	94.49	700
4.	0.004	0.379	95.04	700
5.	0.005	0.405	91.46	700

Table No. 5: Showing the Results Obtained Using UV Method Sample B (Acivir-400 DT)

Sr. No.	Concentration (mg/ml)	Absorbance	% Content	Content (mg)
1.	0.001	0.080	94.11	1000
2.	0.002	0.178	94.17	1000
3.	0.003	0.242	93.79	1000
4.	0.004	0.317	92.96	1000
5.	0.005	0.407	92.08	1000

Table No. 6: Showing the Results Obtained Using Uv Method Sample C (Ocuvir-400 DT)

Sr. No.	Concentration (mg/ml)	Absorbance	% Content	Content (mg)
1.	0.001	0.078	92.88	705
2.	0.002	0.178	93.71	705
3.	0.003	0.227	93.65	705
4.	0.004	0.396	92.80	705
5.	0.005	0.405	91.46	705

Table No. 7: Showing the Results Obtained Using UV Method Sample D (HERPIKIND-400 DT)

Sr. No.	Concentration (mg/ml)	Absorbance
1.	0.001	0.078
2.	0.002	0.071
3.	0.003	0.080
4.	0.004	0.073
5.	0.005	0.085

Table No. 8: Showing the Results Obtained Using UV Method (Standard Acyclovir Drug)

Obtained results are subjected to calculation for evaluating standard deviation and coefficient variation of different brands of Acyclovir were calculated.

4.1.5. Conclusion

According to the Indian Pharmacopoeia (I.P), Acyclovir tablet should contain not less than 90% (360 mg) and not more than 110% (440 mg) of Acyclovir^[10].

From the results obtained using the spectrophotometric method, it can be seen that samples A, B, C, and D passed since all of them are within the limit specified by the I.P, while B & D are failed where all of them contain below the specified limit by I.P.

Acyclovir exhibits its maximum absorption at 254 nm and obeyed Beer's law 1 -5 µg/mL^{[7] [8]}

5. Discussion

The physicochemical properties of four brands named as Sample A (Zoster 400 DT), Sample B (Acivir-400 DT), Sample C (Ocuvir-400 DT) and Sample D (HERPIKIND-400 DT) of Acyclovir tablets obtained from various pharmacies across Karad region, has been evaluated. All the brands met compendial requirements with regards to uniformity of weight, crushing strength and friability. The pharmacopeia compliance with regard to uniformity of weight of each brand studied is important since the uniformity of dosage unit can be demonstrated by either weight variation

or content uniformity study^[11]. These either reflect indirectly or measure directly the amount of drug substance in the tablet^[12]. Although there was compliance with each brand, the differences in tablet weight (a reflection of their sizes), among the brands may have some negative psychological effects on clinicians and their patients since they could raise some doubts on the general equivalence of the different brands of Acyclovir tablets available.

The World Health Organization model formulary advises that a patient should be placed on a particular brand, probably due to pharmacokinetic and psychological reasons^[14]. Sufficient tablet hardness is essential to ensure damage resistance during handling, packaging and transportation. Although IP recommends a crushing strength of 5 kg/cm, an overly hard tablet would lower disintegration time significantly and in turn dissolution^[14].

The minimal friability values for all the tablet brands is an indication of the ability of the tablet to withstand stress due to abrasive forces, without crumbling during transportation, packaging, handling and dispensing. These values also reflect the hardness of the tablets.

Disintegration time is the rate determining step in drug absorption. The type and amounts of excipients used by different manufacturers may influence disintegration and consequently the bioavailability of the drug. The disintegration times of the different brands could not be predicted from their tablet crushing strength values.

Based on the USP specifications, some brands may release over 80% of their drug content within 1 h while some may show variable amounts of their active content^[10]. Here, their disintegration time did not have a direct relationship with their drug release. Some Brands may have disintegration time below 10

min, and drug release above 80%, this could be due to improper formulation technique leading to disintegration into coarse particles and preventing the drug from going into solution.

The chemical content assay using the UV spectroscopic method showed that brands Zoster 400 DT (Sample A) Acivir-400 DT (Sample B) Ocuvir-400 DT (Sample C) and HERPIKIND-400 DT (Sample D) meet the compendial requirements brands and passed UV assay method.

A simple, sensitive, rapid, accurate and precise spectrophotometric method has been developed for estimation of acyclovir in bulk and pharmaceutical dosage forms.

It can therefore be concluded that Acyclovir tablets marketed from Karad region showed good physicochemical qualities, and four brand Zoster 400 DT (Sample A) Acivir-400 DT (Sample B) Ocuvir-400 DT (Sample C) and HERPIKIND-400 DT (Sample D) were found to be chemically equivalent.

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FISCAL EFFICIENCY OF THE SPECIAL CATEGORY STATES: AN INSIGHT INTO THE INDIAN FEDERALISM

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ABSTRACT

The present paper attempts to analyze the nature of state finances in India by recognizing the changes that have occurred in the fiscal parameters over time. It develops a composite fiscal performance index (FPI) to measure fiscal efficiency of the special category states in comparison to general category states of India for the period of 1990-91 to 2019-20. The FPI is consisting of five major sub-indices viz. Surplus Index, Revenue Efficiency Index, Expenditure Quality Index, Debt Surviving Index, and Debt Sustainability Index. Each of the sub-indices comprise into two minor sub-indices. Relative Distance method has been used to construct the relevant indexes. The paper also uses K-mean cluster analysis to check the tendencies of convergence in terms of index value for both the special as well as general category states in India. It observes that the fiscal performance as a whole has been improving during the period from 2005 to 2019 for the entire special and general category states. However, all the special category states were deteriorating as compared to general category states, as their ranking position has been declined. The causes of such deteriorations appear to be their lower revenue generation capacity, less quality of expenditure and fail to maintain debt sustainability. Further, huge inter-state variation has been noticed in terms of FPI value of the states over time. The result of K-mean cluster analysis confirms that the low-level equilibrium trap exists among the special category states.

Keywords: Fiscal Performance Index, Indian Federation, Fiscal Discipline, Special Category States, Cluster Analysis

Introduction

I. Introduction

Deteriorating fiscal performance at both Central as well as State level over time is one of the major concerns for the Indian federation. India being a federal structure, its fiscal performance largely depends on the fiscal performances of her constituent states. Better and prudent financial management in the states may lead to enrich the economic base through higher economic growth (Sinha and Ganguli, 2019). To safeguard the economic and social environment of the country it is necessary to reduce the inter-state disparities that exist among the states. The Central government tries to achieve this by transferring resources from centre to meet the needs of the individual states. Fiscal mechanism, comprising of revenue generation, expenditure allocation, and debt management needs constant monitoring to ensure fiscal discipline so that the macro-economy is well balanced (Sarma, 2018). Thus the Government of India implementing various fiscal reform incentive scheme including Fiscal Responsibility and Budget Management Act (FRBM act, 2003) with an objective to

maintain fiscal balance at the state levels. The eleven states of the country namely Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura and Uttarakhand are belongs to the special category status. These states have faced various challenges such as shortage of capital, natural resources, lack of physical and social infrastructure, low economic base, economic deprivation and geographic isolation as compared to other states of the country. The Central Government provided 90:10 per cent as a grants and loans respectively for the development of the special category states. While general category states has been getting only 30:70 per cent as a grants and loans respectively. Moreover, unlike general category states, there is no hard budget constraint for the special category states as the central transfer is significantly high and also having marked benefit of debt relief and debt swapping through the implementation of FRBM Act. It is imperative to assess the fiscal efficacy of the policies followed by individual states and evaluate their performance on a common scale. This would indicate where they are in relation to each other and also in relation

to the general category states. Thus the present paper tries to measuring fiscal performance of the special category states as well as general category states by preparing a composite fiscal performance index and also examines the ranking of these states in terms of fiscal performance index to check whether these states will improve their performance or not after implementation of FRBM Act (2003).

The rest of the paper is organized in the following manner. Section-II covers the existing literature on this ground. The “Data Sources and Methodological Issues” are discussed in section-III. Section-IV presented and analyzed the empirical results of the study. The “Conclusions” are presented in the last section of the paper.

II. Review of Literature

In recent past, the deteriorating fiscal performance at both Centre and State levels becomes a major concern for India. Rao (2002) has been analysed the problem of state finances in India and also examines the causes of fiscal imbalances in terms of revenue receipts and revenue expenditure of the states. By covering 20 years of data from 1980-81 to 1999-2000 for the 14 major states in India, the study found an increasing divergence in the growth performances among the states. The revenue deficit and fiscal deficit of the states have shown a sharp deterioration. The problem of fiscal imbalances is more acute in poorer states than in the richer states. As the measurement of fiscal performance is concerned, there are some prominent studies like Bhide and Panda (2002) has been proposed a composite index to measure the quality of budget which takes into account five components namely, revenue expenditure, capital expenditure, quality of revenue, degree of fiscal prudence and degree of revenue prudence for a period of 1980-81 to 2002-03. Dholakia (2005) has been developed another approach to measure the fiscal performance of the 14 major Indian states by preparing a composite index consisting of eight fiscal indicators over the period from 1990-91 to 2002-03. Dash and Tiwari (2011) finds that the fiscal performances of the northeastern states were deteriorating during post reform era. Mohanty & Mishra (2016) have been developed a composite fiscal performance

index to measure the fiscal performance for the 17 non-special category states of India for the period of 2003-04 to 2014-15. The composite FPI is made up of five major sub-indices and each of these sub-indexes is mapped into two minor sub-indices. Results show that there is huge inter-state variations and having persistent deterioration in terms of index value. Bhattacharjee (2016) has developed a fiscal performance index by covering all the eleven special category states over two time points (2001 & 2011) to examine their inter-state variation in terms of fiscal performance. Nandal and Annu (2013) try to study the aspects of fiscal imbalance of the states in India for the period from 1995-96 to 2011-12, based on secondary data from various issues on state finances by RBI. By using various statistical tools, the study finds that the major reason of fiscal imbalances in India are due to declining revenue-GDP ratio, slow growth of tax revenue, expanding expenditure etc. Several studies have examined the role of FRBM Act on fiscal performance of both central and state government's finances, e.g. the prominent studies of Rao & Sen (2011), Sen & Dash (2013). Dash (2011) try to evaluates the fiscal performance of Tripura (as a special category states) after implementing the FRBM Act, over the period from 1990-91 to 2009-10. Study observed that the overall fiscal performance of Tripura is improving after the FRBM Act. The FRBMA (2003) sets fiscal regulations that reflect to foster fiscal discipline on both the Central and the State Governments to achieve a balanced budget with effective revenue management (Singh et al., 2017). Sucharita and Sethi (2011) try to analyze the role of FRBM Act in resorting fiscal balance in India for the period from 1980-81 to 2008-09 and finds that the FRBM Act does not have significant effect on the Gross fiscal deficit to GDP ratio. But (Chakraborty and Dash, 2013) in their study, finds that the implementation of fiscal rule leads to reduction in fiscal imbalances at the state levels. Badaik (2017) has been explored the impact of Fiscal Responsibility Legislations (FRLs) on the performance of state finances in India by considering the panel data for 28 states from 2000-01 to 2009-10. Panel regression result shows that FRBM have

positive impact on the fiscal performance of the states.

The issue of inter-state variation with regards to fiscal performance is a serious academic discourse for the Special Category States including North Eastern states. However this persistent regional inequality between the Special Category States and the General Category States is yet to get adequate attention from the academicians of the Northeast and outside. Thus it is most important to study the differences in performance among the states in order to extract the concept about what works and what does not for the individual states (Ahluwalia, 2000).

The paper contributes to the existing literature in three ways. First, it is a comparative study of measuring fiscal performance between special and general category states of India which has not been covered by other researchers so far. Secondly, it employs a K-mean cluster analysis to check convergence tendencies of the FPI level over time. Third, it analyzes data for the period from 1990-91 to 2019-20 by utilizing the most recently available data.

Objective of the Study

The main objective of the present study was to measure the state of fiscal performance of the Special Category States in comparison to the General Category states of India. Also, tries to investigate the converging/diverging tendencies of the Indian states, and that of the special category states with the general category in regards to fiscal performance over time.

III. Data Sources and Methodology

Table1: Structure of Fiscal Performance Index

Major Sub-Indices	Minor Sub-Indices
Surplus Index (SRI)	(i) Revenue Surplus Index (RRI): RS/GSDP (ii) Fiscal Surplus Index (FSI): FS/GSDP
Revenue Efficiency Index (REI)	(i) State Own Tax Revenue Index (SOTRI): SOTR/GSDP (ii) State Own Non-Tax Revenue Index (SONTRI): SONTR/GSDP
Expenditure Quality Index (EQI)	(i) Developmental Revenue Expenditure Index (DREI): DRE/RR (ii) Developmental Capital Expenditure Index (DCEI): DCE/RR
Debt Surviving Index (DSII)	(i) Debt Servicing Index (DSRI): IP/RR (ii) Outstanding Debt Ratio Index ((DRI): DS/GSDP
Debt Sustainability Index (DSTI)	(i) Debt Spread Index (DSI): $G_{\text{gdp}} - G_{\text{ds}}$ (ii) Rate Spread Index (RSI): $G_{\text{gdp}} - r$

The present study is entirely based on secondary data. The data collected from the government official sources such as Handbook of Statistics on State Government Finances published by RBI and EPW Research Foundation. The study covered a period of 30 years from 1990-91 to 2019-20. The entire study period is divided into six sub periods viz. 1990 to 1994 (period-I), 1995 to 1999 (period-II), 2000 to 2004 (period-III), 2005 to 2009 (period-IV), 2010 to 2014 (period-V), and 2015 to 2020 (period-VI).

Composite Fiscal Performance Index

Fiscal Performance Index is a comprehensive method to find out the performance of the states with regards to their financial management. An increase in the value of FPI or any of its indicators would necessarily mean improvement in the fiscal performance of the concerned state and vice-versa. The justification for using a multi-indicator model to evaluate the fiscal performance is because the selection of single indicator for measuring fiscal discipline is unjustified (Dholakia, 2005). The FPI is a composite index consisting of 10 minor sub-indices for reflecting fiscal performance and it is grouped into five major sub-indices. The Minor sub-indices are assigned equal weights to construct a minor index. Further, minor sub-indices are assigned equal weights to form a major index. Similarly, all five major sub-indices are assigned equal weights to construct Fiscal Performance Index. Thus the composite FPI is calculated from the average of major indices. The structure of FPI is depicted in the following (Table1).

Where, Surplus Index (SI) is constructed by taking two minor-indices (i) *Revenue Surplus Index (RRI)* calculated by the ratio of Revenue Surplus to Gross State Domestic Product (GSDP) and (ii) Fiscal surplus Index (FSI) represented by Gross Fiscal Surplus as a proportion of GSDP. Revenue Efficiency Index (REI) consists of two minor indices, (i) State Own Tax Revenue Index (SOTRI), calculated by taking the ratio of State Own Tax Revenue to the GSDP and (ii) State Own Non-Tax Revenue Index (SONTRI), formulated by taking the ratio of State Own Non Tax Revenue to GSDP. Expenditure Quality Index (EQI) made up of two minor indices, i.e. (i) Developmental Revenue Expenditure Index (DREI), constructed by taking the ratio of Development Revenue Expenditure to Revenue Receipts and (ii) Development Capital Expenditure Index (DCEI) formulated by taking the ratio of Development Capital Expenditure to Revenue Receipts. Debt Surviving Index (DSII) comprises of two minor indices, viz. (i) Interest Payment to Revenue Receipt Index (IPRRI) represented by the ratio of Interest Payments to Revenue Receipts and (ii) Outstanding Debt Ratio Index (DRI) constructed by taking the ratio of Debt Stock to GSDP. The Debt Sustainability Index (DSTI) made up of two minor indices, viz. (i) Debt Spread Index (DSI) constructed by indexing the difference of Growth rate of GSDP and Growth rate in Debt Stock and (ii) Rate Spread Index (RSI) measured by the difference of Growth rate of GSDP and average cost of borrowing. Average cost of borrowing is calculated from the ratio of Interest Payments in a particular year to the average Debt Stock of the initial year and last year.

To construct the sub-indices from the identified fiscal parameters, Relative Distance Method, a multi-indicator based approach has been used. It is a normalization method, value ranging from 0 (worst performance) to 100 (best performance). The uniqueness of this method is that to construct an index it can take both the favorable indicators called Improvement Index

and adverse indicators called as Deprivation Index. Deprivation Index means the value with lower ratio for a state, shown higher index value. In the case of Improvement Index higher ratio shows high index value. In this case DSRI and DRI are treated as Deprivation index. RRI, FSI, SOTRI, SONTRI, DREI, DCEI, DSI and RSI are treated as Improvement Index.

$$\text{Improvement Index (I)} = \frac{(\text{Actual value} - \text{Minimum value})}{(\text{Maximum value} - \text{Minimum value})} * 100$$

$$\text{Deprivation Index (D)} = \frac{(\text{Maximum value} - \text{Actual value})}{(\text{Maximum value} - \text{Minimum value})} * 100$$

K-Means Cluster

The fiscal convergence in respect of FPI among the Special and General Category States in India over time can be analyzed by K-mean Cluster analysis. Cluster analysis is a non-parametric approach, which is considered to be a better approach in the context of distributional dynamics of FPI across the states. This will demonstrate that which states are found to be closed to each other based on fiscal performance index value. The K-means clustering procedure maximizes the homogeneity of objects (viz. states) within the cluster and maximizes the heterogeneity between the clusters. We have used Euclidean distance matrix to find out the distances between the clusters. In order to select the number of clusters (k) for each analysis, we objectively consider K=2.

I. Results and Discussions

Composite FPI and Ranking Analysis

The estimated five major sub-indices for the Special and General Category states of India for six different time periods are shown in the Appendix (Table A). The composite FPI value and their ranking for all the states are presented in Table 2. There is a huge inter-state variation in terms of different fiscal indicators which are considering for measuring the fiscal performance of the states.

Table2: Fiscal Performance Index (FPI) and Ranking of the States

States	1990 to 1994	1995 to 1999	2000 to 2004	2005 to 2009	2010 to 2014	2015 to 2019
	FPI (R1)	FPI (R2)	FPI (R3)	FPI (R4)	FPI (R5)	FPI (R6)
Andhra Pradesh	55.63 (7)	54.21 (5)	54.36 (7)	46.56 (16)	53.20 (7)	52.25 (7)
Bihar	35.72 (21)	46.22 (18)	38.38 (24)	47.17 (13)	42.11 (20)	52.22 (8)
Goa	53.16 (8)	51.72 (13)	54.91 (6)	47.98 (12)	47.66 (15)	62.48 (1)
Gujarat	63.61 (1)	52.63 (10)	57.49 (2)	46.26 (17)	51.36 (8)	53.61 (6)
Haryana	50.43 (13)	48.83 (16)	57.37 (3)	56.03 (2)	43.38 (18)	47.75 (15)
Karnataka	60.20 (2)	58.26 (1)	53.96 (9)	52.52 (7)	50 (10)	61 (2)
Kerala	50.80 (12)	50.72 (14)	53.99 (8)	40.80 (19)	36.05 (22)	43.66 (19)
Madhya Pradesh	51.15 (11)	53.76 (6)	47.69 (18)	49.03 (10)	56.27 (5)	55.54 (5)
Maharashtra	58.80 (4)	52.80 (8)	50.61 (12)	46.65 (15)	48.47 (13)	51.17 (10)
Odisha	48.35 (16)	45.23 (20)	48.55 (14)	55.76 (3)	59.09 (2)	58.64 (4)
Punjab	47.50 (17)	42.20 (22)	39.49 (23)	37.11 (23)	31.86 (25)	27.28 (26)
Rajasthan	51.62 (9)	51.87 (12)	48.10 (16)	46.03 (18)	51.35 (9)	45.90 (18)
Tamil Nadu	60.07 (3)	54.72 (3)	51.48 (10)	52.11 (8)	47.66 (14)	47.13 (16)
Uttar Pradesh	42.78 (20)	41.95 (23)	44.96 (19)	46.77 (14)	48.51 (12)	50.42 (11)
West Bengal	48.99 (14)	46.03 (19)	40.75 (22)	31.07 (25)	28.09 (26)	42 (20)
Arunachal Pradesh	57.85 (6)	55.67 (2)	51.23 (11)	54.62 (4)	57.94 (3)	59.38 (3)
Assam	51.44 (10)	44.72 (21)	48.71 (13)	53.96 (6)	56.56 (4)	51.74 (9)
Himachal Pradesh	48.85 (15)	47.98 (17)	36.82 (25)	38.68 (22)	40.82 (21)	38.31 (22)
Jammu & Kashmir	NA	52.49 (11)	41.14 (21)	33.91 (24)	32.19 (24)	37.79 (23)
Manipur	58.17 (5)	50.56 (15)	48.15 (15)	38.94 (21)	46.46 (16)	29.89 (25)
Meghalaya	44.96 (19)	54.50 (4)	56.41 (4)	48.64 (11)	42.82 (19)	47.85 (14)
Mizoram	NA	NA	32 (26)	39.03 (20)	49.16 (11)	46.58 (17)
Nagaland	NA	36.56 (24)	43.14 (20)	30.38 (26)	35.21 (23)	33.15 (24)
Sikkim	NA	53.18 (7)	64.61 (1)	58.52 (1)	53.25 (6)	47.97 (13)
Tripura	46.64 (18)	52.66 (9)	47.94 (17)	51.59 (9)	60.17 (1)	48.36 (12)
Uttarakhand	NA	NA	56.37 (5)	54.13 (5)	45.38 (17)	40.69 (21)

Source: Author's Calculation, Based on A Study of States Finances, RBI & EPW Research Foundation Data

(Note: Telengana, Jharkhand and Chattisgarh from general category states were dropped from the present study due to data unavailability)

During *period-I*, Gujarat, Karnataka and Tamil Nadu were in the top three positions in terms of FPI value due to its better quality of expenditure, reducing deficit and debt sustainability. In this period, Bihar, Uttar Pradesh and Meghalaya were the worst performer. In *period-II*, Karnataka placed at the top, draws its strength from expenditure quality and debt sustainability and it followed by Arunachal Pradesh and Tamil Nadu. Because of low performance in terms of revenue generation and debt ratios, Punjab, Assam and Odisha placed at least in the list. Again Sikkim was at the top of the list and it is followed by Gujarat and Haryana in the *period-III*. During this period, Bihar, Mizoram and Himachal Pradesh were at the bottom. Sikkim, Haryana and Odisha were placed in top three positions in the period-IV, where as Nagaland, West Bengal and Jammu & Kashmir were at the

bottom in the list. In *period-V*, the state Tripura improving its performance and placed as a best performer because of maintaining expenditure quality and debt management and it is followed by Odisha and Arunachal Pradesh. Again, West Bengal, Punjab and Jammu & Kashmir were the worst performer in this period. Lastly, during *period-VI*, Goa is at the top followed by Karnataka and Arunachal Pradesh. The improvement of these three states is explained by their better revenue generation with quality of expenditure and debt sustainability. Because of low expenditure quality and low debt sustainability, Tripura placed its position from 1st to 12th in this period. Nagaland, Manipur and Punjab were the worst performer among the list. In case of general category states it is observed that, only Madhya Pradesh, Odisha, Karnataka and Tami Nadu prevails their position as a best performer and other states

fails to improve their position over time. In case of Special Category states, all the states were deteriorated as compared to general category states. Their ranking position has been declined because of lower revenue generation, less quality of expenditure and fail to maintain debt sustainability. However, fiscal performance as a whole is improving during (2005-06 to 2019-20) for the entire Special and General Category States after implementation of the FRBM Act, 2003. Thus, we can say that there is some significant impact of FRBM Act on the states but many of states fail to improve their position consistently.

Analysis of Ranking Transition of the States

The ranking transition of the states in respect of FPI value is defined as the change in ranking position between two consecutive periods. The reasons for large scale transition are attempted in the Table 3. During period-I&II, large scale ranking transition is observed for all the General Category states except Tamil Nadu and Karnataka. The rank of the many states is improving due to better management of quality expenditure and declined in debt servicing ratio. The FPI rank is deteriorated for the other states due to rise in deficit and debt servicing

ratio and declined in revenue efficiency. Among the Special Category States, all the states improved their rank except Assam. The rank of the Assam is deteriorated because of high deficit and lower debt sustainability. For the period II & III, large scale transition is noticed for all the special and general category states except Manipur and Meghalaya. During period III & IV, only Punjab, Sikkim and Uttarakhand prevails their previous position. For the period IV & V, only Jammu & Kashmir able to sustain the previous position and others has shown large scale ranking transition. Lastly, for the period V & VI, all the states are observed large scale ranking transition except Andhra Pradesh, Madhya Pradesh and Arunachal Pradesh. Most interestingly, Sikkim rank 1st in period- III and IV, but in the period-V and VI its position was declined due to low revenue efficiency and low debt sustainability. It is observed that all the Special category States were placed their rank at bottom over the six time-periods. Thus we can say that, the special category states were mostly affected by lesser value of REI, EQI and DSTI. So they have to strictly follow the target set by the FRBM Act to improve their status.

Table3: Transition of Ranking over 1990-91 to 2019-20

States	R1-R2	Reasons	R2-R3	Reasons	R3-R4	Reasons	R4-R5	Reasons	R5-R6	Reasons
Andhra Pradesh	2	(+) EQI	-2	(-) EQI, DSII, DSTI	-9	(-) SRI, EQI, DSTI	9	(+) REI, EQI, DSTI	0	
Bihar	3	(+) EQI, DSII, DSTI	-6	(-) REI, EQI, DSTI	11	(+) SRI, EQI, DSTI, DSTI	-7	(-) SRI, EQI, DSTI	12	(+) REI, EQI, DSTI
Goa	-5	(-) SRI, EQI	7	(+) SRI, REI, EQI, DSTI	-6	(-) SRI, REI, DSII, DSTI	-3	(-) EQI, DSII, DSTI	14	(+) REI, DSII, DSTI
Gujarat	-9	(-) SRI, REI, DSTI	8	(+) SRI, DSTI	-15	(-) SRI, REI, EQI, DSII, DSTI	9	(+) SRI, REI, DSTI	2	(+) REI, DSII, DSTI
Haryana	-3	(-) SRI, REI, DSTI	13	(+) SRI, DSII, DSTI	1	(+) EQI, DSII	-16	(-) SRI, EQI, DSII, DSTI	3	(+) REI, EQI, DSTI
Karnataka	1	(+) EQI, DSII	-8	(-) REI, EQI, DSTI	2	(+) EQI, DSII	-3	(+) SRI, EQI, DSII, DSTI	8	(+) REI, EQI, DSTI
Kerala	-2	(-) SRI, DSII, DSTI	6	(+) SRI, EQI, DSII, DSTI	-11	(-) SRI, REI, EQI, DSII, DSTI	-3	(+) SRI, EQI, DSII, DSTI	3	(+) REI, DSTI
Madhya Pradesh	5	(+) EQI, DSTI	-12	(-) REI, EQI, DSTI	8	(+) EQI, DSTI	5	(+) SRI, REI, DSII, DSTI	0	

Maharashtra	-4	(-) SRI, REI, DSTI	-4	(-) REI, EQI, DSII	-3	(-) SRI, REI, DSII, DSTI	2	(+) SRI, REI, EQI, DSTI	3	(+) REI, DSII, DSTI
Odisha	-4	(-) SRI, DSTI	6	(+) SRI, REI, DSII, DSTI	11	(+) SRI, REI, EQI, DSII	1	(+) REI, DSII	-2	(-) SRI, DSII, DSTI
Punjab	-5	(-) SRI, REI, DSII, DSTI	-1	(-) EQI, DSTI	0		-2	(-) SRI, EQI, DSTI	-1	(-) SRI, DSII
Rajasthan	-3	(-) SRI, REI, DSII, DSTI	-4	(-) REI, EQI, DSII	-2	(-) SRI, REI, DSTI	9	(+) SRI, REI, DSII, DSTI	-9	(-) SRI, DSII, DSTI
Tamil Nadu	0		-7	(-) REI, EQI, DSTI	2	(+) EQI, DSII, DSTI	-6	(-) SRI, EQI, DSII, DSTI	-2	(-) SRI, DSII
Uttar Pradesh	-3	(-) SRI, REI, DSII, DSTI	4	(+) SRI, DSII	5	(+) REI, EQI, DSII	2	(+) SRI, REI, DSTI	1	(+) REI, DSTI
West Bengal	-5	(-) SRI, REI, DSII, DSTI	-3	(-) REI, EQI, DSII	-3	(-) SRI, REI, DSII, DSTI	-1	(-) EQI, DSII, DSTI	6	(+) SRI, REI, DSII, DSTI
Arunachal Pradesh	4	(+) EQI	-9	(-) SRI, EQI	7	(+) SRI, REI, EQI	1	(+) REI, DSII, DSTI	0	
Assam	-11	(-) SRI, DSTI	8	(+) SRI, REI, DSII, DSTI	7	(+) SRI, REI, EQI, DSII	2	(+) REI, DSII, DSTI	-5	(-) SRI, EQI, DSTI
Himachal Pradesh	-2	(-) SRI, DSII	-8	(-) SRI, REI, EQI	3	(+) SRI, REI, DSII	1	(+) REI, DSII, DSTI	-1	(-) SRI, EQI, DSTI
Jammu & Kashmir	-		-10	(-) EQI, DSTI	-3	(-) SRI, DSII, DSTI	0		1	(+) REI, DSTI
Manipur	-10	(-) SRI, REI, DSII, DSTI	0		-6	(-) DSII, DSTI	5	(+) SRI, REI, DSTI	-9	(-) SRI, REI, EQI, DSTI
Meghalaya	15	(+) EQI, DSTI	0		-7	(-) SRI, REI, EQI, DSTI	-8	(-) SRI, EQI, DSII, DSTI	5	(+) REI, DSTI
Mizoram	-		-		6	(+) SRI, REI, EQI, DSII	9	(+) REI, EQI, DSII, DSTI	-6	(-) EQI, DSTI
Nagaland	-		4	(+) SRI, EQI, DSII, DSTI	-6	(-) SRI, REI, DSII, DSTI	3	(+) SRI, REI, DSII, DSTI	-1	(-) SRI, EQI, DSII
Sikkim	-		6	(+) SRI, REI, EQI, DSTI	0		-5	(-) REI, EQI, DSTI	-7	(-) SRI, REI, DSII
Tripura	9	(+) SRI, REI, EQI	-8	(-) SRI, EQI, DSTI	8	(+) SRI, EQI, DSII	8	(+) REI, DSII, DSTI	-11	(-) SRI, EQI, DSII, DSTI
Uttarakhand	-				0		-12	(-) REI, EQI, DSTI	-4	(-) SRI, EQI, DSII

Source: Author's Calculation, Based on A Study of States Finances, RBI & EPW Research Foundation Data

(Note: SRI-Surplus Index; REI- Revenue Efficiency Index; EQI- Expenditure Quality Index; DSII- Debt Servicing Index; DSTI- Debt Sustainability Index)

Cluster Analysis and the Special and General Category states

The convergence tendencies among the Special and General Category states of India in terms

of fiscal performance can be observed by comparing the results of Cluster analysis. Table 4, presents the results of K-mean cluster analysis to determine the states which have

performed similar in terms of fiscal discipline. The study considered all the 26 states except Jharkhand, Chattisgarh and Telengana due to data unavailability for the cluster analysis. In the *Period-I*, 8 states are in cluster1 and other were in cluster 2. For *Period-II*, 16 states belong to cluster1 and only 8 states were from cluster 2. Fourteenth states in the *Period-III*, are from cluster1 and 12 states are in cluster 2. Again in *Period-IV*, there are only 8 states in cluster1 and others are in cluster2. In the *Period-V & VI*, 17 & 18 states are from cluster1 and 9 & 8 states are in cluster 2 respectively. It is observed that, fiscal convergence achieved due to no or small

change in cluster centers. Though all the special and general category states were belong to both the cluster, Most of the special category states were consistently belong to lower mean cluster (i.e. cluster 2) over the period. From the General category states, Andhra Pradesh, Karnataka, Gujarat, Maharashtra and Tamil Nadu perform better and they consistently belong to higher mean cluster. The distance between final cluster centers are rising from 10.80 in Period-I to 15.63 in Period-VI. Therefore, low-level long run fiscal performance trap is exists among the special category states.

Table4: Results of K-Means Cluster Analysis among the states over six time points

States	Period-I		Period-II		Period-III		Period-IV		Period-V		Period-VI	
	Distance	Cluster	Distance	Cluster	Distance	Cluster	Distance	Cluster	Distance	Cluster	Distance	Cluster
Andhra Pradesh	2.81	1	1.17	1	0.07	1	4.24	2	1.29	1	0.03	1
Bihar	11.91	2	2.36	2	4.00	2	3.63	2	5.16	2	0.002	1
Goa	5.28	1	1.32	1	0.62	1	2.82	2	4.25	1	10.26	1
Gujarat	5.17	1	0.41	1	3.20	1	4.54	2	0.55	1	1.39	1
Haryana	2.80	2	4.21	1	3.08	1	5.23	2	6.43	2	4.47	1
Karnataka	1.76	1	5.22	1	0.33	1	1.72	2	1.91	1	8.78	1
Kerala	3.17	2	2.32	1	0.30	1	4.56	1	0.90	2	7.06	2
Madhya Pradesh	3.52	2	0.72	1	5.31	2	1.77	2	4.36	1	3.32	1
Maharashtra	0.36	1	0.24	1	3.68	1	4.15	2	3.44	1	1.05	1
Odisha	0.72	2	1.37	2	5.74	1	4.96	2	7.18	1	6.42	1
Punjab	0.13	2	1.66	2	2.89	2	0.87	1	5.09	2	9.32	2
Rajasthan	3.99	2	1.17	1	5.72	2	4.77	2	0.56	1	6.32	1
Tamil Nadu	1.63	1	1.68	1	2.81	1	1.31	2	4.25	1	5.09	1
Uttar Pradesh	4.85	2	1.91	2	2.58	2	4.03	2	3.40	1	1.80	1
West Bengal	1.36	2	2.17	2	1.63	2	5.17	1	8.86	2	5.40	2
Arunachal Pradesh	0.59	1	2.63	1	3.06	1	3.82	2	6.03	1	7.16	1
Assam	3.81	2	0.86	2	5.58	1	3.16	2	4.65	1	0.48	1
Himachal Pradesh	1.22	2	4.12	2	5.56	2	2.44	1	3.87	2	1.71	2
Jammu & Kashmir	-	-	0.55	1	1.24	2	2.33	1	4.76	2	1.19	2
Manipur	0.27	1	2.48	1	5.77	2	2.70	1	5.45	1	6.71	2
Meghalaya	2.67	2	1.46	1	2.12	1	2.16	2	5.87	2	4.37	1
Mizoram	-	-	-	-	10.38	2	2.79	1	2.75	1	5.64	1
Nagaland	-	-	7.30	2	0.76	2	5.86	1	1.74	2	3.45	2
Sikkim	-	-	0.14	1	10.32	1	7.72	2	1.34	1	4.25	1
Tripura	0.99	2	0.38	1	5.56	2	0.79	2	8.26	1	3.86	1
Uttarakhand	-	-	-	-	2.08	1	3.33	2	6.53	1	4.09	2

Source: Authors’ own calculations

Period-I, distance between final cluster centers is 10.80

Period-II, distance between final cluster centers is 9.18

Period-III, distance between final cluster centers is 11.91

Period-IV, distance between final cluster centers is 14.56

Period-V, distance between final cluster centers is 14.96

Period-VI, distance between final cluster centers is 15.63

I. Conclusion and Policy Implication

The study clearly observes that there are large inter-state variations in terms of FPI value. During period-I to VI, only Gujarat, Karnataka, Haryana and Tami Nadu prevails their position as a best performer and other states fails to improve their position and the large scale transition of ranking is noticed. In case of Special Category states, all the states were deteriorated over time as their ranking position is declined. Sikkim was the best performer in the period- III & IV, but during period-V & VI,

the ranking of this state was decline from 1st to 13th position because of deteriorating level in terms of revenue generation and debt sustainability. Moreover, the fiscal performance as a whole is improving during (2005-06 to 2019-20) for the entire Special and General Category States after implementation the FRBM Act, 2003. Therefore, the state should try to enhance their performance in terms of revenue generation, increase in expenditure quality and implement debt servicing scheme to ensure debt sustainability to sustain sound public finance. Thus the government should implement rule-based fiscal framework along with target based and time-bound framework with proper accountability and monitoring facilities in order to improve the performance and efficiency of these states in one hand and curbing regional disparities in the other hand.

Appendix

Table A: Major Sub-Index of FPI

States	1990 to 1994					1995 to 1999				
	SRI	REI	EQI	DSII	DSTI	SRI	REI	EQI	DSII	DSTI
Andhra Pradesh	54.46	53.84	45.51	65.27	59.08	38.50	51.34	78.37	58.09	44.77
Bihar	45.20	33.65	35.99	33.67	30.07	35.46	32.32	49.17	45.37	68.78
Goa	60.31	33.37	54.34	66.98	50.79	54.13	34.62	40.68	79.20	50.00
Gujarat	57.36	43.99	59.27	64.02	93.41	46.86	37.20	75.91	72.91	30.24
Haryana	61.27	38.87	19.29	72.92	59.77	48.18	33.22	54.47	73.68	34.63
Karnataka	61.06	31.52	43.33	76.71	88.38	58.27	29.30	58.12	80.81	64.78
Kerala	57.46	29.95	36.15	55.69	74.74	44.84	34.79	59.21	62.44	52.32
Madhya Pradesh	57.90	40.53	37.77	71.24	48.30	44.19	37.51	56.34	71.18	59.57
Maharashtra	61.09	36.13	40.88	78.62	77.29	52.22	32.65	68.65	79.88	30.62
Odisha	55.03	15.84	56.22	40.51	74.15	34.71	16.34	85.78	42.28	47.02
Punjab	49.29	35.93	50.53	52.25	49.50	40.41	30.17	64.86	40.33	35.22
Rajasthan	58.34	24.87	47.33	60.28	67.28	43.20	22.87	87.70	55.89	49.69
Tamil Nadu	57.31	35.63	50.00	79.13	78.30	53.23	37.35	52.35	77.95	52.70
Uttar Pradesh	52.64	23.34	26.63	48.68	62.60	36.38	22.82	67.67	46.69	36.17
West Bengal	55.34	27.18	39.26	52.59	70.57	33.26	22.10	86.49	48.43	39.88
Arunachal Pradesh	96.47	7.81	29.50	93.24	62.25	91.34	1.72	70.29	84.71	30.30
Assam	63.57	11.65	39.90	68.67	73.43	62.13	11.89	56.27	73.00	20.29
Himachal Pradesh	50.75	17.82	81.71	59.40	34.58	29.40	20.29	82.24	55.32	52.65
Jammu & Kashmir	81.27	11.18	45.98	36.63	NA	61.93	10.17	60.03	65.68	64.64
Manipur	75.99	3.77	47.44	68.96	94.68	38.40	3.49	82.20	58.17	70.55

Meghalaya	62.39	12.47	41.67	89.44	18.84	62.02	11.80	61.58	79.89	57.20
Mizoram	NA	NA	NA	NA	NA	28.87	2.69	67.03	NA	NA
Nagaland	0.00	11.16	56.27	31.28	NA	17.63	7.03	66.00	35.15	57.02
Sikkim	60.91	55.90	29.99	57.82	NA	43.08	61.04	0.00	86.72	75.07
Tripura	54.59	11.11	32.71	59.54	75.24	58.29	11.43	60.02	58.60	74.95
Uttarakhand	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
States	2000 to 2004					2005 to 2009				
	SRI	REI	EQI	DSII	DSTI	SRI	REI	EQI	DSII	DSTI
Andhra Pradesh	48.08	52.50	68.63	51.07	51.52	35.40	54.22	59.27	54.58	29.33
Bihar	52.32	15.70	38.55	54.66	30.67	53.76	11.90	57.87	64.66	47.64
Goa	57.82	36.48	49.85	75.70	54.68	39.19	34.98	70.32	64.81	30.59
Gujarat	50.41	30.32	71.39	58.79	76.55	46.37	22.81	67.39	58.01	36.73
Haryana	67.94	31.94	49.53	76.16	61.25	51.11	27.26	77.49	83.91	40.39
Karnataka	68.40	26.33	49.43	86.43	39.21	54.12	25.18	60.24	90.70	32.40
Kerala	54.49	27.74	59.78	67.33	60.59	39.42	22.24	50.83	65.42	26.11
Madhya Pradesh	56.67	27.82	52.14	74.14	27.68	54.58	27.13	52.23	71.87	39.35
Maharashtra	56.90	29.80	45.28	76.76	44.28	51.82	23.02	50.33	73.38	34.72
Odisha	54.17	17.85	41.85	50.11	78.76	69.22	17.98	53.30	78.15	60.15
Punjab	48.40	31.41	39.50	46.16	31.97	35.59	26.78	42.95	46.78	33.46
Rajasthan	54.12	21.72	61.71	53.12	49.83	45.34	20.18	68.46	59.73	36.42
Tamil Nadu	65.18	33.11	47.66	79.03	32.41	55.28	27.63	58.92	83.36	35.37
Uttar Pradesh	50.05	21.27	66.85	53.39	33.27	43.09	21.96	73.70	63.75	31.36
West Bengal	39.27	16.37	81.14	20.29	46.68	19.90	12.00	85.80	13.04	24.62
Arunachal Pradesh	58.59	2.58	54.55	91.64	48.80	79.47	11.05	63.40	78.10	41.10
Assam	66.27	13.84	41.16	77.40	44.87	70.83	15.55	73.82	82.98	26.61
Himachal Pradesh	25.07	17.72	62.44	29.09	49.78	40.98	19.52	55.47	40.60	36.84
Jammu & Kashmir	74.82	14.09	18.63	69.19	28.93	54.46	17.27	19.63	60.28	17.90
Manipur	50.63	2.32	45.33	74.28	68.18	73.44	3.34	47.78	70.14	0.00
Meghalaya	67.73	9.88	66.47	83.81	54.15	55.15	8.97	65.05	84.17	29.87
Mizoram	7.00	2.92	50.31	41.18	58.58	32.03	6.64	54.75	49.80	51.91
Nagaland	65.75	4.45	28.41	47.04	70.02	51.83	3.66	31.73	42.75	21.93
Sikkim	95.25	70.89	5.25	68.41	83.25	68.10	64.03	6.71	74.76	78.98
Tripura	55.47	12.99	37.70	62.86	70.67	92.59	10.17	37.75	68.80	48.64
Uttarakhand	59.09	16.26	90.50	73.06	42.92	42.23	16.17	72.74	69.25	70.25
States	2010 to 2014					2015 to 2019				
	SRI	REI	EQI	DSII	DSTI	SRI	REI	EQI	DSII	DSTI
Andhra Pradesh	28.01	69.58	50.78	51.42	66.22	20.27	44.90	84.13	52.76	59.19
Bihar	53.62	17.58	32.35	73.17	33.84	34.95	40.37	47.79	63.30	74.68
Goa	46.46	61.10	46.35	61.36	23.03	35.67	86.80	31.92	65.65	92.38

Gujarat	49.46	26.02	56.33	54.69	70.32	43.86	31.00	45.27	61.27	86.65
Haryana	39.65	27.63	53.83	66.23	29.60	20.68	46.53	62.64	38.94	69.95
Karnataka	50.19	27.65	55.21	87.06	29.89	38.09	39.21	71.65	81.41	74.63
Kerala	29.21	27.78	45.24	56.84	21.18	22.03	57.22	30.97	49.65	58.42
Madhya Pradesh	55.98	40.51	50.31	78.07	56.47	26.91	65.06	59.41	70.19	56.13
Maharashtra	52.51	23.62	51.15	68.42	46.65	44.10	38.11	37.86	71.91	63.87
Odisha	67.12	33.50	40.17	97.01	57.64	42.64	54.72	45.70	95.45	54.69
Punjab	32.73	28.46	23.21	34.17	40.72	10.66	47.19	29.48	5.91	43.17
Rajasthan	50.40	31.09	56.08	68.30	50.87	10.70	57.08	68.46	45.33	47.90
Tamil Nadu	46.46	29.54	51.88	75.88	34.54	29.79	43.37	49.85	54.27	58.35
Uttar Pradesh	49.29	33.29	55.58	65.25	39.13	33.51	71.39	37.93	51.63	57.64
West Bengal	23.82	14.68	73.25	4.80	23.89	30.24	30.22	72.18	12.99	64.38
Arunachal Pradesh	73.59	22.74	48.62	83.22	61.52	100.00	53.14	56.19	85.40	2.18
Assam	52.34	22.38	70.30	87.26	50.49	44.45	45.06	40.64	90.21	38.35
Himachal Pradesh	34.53	28.78	34.75	46.49	59.53	26.41	36.38	20.17	49.81	58.78
Jammu & Kashmir	35.03	33.17	18.18	52.78	21.81	13.81	76.07	12.50	50.04	36.55
Manipur	77.35	12.31	13.65	66.64	62.33	29.58	10.87	4.25	68.33	36.41
Meghalaya	47.62	18.89	50.38	83.79	13.39	42.86	40.92	45.74	71.23	38.47
Mizoram	12.68	12.62	59.30	66.78	94.44	60.22	21.93	18.46	85.27	47.03
Nagaland	63.84	9.29	5.27	44.91	52.74	39.64	18.60	4.70	42.43	60.38
Sikkim	72.77	55.00	0.00	84.53	53.93	46.04	34.18	17.55	74.01	68.09
Tripura	90.02	12.43	35.00	75.45	87.93	28.14	18.79	34.37	73.67	86.82
Uttarakhand	51.16	16.13	40.83	70.21	48.57	33.04	27.91	19.82	59.93	62.76

Source: Author's Calculation, Based on A Study of States Finances, RBI & EPW Research Foundation Data

(Note: SRI-Surplus Index; REI- Revenue Efficiency Index; EQI- Expenditure Quality Index; DSII- Debt Servicing Index; DSTI- Debt Sustainability Index)

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A STUDY ON PERCEPTIONS OF COLLEGE STUDENTS ON VIRTUAL LEARNING DURING COVID-19

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ABSTRACT

In the present pandemic situation, almost all physical classes are cancelled and started classes through virtual mode in all educational institutions. Along with other fields, education field also faced a lot of difficulties due to this covid-19. The key objective of this paper is to know perceptions of various college students about studying through virtual mode. To know the opinions of students, the researcher conducted a small survey through a semi structured questionnaire which is made with google form. As students and majority of faculty both were new to this virtual mode, they need some sort of training. In this survey, the opinions are collected from 112 students and used simple percentage method tool for analysis purpose. Being analytical paper, all questions are analyzed and arranged the results systematically and drawn conclusion based on this analysis. The literature has attempted to comprehend the student's perception on virtual learning and show up potential key points for success of the virtual learning.

Keywords: Covid-19, Internet, Online Platforms, Perceptions, Virtual learning,

1. Introduction

The present pandemic situation of covid-19 broken the traditional teaching method which is followed by the various schools and colleges and leads to adopt the technological developments. It changed the routine lifestyle of almost all human beings in several ways. The current technological advancements allowed to change with the online subject learning process. It is very essential to learn inclinations in online for the effective productive. Subsequently, in the place of face-to-face learning mode, online education emerged to meet the teaching learning needs of primary level to university level. Therefore, to make smart the present online platforms, apps and to provide training to teachers, the government and other private institutions tried to bring them to the best possible condition and made efforts to provide the suitable teaching-learning material for virtual classes. the virtual learning is known as applying technology to enhance the quality of education. The virtual mode of teaching-learning process based on several factors such as availability, usage of suitable methods, using relevant course material etc. At the same time, the virtual classes may have certain constraints such as problem with internet access, poor internet connection, lack of knowledge about operating online platform of the participants.

2. Virtual Learning and its Benefits

The environment in which the students learn everything virtually is known as virtual environment and the mode of learning is virtual learning. Online learning facilitates the students all over the world from anywhere they can learn. It offers flexibility to attend classes from their own place. It is completely based on internet, and it connects the student and teaching faculty who are in two different places virtually.

Virtual learning has the following benefits:

- **Improved Learning:** Through virtual learning it is possible to understand very easily the content by the students. They can improve the technical capabilities and life skills through maintenance of the time and can improve some other skills.
- **Modern Teaching:** Virtual classes supports to student centric methods; extended level and ingenuity of learning activities; focus on various learning types; modifications and enhancements be able to convert to on-ground programmes as well.
- **Ease:** this mode is more comfortable to attend 24/7 from anywhere and at any time if the students have computer and internet access.
- **Interaction:** it provides the facility to have improved one to one such as teacher-to-

student and student-to-student communication and conversation; a more student-centered education background.

- **Improved Administration:** it gives access to test the students' knowledge and their work at any time more exhaustively.
- **Savings:** With less cost it accommodate more number of students and it increases the satisfaction of students.
- **Outreach:** it gives options to students and can reach new horizons with new students and it increases the enrollments of the students.

3. Review of Literature

Warner, D., Christie, G., & Choy, S. (1998) identified in their study that the clients for vocational training generally prefers traditional methods of face to face college based training due to low level skills in operating computer and internet. **Hung, M. L., Chou, C., Chen, C. H., & Own, Z. Y. (2010)** expressed in their study the the teaching faculty have to motivate the students who has lower efficiency to work together with friends and to express their thoughts courageously and support them at the time of facing problems in online learning. **Sun, A., & Chen, X. (2016)** in their study identified the major challenges in online education, that is establishment of a rational online environment. So, student and faculty with their joint effort and interaction an effective online learning community can create. **Abbasi, S., et.al. (2020)** In their study identified that students are not in the position of accepting virtual learning over face-to-face classes during the situation of lockdown. The management and staff have to take certain steps to improve the online learning during lock down. **Bui, T. H., Luong, D. H., Nguyen, X. A., Nguyen, H. L., & Ngo, T. T. (2020)** in their paper "Impact of female students' perceptions on behavioral intention to use video conferencing tools in COVID-19" explained various tools used for video conferencing such as Zoom, Microsoft Teams or Google Hangout etc. To convert the mode of learning process from traditional to online mode should be properly designed by higher educational institutions based on the regulations of ministry of education and training. **Martin, F., Stamper, B., & Flowers,**

C. (2020), in their paper tested the readiness for virtual learning through perceptions of various students. When compared with communication skills, Online student aspects, time management, and technical skills were rated high for importance. **Bączek, M., et al., (2021)** mentioned in their study as online teaching for medicine students is more valuable. As per their study, majority of the students are expressed that e-learning effectively increased the knowledge and it is very well agreed. But focusing on increasing knowledge is not sufficient and they have to concentrate on clinical and social skills also. As per **Manalo, T. A., Higgins, M. I., Pettitt-Schieber, B., Pettitt, B. J., Mehta, A., & Hartsell, L. M. (2021),** to introduce the urology specialization to medical students and to increase the clinical knowledge for general urology conditions different teaching techniques can be used. Due to COVID-19 pandemic becoming long run survival these techniques are far reaching benefit in surgical curriculum to traditional medical students.

4. Objectives of the Study

1. To know the benefits of virtual learning during Covid-19
2. To study the perceptions of the students on virtual learning and analyze them in a systematic way
3. To offer suggestions based on findings of the analysis

5. Research Methodology

Methodology is said to be the procedure or way in which the study has been done. In the present study, the data is collected with the help of both primary and secondary sources. The data relating to views of students on virtual studying during covid-19 is collected with the help of primary sources that is through a structured a questionnaire which is followed up by a google form. The sample is selected through a simple random sampling technique from various educational institutions such as Intermediate colleges, deemed universities, state universities etc. Out of total sample taken, 113 students responded positively. These respondents are surveyed to know their perceptions on virtual learning during covid-19. The data collected is analyzed with the

support of simple percentage method. Tables and graphs entered wherever necessary.

6. Analysis and Interpretation

For data analysis the simple percentage analysis technique followed.

Table 1: Distribution of respondents based on Age

Age Group	No. of Respondents	Percentage
14-19	48	42
20-25	65	58
Total	113	100

Source: Primary Data

The above table reveals that out of 113 respondents 48 respondents (42%) are in age group of 14-19 and 65 (58%) respondents are in the age group of 20-25. According to this table one can understand that majority of the students belongs to the age group of 20-25.

Table 2: Distribution of Respondents based on Gender

Gender	No. of Respondents	Percentage
Male	56	49.6
Female	57	50.4
Total	113	100

Source: Primary Data

The above table exhibits that out of 113 respondents 56(49.6%) are male and 57(50.4%) are female. From this we can understand that there is a slight variation in male and female number in the sample taken.

Table 3: Distribution of respondents based on the Place of residence

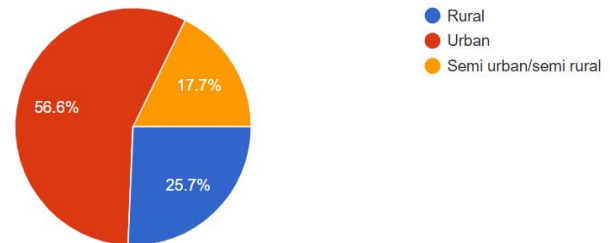
Residential area	No. of Respondents	Percentage
Rural	29	25.7
Urban	64	56.6
Semi rural/Semi urban	20	17.7
Total	113	100

Source: Primary Data

The above table explains that out of 113 respondents 29(25.7%) belongs to rural area,

where as 64(56.6%) respondents belongs to urban area. But a small number that is 20(17.7%) of students are belongs to semi urban/semi rural area.

Fig.1: Respondents classification based on place of Residence



Source: Primary Data

From this, one can understand that out of total respondents, majority of the respondents(56.6%) are residing in urban areas.

Table 4: Classification of respondents based on Courses studying

Courses	No. of Respondents	Percentage
Intermediate	4	3.54
B.Tech	35	30.98
B.A/B.Com/B.Sc	57	50.44
M.Tech/M.Sc/M.Com	17	15.04
Total	113	100

Source: Primary Data

The above table revealed that majority of the students that is 57(50.44%) are from UG (B.A/B.Com/B.Sc) , 35(30.98) are studying B.Tech, 17(15.04%) students are studying PG courses and a very less number that is 4(3.54%) students from intermediate are responded. From this it is understood that majority of the sample is reflecting from UG programmes.

Table 5: Distribution of respondents-based types of devices used for virtual learning

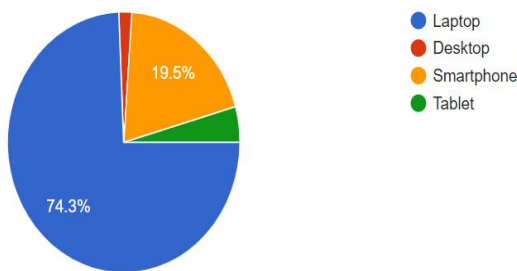
Types of devices	No. of Respondents	Percentage
Laptop	84	74.3
Desktop	2	1.8
Smart phone	22	19.5

Tablet	5	4.4
Total	113	100

Source: Primary Data

From the above table it reveals that majority of the respondents are using laptops for virtual learning that is 84 students (74.3%), and in next place smart phone users 22(19.5%) are there. Very few numbers of respondents are using tablet and desktop for their virtual mode of learning.

Fig.2: Classification of respondents based on types of devices used for virtual learning



Source: Primary Data

The above graph is explaining out of total respondents, majority of the respondents (74.3%) are using the laptop for attending virtual classes.

Table 6: Distribution of respondents based on Platform used for virtual learning

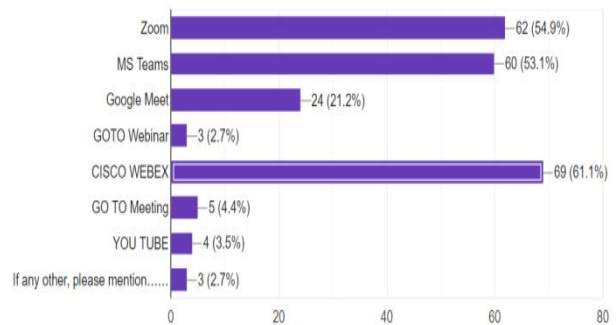
Platform used	No. of Respondents	Percentage
Zoom	62	54.9
MS Teams	60	53.1
Google meet	24	21.2
Go to webinar	3	2.7
Cisco WEbex	69	61.1
Go to meeting	5	4.4
You tube	4	3.5
Any other	3	2.7

Source: Primary Data

It is understood from the table that, majority (61.1%) of the respondents were using Cisco Webex as a platform to attend classes followed by Zoom (54.9%), MS Teams (53.1%) and the remaining platforms were used by a very few proportion of respondents.

Fig.3: Distribution of respondents based on the

platform used for virtual learning



Source: Primary Data

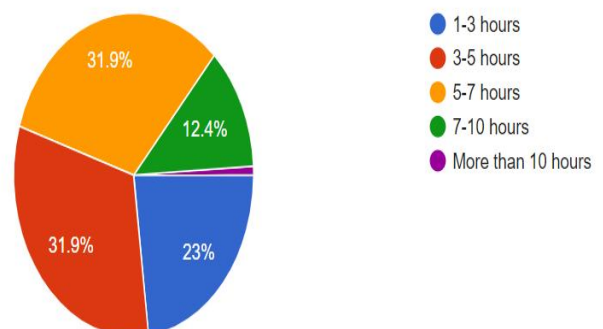
Table 7: Distribution of Respondents based on time spending for virtual learning

Spending time	No. of Respondents	Percentage
1-3 Hours	26	23
3-5 Hours	36	31.9
5-7 Hours	36	31.9
7-10 Hours	14	12.4
More than 10 Hours	1	0.9
Total	113	100

Source: Primary Data

It is evident that 31.9% of the respondents opined that they are spending 3-5 hours and 5-7 hours for the virtual learning on a regular basis, 23% of the respondents were attending their classes in virtual more on an average 1-3 hours per day followed by 7-10 hours by 14% of the students and only one students is using the same for more than 10 hours for online learning.

Fig.4: Distribution of Respondents based on time spending for virtual learning



Source: Primary Data

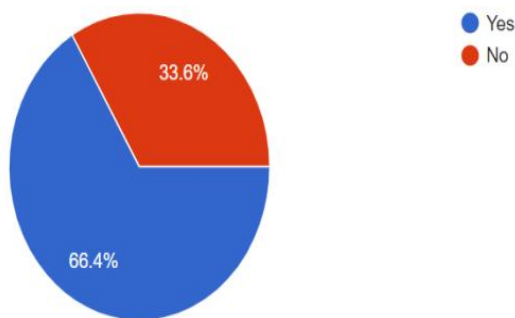
Table 8: Distribution of Respondents based internet speed

Gender	No. of Respondents	Percentage
Yes	75	66.54
No	38	33.6
Total	113	100

Source: Primary Data

It is known that 66.54 per cent of the respondents were opined that, the internet speed for attending online classes was good and only 33.46% of the respondents were opined that the internet speed for attending virtual classes was not good.

Fig. 5: Distribution of Respondents based internet speed



Source: Primary Data

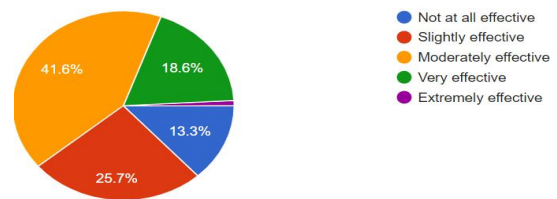
Table 9: Distribution of Respondents based on effectiveness of virtual learning

Spending time	No. of Respondents	Percentage
Not at all effective	15	13.3
Slightly effective	29	25.7
Moderately effective	47	41.6
Very effective	21	18.6
Extremely effective	1	0.9
Total	113	100

Source: Primary Data

It is known from the above table that 41.6 per cent of the respondents opined that the effectiveness of virtual learning was moderately effective, 25.7 per cent of respondents opined that virtual learning very effective followed by 18.6 per cent of the respondents were opined that the virtual learning was very good.

Fig. 6: Classification of Respondents based on effectiveness of virtual learning



Source: Primary Data

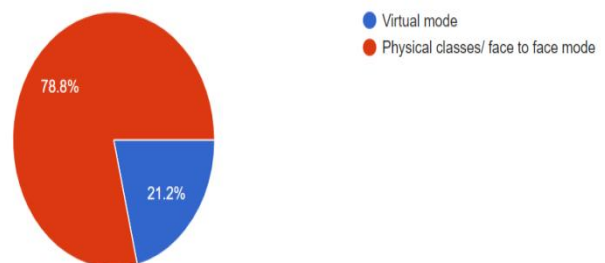
Table 10: Distribution of Respondents based on mode of learning

Mode of learning	No. of Respondents	Percentage
Virtual Mode of learning	24	21.2
Physical mode of learning	89	78.8
Total	113	100

Source: Primary Data

The above table shows that, 78.8 per cent of respondents were interested in physical mode of learning as against 21.2. percent of respondents were interested in Virtual mode of learning which was hardly used pre-corona period.

Fig. 7: Distribution of Respondents based on mode of learning



Source: Primary Data

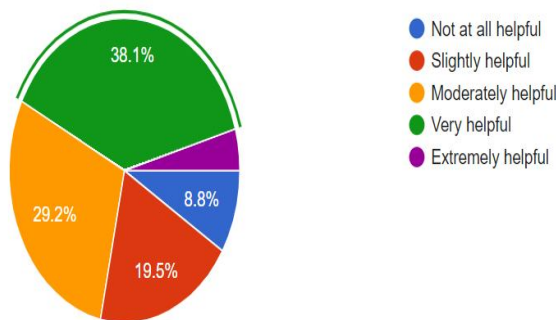
Table 11: Distribution of Respondents based on institution support

Institution support	No. of Respondents	Percentage
Not at all helpful	10	8.8
Slightly helpful	22	19.5
Moderately helpful	33	29.2
Very helpful	43	38.1
Extremely helpful	5	4.4
Total	113	100

Source: Primary Data

It is derived from the above table that 38.1 percent of respondents were opined that the institutional support is moderately helpful in fulfilling the virtual learning process, 29.2 per cent of respondents said that it was highly helpful and 19.5 per cent of the respondents were opined that it was slightly helpful, 8.8 per cent of respondents were opined that the institution support is not effective and only 4.4 per cent of the respondents were opined that institution support is extremely helpful.

Fig. 8: Distribution of Respondents based on institutional support



Source: Primary Data

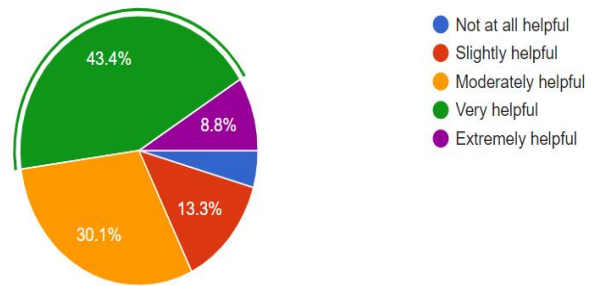
Table 12: Distribution of Respondents based on Faculty support

Faculty support	No. of Respondents	Percentage
Not at all helpful	5	4.4
Slightly helpful	15	13.3
Moderately helpful	34	30.1
Very helpful	49	43.4
Extremely helpful	10	8.8
Total	113	100

Source: Primary Data

It is taken from the above table that 43.3 per cent of the respondents were opined that the support extended by the faculty is very helpful, followed by 34 per cent were with a opinion that it was moderately helpful, 13.3 per cent of the respondents were opined that the faculty support was slightly helpful, 8.8 per cent of the opined that faculty support was extremely helpful and only 4.4 percent of the respondents were opined that it is non at all helpful.

Fig.9: Distribution of Respondents based on Faculty support



Source: Primary Data

7. Findings and Suggestions

7.1. Findings

1. The distribution of respondents according to their age has been classified into 2 categories, viz., 14-19 and 20-25. It is found that majority of the respondents were belonging to the age group of 20-25, i.e., 65(58%) followed by 14-19, i.e., 48(42%).
2. It is identified that there is a slight variation in the gender groups i.e., out of the total respondents of 113, male was 56(49.6%) and female were 57(50.4%).
3. It is interpreted as out of total respondents 113, majority of the respondents (64(56.6%) were residing in urban areas, followed by 29(25.7%) residing in rural areas and a small number of students i.e., 20(17.7%) were residing in semi-rural/ semi urban areas.
4. It is evident from the study that majority of the students that is 57(50.44%) are from UG (B.A/B.Com/B.Sc) , 35(30.98) are studying B.Tech, 17(15.04%) students are studying PG courses and a very less number that is 4(3.54%) students from intermediate are responded. From this it is understood that majority of the sample is reflecting from UG programmes.
5. It is understood that majority of the respondents were using laptops for virtual learning that is 84 students (74.3%), and in next place smart phone users 22(19.5%) were there. Very few numbers of respondents were using tablet and desktop for their virtual mode of learning.
6. It is evident that majority of respondents were using multiple platforms for their virtual learning i.e., Cisco Webex 69 (61.1%), Zoom 62, (54.9%) MS teams 60(53.1%) and followed by google meet 24(21.2%), Go to meeting 5(4.4%) and a

- very less number were using you tube, Go to webinar and others.
7. It is explained that majority of the respondents were spending the time for virtual learning 3-5 and 5-7 hours i.e., 36 and 36 (31.9%) and 26 (23%) respondents are spending 1-3 hours and followed by 7-10 hours spending by 14 (12.4%) respondents and very few respondents were spending more than 10 hours.
 8. It is evident that majority of the respondents 75(66.54%) positively responded about their high internet speed and followed by 38(33.6%) reacted negatively about their high internet speed.
 9. It is understood that majority of the respondents 47 (41.6%) were opined that the virtual learning is moderately effective, followed by 29(25.7%) respondents mentioned that virtual learning is slightly effective. 21 respondents are expressed their virtual learning is very effective and a small number of respondents given their opinion as not at all effective and extremely effective. From this, it is evident that majority of the respondents were with the opinion that moderately effective.
 10. Majority of the respondents 89 (78.8%) expressed physical attending mode of learning is far better than virtual mode of learning. Only a few respondents 24(21.2%) reacted positively towards virtual mode of learning is better than physical mode of learning.
 11. It is interpreted as most of the respondents were opined that the institutional support in virtual learning is very helpful and followed the opinion of institutional support is moderately helpful.
 12. Majority of the respondents were expressed their opinion as their faculty members are very helpful and a few respondents expressed as moderately supported and slightly helpful and not at all helpful.
2. Still majority of the students were expressing physical mode of attending for learning is more comfortable than virtual mode of learning. Hence, it is better the institutions if they provide training to attend online classes effectively.
 3. Though majority of the students have the high speed of internet, but some respondents are suffering with lack of high speed of internet, especially, in remote places. Hence, it can be suggested that the respondents should attend the classes virtually until corona ends. So they have to arrange high internet facility which is available in their areas.
 4. It is better to provide the assistance by the faculty members to the students those who are unable to follow and who are facing problems frequently in attending classes, for them the faculty have to provide guidance to attend classes with ease.
 5. It is suggested that the institutions also support in providing online classes during this Covid-19 most comfortable platforms to students as well as faculty members.
 6. It is better to offer convenient hours to the students for attending virtual mode of learning. Many students are feeling stress in attending more number of hours through virtual mode.

8. Conclusion

During Covid-19, almost all educational institutions introduced the virtual mode of learning. For this the institutions are using different online platforms. Though there are some challenges in conducting and attending online classes, now-a-days it is inevitable to attend virtual classes. So different stakeholders of this virtual mode such as students, faculty and institutions should improve their knowledge about online platforms, the relevant knowledge towards the usage of these platforms etc. the time to spend for these virtual learning also should be convenient to all stakeholders. The problems in virtual mode of learning from each and every stakeholder's point of view should be reduced.

7.2.Suggestions

Suggestions

1. It can be suggested that laptops are more comfortable to use for virtual learning, the institutions may extend their support in

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DEPICTION OF SITA AS A ROLE MODEL FOR SOCIETY IN AMISH TRIPATHI'S FICTION

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ABSTRACT

The Hindu Mythologies portray many and varying women characters comprising different characteristics. Among them, Sita is a well-known female figure famous for her wisdom, courage, and chastity. As the mythical texts are written from male perspectives; so the female characters have been depicted as docile, tender, and inferior to males in all areas. Like this, Sita is also accepted as a frail and victim of many social tortures. Unlike this, the character of Sita depicted by Amish Tripathi is brave, educated, strong, and valorous and gets equality in every area of society. She is skilled in war techniques and administration. Amish Tripathi has tried to give voice to the traditional women to improve the mindsets, thoughts, and behavior of male dominant society. This paper seeks to depict the character of Sita as a role model for society by replacing the Old image of Sita with the new image of Sita as a brave and strong warrior through the fiction of Amish Tripathi entitled Ramchandra series.

Keywords: Amish Tripathi, Role model, Women, Mythology, Sita

I. Introduction

Myths are the old stories being passed from one generation to another, but still charm and influence the men. The writers of every age use them according to the need of contemporary time. They reshape and recreate them to relate them to some situations and realities. Mythical stories have their origin and values and can be connected to day-to-day life, so are widely accepted [1]. Primarily, myths are androcentric dealing with the great deeds of male heroes and are written from a masculine perspective focusing on the supremacy of males. The customs, rules, laws, and traditions of the patriarchal society function as the tools to repress women so that they cannot raise their voices against men [2]. Ramayana is one of the great Hindu Epics which talks about the adventurous journey of Lord Ram's life. Besides, goddess Sita is the ideal wife of Lord Ram, who is adored for her chastity, truth, and dharma but she is presented as a submissive, docile and weak one [3]. In the present time, myths are being reinterpreted with a feminist point of view. Nowadays revisioning or rewriting myths is a new genre in literature. Old myths and religious texts are being written from a feminist point of view. These works are the mouthpiece of women; which makes them express their skills and capabilities before patriarchal society [4]. Amish Tripathi is one

of the renowned contemporary Indian authors. He rewrites the old myths according to the present time's need and perspective. This paper will fetch the attention of the readers towards the role and character of Sita in the renowned fiction of Amish Tripathi entitled Ramchandra series, and also towards the narrative technique and skill of characterization of the writer.

II Objectives

1. To examine the character of Sita in Amish Tripathi's *Ramchandra Series*.
2. To recognize the message delivered to society through the character of Sita in the texts.

III Discussion

Amish Tripathi is a well-known Indian fiction writer in contemporary times. He rewrites myths which he uses as the tools for presenting the solutions for many social and political problems. He cleverly deals with the myths to convey his very thoughts about particular matters. There is a good combination of myth, science, and imagination in his novels; and are written from woman perspectives [2]. Amish Tripathi is known for his two fastest-selling fiction series entitled Shiva Trilogy and Ramchandra Series.

As we all know that there are so many translations and versions of the Epic Ramayana

like Valmiki Ramayana, Tulsidas Ramayana, Adhyatma Ramayana, and so on. All the versions of Ramayana are androcentric dealing with the adventures of Lord Ram. Amish Tripathi unfollows this traditional way of writing. He has changed the socio-economic status of men and women. He attributes the muscular qualities to the stereotypical woman in his works. Amish's women characters benefit society with their skills and wisdom [5]. The women figures in Ramchandra Series - Sita, Kaikeiyi, Manthara, Kaushalya, Samichi, Roshni, Shurpankha, Radhika, Sumitra, Urmila are depicted not as docile and subdued females, but as the epitome of power, bravery, and courage. All these female characters are portrayed as independent, deft, powerful, and skillful professionals [6].

The women characters of the Ramchandra Series don't beg for economic rights and political equality, but they have their own social identity. They are the epitome of intelligence, excellence, power, and perfection. They appear to be free from the old Orthodox distinction between men and women and have omitted the traditional image of "Femininity" that shows them as submissive, timid, tender, docile, and feeble [7]. Amish depicts a quite different Sita in his fiction; she is a princess but does not follow the conventional way of living and behaving of a royal lady. At the place of longing luxurious life, she acts like a brave warrior. She takes decisions according to her wisdom and fights against the evils. She is the combination of beauty, brain, and valor. She is skilled in chivalry and fighting with a stick; and a deft soldier in the war field. Her strong body with beautiful skin bears many scars of battle injuries which make her feel proud [8]. Sita deftly qualified in throwing knives and shooting arrows, only by listening to the sounds. She is attributed masculine characteristics. She is skilled in various war tactics like horse riding, stick fighting, knife and spear throwing, archery, and martial art as well. Even Guru Vishvamitra gets astonished at Sita's stick fighting skills [9].

After sunaina, Sita becomes the Prime Minister of Mithila; she is an ardent follower of laws and benefits the kingdom and society with her wisdom and the talent of the ruling. Instead of following the Orthodox ways to reach the

goals, she manages all the matters and relationships with other states, with her intelligence. She enjoys hunting boars in the forests during exile. She owns strong today when Surpanakha tries to kill her but gets defeated. Amish Tripathi has recreated the social, political, and economic status of the conventional powerful male with the new splendid female who makes improvements and developments in this society by using her inherent ruling skills. Sita as the Prime minister of Mithila tries her best and makes her every effort for the development of society. She manages to get a donation from Malayputras. She begins two significant projects for the welfare of the slum inhabitants and builds permanent houses for them. She undertakes a project to connect Mithila and Sankashya by roads. She constructs a vast lake and a central market in Mithila and provides job opportunities for the citizens [9].

Ram: Scion of Ikshvaku and Sita: Warrior of Mithila are myth-based novels that deliver the voice of the Author to every reader. Amish uses old myths as the source of his writings in which women have been deployed as suppressed, feeble; but in Amish fiction, women are empowered and are presented as more powerful than men. The writers like Amish Tripathi are trying to bring about a great transformation in the status of women in society.

IV Conclusion

The position and status of women in Indian society have gone through many changes, and literature has played an important role in it as literature is the mirror of society. Contemporary writers like Amish Tripathi recreates the ancient myths from a feminist point of view. In Ramchandra Series, Sita is portrayed as a warrior, not as a frail one. Amish presents Sita as an equal and active partner of Ram. Sita is presented as a woman with beauty and a brain. Amish's Ramchandra Series deals with the capacities and powers of women in the context of the mythical character of Sita. He casts the women characters like Sita as the torchbearer to female's rights. He makes them shine even through their sorrows, and they break the shackles of patriarchal society. He goes through feminist theory to meet his

goals. Amish wants to demonstrate that the character of Sita dwells in every woman of India. She can go through any kind of suffering but still has the power to endure and arise.

Amish has used the character of Sita to stimulate the movement of women empowerment in society and it can be helpful to lessen the crimes in society.

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EDUCATION EMPOWERMENT IS MANIFESTATION TO A GIRL CHILD TO REMOVE GENDER INEQUALITY IN THE SOCIETY – A STUDY WITH REFERENCE TO KADAMBATTUR VILLAGE, THIRUVALLUR DISTRICT, TAMILNADU INDIA

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ABSTRACT

Education is once own necessity and once own need which compensate all other need and wants of the social wellbeing. Therefore education is to be considered as the basic needs like food clothing and shelter. In this 21st century, the impact of education in the rural area is comparatively less than the urban area, especially on the girl child education. The predominant nature of the study is too embedded on the education to the girl child (Beti Padhao). The researcher adopted the Kadambattur Village in Tamilnadu in India where there are more than ten thousand people in and around that village. There are 5 government schools, among them only one school is girl's school. This study is manifested to remove gender inequality in the society and to demand the importance of girl child education. The researcher will conduct the research work on the Beti Padhao by circulating the questioner to the selected samples with help of survey and analyse the study with statistical tools. The questioner will be framed on Likert's 5 point scale pattern. The detail study will be carried out after testing the survey by Cronbach Alpha method.

Keywords: *Beti Padhao, Child Education.*

Introduction

1. Introduction

Education is been viewed by different perspectives, with each researcher attempting a definition to explain a process which involves the impartation of knowledge, skills, concepts, ideas and reproving information to pupils, with the intention of making them informed and to create awareness to the society. To assume this position the study is deliberately done from the ground level of the village from Tamilnadu. The best form of education, whether formal or informal irrespective of their race, gender, and colour. It is important to note that education in all ramifications is the catalyst of development of the society, since no nation can grow beyond the quality of education delivered to her younger generation, whereas the younger generation is the future of any society and of that girl child education is the most important factor of the once society and once nation." If you educate a man you educate an individual however if you educate a woman you educate a whole family. Women Empowered means Mother India Empowered"- PT. JAWAHARLAL NEHRU the girl child education en-lights the whole world.

According to Eileen Malone Beach says that the Education, Health Care, and Income as a blessed trinity because they are so closely related, the author compare as how for the wealth and welfare is needed to the same extent the education is also required. According to the words of Napoleon Bonaparte "Give me an educated mother I will give you an educated nation." the author challenges the world that if the girl child gets educated then the whole nation will get educative.

Education is a basic right and more importantly a catalyst for economic growth and human development. Specifically, primary education is the critical enabler required to improve the economic and social scenario. We also need to ensure equal status for the girl as citizens in their own right. For any country to progress, one half of its population cannot be denied the right to education. This denial is also gross violation of many rights enshrined in the Indian Constitution, primary among them being the right to education and the right to equality.

According to Odomore, 2015 "A girl faces a lot of challenges when she gets to education" in the village and the remote areas in tamilnadu the girl's child awareness is less when compared to the urban and developed areas, the esoteric custom and patriarchal bias make these challenges more onerous and difficult.

According to UNICEF, 2009, p.6 Education for women in many developing countries has been a major focus for policymakers and administration in recent years.

2. Review of Literature

The study enormously developed for the need for girl child education in the villages of Tamilnadu, specially the research work is done in Kadambattur Village by forwarding the questioner to the selected samples. The researcher over viewed the review related to the literature and analysed the outcomes.

(Sahoo, 2016) Girl's education is a key factor in India's social and economic growth. The author states that the education to the girl child will eliminate the poverty and disqualify in the nation.

(Andres & Chavez, 2015) The author is very keen in stating that education is once own right. According to Andres & Chavez education of girls not only the benefit for herself but also of her families, society and the whole world as well. Denying girls their right to education is a detriment for many societies.

(Andres & Chavez, 2015) Education can improve an individual's abilities and bring about social change. Andres says that the ability of the social well being can be improved through the education.

(Sangeeta and Kumar, 2013) Better family planning, low mortality rates of infants and children, lower maternal mortality are some of the advantages of educating a girl.

(Ahamad and Narayana, 2015) Women are, however, denied of education in developing nations. The author states that the girl child / women education is the assets of the nation.

(Hardre and Reeve 2003) Parents treated education for a girl as insignificant. Investments in girls' education are seen as unnecessary as it is considered that a boy can only help his family financially while parents have to pay dowry marriage costs for girls. This condition is even worse in rural areas. In rural areas, the birth of girls is seen as a liability. It can be measured through the unequal gender ratio and higher dropout rates of girls that are prominent in rural areas. The root cause of the dropout of women / girl child education was less awareness among the parents community.

(Kumar et al., 2017) Parents would choose to involve their daughters in household work under such conditions rather than sending them to school.

(Upendranath, 1995) At the upper primary level, there is an increase in dropout rates, which is higher among girls than males.

(Rao et al., 2004) In all states, gender differences are predominant for school enrolment and participation.

(Singh & Rabindranath, 2019) Further access to higher education and attainment to girl's education is low among girl's students. Girls' education suffers from many factors; gender discrimination is the most prominent of them.

(Teachman et al, 1996) Some of the key obstacles to girls' education are cultural traditions, boy preference, high education prices, parental education and the financial condition and unsatisfactory school facilities.

3. Objective of the Study

The main aim and scope of the study is to retrieve the girl child education for this purpose the researcher enormously set the objective as

1. To provoke data of comparable nature of some common parameters that will give an understanding of the situation of the girl child education.
2. The researcher actively takes a series of programmes to get remedy the shortcomings on Gender Inequality in the Society.
3. To gauge the status of girl children in their family in order to predict the position of women in 21st Century.
4. The analysis followed with the feminist methodology of participant Action Research in an empirical study to test the gender equality in the education system.

4. Methodology

The study is based on both primary and secondary data. The primary data is collected on structured questioner with optional type question as well as statement in likert's 5 point scale.

4.1 Reliability: The Researcher conducted research analysis to check the statement and variables in the present research. Cronbach alpha method is applied on the variable of Girl child education and the

value obtained is 0.770 and 0.679 respectively, it show that the research instrument used in the research is highly reliable and the research instrument as be used further to verify the objective and test the hypothesis.

- 4.2 Validity : After conducted reliability test the researcher conducted the validity test in the following sets
 - 1. Face validity
 - 2. Content validity
 - 3. Discernment validity
- 4.3 Face validity: Face validity is done during pre-test stage through interaction with girl child in the family and interaction with both the gender in different government schools they clearly expressed the motions about the research instrument and some sentence were modified and corrected.
- 4.4 Content validity: Content validity is done through the polite survey and the respondent expressed their opinion though questioner circulated this shows that the respondent total variance is found to be very high and content are matched for the research work.
- 4.5 Discernment validity: Discernment validity is done through the main study and application of factor analysis, factor segmentation are found to proper with high total variance therefore the research instrument passed the validity test.

Table- 5.2 Showing the Mean, Standard Deviation of the Samples in girl child education stability

S.No	Group	Education	Stability	Gender	Stability
		Mean	SD	Mean	SD
1.	Group as total	87.97	13.78	33.91	7.53
2.	Girl child above 15 years	85.13	16.51	27.88	7.85
3.	Girl child below 15 years	88.92	12.60	35.92	6.24
4.	Education below average	89.38	13.59	34.63	11.26
5.	Education above average	71.00	20.01	32.00	6.28

From the above table the mean value of education stability for the overall group shows 87.97 which we can state that the level of education stability for the overall group is average.

The mean value of the gender equality stability of the employees commitment for the overall of group show 33.91 hence we can interpret the gender equality level for the overall group is low.

5 Data Collection

The researcher applied convenient sampling method to collect the responses from the girl child from various part Kadambattur Village. The researchers consider government schools in Thiruvallur District for data collection purpose. The researcher circulated 40 each in all the government schools in Thiruvallur District and able to obtain 168 responses with completed responses. After scrutinising 14 of the questioner are fill with flaws hence the researcher reject those response and consider remaining 154 responses for the research. Hence the sample size of research is 154.

5.1 Data Analysis

After entering the coding of the questioner the researcher analysis using both univariate and multivariate statistical techniques. Factor analysis along with KMO and Bartlett test suggested exploited to measure the factor of girl child education and gender equality. Chi-square test for sphericity is applied to test the normality of the data as well as the distribution of the sample unit.

5.2 Analysis and Discussion

This chapter deals with projections of result arrived at from the statistical analysis and general discussions with the regard to the result of girl child education and gender equality

Table -5.3 showing the relationship between commitment stability and creativity

Variable	N	Mean	SD	r-value
Education stability	32	87.97	13.78	0.033*
Gender equality	32	33.91	7.53	

*= significant at 0.05 level

From the above table the ‘r’ value of 0.033 indicate the positive correlation and we can

infer that there is a relationship between that variable of commitment and creativity.

Findings and Conclusion

The research concluded that the Girl child education is the most required phenomena in

the society for the successful development of the country. This study emphasis the need for the girl child education and the gender equality. It is further concluded that the awareness on girl child education is given importance now a days.

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3. Rao et al., (2004) in all states, gender differences are predominant for school enrolment and participation.
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5. Singh & Rabindranath, (2019) further access to higher education and attainment to girl's education is low among girl's students. Girls' education suffers from many factors; gender discrimination is the most prominent of them.

QUALITY EDUCATION THROUGH ONLINE TEACHING IN HIGHER EDUCATION INSTITUTIONS - PROSPECTS & PRACTICALITY

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ABSTRACT

Quality Education can be regarded as a primary factor adding to the overall quality of the institution along with modern inputs and acceptable quality of learning environment for the students. The success of quality teaching is mainly based on the support from the institution to cope with the challenges in the delivery process through arranging Faculty Development Programs, training programs, workshops etc. and from the students by attending the classes regularly like the physical mode of education. It may enable the instructor to concentrate on the quality of the delivery system. Now-a-days, especially during COVID 19 lockdown, Online education has turned out as a prime alternate to face-to-face classroom instruction. Online education enables the students to learn anything of their interest, gives comfort while learning, reduces the cost of transportation, can help in identifying the student's area of interest, self-motivation and etc. and at the same time, it is not free from the negative issues like lack of concentration, increased pressure, no physical activity and confined with the single room, health issues, lack of interaction and etc. This paper examines the quality aspects towards the online teaching in higher educational institutions, the issues related to faculty and students in the Teaching-Learning Process and suggestions are also given to overcome the complexities in the Online mode of teaching.

Keywords: Educational Institutions, Higher education, Learning environment, Online teaching, Quality Education, Teaching-Learning Process.

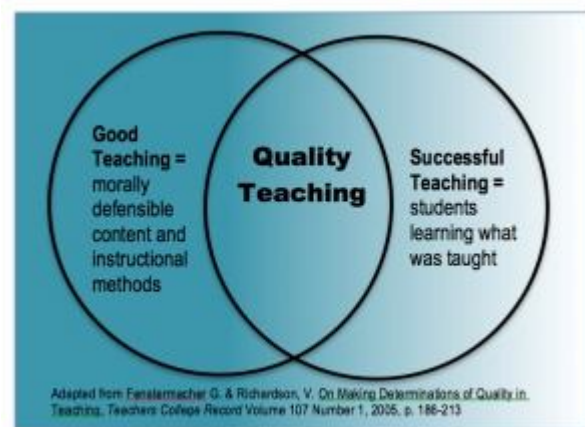
1. Introduction

Teaching quality can be assessed through the knowledge, ability and skills of the teacher and the extent of usage of those factors while delivering classes for the students to offer better learning experiences. Both teaching and learning are inseparable concepts and the one influences the other.

Quality of teaching can be influenced by the other factors that present in the higher educational environment. They include:

- Increasing Scope of education amidst people
- Diversity in Student profile
- Preparation of education contents as per the current trends considering the technology changes
- Diversification of higher education across borders
- Increasing pressures due to the international competition
- Preparing skilled workforce to meet the challenges in the international arena.

Figure 1: Quality Teaching



Source: Critical University Studies

2. Need for Online/Virtual Education

Virtual learning is often identified as web-based training, e-learning, distributed learning, Internet-based learning, web-based teaching, cyber learning, interactive learning, or net-based learning. Before COVID19, Virtual learning was offered and preferred only for distance education system and for the various diploma courses offered by private organizations/institutions especially in the field of IT where virtual classrooms, digital learning and computer-based learning can be possible.

Now-a-days especially during COVID19 and till now, Online/Virtual education has been considered as an important alternative to have face-to-face interactive session. It provides opportunities to individuals to learn online irrespective of place, period, cost, contents. In addition to this, people prefer this online education due to its flexibility in timings and the delivery method followed. Multiple methods of teaching are followed in online classes like video lectures, uploading contents in the concerned website, PowerPoint presentation videos, recorded sessions, ppt slides, communication through video calls, chats, using public private chat rooms and other communication using web. Some of the institutions able to come out with their own platform to reach the students without any ambiguity to support quality in teaching.

3. Transformation of TLP (Teaching Learning Process) from Traditional to Online

In the olden days, students used to go the place of guru, stay there, do all the works and learn everything through practical and lecture method. Then Varnashrama method was followed where the students developed their own skills to start up their own business or profession based on the Varna they belonged to. Later on, schools have been started in the common place for the benefit of the community where both instructors and students assembled to involve in the teaching learning process effectively. In this traditional classroom method, standard pedagogy was developed and delivered to the students where personal concentration over the students was possible. In this method learning through play way methods, active learning methods, case studies, assignments, quizzes, puzzles, songs, stories and the like were used depends upon the level and interest of students.

The teacher is the key person who could bring out the hidden talents among the students and helped them to flourish in that area. Due to the rapid development in the technology, students can learn whatever they need at their doorstep itself without moving anywhere, even they can decide their timings and gurus also. This online/virtual mode of teaching and learning

gives us utmost amount of flexibility but lacks proper control and feedback.

- i. Vedic Period – Gurukul System
- ii. Pre-Independence Period – British Period – Influence of Islamic and Christian missionaries
- iii. Post-Independence Period – Opening of Schools, Colleges and Higher education institutions (IITs, IIMs, etc.,)
- iv. Current Scenario – Opening of Private Educational Institutions
- v. COVID 19 Period – Online courses – E-learning

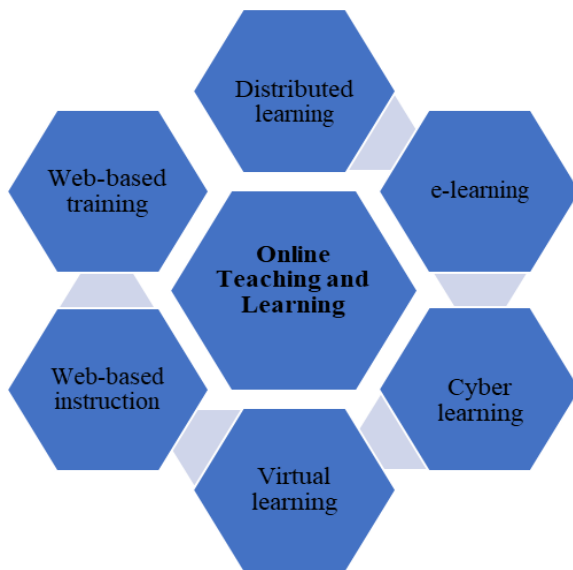
4. Online Teaching and Learning Process (TLP)

Online mode of teaching and learning process is usually referred to as web-based training, e-learning, distributed learning, Internet-based learning, web-based instruction, cyber learning, virtual learning, or net-based learning. TLP comprises the delivery of course contents through online using the electronic media like Internet, intranet, usage of satellite like OneDrive, audio/video sharing and etc. Campbell (2004) argues that the emphasis of virtual learning in higher education settings is on the development of self-understanding, analytical and interactive learning. Above all, virtual mode enables the learner to go even beyond the planned subjects and develops self-directed method of learning to improve the performance of the learner. It induces the learner to search for new and new contents and get benefit out of that. On the part of instructor or the faculty, it insists on the innovative method of content delivery and patience to identify the strengths of the learners to motivate for better performance. The learning space concept is introduced as a framework for understanding the link between student learning styles and the institutional learning environment. The use of the learning space framework was illustrated with the help of case studies like studies of longitudinal institutional development. Finally, the principles for the improvement of experiential learning in higher education was also insisted. (Gampala, V., Koneru, A., Maram, B.)

For that, the instructor should facilitate roles like managerial, social, pedagogical and

technical for achieving productive discussions and results out of it.

Figure 2: Online Teaching and Learning

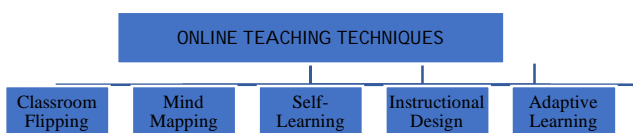


Source: eLearning industry.com

5. Online Teaching Techniques

The following are the important online teaching techniques, the instructor should know and implement to get better results in the form performance.

Figure 3: Online Teaching Techniques



Source: eLearning industry.com

6. Strategies to improve Online TLP

The below mentioned strategies should be followed by the instructor to improve the online TLP. These strategies are indispensable and inseparable to each other.

Figure 4: Online TLP Strategies



Source: eLearning industry.com

Teachers should facilitate the students to make use of various learning resources in different languages and surfing support to find out different learning materials and should introduce personalized learning opportunities by respecting and accepting students' individual interests and allowing flexibility for customizing the learning activities (Lakshmana Swamy, B et al. (2020)).

7. Contribution of Instructors and Learners

The success of Online TLP completely dependent on Faculty involvement, their understanding of different complex design of the study, way of delivery during online classes, making the students to understand and foremost encountering the challenges during the delivery process like power cut, internet connectivity issues, lack of concentration on the part of students, make the session interesting to listen, learn and etc.

While designing a successful online TLP, teachers should consider the all the components involved in both setting the platform and managing the change process to simplify them. The major components like, course description, course outcomes, specific course objectives, course competencies, evaluation criteria especially OBE attainment, and teaching strategies (Maguire, 2005; Park & Bonk, 2007) are to be finalized and the instructors can concentrate on the issues that they might face during TLP and make use of the available opportunities for the success of it. This process assists and encourages the transformation of traditional teaching methods into an online teaching and learning environment.

Everything is possible in the era of digitalization with proper support on the part of management to the faculty members and in turn faculty members to students. It includes improving the accuracy in prediction and providing the organization with the necessary information about the performance of the student. (Anjali Devi, S, (2018))

8. Advantages of Online TLP

The following are the few advantages of the online teaching and learning process. These advantages insist on the importance of online

teaching methods, role of faculty members and students.

- Complete freedom and full-fledged flexibility is given to the learners for the selection of course content to learn, timings, place of learning and etc.;
- Online mode gives the opportunity to increase the quantity and quality of interaction among the instructors and the learners, in turn, it helps in improving the quality of service in the form of delivery and receptivity; (Inglid,1999)
- Gives good access to education and training both for the instructors and learners.
- Reduces the cost of education (only the internet connectivity and fees for the concerned and in some cases, free online courses are also being offered).
- Possibility of enhancing the Cost-effectiveness of education.
- Provides opportunities for the learners to choose their course content and empowers the learners to learn fast.
- Enables to accelerate the usage of new information and new programs through online.

9. Issues in Online TLP

The objectives and expected outcomes of online TLP are based on the quality of online teaching and online access to course contents and materials. Though the online TLP offers a lot of benefits to the institution, instructors and to the learners, is not free from issues. Few of them are mentioned below:

- Technological issues like connectivity issues, browser problems and etc.
- Difficulty to access the instructors.
- Online course materials may be not relevant with the course contents chosen.
- Lack of intimacy in interaction unlike traditional face-to-face discussions in classroom.
- Students' interaction with the instructor may not be sufficient.
- Chances for delays in giving feedbacks to the students.
- Due to the excess strength in online class, it is difficult for the instructor to monitor the performance of the students.

- Updating of course contents and assessments may not be as per the expectations.

For better understanding the issues pertaining to online TLP can be classified into two. They are from the viewpoint of faculty members and students. A brief discussion on those viewpoints is given below:

10. Issues from Instructors point of view

- The major drawback in online TLP is time constraint. The teaching community and instructors are compelled to attend and present in webinars, online hands-on-experience programs, FDPs, conferences, etc. as a part of their regular duty.
- To reach the students online during lockdown period especially, instructors are compelled to modify their regular courses into online, that might have created resistance amidst instructors and resulted into lack of support and assistance.
- Internet connectivity problems, lack of sufficient supply of hardware and software, lack of technical expertise on the part of instructors, lethargic behavior of learners, insufficient orientation to the learners, limited time bound for the instructors to design and execute the curriculum online are few of the issues raised on the part of the faculty members (Nkonge & Gueldenzoph, 2006).
- Inherent limitation is visible in online learning environment unlike face-to-face classroom interaction, where the faculty members and students discuss in person and sort out the issues immediately.
- Teachers are vested with highest place in society for which they develop and give proper shape to the younger generation. Teachers are expected not to be partial at any time and should not discriminate the students (Yash Raj et al. (2020)).

11. Issues from Learners point of view

- Lack of technical support/ Orientation is needed to equip the students themselves to cope up with emerging situations.
- Lack of or less interaction with faculty members leads to lack of interest in the concerned courses.

- Lack of understanding in case of practical sessions where hands-on experience is required to understand the concept and application of it.
- Internet connectivity is the common problem that everyone could face it during COVID19 period especially.
- It was found that, the online sessions were more teacher-oriented and minimum participation of the student role (Dandu, G., et al.)

12. Prospects and Practicality of Online TLP

Online TLP prospects and practicality is based on two important factors like new roles to be assumed by the faculty members and factors influencing for the success of it.

12.1 New Faculty Roles in Online TLP

The role of instructors in online is new and complex in nature just because of the unique attributes of online TLP, such as, flexibility (any time, any place and anyone) and learners' anonymity. The online instructors' role can be classified into four. They are:

Figure 5: Online Instructor's Role



Source: Kurzweli & Marcellas, 2008

12.1.1 Pedagogical role: It revolves around the educational facilitation like designing and developing better online courses focusing more on effective and efficient course delivery and change in pattern of assessments in order to suit the online mode of delivery.

12.1.2 Social Role: It is the creation of friendly social environment necessary for online TLP. It should provide opportunities for the students to have social interaction among them in the form of breakout rooms etc.

12.1.3 Managerial Role: It includes agenda and objective setting, rulemaking and decision making. A systematic and well-organized faculty development initiatives are given consideration.

12.1.4 Technical Role: Technical support occupies a crucial role in the success of Online TLP endeavors. In this role, first the instructors

should feel comfortable with platform in which the TLP is going to be handled and the same is to be passed on to the learners during TLP. In addition to this the faculty should act as the problem solvers whenever the technical issues are taken place and assists the learners to be comfortable with the online learning programs.

12.2 Factors influencing the success of Online TLP

The success of online TLP is based on the following 3 factors like, Students related factors, Instructors related factors and Institution related factors (D.U. Bolliger and O. Wasilik, 2016) and brief discussion on those factors are also given.

12.2.1 Students related factors: More diverse nature of student population in concentrated at a time and enables the students to have interactive communication with both instructors and peer groups in the session.

12.2.2 Instructor related factors: These factors provide professional development opportunities for the instructors. Their satisfaction is positively motivated by positive student outcomes, self-gratification in terms of technology, accepting intellectual challenges and creates interests in terms of technology usage and familiarized with the latest updates in technology. They should introduce various activities such as oral presentation sessions on the important topics, mock interviews, GD sessions and role-plays. (Dandu, G., et al.)

12.2.3 Institution-related factors: Generally, faculty satisfaction is mainly based on the support given by the institution in valuing online teaching of the instructors and developing policies in support of the faculty members especially in resolving workload issues and allows the instructors to spend much time on the development of online courses than the course delivery.

It is understood from the above factors that, student's satisfaction and faculty satisfaction are the important factors that contribute greatly for the achievement of the Online Teaching and Learning Process.

13. Conclusion

In today's learner-centered world, prediction of trends in technology advancement becomes crucial. Especially in case of educational institutions, online mode of teaching has failed initially due to the reason that, instructors and learners failed to give value for the eLearning courses. eLearning is full of challenges and opportunities which should be tackled in such a way that the challenges are to be met and the opportunities to gain success should be utilized properly.

To gain success of Online TLP, with the support of the Management / Institution the faculty members must expose their work abilities in designing the e-Course to suit the demands of the learners and concentration should be paid in the content delivery in order to make the student concentrate on the course content without any distraction and develop interest in the online courses. To facilitate the online TLP a complete success, the educators

should come out with possible solutions for all the situations and to have access in all digital resources to ensure autonomy in the process.

The pace of education is kept on changing rapidly than as expected. The educators must also change themselves in terms of attitudes, work styles, thinking and adaptiveness to cope with the changes in educational and social environment. For this, the faculty members should come out strategy that, "Must work on Ourselves" to motivate themselves and to motivate the learners towards the success of Online TLP.

To resolve the technical, managerial and pedagogical issues in Online TLP, blended mode of teaching, learning process is considered as a better alternative than to be completely dependent on Online teaching learning process where the technological issues can be resolved, and students/instructor's interaction will be very much appreciated.

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IMPACT OF CUSTOMER BASED BRAND EQUITY ON BRAND TRUST FOR INDIAN AIRLINES

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ABSTRACT

This exploration paper looks at the effect of Airlines customer based brand equity which is grounded with Keller's customer Based Brand Equity yet restricted to the four measurements (Airline flight service quality, Airline brand awareness, Airline brand association and Airline brand association) on Airline brand trust. The information gathered using 7point – Likert scale and this exploration gives knowledge into viable procedures that can be utilized to build Airline brand trust. This examination depends on a study directed in Nov. Dec. 2019 at Pune and Mumbai Airports. This examination endeavors to assess the 212 responses gathered from Indian Airlines travelers. The outcomes showed that customer based brand equity measurement, flight service quality, brand awareness and brand association are key drivers of Indian Airlines customer perception.

Keywords: Brand Equity, Branding, Brand Equity Dimensions, Indian Airlines.

1.0 Introduction

Essential rule of brand value is to highlight and repeat a chose characteristics the brand has anticipated, that must be predictable inside the perspective of the buyers. These entire projections region unit inside such a public correspondence, various advancing methods that build up relationship with the buyers (Allison, 1964). It's fundamental to make independent relationship with customers that has penchant of pleasant result inside such a consumer loyalty, come customer, dedication and informal promoting (Cheng, Chen, and Chang, 2008). Aircraft business has offered significance to support as essential giving and it's imperative to oversee entire name and fabricate entire trust. The common aeronautics exchange India has arisen commonly of the snappiest developing ventures inside the nation all through the most recent 3 years. India has become the third biggest homegrown avionics market inside the world and is anticipated to overwhelm United Kingdom of Great Britain and Northern Ireland to turn into the third biggest air traveler market by 2024. In the course of recent years, India's avionics exchange has completely developed quick: in 2018, the International vehicle Association (IATA) expected that India would be the world's third biggest aeronautics market by 2024. Nonetheless, when four years of twofold

digit request development, in 2019, traffic in India rose five.1%, down from eighteen.9% development in 2018, with regards to IATA.

2.0 Literature Review

From a give perspective, India's flight exchange experiences a decent amount of disturbance, with aircraft closures along with Jet Airways a year ago and coraciform feathered creature Airlines in 2012, and furthermore the withdrawal of Air Bharat by the Indian government. Furthermore, Indian transporters face inborn underlying issues, similar to thin edges, regulative weights, high charges and shaky fuel costs. Brand value are regularly illustrated as an assortment of resources and liabilities joined to a brand (Aaker, 1991). A notable brand will make its item appear to be extra extraordinary, and this additional value, that isn't gotten from the item themselves, is referenced as brand value (Keller, 2003). To be extra explicit, this additional cost is granted by the brand and token (Yoo and Donthu, 2000). In the event that the brand or seal changes, their related resources would be enormously influenced, even altogether cleared out, notwithstanding there being no progressions to the item themselves (Aaker, 1991).

In business research, the term realness has been utilized in various manners to suggest unique implications (Beverland, 2005). Regularly,

credibility is utilized to allude to the validity, reality or reality of something (Kennick, 1985). It has additionally been characterized as far as earnestness, honesty and innovation (Fine, 2003) and identified with ideas, for example, being characteristic, genuine, straightforward and unspun (Boyle, 2003). Shoppers experience credibility diversely and utilize a scope of prompts to assess the credibility of an item, which might be founded on their advantage in, also, information on, a subject (Grazian, 2003). Credibility decisions might be conformed to indexical signs (a real association between the item and time) or notorious prompts (the degree to which an item or occasion is a sensible reproduction of the past) (Grayson and Martinec, 2004). The qualification between the credible and inauthentic will in general be emotional and socially or on the other hand by and by built (Grayson and Martinec, 2004; Leigh et al., 2006). It is a conduct experienced by an individual (Sheldon, Ryan, Rawsthorne, and Ilardi, 1997) that is self composed (Wild, 1965) and self-decided.

Thus, brand value assumes a significant function inside the subject of name the board. In past investigations, understudies extended speculations identifying with client based brand value and philosophy to gauge it were marked. Henceforth, this paper mean to dissect the fundamental destinations as to exactly review the effect of client put together brand value measurements with respect to brand trust in Indian Airlines.

3.0 Research Methods

The analyst directed a study between Nov.2019 to Dec 2019 with the objective example for this examination which was the Indian Airlines travelers. Information assortment instrument was created grounded with discoveries and results from past examinations identified with this exploration paper. The develops talked about in this paper arose through the writing survey measure.

Target respondent for this investigation was any Indian individual do habitually air venture (At least 2 of every a year). Respondents were toward the beginning screened for this whether they had past air travel insight and they are

readiness to impart their experience to the scientist.

Of the 249 respondents, scientist had the option to establish qualified for the examination, 221 in consent to complete the review. Nonetheless, nine were disposed of in light of deficient reactions; a definitive example was 212 for a proficient reaction pace of 85%. Most of respondents were male (70%) and rest were the females (30% percent). Their age went from 24 to 68 with mean age of 44. The examples were mentioned to record their assessment for research inquiries on a 7 point Likert scale. Altogether 212 polls were managed for this examination at Pune and Mumbai International Airport with travelers from Indian Airlines which structure the brand test base for the investigation.

3.1 Hypothesis Development

Service quality could be a strategy upheld the assessments of customers about expected and saw administration. Therefore, fulfillment occurs if the apparent assistance meets or surpasses desires. On the off chance that the desires are horribly high, making certain good help quality relies upon the following assistance execution. Because of administrations are unique in nature, the investigation of administration quality depends on insights. Carriers higher productivity can be accomplished with higher brand dependability that will be brought about making expanded brand trust. Though higher brand devotion can be accomplished through better apparent 'Flight administration quality. This might be conceivable with constructive outcome of this on brand trust. This contention prompts first speculation of this paper as:

H1: Airline 'Flight service quality' has a positive effect on Airline 'brand trust'.

Brand influence discovered to be decidedly connected with brand trust and might be hold acceptable with aircrafts as well. This might be emphatically disposed by client's realness that prompts second theory of this examination paper as:

H2: Airline 'brand affect' has a positive effect on Airline 'brand trust'.

Brand mindfulness is significant precondition and fundamental angle to Brand trust. Grounded on CBBE model, IMC crusades

improve brand mindfulness that over a critical period accept to be brought about expanded brand trust. In light of this contention third theory of this examination paper was outlined as:

H3: Airline 'brand awareness' has a positive effect on Airline 'brand trust'.

Estimation of the brand correspondence and picture of a brand is straightforwardly affected by different affiliation has been created with the brand in the psyche of clients. Particularly in carriers industry brand affiliations accepts to be significant determinants for brand trust. Hence specialist outlines the fourth theory as:

H4: Airline 'brand association' has a positive effect on Airline 'brand trust'.

Respondents were classes on age, sexual orientation and number of flights they did in a year generally for domestics just as for global. The unwavering quality was guaranteed through dependability test "Cronbach's alpha". The table no. 1.0 gives the subtleties of all builds trial of reliability.

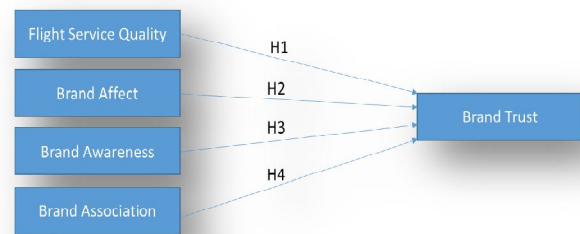


Fig. 1.0

4.0 Result and Discussion

Information was gathered from 212 Indian Airlines travelers from Pune and Mumbai.

Table No. 1.0

Construct	Items	Mean	SD	Standard Loadings	Cronbach's alpha
Flight service Quality	V1	6.03	1.17	0.79	0.927
	V2	6.04	1.13	0.87	–
	V3	6.02	1.15	0.83	–
	V4	5.89	1.19	0.89	–
Brand affect	V5	5.83	1.07	0.87	0.957
	V6	5.37	0.93	0.93	–
	V7	5.53	1.02	0.97	–
Brand awareness	V8	5.59	0.99	0.91	0.889
	V9	5.63	0.07	0.83	–
Brand association	V10	5.37	1.09	0.87	0.887
	V11	5.43	1.07	0.89	–
Brand trust	V12	5.33	0.87	0.81	0.916
	V13	5.37	0.97	0.87	–
	V14	5.39	0.91	0.87	–

Table No. 2.0

Hypothesized paths	Standardized path coefficient	t-Value
H1: Flight service quality → brand trust	-0.497	-6.121
H2: Brand affect → brand trust	0.801	21.237
H3: Brand awareness → brand trust	0.197	6.512
H4: Brand association → brand trust	-0.083	-3.043

As summed up in table no. 2.0, theory 1 predicts that Airline 'Flight administration quality' negatively affects Airline 'brand trust' ($\beta = - 0.497$, $t = - 6.121$, $p < 0.001$). Speculation 2 predicts, Airline 'brand influence'

positively affects Airline 'brand trust' ($\beta = 0.801$, $t = 21.237$, $p < 0.001$). Theory 3 predicts Airline 'brand mindfulness' positively affects Airline 'brand trust', which the outcome ventures ($\beta = 0.197$, $t = 6.512$, $p < 0.001$). At

long last, the results of the investigation don't uphold Hypothesis 4 ($\beta = -0.083$, $t = -3.043$, $p < 0.001$) and ventures that Airline 'brand affiliation' negatively affects Airline 'brand trust'. Moreover, the results of the above examination delights that brand influence and brand mindfulness are generally fundamental and decidedly related predecessors of brand trust.

5.0 Conclusion

This exploration results advocates that the impacts of client put together brand value with respect to mark notoriety and brand trust are positive. The previous exploration have not investigated the effect of client based brand value and brand notoriety on brand trust in the Taiwanese Airline industry. This examination is the first to inspect the relationship among client based brand value, brand notoriety and brand trust in the Airline business.

The discoveries of the examination of this investigation exhibits that Flight administration quality, brand influence, brand mindfulness and brand affiliation are identified with brand trust. In this manner it very well may be presumed that to accomplish higher client trust on carriers brand administration quality should be viably overseen in accordance with client saw quality. The momentum research

investigated the impact of client put together brand value measurements with respect to mark trust. This exploration results uncovered that brand influence and brand mindfulness effectsly affect brand trust. Nonetheless, there was no sure obvious that favor Flight administration quality and brand affiliation sway on brand trust. CBBE measurement brand affiliation is relied upon to be completely interceded by means of brand notoriety and it is upheld by the proof from previous exploration in the administration business. Hence, this supporters that Flight administration quality and brand affiliation has agreed effect on brand trust. CBBE measurement Flight administration quality, brand affiliation and brand mindfulness are fundamental and most significant factors and lead drivers of brand trust particularly for Airlines industry.

This research examines the impact of customer-based brand equity with the four dimensions (Airline flight service quality, Airline brand affect, Airline brand awareness and Airline brand association) on Airline brand trust specifically for Indian Airlines and analyzing this for other airlines may be future are of research. Analyzing the brand reputation with customer-based brand equity may be future scope for researchers.

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Annexure A

Items	Mean
The staff of this airline brand are courteous	V1
This airline brand has lower lost bags	V2
This airline brand has convenient flight schedule	V3
This airline brand has higher punctuality standards	V4
I feel good when I travel in this airline brand	V5
This airline brand makes me contented	V6
This airline brand gives me pleasure	V7
I am familiar with this airline brand	V8
I can recognise this brand among other airline brands	V9
I like the design of the aircraft cabin of the airline brand	V10
This airline brand has attractive cabin crew uniform	V11
I can rely on this airline brand to solve my service dissatisfaction	V12
This airline brand guarantees satisfaction	V13
I have confidence in this airline brand	V14

Annexure B Demographic Information

		Age		
		Less than 24	24-40	40 & Above
		Count	Count	Count
Gender	Male	59	49	40
	Female	12	48	4

		No. of International flights in a year		
		Less than 6	6- 12	More Than 12
		Count	Count	Count
Gender	Male	50	82	16
	Female	44	11	9

		No of Domestic Flights in a year		
		Less than 6	6- 12	More Than 12
		Count	Count	Count
Gender	Male	28	76	44
	Female	38	21	5

TUBERCULOSIS IN ASSAM: A NEED OF PUBLIC AWARENESS, KNOWLEDGE AND EDUCATION

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ABSTRACT

Tuberculosis is a specific infectious disease caused by Mycobacterium Tuberculosis. The disease may be also transmitted other parts of the body, including the kidneys, bones, meninges and lymph nodes. This paper follows up that the exploratory survey identifies lack of awareness; socio economic taboo and poverty are the most important tuberculosis risk factors. This cross-sectional study, It followed a descriptive, non-experimental research design with a quantitative measure to investigate awareness of TB patients in Dhemaji district, Assam. The study covers various socio economic angles which aggravates the spread of the disease among poor (low income) people. The health risks of low income family respondents had strong correlation with poor education, inadequate nutrition.

Keywords: Awareness, Dhemaji, Education, Knowledge, Infectious, Socio-Economic, Tuberculosis.

1. Introduction

Tuberculosis is an infectious disease caused M. tuberculosis. The disease is mostly affects the lungs and it's also affects other parts of the human body includes bones, meninges, lymph nodes and kidneys (Paul et al 2009).

According to WHO, tuberculosis is infectious disease cause death worldwide associated to malnutrition, substandard housing, poverty, overcrowding and deficient health care.

The estimated 1/3 of the world's population has been infected tuberculosis and has become the world severe cause of death (WHO 2018). India is a country where the highest number of people suffering from tuberculosis. About 40% people are infected with the tuberculosis bacillus (TB India 2009). Among these, 1/5 of the global incidence cases and 2/3 rd of the south east Asia cases (TB India 2009). The world health organization initiated one of the principle programme which is Directly observed treatment short course (DOTS) for the treatment and management of tuberculosis (TB) (WHO 2018). In India, DOTS was officially launched as the revised national tuberculosis control programme (RNTCP) strategy in 1997. The revised national tuberculosis programme control programme has introduced in our country India in mid 1990s for the control, prevention and cure of tuberculosis infectious through WHO endorsed DOTS strategy. In 1998 RNTCP was first implemented in Dibrugarh district of

Assam. Currently 150 numbers of tuberculosis unit (TU), 350 numbers of designated microscopy centres (DMC) and more than 7000 DOTS centres are running in the state for providing DOTS to the TB patients (STO, Assam 2020).

Tuberculosis has been seen traditionally as poor man's disease, but this no longer true in Assam. There are no any studies to establish about TB patients pool (Masand Pratibha 2012). In directly observed treatment short course, patients are required to take medication in front of service provider or health workers (Heymann et al 1998).

Description of the health awareness strategy

In-order to overcome reaching the missing and late diagnosis 3 million case globally, "Finding Active Case" strategy is introduced "Finding Active case" involves strategy, cross-sectional house-to-house visit among high risk community groups to identify TB disease symptom and link them to services. The primary objective of this happens is to visit the selected houses of vulnerable and marginalized communities, inform about TB disease, its diagnosis, symptoms, treatment and RNTCP services.

1.2 Objectives of the study

The objective of the study was

- i) To gain better understanding of the socio-demographic factors and awareness of

people towards tuberculosis in Dhemaji, Assam.

- ii) To understand the awareness level of disease from the patients suffering from tuberculosis.

1.3 Research design and methodology

This cross-sectional study took place from Feb. 2019 to Jan. 2020. It followed a descriptive, non-experimental research design with a quantitative measure to investigate awareness of TB patients in Dhemaji district, Assam.

Each of patients was interviewed personally in DOTS center. Details of the patients were taken from the DOTS card provided to them and from the DOTS center in charge. For in-depth understanding of respondent’s lifestyle the interviewer personally visited to selective patient’s houses.

The questionnaire was divided into three sections. The first section focused on the TB patients profile while second section dealt with

demography characteristics and third section dealt with the behaviour of TB patients. Total 280 sample were collected out of which the results of the study was carried out by interviewing 265 TB disease patients (N=265) from selected DOTS centers in Dhemaji Area, Assam.

2. Data analysis and interpretation

2.1 Socio Demographic characteristics

A total of 265 patients were interviewed at various selected DOTS centres in Dhemaji. The survey sample contains 146 (55.09%) males and 119 (44.91%) females. Primary survey was carried out on the TB patients aged between 15 years to 85 years. The mean age of patients was 35.42 years.

Respondents were between age 15-45 years 29% followed by 25-35 years and 35-45 years contributing 29% and 21% of respondents respectively. The demographic variable of the TB patients are presented in table 1.

Table1: Primary Survey Composition

Particulars	Survey Sample					
	Male	Female	Total	Male (%)	Female (%)	Total
Sex	146	119	265	55.09	44.91	100
Age Group						
15-25	35	44	79	23.97	36.97	29.81
26-35	44	32	77	30.14	26.89	29.06
36-45	32	25	57	21.92	21.01	21.51
46-55	18	12	30	12.33	10.08	11.32
55 Above	17	6	23	11.64	5.04	8.68
Total	146	119	265	100	100	100
Employment Status						
Self Employed/ Business	23	11	34	15.75	9.24	12.83
Job	75	21	96	51.37	17.65	36.23
Unemployed	48	87	135	32.88	73.11	50.94
Total	146	119	265	100	100	100
Education						
Illiterate	24	36	60	16.44	30.25	22.64
Primary	57	40	97	39.04	33.61	36.60
Secondary	52	30	82	35.62	25.21	30.94
Graduate	11	12	23	7.53	10.08	8.68
Post Graduate	02	01	03	1.37	0.84	1.13
Total	146	119	265	100	100	100

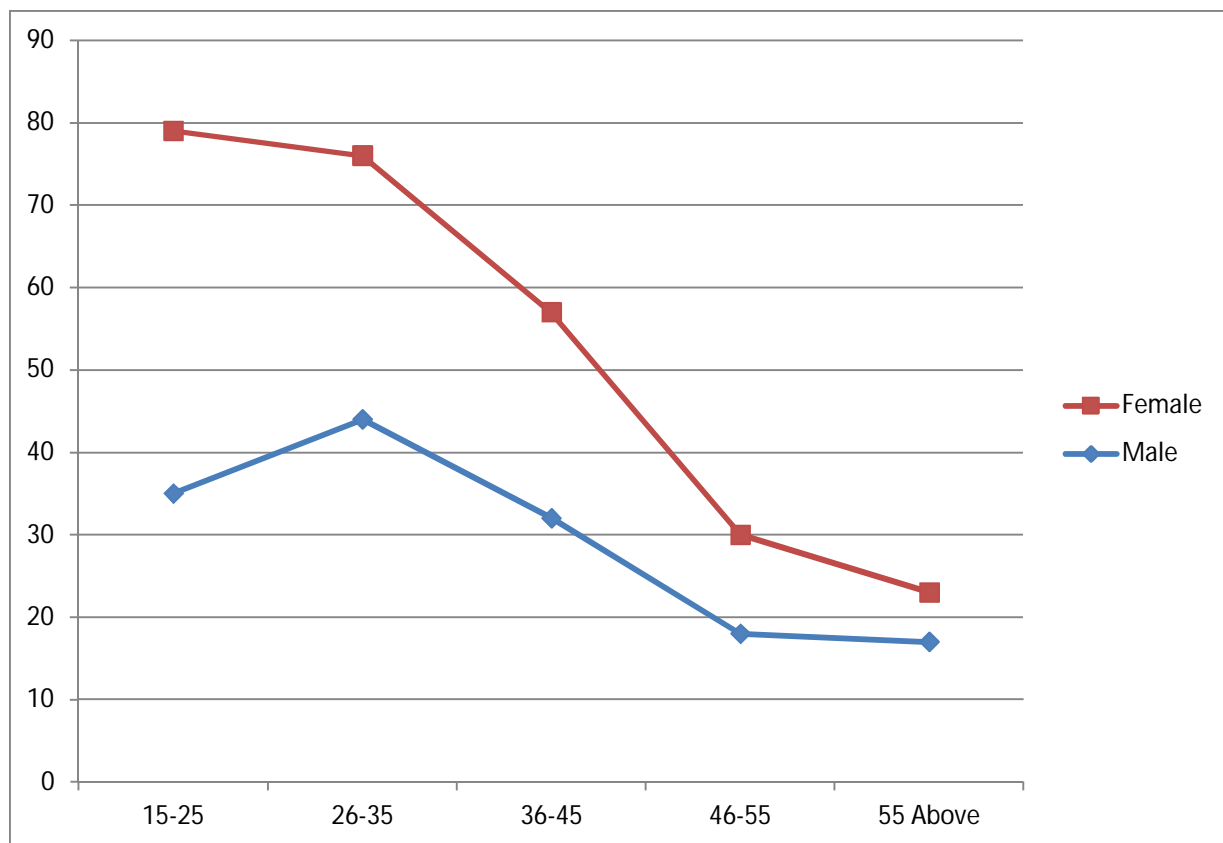
Particulars	Survey Sample					
	Male	Female	Total	Male (%)	Female (%)	Total (%)
Marital Status						
Single	48	38	86	32.88	31.93	32.45
Married	97	73	170	66.44	61.34	64.15
Divorced	01	08	09	0.68	67.23	3.40
Total	146	119	265	100	100	100

Residence Type						
Pacca	40	27	67	27.40	22.69	25.28
Semi-Pacca	42	40	82	28.77	33.61	30.94
Cacca	64	52	116	43.84	43.70	43.77
Total	146	119	265	100	100	100
Monthly Income						
Below 2 K	12	11	23	7.69	9.24	8.68
2-5 K	48	41	89	32.88	34.45	33.58
5-10 K	63	43	106	43.15	36.13	40.00
10-15 K	13	18	31	8.90	15.13	11.70
15 K and above	10	06	16	6.85	5.04	6.04
Total	146	119	265	100	100	100

The majority of population had education upto primary level (36.60%) followed by secondary education Population containing 32.94%. In these, around half of the TB patients are

unemployed while nearly 13% are self employed. About 80% of the patients have income below Rs 10,000.

Figure 1: Age wise TB patients



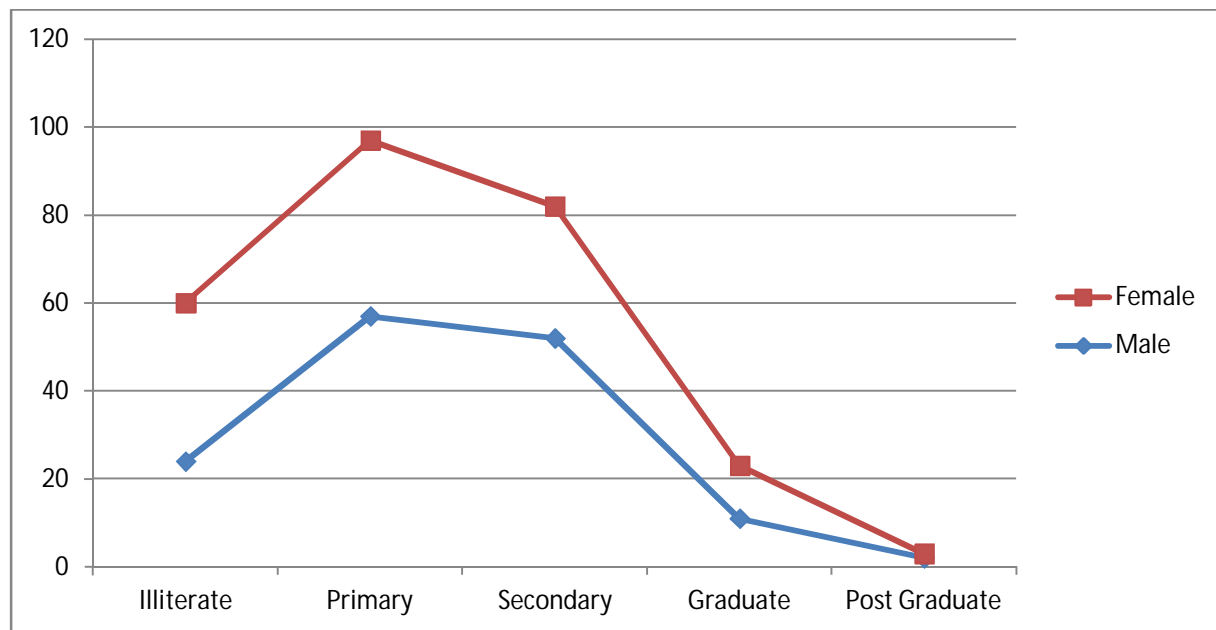
Source: Primary Survey

2.2 Awareness of TB patients towards disease and its transmission:

The study was carried out in various DOTS centres across Dhemaji in Assam. Awareness towards the level of TB disease is very low amongst the TB patients. About 62% of the population are not aware the treatment they are undergoing. The infectious natures of disease are less concerned about the TB patients. The family members of TB patients use common

soap, Assamese gamosa, towels and napkins. About 32%, 30%, 3% and 7% of TB patients use common soap, Assamese Gamosa, towels and napkins. Only 40% of the TB patients use spit box for spitting while 60% of the population spit outside like, field and road. This unsafe sputum disposal was the predominant factors (practice) among the TB patients (Bhattacharyya et al 2005).

Figure 2: TB Awareness and Transmission



Source: Primary Survey

Fig 2 shows groups of awareness about TB and its transmission from the fig 2, it is noted that, about the knowledge level of tuberculosis and its transmission shows to have a relationship with the level of education of an individual. As educational level extend, so does awareness of tuberculosis and TB transmission and its curability. Here we have found that correlation coefficient ($r=0.878$) between literacy and awareness about the TB disease. A high degree correlation coefficient ($r=0.98$) was found that between education level and TB transmission.

3. Conclusion

Tuberculosis has been connection communicatory with environmental risk factors that go in hand in hand with poverty such as tobacco smoke, pollution, overcrowded condition; malnutrition and excessive alcohol use (Moller et al 2010). The family has a significant effect of knowledge with regard to care of their own and family members. The health risks of low income family respondents had strong correlation with poor education, inadequate nutrition, disgraced and strenuous environment, inferior quality of employment and lack of social stability.

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WORK LIFE BALANCE AMONG BANK EMPLOYEES DURING COVID 19: A STUDY WITH SPECIAL REFERENCE TO AHMEDABAD CITY

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ABSTRACT

“Work-life balance” refers to the level of prioritization between personal and professional activities in an individual's life and the level to which activities related to their job are present in the home. It typically means the achievement by employees of equality between time spent working and personal life. A good work-life balance for employees can improve staff motivation, increase staff retention rates, reduce absence, attract new talent, and reduce employee stress. The present changing time is found to be more demanding. A good balance in work and life can play a phenomenal role in the attainment of personal and professional goals.

The purpose of this paper is to explore work life balance during Covid-19 time in banking industry with special reference to Ahmedabad city. The study targets employees of private banks like HDFC, ICICI & Kotak Mahindra of Ahmedabad. This study is exploratory & descriptive research based on primary data collected through structured interview in person with 108 employees of HDFC, ICICI & Kotak Mahindra bank. The study is supported by available secondary data too. The research methodology deployed for research work is collection of primary data through questionnaire.

Keywords:- Work life Balance, Job Satisfaction, Banking, Covid-19

Introduction

Banks plays crucial role in the entire financial system by mobilizing deposits from households spread across the nation and making these funds available for investment, either by lending or buying securities. Today the banking industry has become an integral part of any nation's economic progress and its employees are expected to work aggressively for ensuring smooth functioning of the banks

The purpose of this study is to explore work life balance among employees of private sector banks during Covid-19 pandemic. Especially the paper is intended to address the following problems:

- a) How is the internal environment of banking industry during Covid-19?
- b) Are the employees satisfied with their work-life balance during Covid-19?
- c) What actually does these employees look for in terms of work-life balance in Covid-19 situation?
- d) What are the factors influencing work life balance during Covid-19.

Significance of the Study

The research aims at understanding the Work Life Balance in banking Industry during

Covid-19. It is an industry that is service oriented and requires highly skilled manpower to serve its customers in best possible manner. It is an industry where the working hours for the employees may extend up to 12 hours or even more. During the time of Covid-19 pandemic justifying the requirements of bank work with lookout for personal safety becomes even more difficult. Thus, the present study provides conceptual framework of work life balance in banking industry during Covid-19. The study presents the relation of work life balance with other major aspects of human resource management i.e. job satisfaction, job stress and employee turnover in Covid-19 situation.

Research Methodology

The research methodology proposed examines work life balance of employees at private banks like HDFC, ICICI & Kotak Mahindra of Ahmedabad during Covid-19. This study is exploratory & descriptive research based on primary data collected through structured interview in person with 108 employees of HDFC, ICICI & Kotak Mahindra bank. The research is supported by available secondary data too. The research methodology deployed for research work is collection of primary data

through survey of 108 employees. Stratified random sampling method is used for data collection. The collected & analyzed data is presented with the help of statistical test like factor analysis, chi-square, graphs & charts for more clarification.

Objectives of the study

The study approaches the problem from the viewpoint of both the employees and the employers to attain the work life balance. The main objective of the study is to know how the bank employees are balancing their professional and personal work life. The following are the main objectives of the study:

1. To identify major factors influencing Work Life balance of bank employees during Covid-19.
2. To study the impact of working hours on productivity of the employee during Covid-19.
3. To evaluate how personal & professional work pressure affect the employees life in Covid-19 situation.
4. To come up with the strategies to improve the quality of Work Life of employees during Covid-19.
5. To study employees time management for personal and professional Commitment.

Sampling Method Used

In this research, the sampling universe consist of employees at corporate private banks like HDFC, ICICI and Kotak Mahindra of Ahmedabad & Stratified Random Sampling method is used for data collection. Stratified random sampling is probability sampling method using which a research organization can branch off the entire population into multiple non-overlapping, homogeneous groups and randomly choose final samples from the various strata for research which reduces cost and improves efficiency. Members in each of these groups should be distinct so that every member of all groups get equal opportunity to be selected using simple probability In this study respondents are selected using stratified random sampling by diving them into stratum based on their designation. The respondents are stratified into 3 categories; Managerial level, Administrative level, and Executive staff members.

Respondents are further selected from these three strata in equal proportion. i.e. 12 employees from each strata consisting of 36 employees from each bank. Thus, total 108 employees are surveyed consisting of 36 employees from each selected private sector bank.

Sample Size

In this research the sample size is 108 employees of HDFC, ICICI and Kotak Mahindra bank of Ahmedabad. Respondents are further selected from these three banks in equal proportion. I.e. 36 employees from each bank. They are further stratified into 3 categories; Managerial level, Administrative level, and Executive staff members & respondents are selected in equal proportion from these strata. Respondents are selected from three different strata to avoid influence and biased opinions of particular level of management.

Statistical Tools Used For Analysis

For the purpose of analysis different statistical tools are used, they are as follow:

Factor Analysis

Factor analysis is a technique used to reduce a large number of variables into fewer numbers of factors. This technique extracts maximum common variance from all variables and puts them into a common score. As an index of all variables, the score is further used for analysis. Factor analysis is conducted to identify major factors influencing work life balance among bank employees as below:

Kaiser-Meyer-Olkin (KMO)

It measures sampling adequacy. It is measure used to examine appropriateness of factor analysis. Its high value between 0.5 & 1 indicates that factor analysis is appropriate. Its score below 0.5 implies that factor analysis is not appropriate. In this case KMO is 0.712. This indicates that factor analysis is appropriate & acceptable.

Bartlett's test of Sphericity

Its a test statistics used to examine hypothesis that variables are uncorrelated in population.

The hypothesis tested accordingly is as follows:

Ho: Population correlation matrix is identity matrix where each variable correlates perfectly with itself only & has no correlation with other variables

Ha: Population correlation matrix is identity matrix where each variable does not correlates with itself only & has correlation with other variables.

Significance value is 0.001 which is lesser than 0.5. Thus, Ha is accepted i.e. Population correlation matrix is identity matrix where each variable does not correlates with itself only & has correlation with other variables. This ensures reliability of the test.

Table 1 : Communalities

	Initial	Extraction
Remuneration	1.000	0.821
Working Climate	1.000	0.619
Lengthy Working Hours	1.000	0.608
Overtime	1.000	0.622

Incentives	1.000	0.704
Target Pressure	1.000	0.658
Supervisor's Attitude	1.000	0.745
Provision of work from home	1.000	0.508
Amenities Availability	1.000	0.521
Working on holidays	1.000	0.672
Working Autonomy	1.000	0.748
Frequent work related trips	1.000	0.653
Performance Appraisal	1.000	0.774
Career growth prospect	1.000	0.782
Family Support	1.000	0.763
Management Support	1.000	0.776
Extraction Method: Principal Component Analysis.		

Total Variance Explained tells about number of factors extracted by SPSS. Reading has come for first three variables only that mean SPSS has converted 16 original variables into three new factors. These three variables explains 79.58% of variance which is a good result as more than half of the data is explained by these factors (Extraction method used is principal component analysis)

Table 2: Total Variance Explained

Component	Initial Eigen Values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.335	34.271	34.271	1.335	34.271	10.271	1.197	30.206	30.206
2	1.267	25.745	60.016	1.267	29.745	40.016	1.185	29.118	59.324
3	1.113	14.500	74.516	1.113	16.564	56.580	1.180	20.256	79.580
4	.950	3.297	77.813						
5	.942	3.216	81.029						
6	.923	3.115	84.144						
7	.900	3.283	87.427						
8	.871	3.010	90.437						
9	.864	2.502	92.939						
10	.855	2.428	94.367						
11	.840	1.317	95.684						
12	.816	1.278	96.962						

13	.709	1.154	97.116						
14	.700	1.144	98.260						
15	.691	1.132	99.392						
16	.682	0.608	100.00						

Determination based on Eigen Value: Eigen value represents the amount of variance associated with the factor. In this approach, only factors with Eigen value greater than one are retained. here first three variables have Eigen values of one approximately so only first three factors are drawn for further analysis.

Principal Component Analysis (PCA) extraction method is used to extract these three factors. As Component matrix does not give clear classification about which variable is going into only one factor so rotation with Varimax method is performed to get the required clarity.

Table 3: Component Matrix

	Component		
	1	2	3
Remuneration	.430	-.032	-.196
Working Climate	.398	.216	-.061
Lengthy Working Hours	.456	.015	.065
Overtime	.314	-.221	.359
Incentives	.238	.117	.017
Target Pressure	.340	-.116	-.229
Supervisor’s Attitude	-.172	-.166	.751
Provision of work from home	.281	-.237	-.076
Amenities Availability	.553	.092	.218
Working on holidays	.276	-.534	.278
Working Autonomy	.360	.415	-.022
Frequent work related trips	-.168	.622	.429
Performance Appraisal	.182	.454	.075
Career growth prospect	.352	-.166	-.076
Family Support	.284	-.237	.218
Management Support	.172	.092	.278

Rotation means rotating axis of factors in such a way that variables are clearly going towards one or another factor & clear cut distinction between factors emerges. Thus, variables

which are very closely matching & from customer point of view are only one factor are summarized as follows:-

Table 4 : Rotated Component Matrix

Rotated Component Matrix	1	2	3
Remuneration	.688	-.078	.062
Working Climate	-.148	-.667	.078
Lengthy Working Hours	.130	.053	.618
Overtime	.233	.297	-.523
Incentives	.554	.408	.145
Target Pressure	-.077	.568	.306
Supervisor’s Attitude	-.214	.564	.045
Provision of work from home	.064	.556	.081
Amenities Availability	.190	.165	.522
Working on holidays	.180	-.357	-.518
Working Autonomy	-.115	.232	.544
Frequent work related trips	-.271	.454	.562
Performance Appraisal	.568	.436	.351
Career growth prospect	.554	.326	-.411

Family Support	.163	.562	.214
Management Support	.216	-.665	.172

Table 5 : Variables Extracted

Factor	Variables extracted	Factor Name
1	High loading with factors like Remuneration, Incentives, Performance Appraisals, Career Growth	Monetary Gains
2	High loading with factors like Working climate, Target Pressure, Attitude of Supervisor, Provision of Work from Home, Family Support, Management Support	Work related pressure & support
3	High loading with factors like Working hours, Overtime, Availability of Amenities, Working on Holidays, Working Autonomy, Frequent office work trips	HR Policy

Thus, the most important factors determining work-life balance in banking industry during Covid-19 time are as follows:-

1. Monetary gains
2. Work related pressure & support
3. HR Policy

Thus, It is observed from factor analysis that monetary gains is the most important factor influencing employees work life balance as it provides motivation to employees to continue the job during critical time of Covid-19. Second most important factor influencing work

life balance of employees is found to be work related pressure & support. It followed by HR policies about working hours, overtime, availability of amenities, working on holidays, working autonomy, frequent office work trips

Testing Of Hypothesis

Ho: Private bank employees are not able to attain work life balance during Covid-19 pandemic

H1: Private bank employees are able to attain work life balance during Covid-19 pandemic

	Highly Satisfied	Satisfied	Neutral	Dissatisfied	Highly Dissatisfied	Total
Male	10	15	06	14	15	60
Female	12	13	04	9	10	48
Total	22	28	10	23	25	108

O = Observed Value

E = Expected Value

E = Column total * Row total / Grand total

Degree of Freedom = (Number of rows – 1) (Number of column – 1)

$$= (2-1)(5-1)= 4$$

Observed Value	Expected Value	(O-E) ²	(O-E) ² /E
10	12.22	4.93	0.40

15	15.56	0.31	0.02
6	5.56	0.19	0.03
14	12.78	1.49	0.12
15	13.89	1.23	0.09
12	9.78	4.93	0.50
13	12.44	0.31	0.02
4	4.44	0.19	0.04
9	10.22	1.49	0.15
10	11.11	1.23	0.11

Test Statistic	Level of Significance	Degree of Freedom	Calculated Value	Table Value	Result
	5%	4	1.48	9.49	Accept H0

Interpretation

Calculated Chi-Square value is 1.48 lesser than the table value 9.49, thus, Ho is accepted. It indicates that private bank employees are not

able to attain work life balance during Covid-19 pandemic as private banks remained open even at the time of lockdown. The only relaxation given was reduced official working hours but moreover the employees were

suppose to keep on working throughout the day for achieving their targets.

Findings

Majority of the banking industry employees are male and married. Employees are found to be working 12 hours. Most of the employees are found working over time even after completion of their official working hours. Employees feels that they are unable to attend social family gathering because of their busy work schedules. They experience sometimes even the guilt of not sparing enough of the time with their family members specifically along with their kids. Employees are expecting flexible working hours to ease their tension about reaching on time as well as to adjust along with their family related requirements atleast at the time of Covid-19 pandemic.

Private bank employees finds long working hours affects their productivity. Work pressure is realized by many employees and some are found to be suffering from stress related health issues. Employees have experienced that work pressure affects their working efficiency at home also. Lack of good growth career prospects leads to dissatisfaction among employees resulting as the major cause of their attrition. Moreover, monetary gains, work related pressure & support & HR policies are found to be most important factors influencing private bank employees work life balance during Covid-19 time. These factors directly affects the employees motivation level to continue the job even at the critical time of Covid-19. Significant influence of employees' family size on work satisfaction is not observed. Management as well as family support serves as a significant predictor for personal life satisfaction of employees working in banking sector.

Suggestions

The balance between personal and professional life vary from person to person. Based on the findings of the study the following suggestions are drawn:

Counseling programs regarding proper work life balance can be conducted for employees who cannot manage work and lifestyle. Women employees playing dual role of handling household as well as office if possible

are not suppose to be considered for overtime working. This will assure their long term continuity with the organization. Also the time schedules could be fixed in such a manner that it is not affecting anyone's work life balance. □ The employees could be encouraged to work productively without wasting much of their time gossiping with each other. Sometimes job rotation can be practised. This would help in reducing boredom caused due to monotonous working of the employees. Most importantly leave request should be handled cautiously by considering them favorably if possible. Unnecessary delays in sanctioning leaves should be avoided.

Some organizational initiatives like Part-time, Job sharing, Shift work, Staggered hours, Compressed hours etc could be introduced for maintaining work life balance. Most importantly respectful treatment of employees at all levels, compensation/pay and benefits which are the key drivers of job satisfaction are suppose to be provided appropriately. Some motivating functions like celebration of employees achievements along with family members could be arranged for employees. Also for rejuvenating private bank employees some outstation trips together with training programme, sports competition etc could be organized at fixed intervals.

Some individual level initiatives also needs to be initiated by employees for maintaining work life balance. Its important to attain a balanced mind approach for private bank employees with ultimate level of work pressure. Employees should take nutritious & healthy diet on time for assuring working efficiency with required level of attention. Exercise is a very good medicine and it helps in being stress free so proper exercise, yoga, meditation can help in maintaining better work-life balance.

Conclusion

Employees should fix their priorities. They should decide themselves what is more important for them and then work accordingly. Even employees should share their frustrations with friends, relatives, coworkers. This way one could withstand frustrating situation. Employees should find a mentor at the work place who provides correct advice in difficult time & thereby helps withstand work pressure.

An individual must manage the time consumed on various roles and responsibilities of life by assuring that time and energy support Work-life balance.

Thus, it is important to understand that every person is responsible for his/her own work-life balance and the individual himself could be of the highest help for attaining his work life

balance. As said by experts that our emotions are the product of our own thoughts, employees alone can control their thoughts and emotions. So having and cultivating a faith and confidence in oneself can be the strong tool for maintaining work-life balance in the critical time of Covid-19 for private sector bank employees.

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SOCRATIC REVIEWING OF THE CONVERSE IN THE SET NARRATIVES OF AN ANTAGONIST- WITH REFERENCE TO THE CHARACTER OF DURYODHANA

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ABSTRACT

The postmodernist approach of reinterpretation provides many interesting ways to explore the ancient treasure and present the same stories to the sensible readers in a new lense. The great mythological epics till now are shared more with the didactic role or entertainment purpose but these present interpretations allow readers to provide insight into the ideals and societies of ancient culture. This paper explores the non-normative side of the protagonist Duryodhana as a human being leaving behind the fix notion of black and white binaries. Exploring his character in the light of developmental psychology, the modern reinterpretations provide a bipartite concept of self and society and ill effects of peer victimization, it also dos away with popular normative views and reviews how the insecurities and ill treatment by the society disconnect an individual from his essential core provoking him to become a fallacious and insecure personality.

Keywords: *Reinterpreted Works, Developmental Psychology, Peer Victimization, Society and Self, Unconventional Queer, Marginalization.*

Introduction

In this egocentric world where people are confined to themselves, some altruistic traits of modernization can also be seen which have given rise to the heterogeneous study of the set, prevalent and paradoxical characters from our rich heritage of mythology. From the very childhood we have been taught our mythologies in form of stories, to develop sense of morality and understanding for the culture. These mythologies are full of stories of heroes, battles, queens, villain and the battles or eternal struggle of them between good and evil. And the most interesting part of these stories is that these characters are always presented based on the spectrum of ethics and morality fixed by the society on the basis of binary opposition, without considering their individual characteristics and behaviors. On the basis of the fixed normative definition of right and wrong, moral or immoral – these are shown steadfastly on opposite ends of the spectrum of good or evil. The fine line between good and evil is generally ignored to present the idealistic examples for the social norms. Ignoring the other side of the coin the villainous man has always been presented with a stereotyped image, who loves to inflict pain upon everyone, hates others, is cruel, lustful person and the hero on the other hand is portrayed as extra good or best human. But

somewhere the focus on the concept of good and goodness is so much prevalent that the psychological reasons and the situations behind every bad or evil are ignored in them. The characters are easily defined or rather tagged as bad but why he is bad is ignored in it. The reasons and psychological aspects behind such behaviors are not given much consideration – but normative way of always representing the story from one side does not serve the purpose in post modernism. Commenting on the role of society Osho says that the Society is not at all interested in making creative, awakened individuals; instead they focus on promoting them to be more skillful, more productive and efficient like machines. The creative awakened personalities like Buddha, Jesus Christ, Socrates or Pythagoras are not needed at all by the society. Such extraordinary personalities who dared to not follow the conventions blindly, existed not because of the society but are the results of their own individual efforts.

Methodology

This study consist of close reading, reinterpretation and in-depth study of the reinterpreted works of modern writers and the old epic *Mahabharata*. This research paper also considers the critical material and reviews available on various sites and books.

The Unexplored Domain

The new mythologists are on different ground in terms of how they choose to tell stories we already know. As a culture, these myths have been told in numerous ways inflicted by time and place, by caste and region, by politics and ideology etc. the pioneer writers like Maithili Sharan Gupt and Navlekar started writing contemporary literature on these mythologies, providing a third eye view to these normative characters. The Modern and Contemporary writers like Devdutta Patnaik, Ananda Neelkanthan, Kavita Kane and others in various languages have been creating and questioning the subversive narratives for characters from myth and epics for decades. These narratives not only present literary merits or perceived multiplicity of possible narratives, but also present many new thought probing questions like -

- Does the popular old narrative can have any other voices?
- Do they present new spaces of interpretations and empowerment?

Victoria Moschou, in her work *Guardian of the Auras* quotes, "But you see, my dear Guardian, everyone is the Villain in someone else's story". The stubborn insularity and ethnocentric viewpoints prevalent in the society somewhere became the reasons behind building of a negative character in the old narratives. Treating these mythological villains in paradoxical manners has received much more attention by dominant intellectuals than their positive traits. Deconstructing the normative images of these characters portrayed as sheer villain the writer Nishant Uppal comments -

"In the Indian caste system, national image, and the historical period-differ in their parameters of analysis. Yet, they all suffered conscious and systematic degradation of meaning and image in some respects. Villain is a word that has suffered etymological deterioration. The Vaishyas and the Shudras in the Indian caste system systematically lost their equal stature to the Brahman and the Kshatriya." (Nishant Uppal, Duryodhanization: Are Villains Born, Made or Made up?)

The Bipartite Concept and Duryodhanization
In the great Indian epic, the Mahabharata the character of Duryodhana is presented as a lustful greedy king, who was solely responsible

for the disastrous war of Kurukshetra. But the other important aspects of the war and the destruction of a dynasty cannot be ignored. This study provides us with questions to ponder on as- Is the character of Duryodhana presented without any biasness? Were not the Pandavas too had the lust for power? Was not the pomp of power and constant bullying by Bhima, the partiality done by the teacher Drona and humiliation of Kauravas for being son of a blind man, not the reasons of inferiority among Kauravas? Why Yudhishtira could not control his temptation for gambling? Was it justified to stake a wife and blame others for destruction? This study is an attempt to understand the emotional and social causes and the circumstances in which Suyodhana was compelled to become Duryodhana. History, they say, is written by victors. And that is why unlike Bhima, Yudhishtir and Draupadi, Duryodhana's point of view has hardly been considered. This book tries to look at the character of Duryodhana in an iconoclastic way. Leaving behind the limitations of taking the mythology as a sacrosanct text, the new reinterpretations are creative, analyzed, dissected and, delve into ambiguous areas. These re-interpretations aim at reformulating the notions of dharma that dominates Hindu Mythology, providing the perspectives of marginalized voices of the epics.

In the book *Ajaya – Role of the Dice*, the author Anand Neelakanthan has tried to present the story of a damned silent hero who became the victim of uncritical acceptance of conventional renderings of Indian epic Mahabharata. The Kaurav prince Suyodhana is presented with a different picture in this book than Mahabharata. The scheming, roaring and arrogant villain Duryodhana presented in the popular serials, stories or traditional retellings so far, has been presented in a more human way through the reinterpreted personality of Suyodhana. This book is an attempt to view this popular epic from the side that lost the war. Those who are marginalized, defeated, insulted & trampled are shown in the light of emotional, social, political or morally marginalized areas which are pre decided by the social and religious norms, which ignores the concept of self and sees the world in a set

normative pattern only. Instead he has appeared as an amazingly honest, brave, truthful and great warrior always ready to fight for the people and the views he believed in. The interesting parallels between the world of today and the world of the *Mahabharata* in addressing the issue of caste have been defined in this book through the character of Suyodhana. The modern world which compelled Eliot to write *Wasteland* depicting the moral and mental deterioration of humans, badly needs to understand the root cause of this challenging ideologies. According to the survey of WHO out of 10 youth, eight are suffering from mental anxieties and personality disorders. Instead of blaming the society or these victims, measures should be developed to understand the reasons behind their frustrations and provide them more healthy societies, where they are less judged, less compared and least humiliated. The revolutionary points on which this book deals with are based on the character of Suyodhana who believes that deciding the station is determined by one's Karma, not one's birth. The key points considered in this study are-

- The Stereotyped Antagonist.
- Question over role of Varna System and Education.
- Conflict of Society and Self.
- Turning of Suyodhana into Duryodhana.
- Through traditional narratives – looking to the story in different perspective.

The Tormented Childhood

Neelakanthan has presented Duryodhana as Suyodhana, a lead protagonist from the story of *The Mahabharata*. Suyodhana's journey started with the besmirch done by Padavas specially Bhima who tortured and ill-treated him and his siblings in various ways. As a childhood prince Suyodhana was a compassionate and determined prince who had faith in himself. Instead of accepting the rules written in scriptures or taught by Guru Dronacharya, he wanted logical reasoning for their acceptance. The dogmatic rules of caste and Varnashram were brutally criticized by him which become enough reason for the Brahmins to hate Suyodhana. Right from the beginning of the epic when Kunti returns to

Hastinapura seeking refuge, Duryodhana was made insecure that the kingdom would go to Yudhishtira, the eldest prince and the son of Pandu as his blind father Dhritarashtra was only a caretaker in the absence of Pandu. The thought of this insecurity was so appalling for him that he being tormented, tried everything in his means to eliminate them. But Bhima's physical prowess, which practically subdued everybody without a chance for any resistance, was also the reason which provoked Duryodhana to feel insecure. Though Bhima tormented the Kauravas in childishness and never with any malice, but Duryodhana, already insecure, developed a deep rooted hatred for Bhima and his brothers. *The Mahabharata*, Book 1: Adi Parva: Sambhava Parva: Section CXXVIII which is a translated English prose from the original Sanskrit text by Kisari Mohan Ganguli also admits this fact that Bhimasena always tried to show his superiority by consuming articles of food, and scattering dust and beating all the sons of Dhritarashtra. He used to pull the Kauravas by the hair and made them fight with one another, laughing all the while, "The second Pandava used to seize them by the hair and throwing them down, to drag them along the earth. By this, some had their knees broken, some their heads, and some their shoulders. This bullying continued sometimes in form of holding them drowned in water, till they were nearly dead, shaking and striking the trees with his foot on which the Kauravs climbed, so that down came the fruits and the fruit pluckers at the same time. Bhima used to make a display of his strength by thus tormenting them in childishness but not from malice." (*The Mahabharata*, Book 1: Adi Parva: Sambhava Parva: Section CXXVIII)

Growing up together, Bhima's playful pranks left Duryodhana with helpless anger. Unable to counter him, Duryodhana resorts to crookedness. Shakuni, the prince of Gandhar also played a vital role in provoking and misleading Suyodhana, so that he can serve his personal enmity against Bhima and Hastinapur. If instead of comparing and humiliating him, his emotional and psyche needs would have been taken care of, things would have been different. When Karna came to Guru Dronacharya for training, the Guru

refused to teach him as he was low caste but Suyodhana reminded the Guru of his brother-in-law Kripa who disbelieved in the purity, sanctity of caste and dared to break the rules. Suyodhana's curious mind questioned everything but most of his doubts were either unanswerable or were answered with punishments or remarks with belittling remarks like "Sons of Andha, like father – like – sons, unable to see right from wrong" etc.

Even the translated work of Kisari Mohan Ganguli on the epic *Mahabharata* describes that Guru Drona too had a biased liking towards the Pandavas and partial attitude towards Kauravas. In one incident when a Nishada boy (untouchable) entered in a royal garden and was rebuked brutally by the brahmin Guru Dronacharya and Pandavas, only Suyodhana himself extended him fruits with his hands. The pathetic condition of Eklavya (untouchable) and his family made him ponder over their poverty. Suyodhana sat thinking of Eklavya's hungry and tired face, and the poverty that had made him dare trespass into the royal gardens. When Ekalavya came to Guru Drona to request him to become his guru. At that Guru Drona becomes furious and peered down at the cowering Nishada boy. He hissed towards Suyodhana too and blamed his father King Dhritrashtra to allow such worms to rise and demand education from Brahmins. Suyodhan's eyes lit with anger but before he could respond, Drona turned towards the Nishada boy, who was standing still with his head hanging in shame and shock. When Guru Drona haughtily asked Eklavya to offer his right thumb as gurudakshina, Suyodhana was in shock. He knew if Eklavya will agree to it, he will never be able to grip the heavy bow without the thumb of his right hand. Suyodhana sensed the cunningness of the Brahmin guru. But before he could stop him, Eklavya had cut his thumb. Suyodhana shouted at the Guru but his fury did not touch Drona.

Challenging the Queer Side of the Society

The prince Suyodhana is found questioning the queer, absurd but socially accepted norms in the present reinterpretations. Suyodhana, who had been shown as blind for power and throne in the traditional stories of The *Mahabharata*, has a totally contrasting image in his

childhood. Many a times in his boyhood he questioned his mother Gandhari, the reason why she wears the blindfold on her eyes and does she really loves her husband Dhritarashtra. The sensitivity of emotions and compassion for the mother could be easily seen in this young Suyodhana. In the starting of the book, Bheema has been shown bullying Suyodhana who was later rescued by the General (PM) Vidur. Suyodhana hugged him with rush of gratitude but Vidur warned him not to touch him as he was a low caste. But Suyodhana kept on questioning this queer norm as Vidur was also raised by his grandfather along with his father and was very virtuous like any other kshatriya from his childhood only. He started questioning these illogical norms set by the society and religion. Being a shudra, son of a palace maid Dhaumya, but son of the grandson of Kuru King Shantanu, Vidur was humiliated by Pandavas and the Brahmins. Suyodhana could feel Vidura's pain and he never understood why everyone, including his own parents, treated him with a hint of contempt. Sometimes he even used to wish that he had been born the child of common people.

Humiliation and the Young Mind

Guru Drona his teacher hated him and thought him to be anti dhrama and also blamed him to be a reason which spoiled his son Ashwatthama. Suyodhana always had a habit of questioning everything, for which the guru had no answers. This made Drona feel inadequate. So, Drona reacted with the viciousness that only teachers are capable of towards students they do not like. Whenever Suyodhana wanted to ask any question before learning, it was taken as arrogance compared to his Pandava cousins who use to follow everything told by the Guru without questioning. Guru Drona used to hurt Suyodhana whenever he could. He wanted to crush the boy's rebellious spirit and mellow him so that he would fit in the society where everything was accepted as told by the Brahmins without knowing its authenticity of the established order and norms. He used to beat the boy in small affairs, scolded him in front of his cousins and gave him insulting punishments. Suyodhana was called with

names like- son of Andha, like father – like sons, unable to see right from wrong. This affected the little prince a lot. He used to be silent on these occasions. His cousins used to laugh at him and mocked at him. As a teacher Drona considered it his duty to mold his students to fit into the society. He did not want Suyodhana to rebel and challenge or change the established order. Instead of appreciating the innovative and reason-based mind of Suyodhana, he thought it his sanathana dharma to crush the questioning spirit of his awakened and kind hearted prince. That's why Suyodhana hated the classes of Guru Drona and wanted to be out in the forest, roaming about and watching the birds and butterflies. Drona criticized him for roaming in the streets without caring for the taboos or about pollution, touching everyone, eating with untouchables, playing with Shudras. He called him Duryodhana instead of Suyodhana.

"And you, prince Suyodhana....no, I should call you Duryodhana, for that is what you are one who does not know how to handle aims, is clumsy footed, a nitwit....You bring only shame on your ancient line and on Hastinapura, Prince." (Page 89)

Suyodhana felt great plight and resented the vicious nickname that many relished calling the sons of Dhritarashtra. The auspicious prefix 'Su' was replaced by 'Du' behind the backs of Suyodhana and his brothers and sister, right from childhood naming Suyodhana as Duryodhana, Sushasana as Dushasana, Sushala as Dushala and so on. The guru's taunt had somewhere ensured these inauspicious names become fixtures. Suyodhan's child mind was badly tormented by the stifled laughter of the Guru and Pandavas who never missed an opportunity of mocking at him. In one incident Suyodhana shared his mental plight to his friend Aswathama about his guru, "My guru's open dislike has not made my learning easy. I feel my confidence draining away the moment I see Bhīma. I hate the way he and his brothers treat us and others weaker than themselves. But I cannot agree to any unfair means to defeat them. One day, with hard work and practice, I will become a better warrior than Bhima." (page 145)

These things had a big mental and emotional impact on adolescent Suyodhana. He felt

unaccepted, isolated, angry and withdrawn. These abuses were not simple conflicts. In a very famous childhood incident of Kauravas and Pandavas, they had to hit the eye of a parrot during learning archery. While Arjuna hit the mark exactly where the guru wanted, Duryodhana was in agony to hear the cries of another parrot hovering above its dead mate. Few moments before this incident he was talking to his Guru and fellows about the beauty and romance spread in the forest in the month of Shravan. He was brutally rebuked for acting like a poet instead of a Kshatriya by his Guru. The Guru smacked him on cheeks and called him a fool and a woman. Suyodhana walked back with his head hung in shame. The unkind words had stunged him, but still he intended no insult to his teacher.

The Compassionate Side

After this incident, once he followed the Nishada Eklavya to his abode. Suyodhana was stunned to see the pathetic condition of the poor living in the forest. He felt the agony to see the condition of tribes in his kingdom and felt it so shameful that so many people there had nothing to eat. He told his friend Aswathama that why there was so much injustice in the world, why his uncle Bhishma did nothing about it and why everything was done according to the stupid taboos and caste rules. The great visionary mind of Suyodhana dreamt to change the entire system when he would become a king.

During one instance when Bhishma was teaching him to behave maturely as he would be the crown prince, he questioned gallantly that why there was so much suffering and poverty in their kingdom for most of the people while Hastinapur was ruled wisely by great rulers and regents. Bhishma instead of getting angry at the audacity of Suyodhana, patiently explained him that the oppression, discrimination and privileges were all part of civilization and when he will become a king he can rule wisely and can ensure that the poor and those oppressed by birth do not suffer even more. He was also aware of the fact that Shakuni, the Gandhar King was spoiling Suyodhana. So, he warned Suyodhana to stay away from Shakuni and handle his temper even when treated badly. He suggested him-

"Right now, you are a student and your duty is to learn. Keep dreaming but plant your feet firmly on the ground. Do not be swayed by Drona, Karna or Kripa. Stay away from Shakuni. If someone calls you a blind man's son, forgive him. They say such things because they cannot get even in any other way. Take it as a compliment." (Page 79)

Peer Victimization

In another incident Suyodhana was accused of murder of Bhima by the Pandavas and their mother Kunti. Without investigating on the facts, they simply wanted to get Suyodhana punished for the murder which was not yet proved. Suyodhana standing in the middle of the sabha, felt the trauma of these accusations. His head sinking with the shame, for something he had not done. He wondered what he had done to cause so many people as his cousins, Maa Kunti, the priests and others to hate him. It was all done because he never followed the Orthodox religion blindly, instead he questioned on everything with logic and reasons. For him humanity and emotions were bigger than religion. He never agreed to their ridiculous ideas of purity of birth and such nonsense, but he had never thought they would hate him for just having a different point of view. He was called arrogant, condemned for not following the rules or taboos of holy smritis, rebuked for moving around with low castes and pollute the priests and palace. Whenever he tried to question the holy books out of curiosity, he was called argumentative, opinionated and adamant calling his ideology full of foolish ideas. They criticized him that he found pleasure in questioning the holy books, with his puny intelligence, he tried to argue with scholars and thought that he can teach the pundits. He was criticized for offering money and food to the dirty beggars who throng and polluted the holy places. He refused to accept their baseless theory that by trying to help the poor, he was interfering with the laws of Karma and that people are poor or rich, Brahmin or Pariah, by virtue of the Karma of their previous birth. Apart from the debates of how authentic these facts are, this study shows us the different phases and experiences (good or worst) and their effect on the upbringing of an adolescent. Even in

today's world many Therapists and psychologists agree that parents need to be cautious treating the sibling aggression as it can be potentially harmful resulting in bad outcomes like depression, anxiety and self-harm. One of the prominent psychologist Olweus defines Peer Victimization as a major causes of rivalries among cousins in adolescence. This unhealthy sibling rivalry in adults later became painful for Suyodhana when he became an adult. His character reflected the signs of –

- Dwelling on past hurts.
- Thinking often how horrible it was to grow up with his cousins.
- Over analyzing what happened that caused the hurts of sibling rivalry incidents.
- Being very competitive with them even in adulthood.
- One – upping siblings.
- Jealousy, envy and comparison

Suyodhana who was verbally or physically abused by their cousin brothers showed its ill effects in his relationships including professional, romantic and family relationships. It resulted in loss of his sense of self, judging other people based on the bad experiences he carried from the past and also had an adverse effect on his interpersonal effectiveness. Often the problems created during childhood are so stubborn that it becomes very hard to move beyond them. Often Suyodhana has been portrait in this book saying that he could not stand his cousins as they always tried to humiliate him and torture him. Through this discourse of Developmental psychology the growth, change and consistency, life spans and how thinking, feeling and behavior change throughout a person's life has been explained.

The Lucifer Effect

Philip Zimbardo, teacher of psychology at Stanford University did an experiment and came out with a book named "The Lucifer Effect" which explains in detail about understanding how good people turn evil or how the psychologists and psychiatrists in order to treat the victim, focus on dispositional causes, or the inborn traits of our behaviour. Although everyone do carry these attributes

with them, still there are some situational causes which are more responsible for these behaviours than the inherent traits. The exercise of power to intentionally harm people psychologically, to destroy people morally and to commit crimes against humanity is defined by Zimbardo as the definition of evil. The Lucifer effect establishes the fundamental question about the existence of human nature, the reasons behind their evil actions or reactions and how is it possible for ordinary, average, even good people to become perpetrators of evil. Through the character of Lucifer, we can relate Suyodhayana turning into Duryodhana, and how the social settings and the roles, change or force a person to be overpowered with evil.

Suyodhana Becoming Duryodhana

Questioning these normative tendencies of the society Osho comments that the Society always wants an individual to mix with the crowd, to fit with the crowd. It does not appreciate the idea of originality or being oneself. It wants them to follow everything blindly staking their originality and turning into a carbon copy of the ideal that the society has determined for everyone. Probably, the hatred of Duryodhana for the Pandavas would have diminished if the Pandavas would have also been seen as ordinary human beings capable of erring. But the constant partiality and over goodness shown by them, were enough reasons for salt on Duryodhana's wounds.

This study exposes the normative set patterns of the society on the basis of which, it rewards or punishes an individual. From many centuries, it has been done and is still going on

– It snatches the dignity, individuality, freedom of thinking and expressions and kicks him in politics of religion, caste, society and moral values. The person like Suyodhana who tries to question the nonsense norms of society, wants to live his life according to his own understanding, was rebuked brutally and was called rebellious. From the very beginning till now the society has called morality and dharma superior than individual emotions. These conscious people who dare to accept the insecurities of the unknown, the discomfort and the inconvenience of the unfamiliar are criticized for being honest in this world of ambition, politics and ego. Such individuals face much conflict and aggression whenever they try or question to change circumstances, to change people, thinking of an utopian world, changing the society, its structure, economy, politics or education, they are lost at last. The multidimensional traits of Suyodhana always treated as a rebel or Villain is no less different than the present society youths. Like him, they too do not believe in anything except their own experiences. Their experiences are their only truth, no savior, no holy scripture, no ancient tradition or dharma can give them their truth. The rebel has no belief system-theist or atheist, no caste- kshatriya or shudra, he is an inquirer, a seeker, a rational being. Dharma and Politics are used as a mask to hide the insecurities in them. Suyodhana can be called a rebel who had no interest in dominating over others, having no lust for power that destroys humanity and not allows it to be beautiful, healthy, creative and wholesome. This lust only leads ultimately to conflicts, competitions, jealousies and finally to wars.

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A STUDY ON "FACTORS CAUSING STUDENT DISTRACTION IN AN ONLINE CLASS"

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ABSTRACT

The online teaching method with the help of internet is currently the only option for Universities, affiliated colleges and Schools. Teaching has now been shifted from offline to online mode due to the pandemic. In this situation despite various issues the students have no other option but to learn online. Distraction is ultimately not intended but bound to happen due to lack of offline environment. To understand the various reasons that are causing distraction in an online class the researcher has prepared a semi structured questionnaire and surveyed 230 Management Institute students. A combination of closed ended and open ended questions were prepared to collect the data. Based on the findings the author concluded that factors that cause students distraction in an online class are 1) 2) and 3)

Keywords: Online teaching, offline teaching, Distraction, Online class.

Introduction

It is prominent in the current situation that all the teaching has shifted from offline to online environment. The young generation is exposed to various screens more than 4 hours a day for the purpose of learning and then working on the assignments. This scenario has led to various adaptations at home. The home is now the classroom and one could not deny the possibilities of getting distracted due to a number of reasons during an online class. Distraction is defined as a thing that prevents someone to concentrate on something. To understand the reasons for student distraction, researcher has made an attempt to survey the management students with the help of a semi – structured questionnaire. All the possibilities that could be the reasons for distraction in an online class have been considered and included in the study. A total of 240 respondents were targeted and forwarded the questionnaire. Data was captured with the help of google forms. Intentionally two questions included were open ended. This was to understand if respondents had other than the mentioned reasons for distraction during online class.

Objectives of the Study

To study the factors causing student distraction in an online class.

Literature Review

In a prominent article on “Distracted learning : Big problem and golden opportunity by Shelly

J Schmidt has highlighted a number of negative outcome of distracted learning as follows: (Schmidt, 2020)

- A) Learning tasks take longer
- B) A student faces mental fatigue caused by switching back and forth between tasks
- C) Distraction causes brain process and store information in less useful ways.

In his talk on the topic “How to get your brain to Focus by Chris Bailey, TEDx Manchester has highlighted the root cause of distraction is not that we are distracted its that our brains are overstimulated. According to him its that we crave distraction in the first place. Our brain loves information and social media and email. In his conclusive remarks he says that if we are distracted in each moment, those moments of distraction and over simulation build up and accumulate to create a life that’s more distracted, like there is no clear direction. (Bailey, 2019)

In a article named “The human element in online learning “ emphasizes that effective online teaching often requires more planning and more overall effort than traditional classroom teaching of the same material. (DeBrock, 2020)

In a article by Ankita Sharma on “Becoming “in distractable “is the most important skill for the 21st century : Nir Eyal shares that distraction begins from within. According to the author if we don’t understand the uncomfortable sensation that we seek to escape

from, we will always succumb to one distraction or the other. The first strategy suggested is :

- a) Master the internal triggers
- b) Making time for traction
- c) Hacking back the external triggers
- d) Prevent distraction with pacts

Methodology

A systematic data collection was initiated in the student group using primary as well as secondary data. Students from the Management Institutes were targeted and online link of the questionnaire was shared. Students were asked to respond to the questionnaire. The questionnaire was designed in a structured manner with maximum of close ended questions and last two questions were open ended. Open ended questions were purposely included to collect responses that might have otherwise missed out in a close ended questionnaire format.

Target respondents: Management Students

Geographical Scope : Pune Region

Sample Design: Convenience Sampling method

Data collection: Through a Semi - structured questionnaire

Research Design: The objective of this paper was to identify the various reasons that the students think are the factors that cause distraction during an online class. The researcher also intends to suggest ways to

handle distraction during an online class after studying the reasons causing distraction.

Sampling: A total of 230 students were targeted. 5 forms were rejected due to incomplete information. 225 responses were gathered from the students. The same were analysed to draw inferences.

Data: Data collected was analysed using bar charts, pie charts and compiling of qualitative statements.

Tools: MS Excel

Tracking: Questionnaire on the google form was tracked for the respondents.

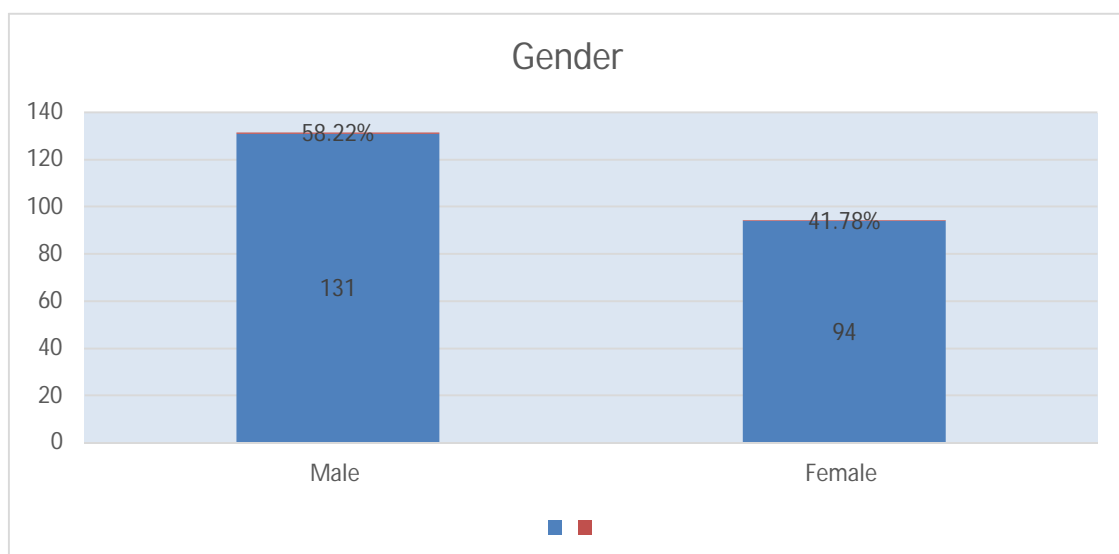
Reporting: Tables, pie charts, bar charts.

Parameters: The following parameters were part of the questionnaire prepared for the respondents.

1. No. of hours preference for online teaching
2. Timing in relation to attention span of student
3. Rating of factors causing distractions : Technical issues, self-motivation, lack of interaction, one way communication, failure to understand, teacher's communication/ explanation, subject, Lack of infrastructure arrangement, Background Noise, Family priorities.
4. Two open – ended questions.
 - a. Any other factor that could be causing distraction
 - b. Inputs – how the online class could be engaging

Data Analysis

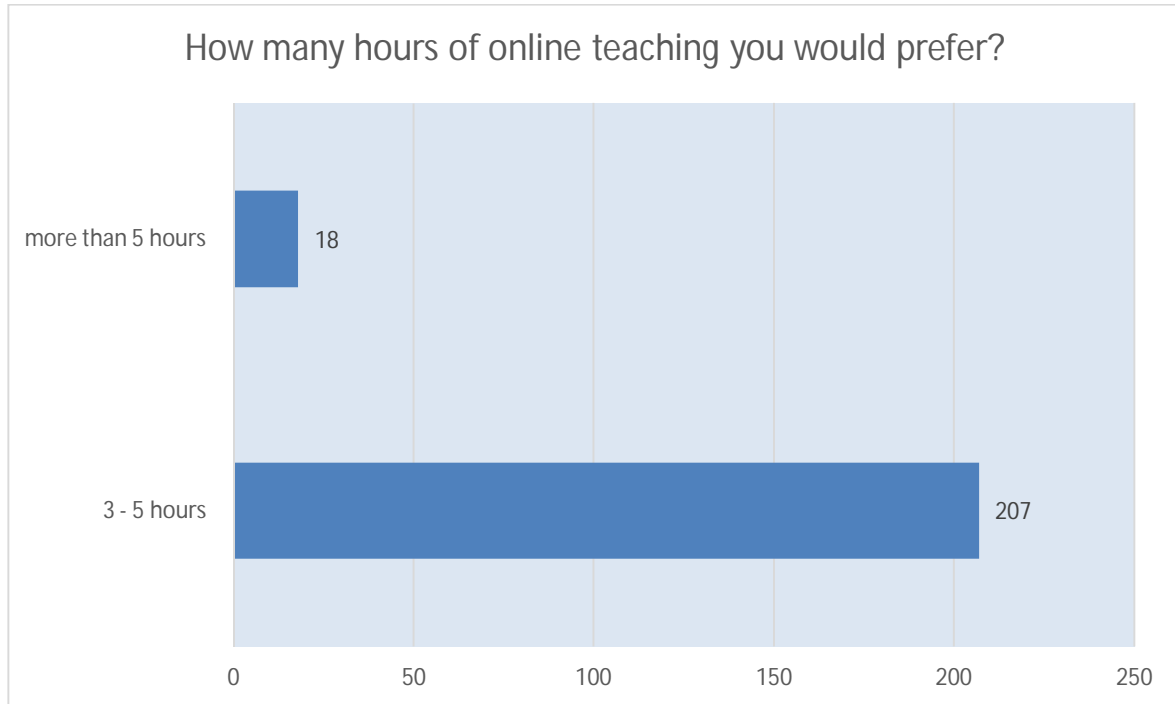
1. Gender



Interpretation : In a total of 225 respondents, there were 131 male respondents which is 58%

of the respondents. 94 respondents i.e. 42% of the respondents were female.

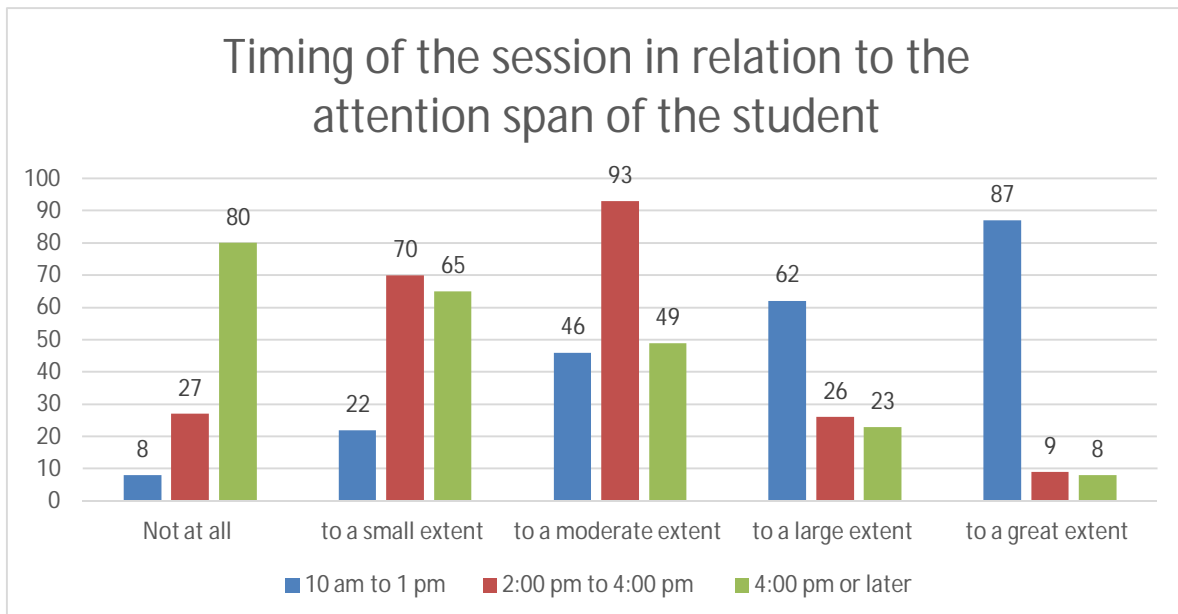
2. How many hours of online teaching you would prefer?



Interpretation : A total of 207 respondents i.e. 92% of them have shown preference for 3 – 5 hours of online teaching. The remaining 18 i.e.

only 8% have shown preference for more than 5 hours.

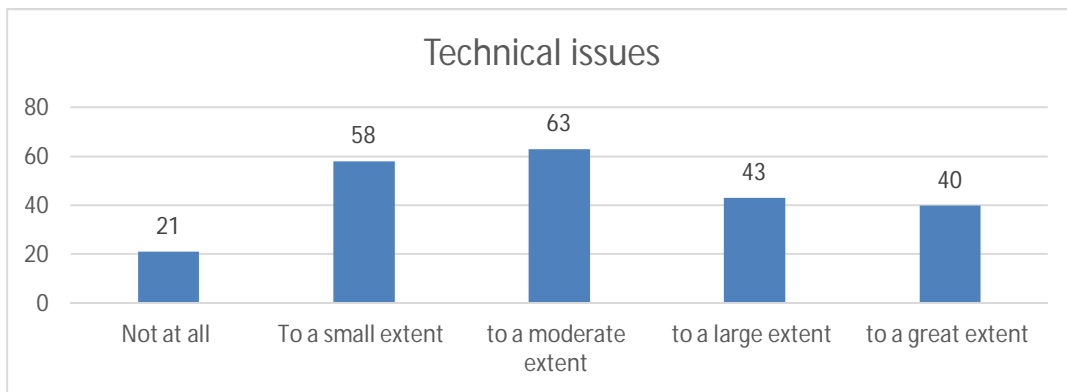
3. Rate the timing of the session in relation with the attention span of the student.



Interpretation : It is clear from the above table that the students rated the first slot 10:00 am to 1:00 pm favourably in terms of attention span. 66% of the students rated 10:00 am to 1:00 pm in terms of attention to a large and great extent.

72% of the students rated attention span to small and moderate extent in the 2:00 pm to 4:00 pm slot. 64% of the students rated attention span to small and not at all during 4:00 pm or later.

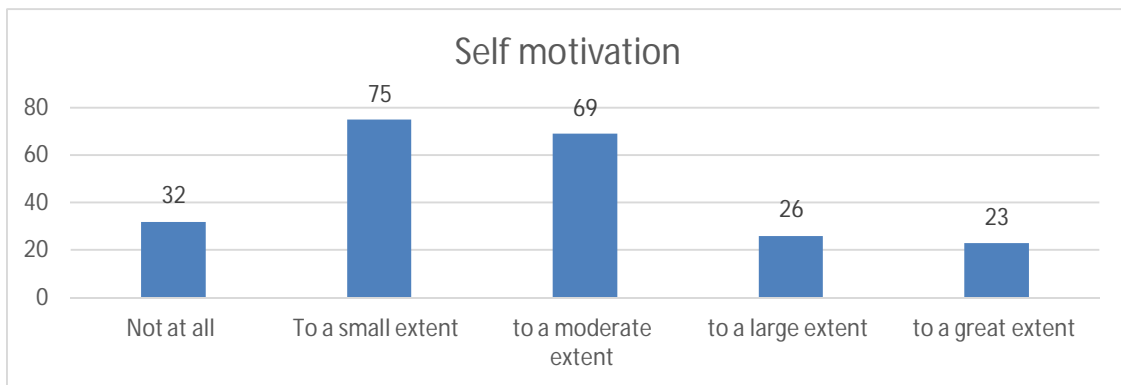
4. Distractions during online class.



Interpretation : 53% of the respondents rated technical issues was one of distracting factors to a small and moderate extent. 36% of respondents rated the same to a large and great

extent. The remaining 9% agreed that technical issues were not at all a distraction.

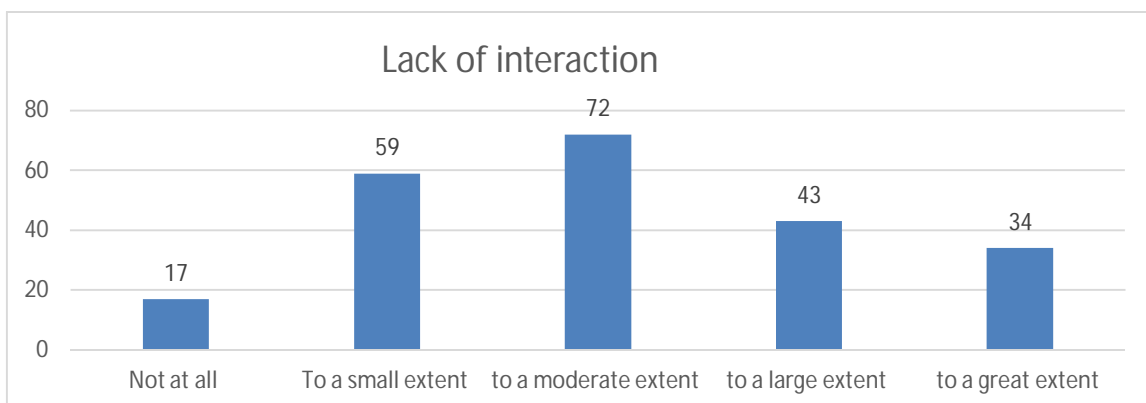
4.2



Interpretation: 64% of the respondents replied that self-motivation was one of the distracting factor to a small and moderate extent. 21% of

the respondents said that self-motivation was a distraction to a large and great extent. The remaining 14% replied that self-motivation was not a distracting factor at all.

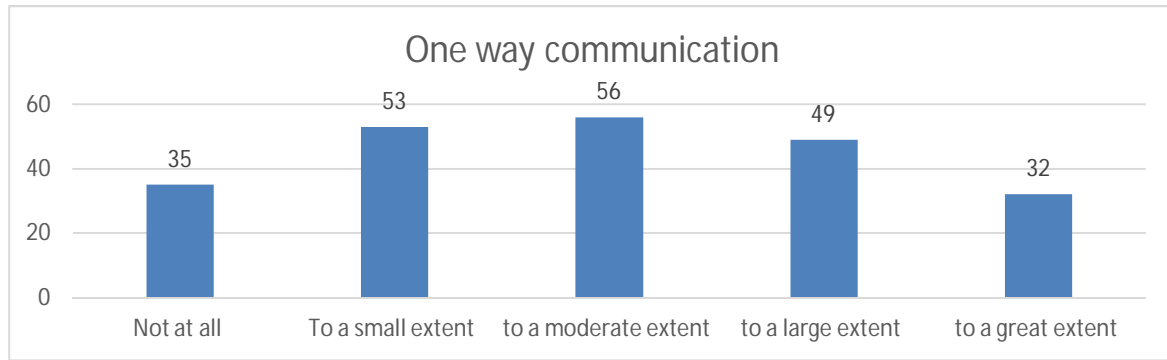
4.3



Interpretation : 58% of the respondents rated lack of interaction to small and moderate

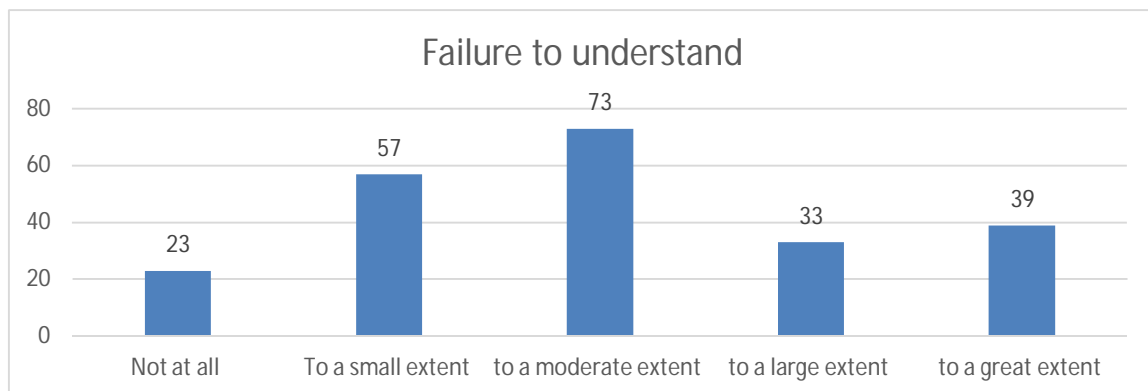
extent. 34% rated lack of interaction to a large and great extent. Only 7.5% rated lack of interaction not at all prevalent.

4.4



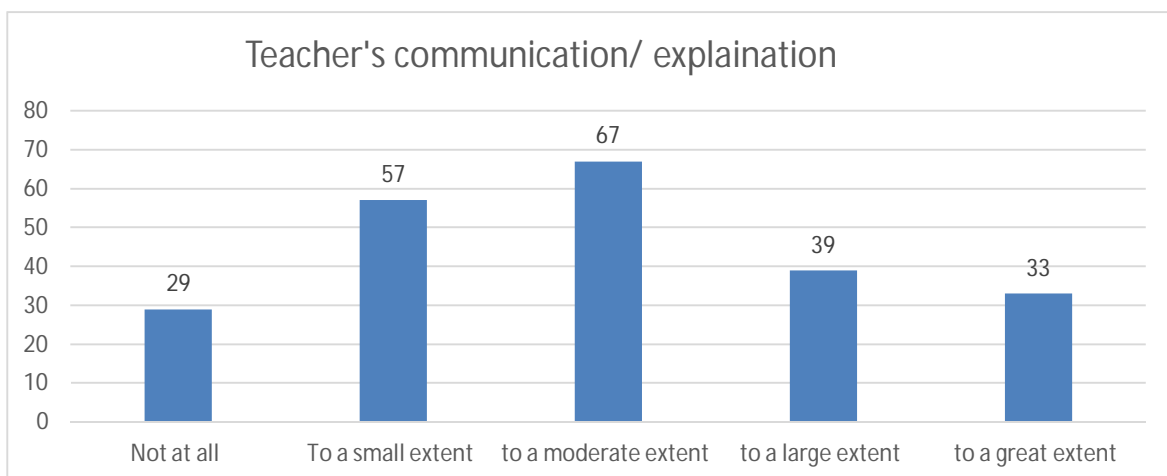
Interpretation : 48% of the respondents rate one way communication as a reason to a small and moderate extent. 36% rate one way communication to a large extent and to a great extent. Only 16% rated one way communication not at all as a distraction.

4.5



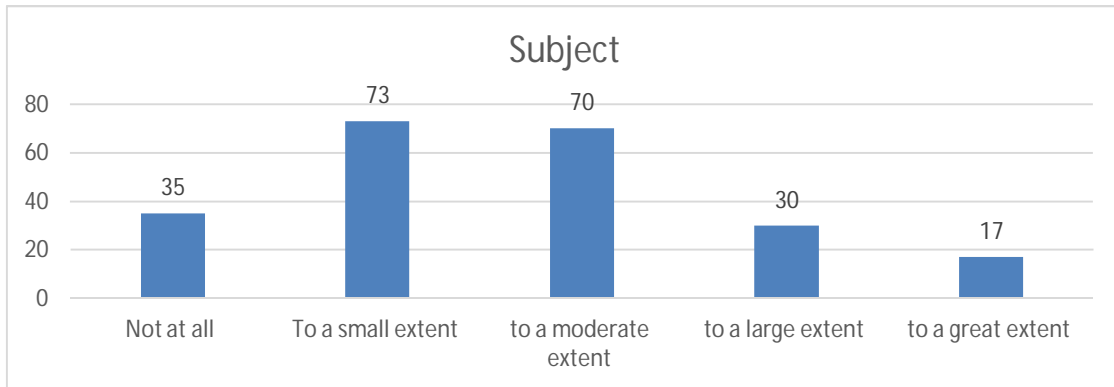
Interpretation : 58% of the respondents are of the opinion that failure to understand is a distraction to a small and moderate extent, 32% have rated failure to understand to a largened great extent, Only 10% have rated failure to understand not effecting at all.

4.6



Interpretation : 55% respondents rated teacher's communication to a small and moderate extent, 32% rated teacher's communication to a large and great extent, Only 12% rated the same not at all as a distraction.

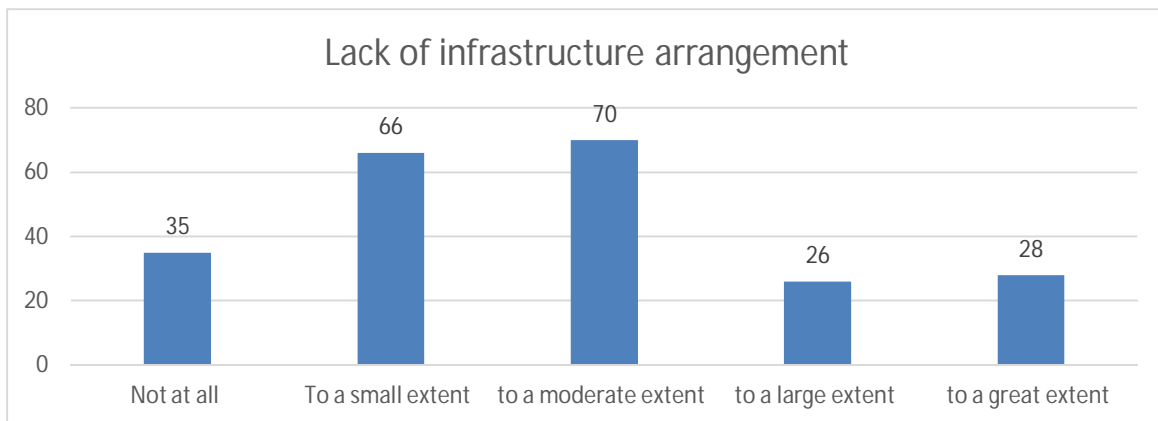
4.7



Interpretation : 64% of the respondents have rated subject as a reason to a small and moderate extent, 21% have rated subject as a distraction to a large and great extent, 16% of

the respondents have rated subject not a reason for distraction.

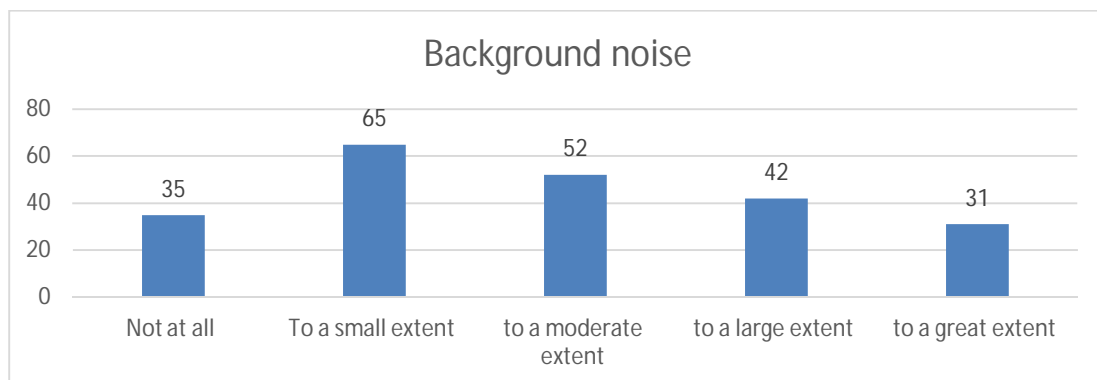
4.8



Interpretation : 60% of the respondents have rated lack of infrastructure arrangement to a small and moderate extent, 24% have rated the same to a large and great extent, 16% have

rated lack of infrastructure arrangement not a reason for distraction.

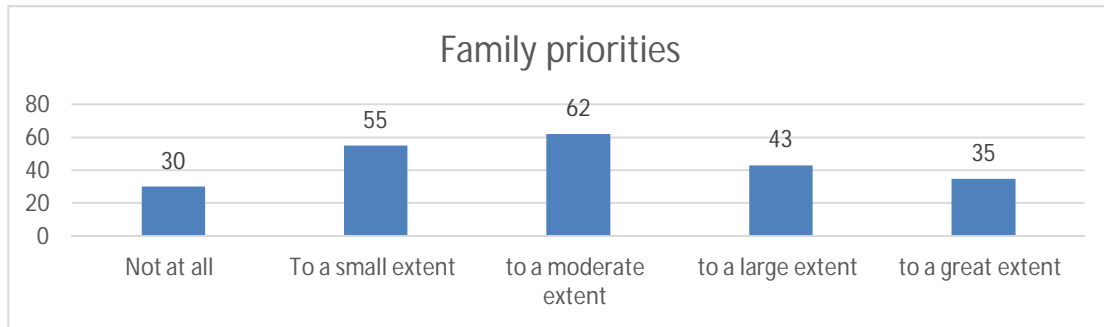
4.9



Interpretation : 52% of the respondents have rated background noise to a small and moderate extent, 32% have rated the same to a

large and great extent and 16% have rated background noise not a distraction at all.

4.10



Interpretation : 52% respondents have rated family priorities to a small and moderate

extent, 35% have rated family priorities to a large and great extent, Only 13% have rated family priorities not as a distraction.

5. Any other factor that you think could be causing distraction during an online class which has not been mentioned above.

Network	7
Student involvement : lack of attention, motivation, monotonous, exposure to various screens, understanding	8
excess teaching	3
social sites	7
Teachers : teachers network, teachers only reading ppts, lack of making teaching interesting, teachers interest, lack in teachers confidence using online platforms, interaction, online, lectures - doubts are not clear, teachers inability to explain importance of topic	11
lack of confidence	1
Environment - power failure, house help, guest, family issue, no monitoring, environment	14
online - operation - multiple screen exposure, data pack, clicking audio button on, ear pain, poor eyesight, health	7

Interpretation : A Total of 82 inputs were received in response. The responses have been categorised to understand and interpret. The total in the categories is 58. The online environment not study friendly, teachers technical problems and lack of engagement and student involvement contributes to 57% of the total.

6. Your input on "how the online class could be engaging".

Timings	5
Interesting	6
Videos	4
Interactive	19
Engaging	9
Q & A	3
Boring	2
Two way communication	8

Intervals	2
Group activities	11
White boards	2

Interpretation : The above mentioned are the critical aspects and contribute to 72% out of the total of 99 inputs received from the respondents on "how the online class could be engaging". Interactive Session, Group activities, Engaging, two way communication and interesting are contributing to 53% scores.

Findings

131 Males and 94 female respondents contributed inputs in this study. 92% of the respondents would prefer to have 3-5 hours of teaching daily. 10:00 am to 1:00 pm has been rated as the preferred time in relation with the attention span of the students. 87% of them have shown preference for this slot.

Ten factors that were included in the study namely - Technical issues, Self-motivation, Lack of interaction, One way communication, Failure to understand, Teachers communication / explanation, Subject, Lack of infrastructure arrangement, Back ground noise, Family priorities and respondents were asked to give inputs on the same. It was noted that all these factors scored high on being distractors during an online class, Self-Motivation, One way communication, Subject, Lack of infrastructure arrangement and Background noise scored high as compared to the remaining.

An open ended question with an intention to collect inputs if there are any other factors that cause distractions was added. A Total of 82 inputs were received in response and the total in the categories is 58. The online environment not study friendly, teachers technical problems and lack of engagement and lack of student involvement contributes to 57% of the total.

Students were asked to give inputs to make the class engaging and 11 broad categories are the critical aspects and 99 inputs received from the respondents on "how the online class could be engaging". Interactive Session, Group activities, Engaging, two way communication and interesting are contributing to 53% scores.

Conclusion

This study reveals that the students are better engaged if the online classes are taken for 3-5 hours and the preferred timings would be from 10 am to 1 pm. The parameters like self-motivation, one way communication, the subject, Infrastructure arrangement and background noise are the reasons for distraction during an online class. It has been found that online environment is not able to beat the offline interaction and personal touch. It is noted that all the doubts, engagement and motivation to attend are impacting the delivery of the session. It is also difficult for the teachers to adapt to this method of online delivery. The way ahead is to promote participation, interaction, group activities, two way communication and make the session interesting. Both teachers and students will have to work out on finding newer ways of connecting with each other for better enabled learning and adapt to this situation by understanding each other.

Scope for Further Research

The geographic ambition covered during this study has been limited and further research can be conducted exploring other regions. The survey has covered management students as respondents. Further studies can be done by studying the undergraduate, junior college or school students.

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THE ECONOMIC IMPACT OF COVID-19 PANDEMIC WITH REFERENCE TO THE QUANTUM OF GOODS AND SERVICES TAX COLLECTION IN KARNATAKA STATE

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ABSTRACT

COVID-19 has severely paralyzed every major economy in the world. The World Health Organization first declared COVID-19 as a global health emergency in January 2020. It originated in Wuhan, China, but has been found in over 200 countries. In the context of the corona virus pandemic, many countries worldwide have used containment to control infection. As a result of containment, production and distribution lines have been disrupted throughout the territory. All segments of the economy have been affected in a number of ways, which has a direct impact on GDP, unemployment and tax collection. The Goods and Services Tax (GST) is a harmonized tax that covers various indirect taxes in India. The GST collected is a reflection of the volume of economic activity in India. Hence, in this research paper, an attempt has been made to measure and evaluate the impact of Covid-19 on the Indian economy concerning the quantum of Goods and Service collection in Karnataka State during the financial year 2020-2021. For this study, secondary data relating to month wise GST collection have been collected from the official websites of the GST Council of India and descriptive statistical techniques have been used for testing statistical significance of the impact of COVID-19 pandemic on the quantum of the collection of Goods and Service Tax in Karnataka state during the financial year. The results indicate there exists a significant difference in quantum of Goods and Services Tax collection in Karnataka State during the financial year 2020-2021, gives us a clear message that we should undoubtedly rethink the plans in more structural and more viable ways to reach a position to absorb any kinds of uncertain threats from the external environment.

Keywords: Covid-19, Indian Economy, GST, Lockdown, Government of India etc.,

1. Introduction

Covid-19 has obstructed every part of our life, whether it is our social life or economic, political life or religious. Although this untreatable virus originated from China, it has affected us much more poorly than China as we are not able to absorb the uncertain threats from the external environment. All the parts, especially the transport sector, including tour and travel, production, and distribution, have been badly affected due to prolonged lockdown. In some cases, the lifestyles have been changed totally due to this Corona outbreak. The most critical impact of the Covid-19 pandemic has been witnessed on the Indian economy, especially regarding employment and income generation. The majority of the Indian population depends upon daily income. This Covid-19 and subsequent prolonged lockdown made many populations of India unemployed. The low-income feature of the Indian economy has created a vicious circle on the low-income group of people. Similarly, significant impact of Covid-19 on the Indian economy can be seen in the

transport and distribution system. Subsequently, impact on the Indian economy can be seen as consumer spending, as consumer spending has been the worst hit due to the loss of daily income jobs. Goods and Services Tax in India is a harmonized indirect tax on a PAN India basis. Significant indirect taxes are subsumed with the GST. It indicates economic activities in terms of production, trade, commerce, and consumption indirectly it also implies the magnitude of employment in India. Hence, the economic impact can be measured and evaluated through the quantum of collection of GST.

2. Review of Related Literature

There is no good number of studies conducted so far on the impact of Covid-19 on the Indian economy. Different news report of electronic and print media has conducted few studies on this issue. Different economic and financial agencies have also undertaken few studies to assess the impact of Covid19 on the Indian economy regarding various economic indicators and economic sectors.

Baneswar Kapasi, and Mahesh Kumar Kurmi. (2021) have conducted a research on “**A Knock Around The Economic Impact of Covid-19 With Reference to The Quantum of Goods and Services Tax Collection in India**”, they made an attempt to assess the impact of Covid-19 on the Indian economy concerning the quantum of Goods and Services tax collection in Indian during the lockdown period. They indicated no significant difference in the quantum of Goods and Services Tax Collection in India before and after the lockdown announcement due to the COVID-19 outbreak.

Roy A. and Bhusan B. (2020) in their study on “**Impact of Covid-19 on Goods and Services Tax (GST) With Respect to Micro Small and Medium Enterprises (Msme) Sector**” with the objective of study the how Covid-19 affected the GST collections in the MSME sector. They have discussed few measures that Govt of India has taken to achieve the dream of Self-Reliant India or Atmanirbhar Bharat. They observed that the business practices of Indian MSMEs will be totally changed. MSMEs have to adopt digital practices in their business and bring in innovation. Due to nationwide lockdown, supply of goods and services are affected adversely which has affected the GST collection.

Roy et. al., (2020) through their study on “**Consolidated recommendations to change GST patterns for managing the impact of Covid-19: A case in India**”, put an effort to signifies that the financial situation of rural SMEs has become volatile due to job losses, weak financial quarterly income, salary cuts and lower volume of sales. A majority of 61% of business owners of SMEs in India decided to lower their respective scale of business operations during the pandemic. The feasible recommendation will be to exempt the business owners from paying penalties. Also, GST charges would be levied after the deduction of ITC charges. They concluded that the optimal way for managing the way entrepreneurs of SMEs manage business operations is to file GST returns in a quarterly manner, rather than per month.

Bansal et. al., (2020) have conducted a study on “**Impact of COVID-19 a Global Pandemic on Indian Economy: With special**

Context to Goods and Service Ta”, They have evaluated that sudden entry of novel coronal virus in Indian Territory started to infect the peoples silently. Hence, Indian government decided to complete lockdown nationwide to cope up with this global pandemic situation. Indian economy been sickening due to global pandemic situation. Every industry adversely affected by this covid-19 a global pandemic. Financial as well as convenience crises been arisen. Nationwide lockdown, supply of goods and services are completely affected adversely. Hence, GST collection has also been affected adversely.

KritikaTekwani, and Raghuvanshi, R. (2020) in their article on “**GST Relief Measures During Global Pandemic (Covid-19)**”, The outbreak of novel coronavirus also put a negative impact on every sector of the Indian economy. The financial sector of India is also influenced by this situation. The government of India has taken various steps to prevent the spread of this virus. Lockdown is one of the measuring steps taken by the Government. Hence, they has addressed the various indirect tax amendments of GST and also suggested some tax relief options given by the Government.

Most of the studies have been conducted to assess the impact of Covid-19 on the Indian economy regarding the demand-supply chain, international trade, financial market, stock market and economic growth. Hence, there have been no studies conducted to evaluate the impact of Covid-19 with reference to the quantum of Goods and Services Tax Collection in Karnataka state.

3. Objectives of the Study

1. To measure and evaluate the economic impact of COVID-19 Pandemic with reference to the quantum of Goods and Services Tax collection in Karnataka state during the financial year 2020-2021.

4. Hypothesis of the Study

Keeping in mind the above stated objective of the study, the following hypothesis is formulated and tested in this regard:

H₀: There exists no significant difference in quantum of Goods and Services Tax collection

in Karnataka State during the financial year 2020-2021.

H₁: There exists a significant difference in quantum of Goods and Services Tax collection in Karnataka State during the financial year 2020-2021.

5. Research Methodology

Secondary Data relating to GST collection have been collected from the official websites of the GST Council of India. In addition to, data relating to the month-wise GST collection during financial year 2020-2021. For the purpose of analysis of operational/performance statistics and to evaluate the economic impact of Covid-19 pandemic on collection of GST, a few statistical tools are used. CMGR, One-way ANOVA and Descriptive Statistics are the statistical tools/techniques used for the purpose of analysis of performance statistics and to test the hypothesis formulated for the present study.

6. Results and Discussion

In the light of the above, and keeping in mind the objective and hypothesis, a few relevant parameters are identified below for the purpose of evaluating the economic impact of Covid-19 pandemic with reference to the quantum of Goods and Services Tax collection in Karnataka state and the corresponding hypothesis is, as stated above.

The objective is **to measure and evaluate the economic impact of COVID-19 Pandemic with reference to the quantum of Goods and Services Tax collection in Karnataka state**

during the financial year 2020-2021, and the hypothesis is, **there exists no significant difference in quantum of Goods and Services Tax collection in Karnataka State during the financial year 2020-2021**. For the purpose of achieving this objective and to test the hypothesis, the following parameters are used.

Goods and Service Tax in India is a single indirect tax that combines different indirect taxes levied on goods and services in India. Goods and Service Tax includes Central Goods and Service Tax (CGST), State Goods and Services Tax (SGST), Union Territory Goods and Services Tax (UTGST), Integrated Goods and Services Tax (IGST). Goods and Services Tax is collected on every stage of value addition in production, distribution, and consumption. It is a destination-based consumption tax that reflects the production and the consumption or demand. Goods and Services Tax is also collected on services, and therefore the economic activities relating to services can also be assessed using the quantum of Goods and Services Tax collection. GST collection directly or indirectly indicates the level of economic activities in terms of trade, commerce, production, distribution, and consumption in the country. Higher GST collections represent an increase in economic activities like production, distribution, and consumption. Similarly, lower GST collections epitomize the downtrend of economic activities.

Table No. 1: Month-wise GST Collection in Karnataka state during Financial Year 2020-2021

Monthly	CGST	SGST	IGST	CESS
Apr-20	484.21	576.90	930.72	36.71
May-20	1,058.54	1,296.00	1,532.28	621.19
Jun-20	1,795.58	2,221.70	2,033.28	659.17
Jul-20	1,412.93	1,841.26	2,055.78	703.80
Aug-20	1,440.66	1,848.19	1,717.39	495.75
Sep-20	1,548.22	1,989.73	1,974.56	537.92
Oct-20	1,597.31	2,086.96	2,549.51	764.14
Nov-20	1,632.40	2,119.33	2,422.44	670.68
Dec-20	1,752.69	2,274.82	2,785.19	646.42
Jan-21	1813.82	2346.21	3101.01	716.34
Feb-21	1747.06	2230.65	2759.87	843.86
Mar-21	1878.91	2377.71	2834.15	824.20

CMGR	13.12%	13.74%	10.65%	32.69%		
Descriptive Statistics						
	Minimum	Maximum	Sum	Mean	Std. Deviation	C.V
CGST	484.21	1878.91	18162.33	1513.527	395.343	26.12%
SGST	576.90	2377.71	23209.46	1934.122	520.428	26.91%
IGST	930.72	3101.01	26696.18	2224.682	634.138	28.50%
CESS	36.71	843.86	7520.18	626.682	212.252	33.87%

Source: <http://gstcouncil.gov.in/gst-revenue>

The above table represents Month-wise GST collection in Karnataka state during financial year 2020-2021. For the study period, The CMGR works out of CGST 13.12 per cent and SGST 13.74 per cent respectively. However, which indicates that there is not a big gap between CGST and SGST.

Similarly, the descriptive statistics of the above table express some different things. The Total CGST Minimum value stood at Rs. 484.21 crore and Maximum value of Rs. 1878.91 crore. Its Mean value of Rs. 1513.527 crore with Standard Deviation of Rs. 395.343 crore and Coefficient of Variance of 26.12 per cent. In case of Total SGST, it is Minimum of Rs. 576.90 crore, Maximum of Rs. 2377.71 crore,

Mean value of Rs. 1934.122 crore, Standard Deviation Rs. 520.428 crore and Coefficient of Variance of 26.91 per cent. Similarly, in case of IGST, it is Minimum of Rs. 930.72 crore, Maximum of Rs. 3101.01 crore, Mean value of Rs. 2224.682 crore, Standard Deviation Rs. 634.138 crore and Coefficient of Variance of 28.50 per cent respectively. Again, CESS, Minimum value stood at Rs. 36.71 crore and Maximum value about Rs. 843.86 crore. Its mean value is Rs. 626.682, standard deviation is Rs. 212.252 crore and Coefficient of Variance of 33.87 per cent. All these above facts clear that "if the government will be taken perfect policy measures, increase the collection of GST revenue".

Table No.2: One-way ANOVA of GST Collection in Karnataka state during Financial Year 2020-2021

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3068259.262	2	1534129.631	5.550	.008
Within Groups	9122011.513	33	276424.591		
Total	12190270.775	35			

The above table describes the One-Way ANOVA of quantum of GST collection in Karnataka state during the financial year 2020-21. The table shows that the obtained F value is 5.550 which is greater than the table value

3.28. Hence, it can be stated that null hypothesis is rejected and formulated the alternative hypothesis that **there exists a significant difference in quantum of Goods and Services Tax collection in Karnataka State during the financial year 2020-2021.**

Table No. 3: Post-hoc analysis of GST Collection in Karnataka state during Financial Year 2020-2021

(I) Group	(J) Group	Mean Difference (I-J)	Sig.
CGST	SGST	420.59417	.059
	IGST	711.15417*	.002
SGST	IGST	290.56000	.185

*The mean difference is significant at the 0.05 level.

The above table shows the Post-hoc analysis of quantum of GST collection in Karnataka state during the financial year 2020-21. The above

table reveals that there exists a significant difference between CGST and IGST.

7. Conclusion

The Covid-19 has distorted the Indian economy in unpredictable ways during the lockdown period. The lockdown nature was unique, unexpected due to demand shock, supply shock, and market shock. Due to the lockdown for COVID-19, the Indian economy has affected all other economies differently. Goods and Service Tax collection is a variable that combines different economic parameters. It indicates production, consumption, income, employment, etc. Though the above study

demonstrates there exists a significant difference in quantum of Goods and Services Tax Collection in Karnataka during the financial year due to COVID-19 outbreak. This impact has a long-term bearing on the Karnataka economy in GDP, employment, trade, and commerce. The policymakers should undoubtedly rethink the plans in more structural and more viable ways to reach a position to absorb the uncertain threats in any form from the external environment. This Covid-19 pandemic gives us a clear message to adopt a sustainable development model based on inclusive growth and self-reliance.

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ROOT SQUARE MEAN GRACEFUL LABELING OF CORONA PRODUCT GRAPHS

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ABSTRACT

: Let $G = (V(G), E(G))$ be a graph. An one to one function M is defined on V to $\{1, 2, \dots, q + 2\}$ is termed as Root Square Mean Graceful Labeling of G if the function M^* induces

$$M^*(e = xy) = \begin{cases} \left\lfloor \sqrt{\frac{M(x)^2 + M(y)^2}{2}} \right\rfloor, & \text{if } |M(x) - M(y)| \text{ is odd} \\ \left\lceil \sqrt{\frac{M(x)^2 + M(y)^2}{2}} \right\rceil & \text{if } |M(x) - M(y)| \text{ is even} \end{cases}$$

for all $xy \in E(G)$ which is bijective. A graph G which permits a Root Square Mean Graceful Labeling is referred to as Root Square Mean Graceful Graph. Through this Research Work, we examine Root Square Mean Graceful labeling of Corona Product Graph.

Keywords and Phrases: Root Square Mean graceful labeling, Cycle, Ladder, Triangular Ladder, path.

1. Introduction

The graph G is a pair $(V(G), E(G))$ where the elements of $V(G)$ and $E(G)$ are respectively called vertices and edges. When there is no possibility of confusion we use $V(G) = V$ and $E(G) = E$. Rosa was the first to define “ β –valuation” which was renamed by Golomb [5] as “Graceful labeling” which is now the prevalent phrase. An one to one function M is defined on V to $\{0, 1, 2, \dots, q\}$ is termed as Graceful Labeling of G if the function M^* induces $M^*(e = xy) = |M(x) - M(y)|$ which is bijective. The graph which permits graceful labeling is referred to as graceful graph. These labeling are help to solve Ringel’s Conjecture. S.S Sandhya, S. Somasundaram and S. Anusa introduced the concept of Root Square Mean Labeling of graphs. A function M is called Root Square Mean Labeling of a graph $G(V, E)$ with p vertices and q edges if $M : V \rightarrow \{1, 2, \dots, q + 1\}$ is injective and the induced function $M^*(e = xy) = \left\lfloor \sqrt{\frac{M(x)^2 + M(y)^2}{2}} \right\rfloor$ or $\left\lceil \sqrt{\frac{M(x)^2 + M(y)^2}{2}} \right\rceil$ for all $xy \in E(G)$, is bijective. A graph which admits Root Square Mean Labeling is called Root Square Mean Graph [3]. S. Arockiaraj, A. Durai Baskar and A. Rajesh Kannan introduced the concept of F-

Root Square Mean Labeling. A function M is called a F-Root Square Mean Labeling of a graph $G(V, E)$ with p vertices and q edges if $M : V(G) \rightarrow \{1, 2, \dots, q + 1\}$ is injective and the induced function $M^*(e = xy) = \left\lfloor \sqrt{\frac{M(x)^2 + M(y)^2}{2}} \right\rfloor$ for all $xy \in E(G)$ is bijective. A graph which admits F-Root Square Mean labeling is called F-Root Square Mean Graph [4]. Motivated by the works of so many authors in the area of graph labeling, we introduce a new type of labeling called Root Square Mean Graceful Labeling. In this paper we investigate some results on Root Square Mean graceful labeling of graphs. Inspired by the work of numerous writers, we’ve defined “Root Square Mean Graceful labeling” [1]. Through this Research work, we examine “Corona Product on Root Square Mean Graceful labeling”.

Definition 1.1.

A Corona Product $G \odot H$ is obtained by taking one copy of G with ‘ r ’ points and r^{th} copies of H then each vertex in r^{th} copy of H is joined by an edge to the r^{th} point of G .

2. Main Results

Theorem 2.1. The Corona Product of C_m and K_1 is a Root Square Mean Graceful graph for all m .

Proof.

Let $\{x_r, 1 \leq r \leq m\}$ be the vertices of C_m and $\{y_1^r, 1 \leq r \leq m\}$ be the vertex of K_1 . We define a vertex labeling $M : V(G) \rightarrow \{1, 2, \dots, q + 2\}$ as follows $M(x_1) = 2, M(y_1^1) = 1, M(y_1^m) = 3.$

When m is even

$$M(x_r) = M(x_{r-1}) + 4, 2 \leq r \leq \frac{m}{2}$$

$$M(x_r) = M(x_{r-1}) - 4, \frac{m}{2} + 2 \leq r \leq m,$$

$$M(x_{\frac{m}{2}+1}) = M(x_{\frac{m}{2}}) + 2, \quad M(y_1^r) = M(x_r) + 1, 2 \leq r \leq m - 1, r \neq \frac{m}{2} + 1$$

$$M(y_1^r) = M(x_r) + 2, r = \frac{m}{2} + 1.$$

When m is odd

$$M(x_r) = M(x_{r-1}) + 4, 2 \leq r \leq \frac{m+1}{2};$$

$$M(x_r) = M(x_{r-1}) - 4, \frac{m+5}{2} \leq r \leq m,$$

$$M\left(x_{\frac{m+3}{2}}\right) = M\left(x_{\frac{m+1}{2}}\right) - 2 ; M(y_1^r) = M(x_r) + 1, 2 \leq r \leq m, r \neq \frac{m+1}{2}$$

$$M(y_1^r) = M(x_r) + 2, r = \frac{m+1}{2}.$$

Then the edge labelled as

$$M^*(x_r x_{r+1}) = \left\lfloor \sqrt{\frac{M(x_r)^2 + M(x_{r+1})^2}{2}} \right\rfloor, 1 \leq r \leq m - 1 ;$$

$$M^*(x_r y_1^r) = \left\lfloor \sqrt{\frac{M(x_r)^2 + M(y_1^r)^2}{2}} \right\rfloor, r = \frac{m}{2} + 1 \text{ if } m \text{ is even, } r = \frac{m+1}{2} \text{ if } m \text{ is odd.}$$

$$M^*(x_r y_1^r) = \left\lfloor \sqrt{\frac{M(x_r)^2 + M(y_1^r)^2}{2}} \right\rfloor, 1 \leq r \leq m, r \neq \frac{m}{2} + 1 \text{ if } m \text{ is even, } r \neq \frac{m+1}{2} \text{ if } m \text{ is odd}$$

The edge labeling obtained above are distinct. Thus the function M permits Root Square Mean Graceful labeling of $C_m \odot K_1$ for all m.

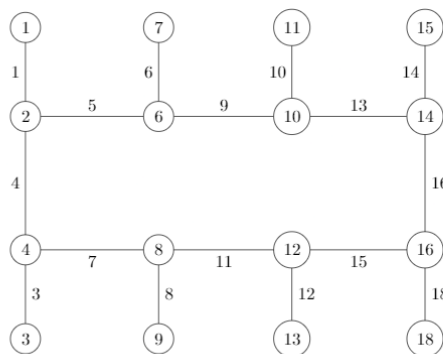


FIGURE 2.1. Root Square Mean Graceful Labeling of $C_8 \odot K_1$

Theorem 2.2.

The corona product of C_m and $2K_1$ is a Root Square Mean Graceful graph for all $m \leq 5$.

Proof. Let $\{x_r, 1 \leq r \leq m\}$ be the vertices of C_m and $\{y_1^r, y_2^r, 1 \leq r \leq m\}$ be the vertices corresponding to each r^{th} vertex of C_m .

We define a vertex labeling $M : V(G) \rightarrow \{1, 2, \dots, q + 2\}$ as follows

$$M(x_1) = 2; M(x_m) = q + 1; M(x_r) = M(x_{r-1}) + 3, 2 \leq r \leq m - 1$$

$$M(y_1^r) = M(x_r) + 1, 1 \leq r \leq m - 1; M(y_2^r) = M(x_r) - 1, 1 \leq r \leq m,$$

$$M(y_1^m) = M(x_m) - 2.$$

Then the edge labelled as

$$M^*(x_r x_{r+1}) = \left\lfloor \sqrt{\frac{M(x_r)^2 + M(x_{r+1})^2}{2}} \right\rfloor, 1 \leq r \leq m - 2;$$

$$M^*(x_r x_{r+1}) = \begin{cases} \left\lfloor \sqrt{\frac{M(x_r)^2 + M(x_{r+1})^2}{2}} \right\rfloor & \text{if } r = m \text{ is even} \\ \left\lfloor \sqrt{\frac{M(x_r)^2 + M(x_{r+1})^2}{2}} \right\rfloor & \text{if } r = m \text{ is odd} \end{cases}$$

$$M^*(x_r y_1^r) = \left\lfloor \sqrt{\frac{M(x_r)^2 + M(y_1^r)^2}{2}} \right\rfloor, 1 \leq r \leq m - 1; \quad M^*(x_r y_1^r) = \left\lfloor \sqrt{\frac{M(x_r)^2 + M(y_1^r)^2}{2}} \right\rfloor, r = m$$

$$M^*(x_r y_{2^r}) = \left\lfloor \sqrt{\frac{M(x_r)^2 + M(y_1^r)^2}{2}} \right\rfloor, 1 \leq r \leq m;$$

The edge labeling obtained above are distinct. Thus the function M permits Root Square Mean Graceful labeling of $C_m \odot 2K_1$ for all $m \leq 5$.

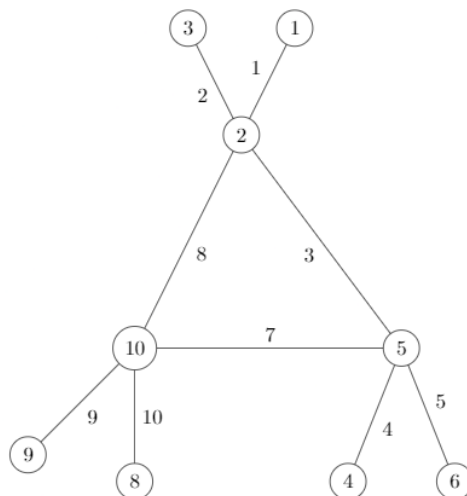


FIGURE 2.2. Root Square Mean Graceful Labeling of $C_3 \odot 2K_1$

Theorem 2.3. The Corona Product of TL_m and K_1 is a Root Square Mean Graceful graph for all m.

Proof. Let $\{x_r, 1 \leq r \leq m\}$, $\{y_r, 1 \leq r \leq m\}$ be the vertices of two path. Let $\{x_1^r, 1 \leq r \leq m\}$ be the vertex of each K_1 corresponding to x_r , and $\{y_1^r, 1 \leq r \leq m\}$ be the vertex of each K_1 corresponding to the y_r vertex of TL_m .

We define a vertex labeling $M : V(G) \rightarrow \{1, 2, \dots, q + 2\}$ as follows

$$M(x_1) = 5; \quad M(x_1^1) = 3; \quad M(y_1^1) = 2; \\ M(x_r) = M(x_{r-1}) + 6, 2 \leq r \leq m;$$

$$M(y_1) = 1; M(y_r) = M(x_{r-1}) - 2, 2 \leq r \leq m; \\ M(x_1^r) = M(x_r) - 1, 2 \leq r \leq m;$$

$$M(y_1^r) = M(y_1^{r-1}) + 2(r - 1), r = 2, 3; \\ M(y_1^r) = M(y_{r-1}) - 2, 4 \leq r \leq m.$$

Then the edge labelled as

$$M^*(x_r x_{r+1}) = \left\lfloor \sqrt{\frac{M(x_r)^2 + M(x_{r+1})^2}{2}} \right\rfloor; M^*(y_r y_{r+1}) = \left\lfloor \sqrt{\frac{M(y_r)^2 + M(y_{r+1})^2}{2}} \right\rfloor, 1 \leq r \leq m$$

$$M^*(x_r x_1^r) = \left\lfloor \sqrt{\frac{M(x_r)^2 + M(x_1^r)^2}{2}} \right\rfloor, \quad 2 \leq r \leq m;$$

$$M^*(x_1 x_1^1) = \left\lfloor \sqrt{\frac{M(x_1)^2 + M(x_1^1)^2}{2}} \right\rfloor$$

$$M^*(x_r y_{r+1}) = \left\lfloor \sqrt{\frac{M(x_r)^2 + M(y_{r+1})^2}{2}} \right\rfloor, 1 \leq r \leq$$

$$m - 1; M^*(x_r y_r) = \left\lfloor \sqrt{\frac{M(x_r)^2 + M(y_r)^2}{2}} \right\rfloor;$$

$$M^*(y_1^r y_r) = \begin{cases} \left\lfloor \sqrt{\frac{M(y_1^r)^2 + M(y_r)^2}{2}} \right\rfloor, & \text{if } |M(y_1^r) - M(y_r)| \text{ is odd} \\ \left\lfloor \sqrt{\frac{M(y_1^r)^2 + M(y_r)^2}{2}} \right\rfloor, & \text{if } |M(y_1^r) - M(y_r)| \text{ is even} \end{cases}$$

The edge labeling obtained above are distinct. Thus the function M permits Root Square Mean Graceful labeling of $TL_m \odot K_1$ for all m.

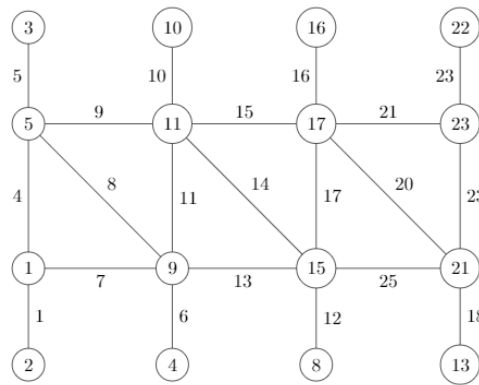


FIGURE 2.3. Root Square Mean Graceful Labeling of $TL_4 \odot K_1$

Theorem 2.4. The Corona Product of L_m and K_1 is a Root Square Mean Graceful graph for all m .

Proof. Let $\{x_r, 1 \leq r \leq m\}$ and $\{y_r, 1 \leq r \leq m\}$ be the vertices of two path. Let $\{x_1^r, 1 \leq r \leq m\}$ be the vertex of each K_1 corresponding to x_r , and $\{y_1^r, 1 \leq r \leq m\}$ be the vertex of each K_1 corresponding to the y_r vertex of L_m .

We define a vertex labeling $M : V(G) \rightarrow \{1, 2, \dots, q + 2\}$ as follows

$$M(x_1) = 4; M(x_2) = 6; M(x_r) = M(x_{r-1}) + 5, 3 \leq r \leq m;$$

$$M(y_1) = 1; M(y_2) = 10; M(y_r) = M(y_{r-1}) + 5, 3 \leq r \leq m;$$

$$M(x_1^r) = M(x_r) + 1, 3 \leq r \leq m; M(x_1^1) = M(x_1) - 1, r = 1, 2; M(y_1^1) = 2; M(y_1^r) = M(y_r) - 2, 2 \leq r \leq m.$$

Then the edge labelled as

$$M^*(x_1x_2) = \left\lfloor \sqrt{\frac{M(x_1)^2 + M(x_2)^2}{2}} \right\rfloor; M^*(x_r x_{r+1}) = \left\lfloor \sqrt{\frac{M(x_r)^2 + M(x_{r+1})^2}{2}} \right\rfloor, 2 \leq r \leq m - 1;$$

$$M^*(y_r y_{r+1}) = \left\lfloor \sqrt{\frac{M(y_r)^2 + M(y_{r+1})^2}{2}} \right\rfloor, 1 \leq r \leq m - 1; M^*(y_1 y_1^1) = \left\lfloor \sqrt{\frac{M(y_1)^2 + M(y_1^1)^2}{2}} \right\rfloor;$$

$$M^*(x_1 y_1) = \left\lfloor \sqrt{\frac{M(x_1)^2 + M(y_1)^2}{2}} \right\rfloor; M^*(x_r x_1^r) = \left\lfloor \sqrt{\frac{M(x_r)^2 + M(x_1^r)^2}{2}} \right\rfloor, 1 \leq r \leq m;$$

$$M^*(y_r y_1^r) = \left\lfloor \sqrt{\frac{M(y_r)^2 + M(y_1^r)^2}{2}} \right\rfloor, 2 \leq r \leq m;$$

$$M^*(x_r y_r) = \left\lfloor \sqrt{\frac{M(x_r)^2 + M(y_r)^2}{2}} \right\rfloor, 2 \leq r \leq m$$

The edge labeling obtained above are distinct. Thus the function M permits Root Square Mean Graceful labeling of $L_m \odot K_1$ for all m .

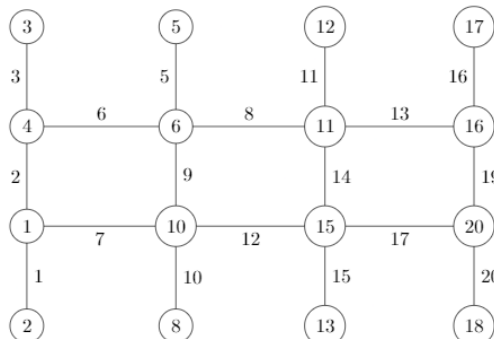


FIGURE 2.4. Root Square Mean Graceful Labeling of $L_4 \odot K_1$

Theorem 2.5. The Corona Product of P_m and nK_1 is a Root Square Mean Graceful graph for all m and $n \leq 5$

Proof. Let $\{x_r, 1 \leq r \leq m\}$ be the vertices of path P_m and $\{y_s^r, 1 \leq r \leq m, 1 \leq s \leq 5\}$ be the isolated vertices corresponding to each $\{x_r, 1 \leq r \leq m\}$. We define a vertex labeling

M: V(G) → {1, 2, ..., q + 2} by following cases.

$$\square \square \square \square \square) \square \square \square \square \square = \square = \square$$

$$M(x_r) = 2r, 1 \leq r \leq m; \quad M(y_1^r) = 2r - 1, 1 \leq r \leq m.$$

Then the edge labelled as

$$M^*(x_r x_{r+1}) = \left\lfloor \sqrt{\frac{M(x_r)^2 + M(x_{r+1})^2}{2}} \right\rfloor; \quad M^*(x_r y_s^r) = \left\lfloor \sqrt{\frac{M(x_r)^2 + M(y_s^r)^2}{2}} \right\rfloor, 1 \leq r \leq m$$

The edge labelled above are distinct.

Case ii) when n = 2, □ ≤ □ ≤ □

$$M(x_1) = 2; \quad M(x_r) = M(x_{r-1}) + 3, 2 \leq r \leq m; \quad M(y_1^r) = M(x_r) - 1;$$

$$M(y_2^r) = M(x_r) + 1, 1 \leq r \leq m$$

Then the edge labelled as

$$M^*(x_r x_{r+1}) = \left\lfloor \sqrt{\frac{M(x_r)^2 + M(x_{r+1})^2}{2}} \right\rfloor; \quad M^*(x_r y_s^r) = \left\lfloor \sqrt{\frac{M(x_r)^2 + M(y_s^r)^2}{2}} \right\rfloor, 1 \leq r \leq m.$$

The edge labelled above are distinct

Case iii) when n = 3, □ ≤ □ ≤ □

$$M(x_1) = 2; \quad M(x_r) = M(x_{r-1}) + 4, 2 \leq r \leq m; \quad M(y_s^r) = M(x_r) + s, 1 \leq r \leq m;$$

Then the edge labelled as

$$M^*(x_r x_{r+1}) = \left\lfloor \sqrt{\frac{M(x_r)^2 + M(x_{r+1})^2}{2}} \right\rfloor, 1 \leq r \leq m - 1;$$

$$M^*(x_r y_s^r) = \left\lfloor \sqrt{\frac{M(x_r)^2 + M(y_s^r)^2}{2}} \right\rfloor, s = 1, 3;$$

$$M^*(x_r y_s^r) = \left\lfloor \sqrt{\frac{M(x_r)^2 + M(y_s^r)^2}{2}} \right\rfloor, s = 2;$$

The edge labelled above are distinct.

Case iv) when n = 4, □ ≤ □ ≤ □

$$M(x_1) = 2; \quad M(y_s^r) = M(x_r) + s, 1 \leq s \leq n - 1; \quad M(x_r) = \begin{cases} M(x_{r-1}) + 4 & \text{if } r \text{ is even} \\ M(x_{r-1}) + 6 & \text{if } r \text{ is odd} \end{cases}$$

$$M(y_4^r) = \begin{cases} M(x_r) - 1 & \text{if } r \text{ is odd} \\ M(x_r) + 4 & \text{if } r \text{ is even} \end{cases}$$

Then the edge labelled as

$$M^*(x_r x_{r+1}) = \left\lfloor \sqrt{\frac{M(x_r)^2 + M(x_{r+1})^2}{2}} \right\rfloor;$$

$$M^*(x_r y_s^r) = \begin{cases} \left\lfloor \sqrt{\frac{M(x_r)^2 + M(y_s^r)^2}{2}} \right\rfloor, & s = 1, 3 \\ \left\lfloor \sqrt{\frac{M(x_r)^2 + M(y_s^r)^2}{2}} \right\rfloor, & s = 2 \\ \left\lfloor \sqrt{\frac{M(x_r)^2 + M(y_4^r)^2}{2}} \right\rfloor, & r \text{ is odd} \\ \left\lfloor \sqrt{\frac{M(x_r)^2 + M(y_4^r)^2}{2}} \right\rfloor, & r \text{ is even} \end{cases}; \quad M^*(x_r y_4^r) =$$

The edge labeling obtained above are distinct.

Case v) when n = 5, □ ≤ □ ≤ □

$$M(x_1) = 2; \quad M(y_s^r) = M(x_r) + s, 1 \leq s \leq n - 1; \quad M(x_r) = M(x_{r-1}) + 6, 2 \leq r \leq m;$$

$$M(y_5^r) = M(x_r) - 1.$$

Then the edge labelled as

$$M^*(x_r x_{r+1}) = \left\lfloor \sqrt{\frac{M(x_r)^2 + M(x_{r+1})^2}{2}} \right\rfloor; \quad M^*(x_r y_s^r) = \begin{cases} \left\lfloor \sqrt{\frac{M(x_r)^2 + M(y_s^r)^2}{2}} \right\rfloor & \text{if } s \text{ is odd} \\ \left\lfloor \sqrt{\frac{M(x_r)^2 + M(y_s^r)^2}{2}} \right\rfloor & \text{if } s \text{ is even} \end{cases}$$

The edge labeling obtained above are distinct. Thus by comparing the above cases, The function M permits Root Square Mean Graceful labeling of $P_m \odot nK_1$ for all m and

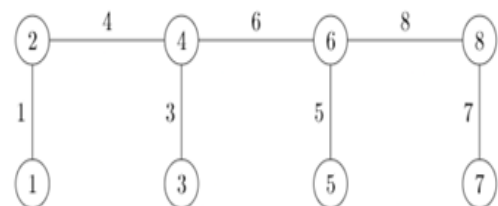


FIGURE 2.5. Root Square Mean Graceful Labeling of $P_4 \odot K_1$

n ≤ 5.

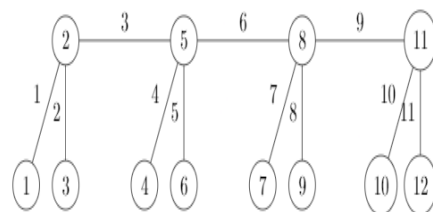


FIGURE 2.6. Root Square Mean Graceful Labeling of $P_4 \odot 2K_1$

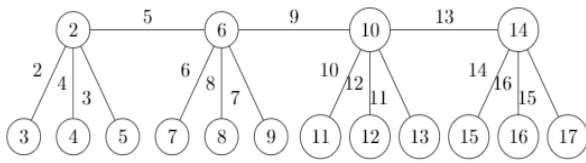


FIGURE 2.7. Root Square Mean Graceful Labeling of $P_4 \odot 3K_1$

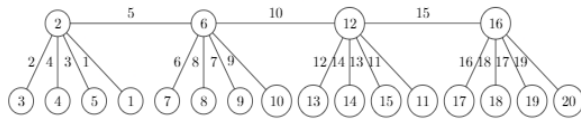


FIGURE 2.8. Root Square Mean Graceful Labeling of $P_4 \odot 4K_1$

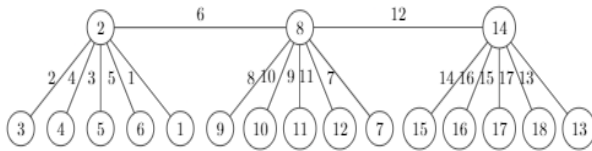


FIGURE 2.9. Root Square Mean Graceful Labeling of $P_3 \odot 5K_1$

Theorem 2.6.

The Corona Product of P_m and C_3 is a Root Square Mean Graceful graph for all m .

Proof. Let $\{x_r, 1 \leq r \leq m\}$ be the vertices of path P_m . Let $\{y_s^r, 1 \leq s \leq 3\}$ be the vertex of each C_3 corresponding to the each vertices of P_m . We define a vertex labeling $M :$

$$V(G) \rightarrow \{1, 2, \dots, q + 2\} \text{ as follows}$$

$$M(x_1) = 8; \quad M(x_2) = 9; \quad M(x_3) = 20;$$

$$M(x_r) = M(x_{r-1}) + 7, 4 \leq r \leq m;$$

$$M(y_1^1) = 1; \quad M(y_2^1) = 2; \quad M(y_3^1) = 4;$$

$$M(y_1^2) = 10; M(y_2^2) = 15; M(y_3^2) = 11;$$

$$M(y_1^r) = M(x_r) - 3, 3 \leq r \leq m; M(y_2^r) = M(x_r) + 2, 3 \leq r \leq m;$$

$$M(y_3^r) = M(x_r) - 2, 3 \leq r \leq m;$$

Then the edge labelled as

$$M^*(x_r x_{r+1}) = \left\lfloor \sqrt{\frac{M(x_r)^2 + M(x_{r+1})^2}{2}} \right\rfloor; \quad M^*(x_r y_1^r) = \left\lfloor \sqrt{\frac{M(x_r)^2 + M(y_1^r)^2}{2}} \right\rfloor;$$

$$M^*(x_r y_s^r) = \left\lfloor \sqrt{\frac{M(x_r)^2 + M(y_s^r)^2}{2}} \right\rfloor, \quad s = 2, 3 \quad ;$$

$$M^*(y_1^r y_2^r) = \left\lfloor \sqrt{\frac{M(y_1^r)^2 + M(y_2^r)^2}{2}} \right\rfloor;$$

$$M^*(y_1^r y_3^r) = \left\lfloor \sqrt{\frac{M(y_1^r)^2 + M(y_3^r)^2}{2}} \right\rfloor;$$

$$M^*(y_2^r y_3^r) = \left\lfloor \sqrt{\frac{M(y_2^r)^2 + M(y_3^r)^2}{2}} \right\rfloor.$$

The edge labeling obtained above are distinct. Thus the function M permits Root Square Mean Graceful labeling of $P_m \odot C_3$ for all m .

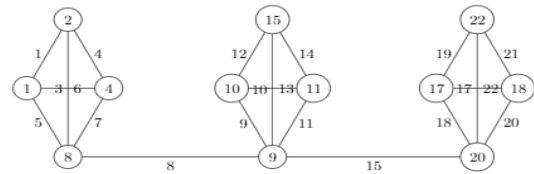


FIGURE 2.10. Root Square Mean Graceful Labeling of $P_3 \odot C_3$

Corollary

If $G \odot H$ is a Root Square Mean Graceful graph then G and H are Root Square Mean Graceful Graphs.

Conclusion

Through this Manuscript, we examined corona product on Root Square Mean Graceful graph with the labeling property. Our next step is, to extend and apply this labeling to diverse graph families.

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