A STUDY ON OCCUPATIONAL STRESS OF PHYSICAL EDUCATIONAL TEACHERS SERVING AT GOVERNMENT SPONSORED SCHOOLS IN MEDINIPUR ADMINISTRATIVE ZONE

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ABSTRACT

Purpose: The study was to find out and compare the level of Occupational Stress between the physical education teacher of male and female in each District and in Administrative division of Midnapore for teaching Physical Education Profession. Subject: Total one hundred and eighty (N=180) Secondary higher secondary level Physical Education teachers were selected as subjects equally from five districts of Medinipur Administrative Division of West Bengal State and divided into two like male and female. Random sampling technique was used and minimum five years teaching experience was considered for selecting a subject. Criterion measured: The test of Occupational Stress of Physical Education Teacher was assessed by Occupational Stress Scale of Dr. A. K. Shirotriya and Dr. M. I. Quraishi through specific questionnaire. Statistics: Mean and standard deviation (S.D.) were calculated for analysis of data. Statistical significance of two groups, mean difference was tested by Independent - sample T-test. For comparing the significance of two mean, mean differences, the level of significance was set as 0.05 level of confidence. Result: Among the districts of Jhargram, Purba Medinipur, Paschimm Medinipur and finally the administrative division of Midnapore, the significant difference were observed in Occupational stress between Male and Female Physical Education Teachers where Female Physical Education Teachers were feeling stress more than the Male Physical Education Teachers in that of their counterpart.

Keyword: Occupational Stress, Administrative division, male and Female Physical education teacher

Introduction

In education system the occupational stress is an ongoing issue which hinders the progressive of education. Occupational stresses the inability to cope with the pressures in a job.psychologist define the stress as the bodily response to a change that requires a mental or physical, emotional or adjustment or response (Bauer & Erdogan, 2009). According to Kyriacou, (2001), Teacher stress is defined as experiences inteachers, of unpleasant, negative emotions such as anger, frustration, anxiety, depression and nervousness, resulting from some aspect of their work as teachers. It is a Psychological and biological Matters. The result of continuing stress may become disruption the following areas of health, physical, emotional, spiritual and social respectively. Numerous eminent educationist and researcher had studied earlier. Few of them are reviewed by keeping concern with this study Like-

NainaSabherwal and Deeya Ahuja et al, (2015) has attempt to find out the occupational stress among faculty members in higher education institution and the results showed that the determinants of stress among the administrators are numerous and varied, with compilation of results, time pressures, lack of infrastructure, student's indiscipline and poor pay prospects as a very high ranked stressors. Along with that, findings also revealed that the administrators experienced on an average a low to moderate level of stress and this did not negatively affect their performance.

Dr. Ansarul Hasan, (2014) found that the primary school teachers are highly stressed. Moreover, the private primary school teachers have also found to be highly stressed in comparison to their government primary school teachers counterparts. **Chaly PE, Anand SPJ, Reddy et. al, (2014)** results showed, Out of 504 software professionals and 504 schoolteachers, for 23% of software professionals and 85% of schoolteachers, stress was Not a Problem in their life. 71%of software professionals and 15% of schoolteachers were in moderate Stress level. For 6% of software professional stress was a Problem in their life.

Ali Qadimi and Praveena K.B, (2013) investigated that teachers with higher age groups had higher burn out scores. In addition, study shows that there were no significant differences between age groups of schoolteachers with reference to their occupational stress.

Dr. S.S. Jeyaraj, (2013)worked on government and Aided higher secondary school teachers, with the sample of 185 Aided school teachers and 120 Government Teachers. Result shows that teachers who reported greater stress were less satisfied with teaching, reported greater frequency of absences and a greater number of total days absent were more likely to leave teaching (career intention) and less likely to take up a teaching career again (career commitment).

(Ms. Rani Ritu, (2012) conducted the comparative study of occupational stress of secondary school teachers in relation to their demographic variables i.e. gender, types of school and locality. With the objective to compare the occupational stress of male and female secondary school teachers, to compare the OS of the teachers working in government and private secondary schools , to compare the OS of the teachers belonging to urban and rural secondary schools. OSI index prepared by A.K. Shrivastva is used for the data collection. Results showed that there was no significant difference in the occupational stress of secondary school teachers on gender, type of school and locality basis.

(MariyaAftab, TahiraKahttoon, (2012) finding reviles that nearly half of the secondary school teachers experience less stress towards their job and males displays more occupational stress towards job than the females, moreover the trained graduate teachers are found to have higher occupational stress than post graduate and untrained teachers. Teachers with an experience of 6-10 years face occupational stress the most and 0-5 years the least.

Lewis (1999) in his study on 'Teachers Coping with the Stress of Classroom Discipline 'examined that the teachers' estimations of stress arise from being unable to discipline pupils in the way. They would prepare overall maintaining discipline emerged as a stressor with those
worst affected teachers who placed particular emphasis on pupil empowerment.

Ramzan (2012) Analysis of data reflected that the numerous factors related to teachers stress could fall under the "personal" and "professional" aspects of teachers' lives. Likewise, we found variety of sources of teachers stress factors: they emanated from the unfriendly working conditions in schools, from inadequate salary packages and lack of resources in schools.

Sultana (2012) analysis of this findings resulted in categorizing them into three groups: personal stress, professional stress and financial stress. However, the impact of each one of the three groups of teacher stress (i.e. personal, professional and financial) was different for different teachers. It looked like some teachers felt more stressed because of a variety of personal and domestic factors, whereas other teachers felt more constrained because of financial issues. Furthermore, the data analysis also highlighted the sources of teacher stress, which could be easily identified as the "inside-school" and the "outside-school" sources of stress. The various findings related to each one of the two categories are revealing as they show the significance and degree of enormity of stress factors related to these groups.

R.T.Pitchers and R Soden (1998), study on "Scottish and Australian Teachers Stress and Strain" highlights the role overload as a significant stressors. They assessed levels of strain,
Organizational roles and stress in 322 Australian and Scottish Vocational and further education lectures. The researchers have concluded that strain was found to be average in both national groups, but there were high levels of stress, with role overload emerging as the major cause.

Manthei and Solman (1988) in their study on "Comparative Teachers Stress and Negative Outcomes in Canterbury State Schools" focuses the study on "New Zealand and N.S.M.teachers,identified seven structural factors which led to teachers stress like, pupil recalcitrance, poor remuneration, curriculum demands, low professional recognition, poor working environment, community antagonism and time demand and lack of time for adequate, preparation of assistance with individual pupil difficulties. After a critical review it was found that lack of information regarding the study like Occupational Stress of six leading factors that's are Work dilemma, Professional growth, Professional misconceptions, Working conditions, On job relation and Personal status. Based on these factors the researcher made a humble attempt to select the problem entitled -

A Study on Occupational Stress of Physical Educational Teachers Serving at Government Sponsored Schools in Medinipur Administrative Zone

Purpose of the study

The purpose of the study was to find out and compare the level of Occupational Stress between male physical education teacher and female physical education teacher in each District and in Administrative division of Midnapore for teaching Physical Education Profession.

Hypothesis of the study

The following hypothesis was formulated to conduct the present study

1. There would be significant difference in occupational stress between male and female physical education teachers where females were feeling more stress than male in teaching profession in every district.
2. There would be no significant difference in

occupational stress between male and female physical education teachers in teaching profession in Administrative division of Midnapore.

Methodology
Subjects of the Study

In the present study total one hundred and eighty (N=180)Secondary and Higher secondary level Physical Education teachers were selected as subjects from Govt. Sponsored School of Medinipur Administrative Division of West Bengal State, consisting five districts namely Bankura, Purulia, Jhargram, Purba Medinipur and Paschim Medinipur respectively.Equal numbers of subjects were taken from each district and equally categories into two like male and female.For selection of subjects, random sampling technique was used and minimum five years teaching experience was considered. The subject maters are depicted in fig.-1
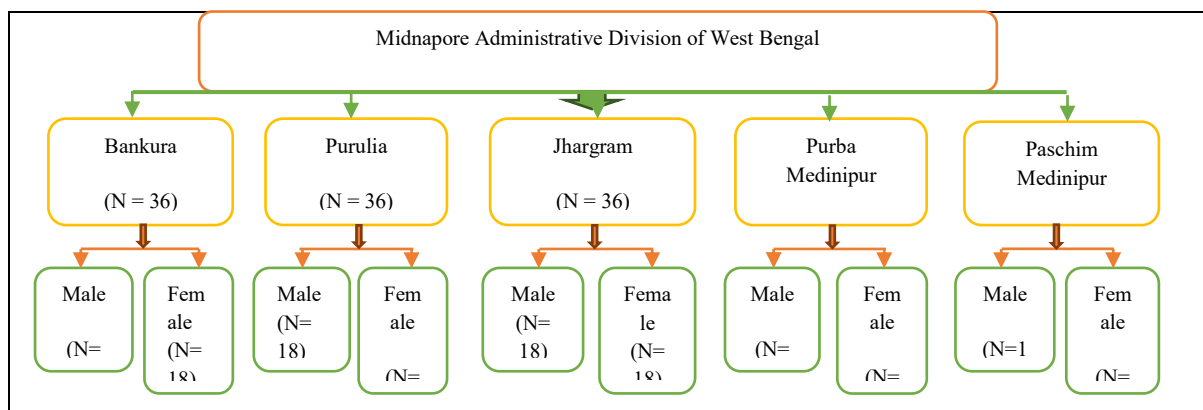

Fig.-1: *Procedure for selection of subjects.*

Measuring Criteria

As criterion measured the Occupational Stress of Physical Education Teacher was assessed by Occupational StressScale of Dr.A. K.Shirotriya and Dr. M. I. Quraishi The testwas done through specific questionnaire.

Statistical Analysis

As the descriptive statistics, the mean and standard deviation (S.D.) were calculated for the analysis of data. Statistical significance of two group i.e. Physical Education Teachers of Male and Female in respective District, mean difference was tested by Independent – sample T-Test. All the statistical calculations were done by SPSS version 25.

For comparing the significance of two mean, mean difference, the level of significance was set as 0.05 level of confidence where the District wise degree of freedom was 34& the significant value i.e. the t-value should be greater than or equal to 2.032 and in Midnapore Administrative Division the degree of freedom was 178 & the significant value i.e. the t-value should be greater than or equal to 1.973.

Result and Discussion

Occupational Stress comprises six leading factors that's are Work dilemma, Professional growth, Professional misconceptions, Working conditions, On job relation and Personal status. Based on these factors the result has been

adopted and compared between Male and Female Physical Education teachers in their

teaching profession district wise and in Administrative division of Midnapore.

Table 1:

Comparison of means of Occupational Stress Towards Teaching Profession between Male and Female Physical Education Teachers

| District	Subject	Mean±SD	SED	D.F.	t-value	Sig (2 tail test)
Bankura	Male	169.89±13.27	4.70	34	0.710	0.483
	Female	166.56±14.86				
Purulia	Male	165.94 ± 18.57	5.94	34	0.710	0.482
	Female	161.72 ± 17.05				
Jhargram	Male	171.33±13.34	4.94	34	-2.135*	0.040
	Female	181.89±16.16				
Purba Medinipur	Male	159.67±18.67	5.89	34	-2.074*	0.046
	Female	171.89±16.12				
Paschim Medinipur	Male	168.22±19.21	6.72	34	-2.239*	0.032
	Female	183.28±21.09				

* Significant at 0.05 level of confidence.
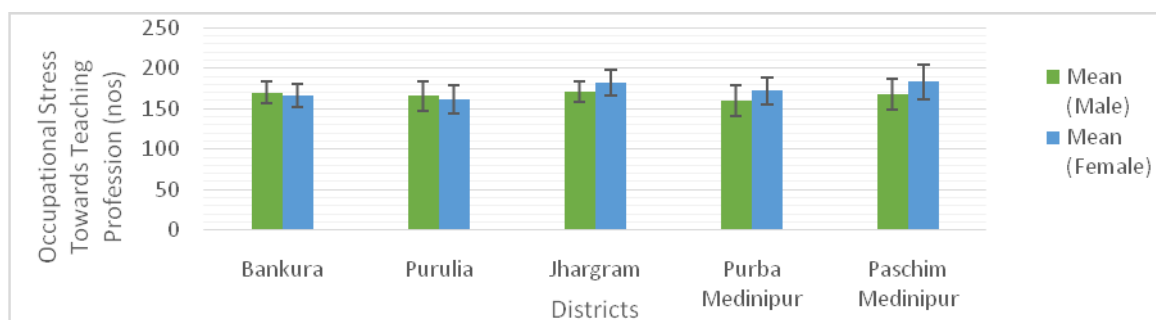
Fig.-2:Comparison of means of Occupational Stress Towards Teaching Profession between Male and Female Physical Education Teachers.

Table-1, represents the Mean and SD value of occupational stress towards teaching profession between male and female physical education teachers has been compared which depicted in fig.-2. The extracted data evident that-

In **Bankura & Purulia** districts, the Mean±SD values of Male Physical Education Teachers were 169.89±13.27 & 165.94±18.57 respectively,Female Physical Education Teachers were 166.56±14.86&161.72±17.05 respectively and t-value were0.710 & 0.710 respectively, which were lesser than the significant value of 2.032 at the 0.05 level of confidence. This implies no significant

difference observed between Male and Female Physical Education Teachers in their respective district. Moreover they belongs to below average stress in their teaching profession. Therefore, the hypothesis stated earlier is rejected.

In **Jhargram,Purba Medinipur and Paschim Medinipur** districts, the Mean±SD values of Male Physical Education Teachers were 171.33 ± 13.34,159.67 ± 18.67 & 168.22 ± 19.21 Respectively, Female Physical Education Teachers were 181.89 ± 16.16, 171.89 ± 16.12 & 183.28 ± 21.09 respectively and t-value were2.135, 2.074 & 2.239 respectively which

were greater than the significant value of 2.032 at the 0.05 level of confidence. Theseevident the significant difference observed between Male and Female Physical Education Teachers in respective districts where Female Physical Education Teachers feeling more stress in their occupation than that of their counterpart. Hence, the hypothesis stated earlier is accepted.

After combing the occupational stressof above five districts the results has been considered finally as the administrative division of Midnapore. The Mean, SD and t-value ofoccupational stress between Male and Female Physical Education Teachers were presented in following Table-2 and graphically depicted in Fig.-3.
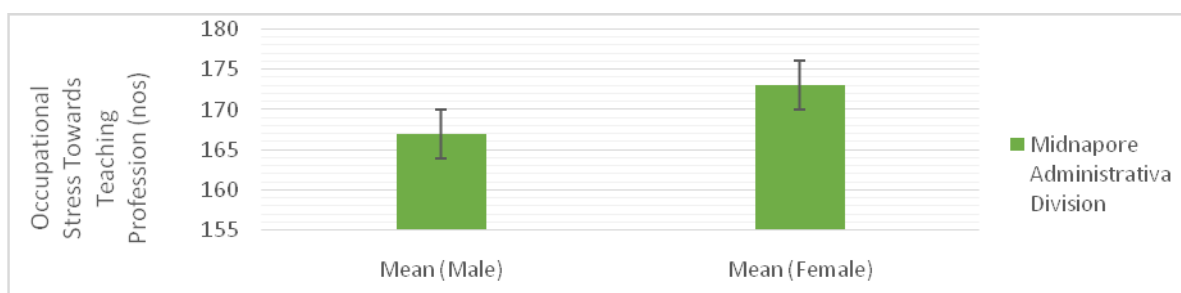
Table 2:

Comparison of means of Occupational Stress Towards Teaching Profession between Male and Female Physical Education Teachers in Midnapore Administrative Zone

Administrative Division	Subject	Mean ± SD	SED	D.F.	t-value	Sig (2 tail test)
Midnapore	Male	167.01 ± 16.95	2.68	178	-2.263*	0.025
	Female	173.07 ± 18.90				

* Significant at 0.05 level of confidence.

Fig.-2: *Comparison of means of Occupational Stress Towards Teaching Profession between Male and Female Physical Education Teachers in Midnapore Administrative Zone*

Considering the occupational stress as a whole the Mean ± SD values between Male Physical Education Teachers was 167.01 ± 16.95, Female Physical Education Teachers (UPET) was 173.07 ± 18.90 and t-valuewas 2.263 which was greater than the significant value of 1.973 at the 0.05 level of confidence. This confirmed that the significant difference observed between Male and Female Physical Education Teachers in administrative division of Midnapore where Female Physical Education Teachers feeling more stress in their occupation in that of their counterpart. Therefore, the hypothesis mentioned earlier is rejected.

Conclusion

Among the districts of Jhargram, Purba Medinipur,Paschimm Medinipur and finally the administrative division of Midnapore, the significant difference were observed in Occupational stress between Male and Female Physical Education Teachers where Female Physical Education Teachers were feeling stress more than the Male Physical Education Teachers in that of their counterpart. Other districts like Bankura and Purulia were not significant.

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GANDHI'S CONCEPT OF RELIGION AND ITS RELEVANCE TO MODERN INDIA

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ABSTRACT

Mahatma Gandhi was a profound and political head of India. Religion was the centre of his being and it was the motivation for every one of his exercises in different fields of his life. His idea of religion uncovers that specific ideas like truth, peacefulness, ethical quality, humankind or humbleness, resistance, human help and so on as indicated by Gandhi, all incredible religion of the world give incomparable significance on the act of his excellence called love or Ahimsa or equity. The strict thought of M. K. Gandhi is taken from the conviction that there is one reality that is God which is nothing else except for truth. Gandhi gives a lot of significance on the idea of resilience when he discusses religion. Gandhi doesn't mean Hindu religion, as per him, men's religion is what purges men's spirit and empower him to join him with his inward truth. The significant highlights of religion, the significant strict practices, for example, fasting, petition, the five pledges, and pertinence to current India are the significant pieces of the paper.

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Keywords: *Tolerance, Humbleness, Fasting, Prayer, Non-violence.*

Introduction

Mohandas Koramsad Gandhi, who was known as a" Great Soul" and was a profound and political head of India. There is no doubt of uncertainty really, the idea of religion of M.K. Gandhi is a significant idea for social consistency and equity. However, to examine about Gandhian idea we ought to need to think first about what religion is. Various definitions have been discovered a portion of whose are phenomenological and others are interpretative. For instance, "Religion is human acknowledgment of very human controlling force and particularly of an individual God or Gods started to submission and love"(Consize Oxford Dictionary).Again there are mental definitions, for example, "the feelings,acts and experience of people man in their isolation, so exceptionally far as they catch themselves to remain corresponding to whatever they may consider to divine."(William James). Essentially there are sure sociological, regular and strict definitions. Strictly talking, "religion is the acknowledgment that everything is appearances of a force which rises above our knowledge."(Herbert Spencer).

Objective of the study

1. To features the Gandhian idea of religion.
2. To highlight the features of religion.
3. To features the strict practices and pertinence to current India.

Methodology

The examination surely is a spellbinding one in nature. The auxiliary sources like books, diaries, magazine, news papers, web and so on are utilized. The strict thought of M. K. Gandhi are gotten from the conviction that there is our existence that is God which is nothing else except for truth. As indicated by Gandhi, the higher guideline truth and God is religion. By the term religion Gandhiji doesn't mean Hindu Religion. Rather he accepts that man's religion is what decontaminates man's spirit and empower him to join himself with his inward truth. some significant highlights of Gandhi's idea of religion are as per the following:

1. Religion is the declaration of the lasting idea of man. The lasting perspective is the godlikeness of the component of fundamental goodness present in each man.
2. Religion has the personality of virtue and hoisting one's temperament.
3. Religion has the force of stimulating in man a feeling of otherworldly anxiety a sort of a thirst which empowers the person to develop a lot a sense to one side and the reat and makes him a genuinely upright man.
4. Religious yearning rented on a craving and an intellectual inclination to know the past. It has by one way or another the inclination that a definitive strict ideal is only acknowledgment of God.
5. Religion includes a cognizant and true love and making progress toward truth. Gandhi says there is no religion higher than truth and uprightness.

Gandhi brought up that the idea of man's religion ought to be unmistakably begun with his ethical life. Religion without profound quality has no significance. Gandhi has no compassion toward a strict tenet which doesn't engage reason and which isn't related with profound quality, "in my investigations everything identifying with the spirit has involved profound quality; religion of ethical quality, ethical quality from the angle of soul is religion." (An Autobiography,p-4). As per Gandhi, man without religion is beyond the realm of imagination. A few narcissists may broadcast that they are not in any manner worry with religion. Gandhiji pronounces that no man can live without religion. There are some who in the self love of their explanation announce that they don't have anything to do with religion. In any case, "it resembles a man saying that he inhales however that he has no nose whether by reason, or by sense, or by odd notion, man recognizes a type of relationship with the divine".(MKG by Religion, P-3)Gandhi accepted that religion and ethical quality bound up one another. As far as he might be concerned, ethical quality addresses the reason, the embodiment of religion. Again religion which doesn't help man is taking care of the issues of his reasonable life can't be genuine religion. His perspective is that religion isn't only a hypothetical idea that guidelines to fulfill scholarly interest and urges, it is valid for him the lifestyle a functional need. In this way, Gandhiji says that religion ought to be spread all around each part of our life. As indicated by M. K. Gandhi a really strict man is to serve mankind, is to regard his foes as companion. Gandhi says, the possibility of the religion is the acknowledgment of God. One is directly coming in case he is following the way of truth and peacefulness.

Gandhi specifies some strict practices- The essential significant practice is fasting. It is a substantial practice in the Hindu religion. Fasting is fundamental for the control and discipline of actual energy and cardinal longings. Gandhi sees that a total quick trust prayer. Gandhi utilized fasting as a piece of peacefulness and satyagraha because of which he attempted 18 fasting during India's freedom movement. The second quintessence of religion is supplication. It should play a significant job in the existence of man. As per M.K. Gandhi the incredible worth of petition in the everyday battle of man in this world. Petition doesn't mean requesting something. It is an aching of the spirit to look for association with the heavenly. The most significant for a strict individual is to submit to five cardinal ideals like peacefulness, honesty, non-taking, self-restraint and renunciation.

Gandhi's idea of religion holds importance in current Indian culture. Gandhi's views on religion is vital for keeping up with harmony and amicability in the present time. Because of the improvement of science and innovation the idea of religion has changed. There is a need of ideal otherworldliness and profound quality. Because of the progressions in virtues individuals become more self driven and intolerant. To sanitize people groups soul Gandhiji instructs to focus closer on the positive parts of religion. Many prominent activities like Anna Hazare strictly follows Gandhi's principle in all his activities.

Conclusion

From the above conversations we reach the resolution that Gandhi's sees on religion is neither that of the Hindu's nor Muslims nor Christians and so forth It is a religion dependent on friendly equity, advanced fraternity, truth and bliss. His pith of religion is activity or deed. To keep up with world harmony and fraternity, we ought to follow Gandhi's teaching.

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COVID-19 AND INDIAN EDUCATION SYSTEM: IMPACT, POLICIES AND RECOMMENDATIONS

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ABSTRACT

2020 will be chronicled in History as the timeline when humanity, shell shocked and bamboozled by what they are up against, had locked themselves up in personal coops, having eyes shut and heads in the sand, waited for the time when the danger will go away. COVID-19 has affected 68.5 % of enrolled learners amounting to 1,198,530,172 individuals across 153 countries due to countrywide lockdowns globally (UNESCO, 2020). As per AIHSE, India is unparallel in terms of size with 1.4 Million schools, 39931 colleges, 993 universities and 10275 stand alone institutions. COVID-19 has severely disrupted teaching learning activities as due to ensuing lockdown and shutdown of the educational institutions. India's education system, mostly classroom oriented and offline, has struggled to make a swift shift towards online classes and e-learning. This paper is a theoretical attempt using secondary data to analyze the impact of COVID-19 on Indian education system, policies employed by government to resolve the bottleneck situation regarding digitized learning and recommendations for the road ahead. The study reveals that a transition in the entire teaching learning process with blended and hybrid learning is the only way forward.

Keywords: COVID-19, Indian Education, Higher Education, Online Learning, Online Education

Introduction

WHO on penultimate day of January, 2020 declared novel Corona virus as a public health emergency of global concern (Klonowska & Bindt, 2020) and coincidentally on the same day India registered its first COVID-19 case in Kerala's Thrissur district wherein a student after returning home from Wuhan University in China was tested positive. This pandemic has once again brutally exposed human vulnerability and uncertainty has crippled mankind. Globally, millions of people, are scared, not knowing what they are up against, have been locked up in personal coops, eyes shut and heads in the sand, waiting for the time when the danger will go away.

COVID-19 has affected 68.5 % of enrolled learners amounting to 1,198,530,172 individuals across 153 countries due to countrywide lockdowns globally (UNESCO, 2020). 370+ Millions Indian learners are deprived of physical learning activities because of lockdowns and closure of educational institutions mandated by the Indian government to check the spread of COVID-19 pandemic (Educationasia, 2020). India on May 19,2020 became the 11th country to cross one Lakh Corona infections but the spread of contagion has been slower compared to other countries in the same league (Times of India, 2020).

According to Ministry of Family Health and Welfare and worldometer.info, it took 64 days for India to reach one Lakh mark from 100, much slower than many of the first world countries. The strict lockdown of more than two months has been instrumental in bringing down the infection rate. The country has seen it all, the good, bad and the ugly. Near about 100,000 COVID cases were getting reported daily in September 2020. Then curve dipped and by January the number of new cases went below 10,000 a day. Since February, the numbers are going high and at this point the threshold of 100,000 new cases a day. At this juncture, this paper is an attempt to theoretically analyse and examine COVID-19 pandemic and its multifold future implications with special reference to India using secondary data sources from journals, research reports, and news websites and so on.

Objectives of the Study

1. To analyse the impact of COVID-19 on Indian Education System
2. To examine the government initiatives regarding online education and e-learning.
3. To provide policy recommendations to negate the deadlock situation.

Data Method

This paper draws secondary data across sources available on for the purpose of examining and fulfilling the objectives.

Methodology

The paper employs theoretical discussion and interpretation of data qualitatively.

Discussion

1. COVID-19 in India

Till April 7, 2021, more than 12,801,785 positive cases of the coronavirus (COVID-19) have been reported with over 11,792,135 recoveries and approximately 166,208 deaths. Since March 2, 2020, the cases are reported daily with number of infections rising progressively and geometrically along with substantial number of recoveries too.

All the major global health bodies including The World Health Organization have repetitively stressed on the need of "flattening the curve" to negate the pandemic triggered by the novel virus. Simply put, it means lowering the new cases infections so that people can have better recovery without spreading the virus and have access to healthcare facilities. But with the present situation, national health system is on the verge of getting overwhelmed and soon death rates is feared to surpass the rate of recoveries. As per experts, good hygiene practice and social distancing is instrumental in curbing the rate of transmission.

Since early days in March, Maharashtra, the western heartland state of India had the maximum number of infections. Government has been employing contingency measures to ramp up the testing facilities and isolation services. Akin to other countries of the world fighting COVID-19, India has gone for gradual unlocking with restrictions slowly being lifted to get the economy rolling.

2. Effect of COVID-19 on Indian Education System

The terrifying and relentless impact of COVID-19 has traumatized the world to its core. Further, most of the Governments around the world have temporarily closed educational institutions in an attempt to contain the spread of the COVID-19 pandemic. In India too, the government as a part of the nationwide lockdown has closed all educational institutions, as a consequence of which, learners ranging from school going children to postgraduate students, are affected.

These nationwide closures are impacting over 91% of the worlds' student population. Several other countries have implemented localized closures impacting millions of additional learners. UNESCO is supporting countries in their efforts to mitigate the immediate impact of school closures, particularly for more vulnerable and disadvantaged communities, and to facilitate the continuity of education for all through remote learning. The UNESCO report estimates that the coronavirus pandemic will adversely impact over 290 million students across 22 countries. The UNESCO estimates that about 32 crores students are affected in India, including those in schools and colleges (Kasrekar & Wadhavane-Tapaswi, 2020).

According to a UNESCO report, the pandemic has impact over 290 million students across 22 countries due to the closure of schools in the wake of the lockdown. Extended school closures will not only weaken the fundamentals of students, but it will also lead to loss of human capital as well as economic opportunities in the long -run. According to the World Bank, its impact will be profound in countries where education is grappling with low learning outcomes and a high dropout rate. Several educational institutions had no choice but to embrace e-learning to sustain the momentum (Kasrekar & Wadhavane-Tapaswi, 2020). Even before the lockdown was enforced in the 3rd week of March, 2020, the state governments in their individual capacities declared the schools and colleges and the other educational institutions closed for a certain period of time from the middle of March. The closure was extended for some more time and finally the lockdown was declared. Thus the education system has already been hampered for over last four months. This is about regular classes in the educational institutions. Just before the full lockdown, international flights were banned from leaving and entering the country, thereby restricting people from going abroad to attend scheduled international seminars, workshops and also from visiting foreign universities for taking and giving classes and lectures etc. This was followed by cancellation of the national and domestic

flights also thus resulting into people not being able to visit the places for educational purpose even inside the country. Finally with the lockdown, the trains also stopped running and thus the scheduled seminars etc had to be cancelled in all the stages, like, national, state and regional, and even local. Not only have seminars been cancelled, even visiting educational institutes for other purposes had to be postponed, for example, taking viva for thesis, projects etc and for other administrative purposes.

3. Issues and challenges of online learning

With the full lockdown being imposed in the country, the education sector initially came to a standstill. This is an unprecedented and unfamiliar situation, and nobody still knows when the situation will be normal. It is imperative that the lifting of lockdown should obviously not take place in one go, but gradually, as otherwise the very purpose of the imposition of lockdown will be defeated with the spreading of the disease again. It is also true that unless the social distancing measures are removed, bringing back normalcy will be difficult. It is a known fact that the educational institutions are most vulnerable for the spread of the disease due to the mass gathering in the classrooms. Therefore unless, the infection is totally eradicated from the states, it is difficult to bring back the students to the schools, colleges, universities and other educational institutions. Resuming normal classes in classrooms therefore seems a distant dream at this time.
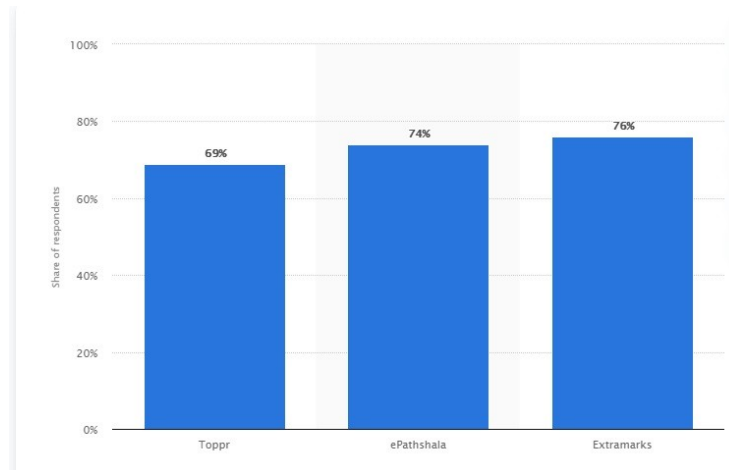

Figure 1 : Impact of the corona virus (COVID-19) on educational mobile app usage in India as of March 2020 (Source : Statista.com)

Gradually the system is getting accustomed to the situation. Distance classes, using various online platforms, have been started in many institutions. It is, however, difficult to say at this moment, how far it has been successful, especially when one is situated in an urban area and has the advantage of teaching an elite class. Also there are hurdles regarding teaching laboratory based courses and mathematics heavy discourses. According to the results of a survey conducted during the first week of a nation-wide lockdown due to the corona virus (COVID-19), educational mobile apps saw a spike in usage compared to week preceding the survey. Over 76 percent of respondents stated that they had increased their use of the educational app, Extra marks. The situation is very different when one looks at rural colleges and universities. Many students in rural areas may not have access to smartphones or computers. Even if they do, the net connectivity may not be as high as in urban areas. In any case, many students of the most elite institutions, the IITs, are not able to have access to online classes from their homes due to these reasons. Therefore some if not all of the universities, and some of the colleges have started online classes. The same can be said about other higher educational institutions, be they governmental, government-aided or autonomous. Private institutions normally draw students from affluent urban classes, and hence do not face problems in dealing with this unprecedented situation.(Gupta, 2020).
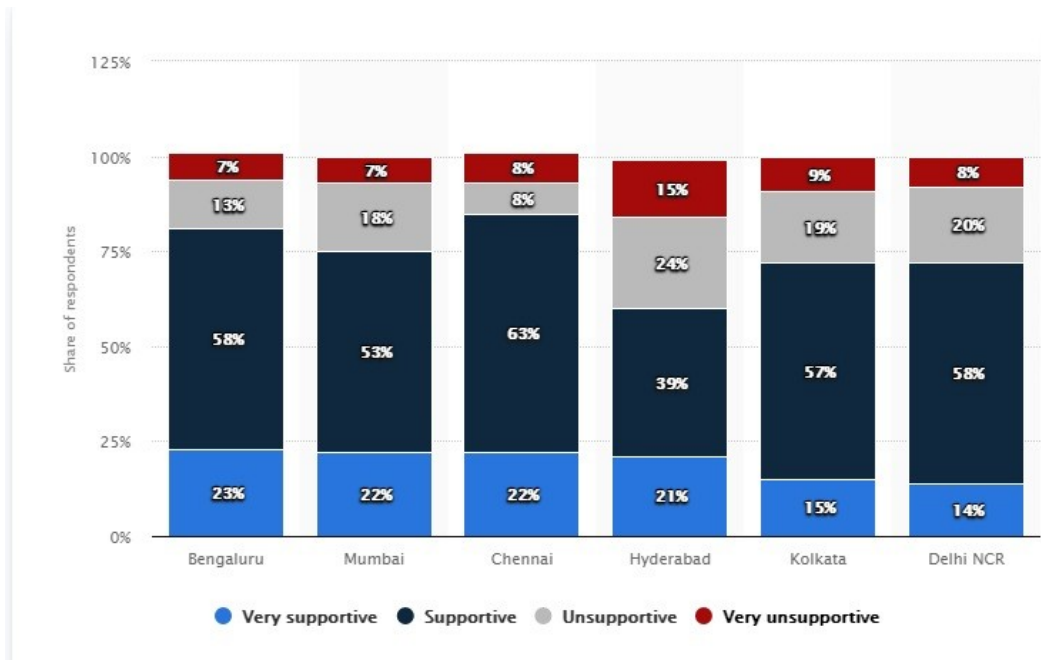
Figure 2 : Level of support from educational institutions during corona virus (COVID-19) lockdown in India as of April 2020, by select city

The data regarding support from educational institutions during lockdown period in April, 2020 (Figure 2) it is seen that educational institutions of South specifically Karnataka were very supportive towards their students (23%) and Delhi-NCR stood last in the tally (14%). As per responses educational institutions of Hyderabad stood top in terms of being very unsupportive towards their students (15%). If metropolitan cities are is in this condition with developed infrastructure and expanded connectivity it is evident that teaching-learning process in North Eastern states would get more such issues owing to its remoteness and underdeveloped facilities.
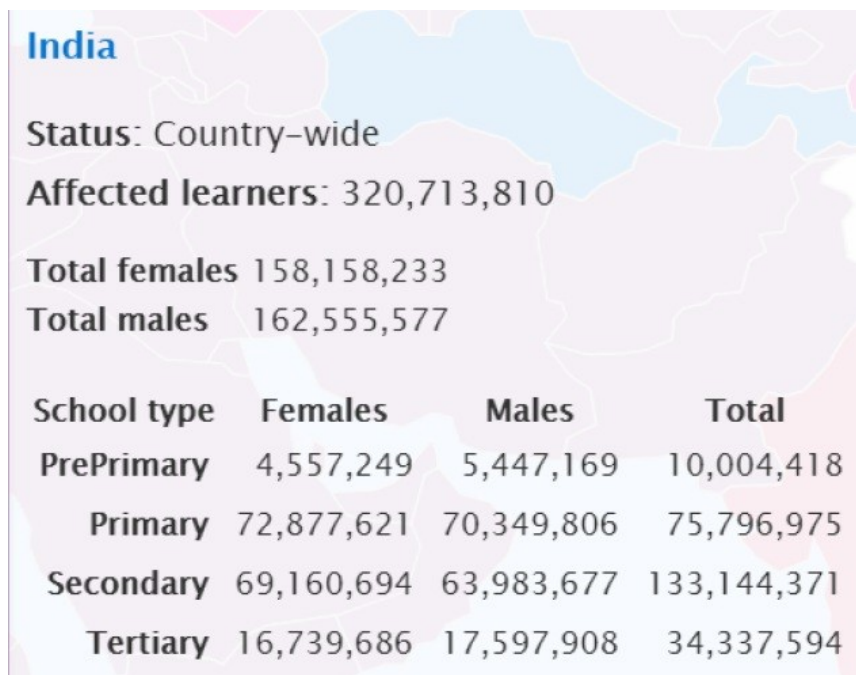
Figure 3 : UNESCO data on total affected learners from preprimary, primary, secondary, and tertiary schools in India

The sudden shift to online learning without any planning -- especially in countries like India where the backbone for online learning was not ready and the curriculum was not designed for such a format -- has created the risk of students becoming passive learners and they seem to be losing interest due to low levels of attention span. Added to this is the exclusion of large proportion of the student population untouched due to the digital divide that is part of many developing nations including India. Online learning could be dull as it is creating a new set of passive learners which can pose new challenges (Misra, 2020).

Online learning is a special kind of methodology and not all teachers are good at it or at least not all of them were ready for this sudden transition from face to face learning to online learning. Thus, most of the teachers are just conducting lectures on video platforms such as Zoom which may not be real online learning in the absence of a dedicated online platform specifically designed for the purpose. There is a risk that in such a situation, learning outcomes may not be achieved and it may be only resulting in engaging the students (Misra, 2020).

The school education system portrays a dismal picture. There are many kinds of schools in the country: government, government-aided, private schools run by missionaries as well as those run by public and private trusts. There are also elite "public schools" and innumerable village level elementary schools under the Sarva Shiksha Abhiyan scheme, the latter catering to the below-poverty-level sections of society. A majority of children (by number) attend village elementary and primary schools. Even in the urban areas, many such primary schools give classes to the poorer sections; most slum children attend these schools. In addition to the economic divide and the rural-urban divide there is a language divide as well. Vernacular medium schools largely (though with exceptions) cater to the poor while English medium schools cater to other sections of the society. Here again comes the aspect of the digital divide: most poor students do not have access to smartphones, and even if they do, the net connectivity is poor and content is often not available in vernacular languages. This gives rise to discrimination in access to education.

Today many schools in urban areas are having online classes, while the majority of rural schools do not. Very young children are not able to learn through online processes as they can neither handle computers nor mobile phones. In many households, there is no computer, and in many, children are not allowed smartphones as well. Both these problems exist regardless of class. Therefore, the digital divide at the school level leads to a gap between the haves and have-nots. Power supply is an issue too. Data from the Mission Antyodaya, a nationwide survey of villages conducted by the ministry of rural development, also points to those differences. Around 20% of India's households received but 8 hours of electricity and only 47% received quite 12 hours (Alexander, 2019).
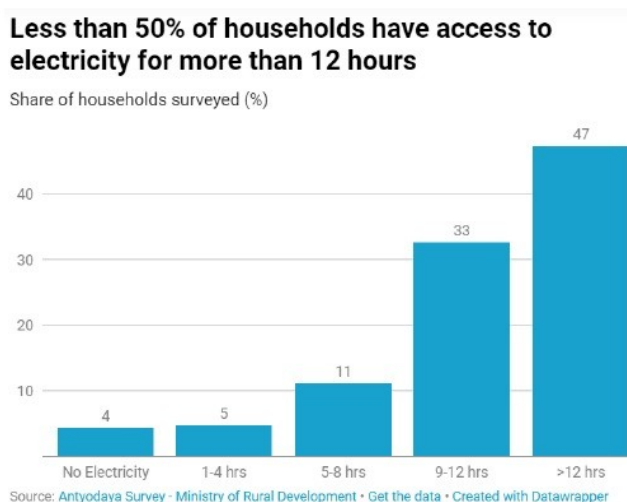

Figure 4: Share of Indian households in terms of access to power supply

Examinations have either been postponed or cancelled. Cancelling intermediate semesters or class annual exams or Class XI board exams will only weaken the foundations of the students. While it is true that online examinations are not possible at this time given the existing infrastructure in the country, already cancelling the exams kills the impetus of learning.

The Paradoxical Technology

It is a known fact that how the digital divide plays an important role; therefore in order to reach all students, classroom teaching is the best option. This is especially true for laboratory-based subjects. While humanities related subjects may be taught online, the teaching will not reach all students. (Lab-based practical classes cannot be held online as it is not possible to set up labs at homes, but that is another story.) Online classes are not capable of substituting classroom lectures. The former is very seldom able to generate the interaction that is needed in a class. Moreover, the teachers' body language, which is a part and parcel of the classroom lectures and is imperative for their success, is also missing in online classes. The use of technology will not only lead to more discrimination, but also will create some practical problems.

Effect on Research

Research has been affected in a negative way. While it is true that non-lab based research can be carried on through the students' perseverance and the contact with the mentor through telephone calls or emails, but one-to-one correspondence, with face to face discussion has no substitute. In many cases, where secondary data are needed, the students cannot visit the sources like the institution itself, offices and libraries, as all data are not available online. Similarly, primary data collection has also stopped since visiting sources is forbidden, and hence research is severely hampered. Mentorship improves only when there is face-to-face correspondence. In the lab-based subjects, research is totally stalled. Doctoral research has been hindered, both in primary and advanced stages. Similarly, M.Phil research has also slowed down. This is a cause for concern since M.Phil is a time bound project. There is a negative effect on project work as well. Thus on the whole there has been an adverse effect on research at all the levels due to the corona virus and COVID-19 pandemic, and the resulting lockdown effect on the all spheres of life.

A few positives

Any change that is so disruptive is also likely to bring with it some new opportunities that will transform the higher education system worldwide and especially in a country like India which is planning to bring about a planned reform in this sector.

Universities and colleges are shifting to a model of blended learning where both face to face deliveries along with an online model will become a norm. This will require all teachers to become more technology savvy and go through some training to bring them to the level that would be required.
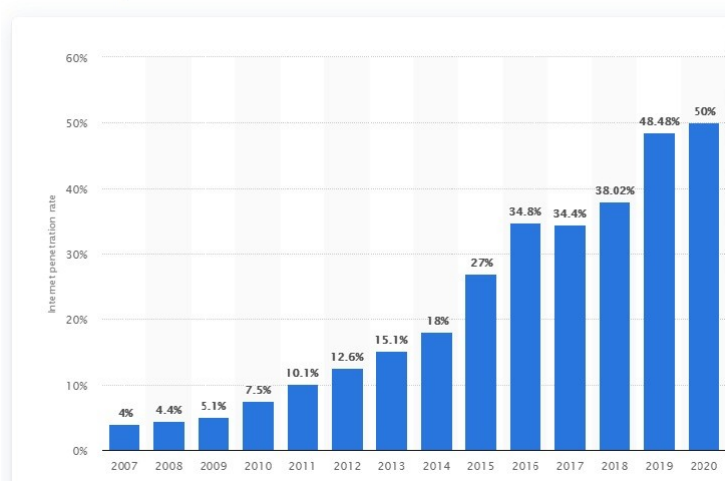

Figure 5 : Internet penetration in India (source- statista.com)

Internet penetration rate in India went up to nearly around 50 percent in 2020, from just about four percent in 2007. Although these figures seem relatively low, it meant that around half of the population of 1.37 billion people had access to internet that year. This also ranked the country second in the world in terms of active internet users. New ways of delivery and assessments of learning outcomes will have to be adopted which opens immense opportunities for a major transformation in the area of curriculum development and pedagogy.

Opportunities have opened up for those companies that have been developing and strengthening learning management systems for use by universities and colleges. This has the potential to grow at a very fast pace but will have to be priced appropriately for use by all institutions. There is a great opportunity for universities and colleges to start improving the quality of the learning material that is used in the teaching and learning process.

Since blended learning will be the new format of learning there will be a push to find new ways to design and deliver quality content especially due to the fact that the use of learning management systems will bring about more openness and transparency in academics.

The teaching community to a large extent has been much insulated and more so in a country like India. There is a new opportunity where collaborative teaching and learning can take on new forms and can even be monetized. Faculty members/ teachers can deliver online courses to even students from competing institutions. Collaborations can also happen among faculty/teachers across the nation to benefit from each other.

Finally, it is expected that there will be a massive rise in teleconferencing opportunities which can also have a negative impact on the travel. A large number of academic meetings, seminars and conferences have moved online and there is a possibility that some new form of an online conferencing platform will emerge as a business model.

Government efforts regarding e-learning

In wake of the COVID 19 pandemic, the Indian National Commission for Cooperation with UNESCO (INCCU) has been working online to carry forward the mandates of the respective Sub Commissions.

Promoting Digital Education with Equity

The Ministry of Human Resources Development and its associated institutions are promoting digital education through Online Educational Platforms and through the mediums of TV and Radio.

Immediately after announcement of lockdown, action was taken to intensify digital learning with equity so that students across the country could continue their learning even during the lockdown. The Ministry has, over the last few years, developed a rich variety of online resources that are available on a variety of platforms. While students and teachers can access these through their laptops, desktops and mobile phones, these resources are being reached to learners in remote areas through Television and Radio.

DIKSHA

This is an online platform for school education. It offers teachers, parents and students engaging learning material relevant to the prescribed school curriculum. It has over 80,000 e-content items in multiple Indian languages, catering to Grades 1-12. During the lockdown period these contents have been accessed nearly 215 million times.

E-PATHSHALA

A web portal and mobile app designed and deployed by the National Council for Educational Research and Training. It has 1886 audios, 2000 videos, 696 e- e-books (e-Pubs) and 504 Flip Books for classes 1st to 12th in different languages.

NATIONAL REPOSITORY OF OPEN EDUCATIONAL RESOURCES (NROER)

A portal equipped with best quality informational content on diverse topics in multiple languages a total of 14527 files including 401 collections, 2779 documents, 1345 interactive, 1664 audios, 2586 images and 6153 videos on different languages.

SWAYAM

This is the national online education platform hosting 1900 courses covering both school

(class IX to XII) And Higher Education (both UG and PG) in all subjects including engineering, humanities and social sciences, law and management courses. A unique feature of SWAYAM is that, it is integrated with the conventional education. The courses are interactive and prepared by the best teachers in the country, and are available free of cost to any learner in the country. Credit transfers are possible for SWAYAM courses (max 20%). There has been a three time increase in access to the platform during the lock down period.

SWAYAM PRABHA

It has 32 DTH TV channels transmitting educational contents on 24/7 basis. These channels are available for viewing all across the country using DD free Dish set top box and antenna .Now even the private DTH operators are telecasting these courses through their channels. The channels cover both school education (class IX to XII) And Higher Education in a wide range of subjects like engineering, vocational courses, teacher training, performing arts, social sciences and humanities subjects, law, medicine, agriculture and many more.

NISHTHA

An integrated Teacher Training Portal and Moblie App

NATIONAL DIGITAL LIBRARY

This is a digital repository of a vast amount of academic content in different formats and provides interface support for leading Indian languages for all academic levels including researchers and life-long learners, all disciplines, all popular form of access devices and differently-abled learners.

In addition to the above there are many other resources deployed by University Grants Commission (UGC), National Institute of Open Schooling (NIOS and Indira Gandhi National Open University (IGNOU) which are being intensified. The lockdown period has seen a huge upsurge in digital learning. The access to the above digital resources has grown nearly five times (2020,MHRD). In addition to these, many institutions are holding online classes through various modes.

Ensuring Equity in Digital Learning

TV Channels/Radio are being used to to reach out to the most difficult areas. The 32 DTH TV channels are available on Swayam Prabha. These channels are available for viewing all across the country using DD Free Dish Set Box and Antenna. The same are being promoted with special emphasis on students in remote areas. 12 channels will be exclusively marked for School education (Class 1 to 12). Swayam Prabha Channels pertaining to school education will be given for 2 hours per day to each State/UT. States will develop class wise/ subject wise content mapped to their syllabus in local languages. Private DTH service providers have also provided one channel each for education during COVID period.

Extensive use is being made of radio channels to broadcast educational programmes .Radio will be used specially for those children in remote areas who are not online (specially for classes 1 to 5). Activity based learning will be very effective for radio channels. 289 Community Radio Stations are to be used .Due to digitalization, huge portions of Analog spectrum of Radio and TV that are not in use, may be utilized for connecting people online in remote areas.

Post lockdown, Operation Digital Board will be an immediate priority in all Govt. and Govt. aided secondary and senior secondary schools. (around 1.53 lakh schools). Two Digital Boards will be provided to each r school. DD free dish antenna will also be included in the package. Pre-loaded pen drives with contents from Class 1 to 12 for areas lacking connectivity. Students will be able to access e-content through on line as well as offline mode. It will also be helpful in watching educational TV channels including Swayam Prabha. Provision of monitoring and evaluation of the usage of ODB will be made.

Proposed Regulatory Changes

In order to promote online learning it is proposed to make Regulatory changes like enhancing the permissible SWAYAM Online component in conventional universities and ODL programmes from the present 20% to 40% ; liberalize open, distance and online education regulatory framework so as to empower/enable 25% of the universities to offer ODL and Online education, from next

academic session if complying with quality provisions ; integrating ODL and Online Regulations focusing on effective promotion, monitoring and regulation.

Online Promotion of Cultural Heritage

'ViraasatSetu' App launched to raise awareness about tangible and intangible heritage of India in the digital space. Webinars were held around Indian heritage sites and cities. The Government has ensured that grants payable to artists under various schemes are paid on time.

Promoting Scientific Research as Response to Covid-19

Over 200 Corona related research projects are on at leading Science and Technology institutions in the country. These range from Personal Protective Care Equipment to Testing Kits, Data Analytics Models and Treatment alternatives. Engineering students from IIT Bombay, NIT Srinagar and Islamic University of Science & Technology (IUST), in Jammu and Kashmir, has come up with a low-cost ventilator using locally available materials. IIT Delhi has developed low cost Probe-free Covid 19 detection arrangements (2020, MHRD).

Conclusion

It is safe to say that the present pandemic will not only affect the economy adversely, but it will also affect the education sector adversely in India. Already, half a session is lost. No one is sure how long it will take for the education sector to come out of the abnormal situation prevailing in the country at present. Moreover, education system is especially vulnerable since mass gathering cannot be avoided in classrooms. Online classes are no substitutes for classroom lectures for a variety of reasons. The digital divide will only leads to discrimination and practical classes based on laboratories cannot be held online. Giving instructions for mathematics heavy courses is also difficult online. The interaction between the teachers and the students is a crucial component of teaching and cannot be replicated in online classes. Research has been severely hampered due to the lockdown. The present COVID-19 situation has disrupted not only the delivery of lessons but the entire educational system, necessitating rework of the entire curriculum. There is need for shift in paradigm focusing on innovation in leveraging technology, active collaboration and capacity building to deliver an immersive learning experience online.

Recommendations and Policy Framework

Nearly 320 million of Indian students have been affected due to school closures and Centre recommended online learning as a solution. But due to the huge digital divide that exists in Indian society the task is herculean. As per National Sample Survey reports (2017-18), only 23.8% Indian houses have access to internet and in case of rural households which account for 66% of the population internet access looms at 14.9%. With only 12.5% students having access to smartphones and majority of teachers not capable of digital teaching the situation seems bleak (Sahni, 2020). Amidst all the hullaballoo some recommendations that can go on a long way in building robust policy frameworks for dealing education during pandemic situation are

1.   Village level learning with the help of educated locals and youth
2.   Digital volunteers capable of teaching in a limited set up
3.   Development of Internet, digital infrastructure and e-facilities
4.   Reorientation in curriculum teaching students empathy and resilience through flexible, critical and creative thinking grounded on realities of nature and environment.
5.   Digital empowerment of teachers
6.   Stress on transfer of information and customised learning.

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PERCEPTION AND ATTITUDE OF MILLENNIALS ON INFLUENCER MARKETING THROUGH INSTAGRAM IN INDIA

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ABSTRACT

This research work is an attempt to understand the concept of influencer marketing through Instagram among millennials. This research reveals how personal branding is now been accepted by the millennials. The evolution of advertising and how it is being welcomed is also brought out through this study. Concept of megabrands positioning their products through micro influencers on Instagram and how Influencers are trusted and how consumers are influenced is also dealt. When people start branding their lifestyle it becomes personal branding. When people brand themselves through products, their lives become their career, through which they make business out of sharing their everyday lives with other people on the internet. Personal branding is now relevant because of the increase usage of social media. This study is an attempt on how well these influencers through Instagram are being received by the Indian millennial audience in the current scenario. The questionnaire with relevant questions on the topic "Influential marketing through Instagram" was given to a sample size of 100. Purposive sampling was used to conduct the research. Gender based influence was not observed. The only common factor for this study was that the sample size should be users of Instagram.

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Introduction

This study will examine the phenomenon of Social Media Influencer's (SMI) among Indian audience and their perception towards influencer marketing through Instagram. Branding requires considerable financial support for promotion, social media offers the opportunity to a person to promote himself as brand in a cheap way (Kaplan &Haenlein, 2010).If content is the fuel for your personal brand, social media is the engine." (Kevan, 2015).

Businesses invite Influencers who have a good amount of followers as their companies brand ambassador (*Tap influence*, 2017). It is believed that consumers opt for Influencers more than mere advertising as consumers feel that influencers are more trustworthy and also consumers follow their favourite Influencer (Talaverna, 2015). In personal branding, people and their careers are marketed as brands which promises performance, specialized designs, and tag lines for success (Lair et al., 2012)

Instagram is a mobile service, which has more than 500 million users (Roth, 2016). There are More than 80 million photos which are uploaded per day on Instagram amounts to give 3.5 billion likes per day inclusive of all users. (Ratcliff, 2016). Therefore, social media influencers considerInstagramto be vey a powerful marketing tool in the corporate level. It is therefore, considered to be a feasible app in terms of ease and a economical way for businesses to approach their existing and target consumers by brand building and loyalty.Through this, it brand awareness and brand image is enhanced (Kreutzer &Hinz, 2010; Mangold&Faulds, 2009). One of the reasons for businesses to use Instagram is for marketing purposes, to be more specific, its influencer marketing. In other words, Influencer marketing functions like electronic word of mouth (Wong, 2014). "Regular" peopleincrease their status quo as celebrities by their simple creative online activities and create a large section of followers on their social media platforms through blogs and vlogs. They are termed as Influencers because of their extensive reach and their ability to influence a larger group of people (Uzunoğlu& Kip, 2014). Influencers need not beworking for a particular company, but their influence of brands makes it attractive for brands and companies, and hence they work hand in glove with each other thereby increasing the number of followers for

that particular brand (Hilker, 2017; Schröder, 2017). By this, the target audience is bombarded with indirect advertising. The aim of influencer marketing is to create a positive consumer feedback (tapinfluence, 2016). Many factors such as message credibility, brand attitude and people´s intention is considered important as it indicates the effectiveness of the influencer through Instagram (tapinfluence, 2016; Cheung et al., 2009; Lee & Koo, 2015; Loda et al., 2009).

The study will involve studying attitude and perception of the growing online consumers in Instagram. It is an attempt to understand the consumers thought process about influential(Influencer) marketers in the recent times. It also aims to find ways in which influencer marketing is impacting and influencing their respective followers and also to find whether positioning a mega brand in Instagram through travel bloggers. "so called digital nomads" and photographers in India have a positive feedback.

The expected results are to share some insight on personal branding as an evolving business model in instagram and strategies in practice. It would also showcase the concept where megabrands follow techniques to market their product through micro influencers.Branding on Instagram Social media is one part of marketing communications and (Yan, 2011) argues that social media is an effective tool for companies to communicate their brand due to the growing numbers of users.Many online shoppers wait for the review of the product before purchasing. Ecommerce society convinces people to give feedback of the products by authorship reviews, rating etc.

some e-commerce companies have also started to use online mixer selling after analyzing g the effect on the gross sales due to this activity.

This study might benefit anyone who wants to pursue blogging, travel photography, business through social media, brands to use Social Media Influencer's to market their products and service through which they can reach millions of followers.

Methodology

The questionnaire with relevant questions on the topic "influencer marketing through Instagram" was given to a sample size of 100. It was made sure that these samples followed influencers and had a basic idea about them. These samples were also regular users of Instagram.Purposive sampling was used to conduct the research. Purposive sampling is a non-probability sampling where the population is selected based upon the characteristics. Sample size was 100, where the male population was 42 and the female population was 58.

Data collection

A survey was taken with 100 respondents to find their attitude and behavior pertinent to influencer marketing in Instagram. The questionnaire was circulated with relevant questions on the topic "influential marketing through Instagram". Targeted population i.e., Millennials were used for this study. The method of non probability, purposive sampling is used. This study is an attempt to bring out the perception of the audience on Influencer marketing.
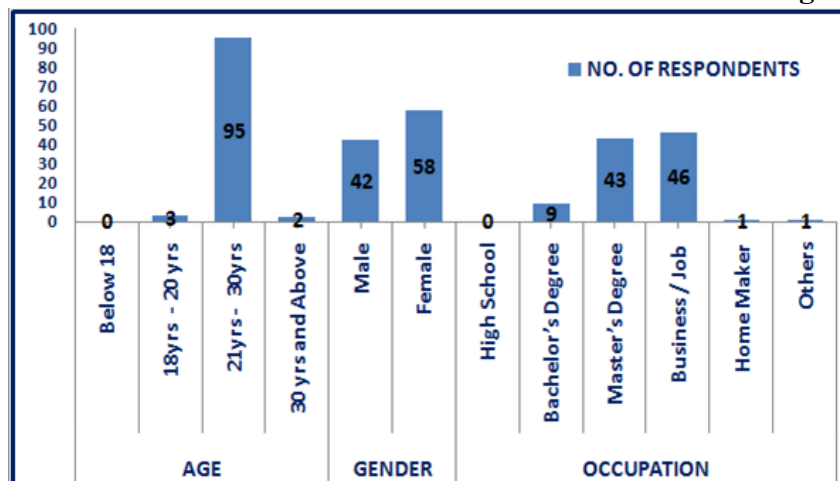
Findings

Fig.1. Correlation between age, gender and occupation of number of respondents

Fig.1. shows that the sample that was collected comprised 3 % of 18-23 yrs , 58% of 20 – 23 yrs , 30% of 23 – 26 yrs , 7% of 26 -30 yrs and 2% of 30 years and above. The Male population was 42 and the female 58. Women samples were more in this study. The occupation showed that the majority of the respondents pursued a master degree, the second being business pursuant. The student community in this survey dominates the sample size being, 52. Samples pursuing a business or a job collectively is 46%, being the second highest.
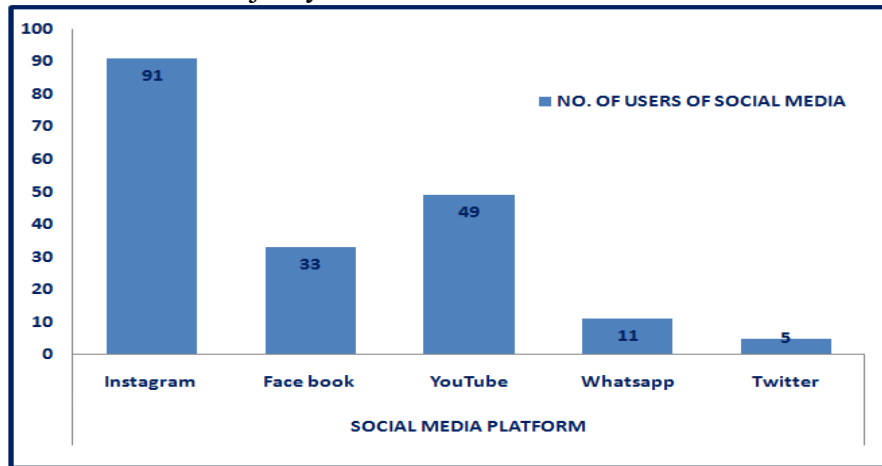
Fig.2. No of social media users in various platforms

Samples were given a choice to choose from more than one option. Fig.2 showsthat a major 91% of the population uses Instagram, second being Youtube followed by Facebook, Whatsapp and twitter. This was an important find to know that the samples were high users of Instagram and were influenced majorly by it.
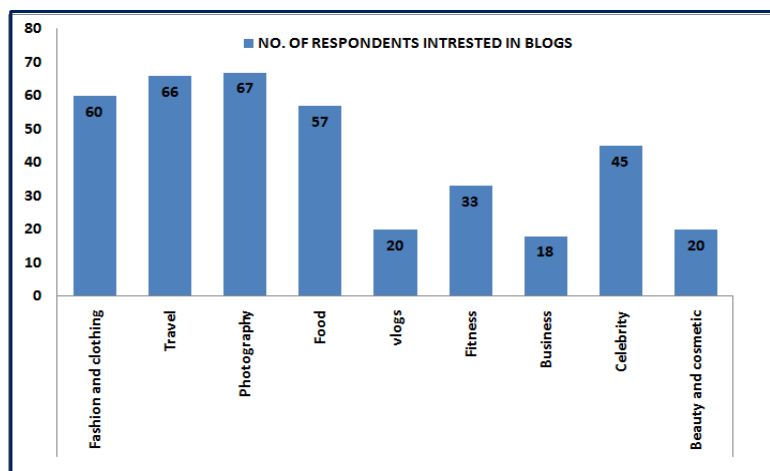

Fig.3. No of Respondents interested in various types of blogs in social media

The respondents were asked as to what kind of blog they follow and they were allowed to choose more than one option. This depicts the range of engagements different blogs experience specifically in Instagram because the major respondents claimed to use Instagram. Observing Fig.3, it can be interpreted as 67% of the sample chose photographers' blog as to be their top preference. This could be because of the samples belonging to the student community. 66% of the respondents chose travel blogs as their preference on Instagram platform. Fashion and clothing tends to have 60% preference. 57% prefers food blog .Celebrity blog followers occupy 45% of the total sample. We see that although the sample size is dominated by students, their interest in celebrity blogging was less compared to the lifestyle blogging. Fitness blogs occupies 33% of blogs interests. Vlogs has 20% preference. Beauty and cosmetic still occupies 20% preference even though the sample is not gender specific. 18% of the samples prefer to follow business blogs.
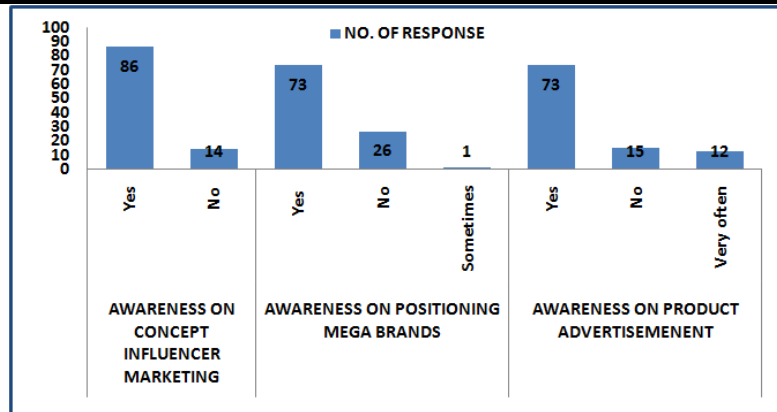
Fig.4. Number of respondents who are aware on concepts of influencer marketing, mega brands positioning and product advertisement

Fig.4 depicts the number of respondents who knew about the concept of Influencer marketing. It was interesting to know that the concept of influencer marketing and personal branding was known to 86% of the sample size whereas a minimal population were not aware of the concept but still consumes products or services delivered through Instagram influencer blogs. This knowledge on influencers again owes to the fact that a majority of the sample size are students.

The very concept of 'Influencer Marketing' has a positive feedback among the respondents. It was much appreciated and rather welcomed. Thus we find an opportunity for talents to start their own business on Instagram. One of the major findings of this study is to analyze if the followers are aware of mega brands being positioned, endorsed and reviewed through an Instagram influencer. This marketing strategy is growing up enormously in modern day influencer marketing and hence the reason to study. 73% of the respondents noted and were aware of this phenomenon and have responded positively. Where minority i,e; Only 26% were not aware of this strategy. 1% felt that they have sometimes come across such kind of ads or review by Instagram influencers. To study the awareness of the respondents towards products being advertised/placed in famous Instagram influencers account that they follow, collectively the survey result shows that majority of the sample population were aware of the products being advertised on instagram blogs. 73% of respondents stated that they were aware about the products being advertised in the blogs , 12% respondents stated that they notice ads very often and only 15% of them responded that they are not aware of the product advertisements being placed in Instagram influencer blogs.
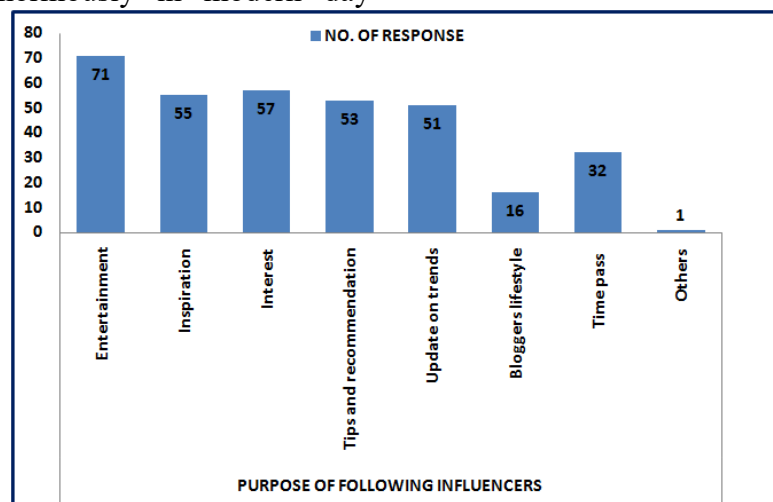

Fig.5. Number of respondents following a particular influencer for a purpose

The reason as to why people followed Influencers were for different reasons. Samples were given more than one option to choose from. Fig.5 shows that a Major 71% of the

respondents said it was for the purpose of entertainment. 57% said that since the content interests them, they follow certain influencers. 55% of them said that they draw their inspiration from the influencers.53% look out for tips and recommendations in the area of

their choice. 51% had the urge to be updated on the current trend. 32% said that its just for passing of time that they see updates and follow Influencers.16% wanted to know the influencers lifestyle.
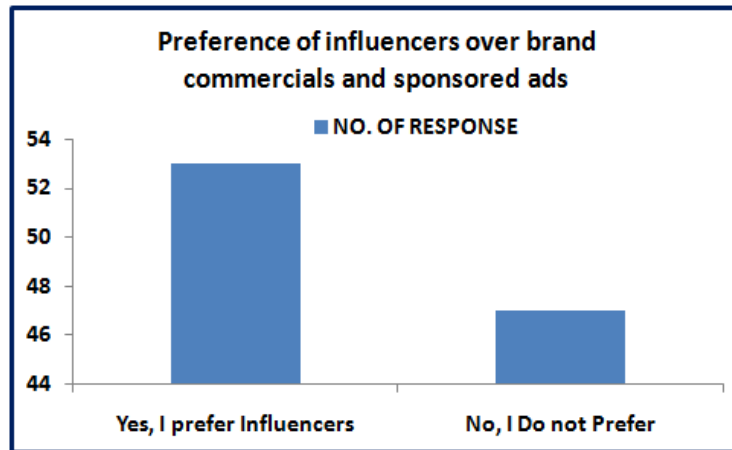

Fig.6. No of respondents who prefer influencers over brand commercials and sponsored ads

Fig.6 shows a clear depiction that the samples preferred Influencers over commercials and sponsored ads, This proves that the trend in

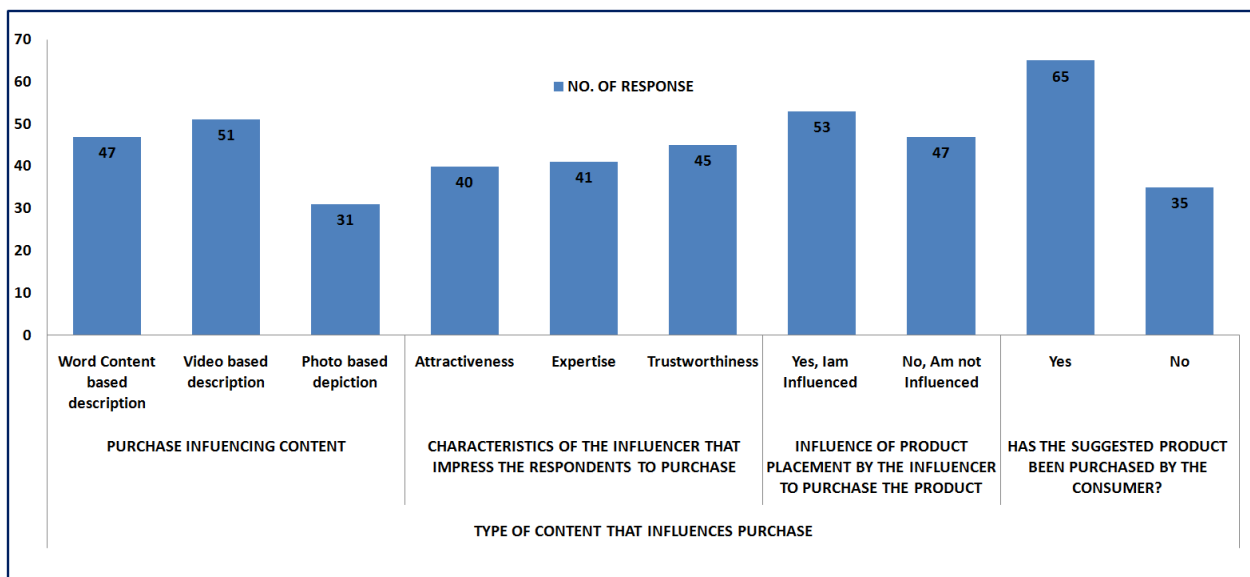advertisement has evolved and traditional advertising methods are going stale.

Fig.7. Content that influences respondents to purchase the product

The respondents were asked as to what type of content impressed them the most that leads to the buying behavior. Fig.7 shows what content influenced the consumers to purchase the product. They were given a choice of selecting only one of the given options. Observing the sample response it can be stated that the Video content of Influencers has a higher interest rate followed by word content and the least being photo based. This shows that the samples are

interested in knowing about the product in depth rather than just appealing photos. In an attempt to find what character of the influencer was liked by the sample, It was found that mere attractiveness and expertise on the product, was not appealing. Respondents appreciate much if the blogger gives a truthful info about the product. And respondents have specified that it is that character which impresses and persuades them the most.

When asked on whether consumers were influenced or convinced about the brands and products showcased by the influencer, respondents said that they are influenced and convinced by their favorite Instagram influencer instead of any other form of commercials and sponsored ads. 53% of the respondents felt that they are more convinced or influenced and definitely rely on the products being placed by the Instagram influencer. 47% responded that they were not influenced by the instagram post on products placement. The result was a 50 – 50 positive, negative feedback on how a product placement influences them.

It was found that 65% of the respondents have purchased on what the influencer has already suggested. Only35% of the respondents did not buy products suggested by the influencer. Though 47% of the sample size claim to say that they are not influenced by the influencer, We see that 65% have already bought products that were suggested by the influencer. Through this we know that the respondents are influenced by a greater extent even though they are not ready to accept that they have already been influenced.
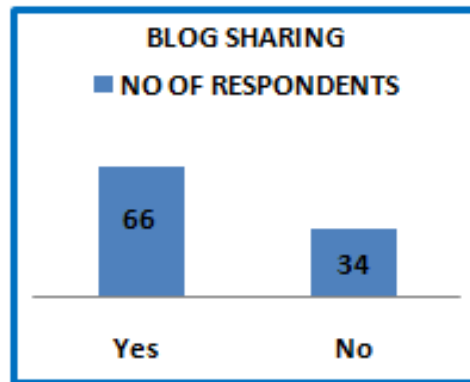

Fig.8. Blog Sharing by Respondents

In Fig.8 It is seen that 66% of the respondents are interested in sharing the posts and blogs they find interesting. Through this we know that if an influencer impresses the audience through the content, there is a high possibility for the influencer to influence a lot of people through his followers sharing the page.

Electronic Word of Mouth (Ewom) is seen to be positive in this study. Only 34% of the respondents were not interested in sharing the content within their circle, this could be due to various reasons which were not investigated in this study.
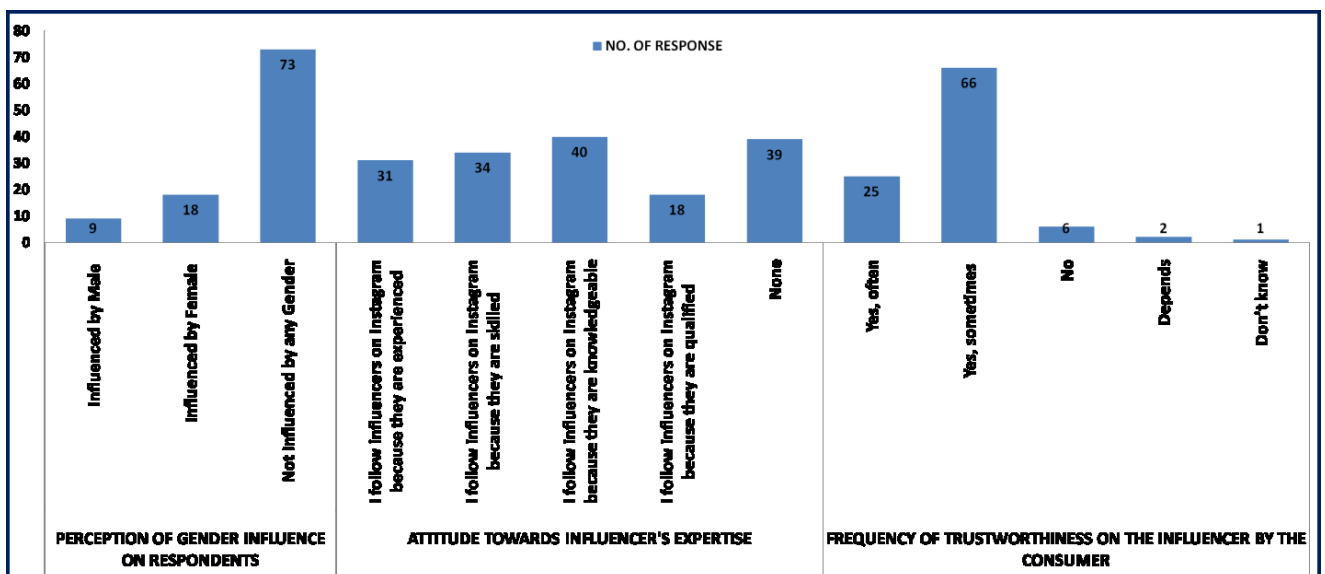

Fig.9. Consumers perception towards gender influence, Influencer's expertise and trustworthiness

Fig.9 clearly states the factor that influences the consumer and the factors which does not influence them. It was found that the respondents were gender neutral to the influencers. They were not influenced by the gender to purchase a particular product. This can be of the reason that they are an educated class. From this we can come to a consensus that gender is not an important factor in influencing an audience but this may vary according to the educated and non educated class or even according to the age group or geographical area.To understand what aspect of expertise was liked by the followers, It was seen that the Respondents liked the influencers knowledge about the product followed by the skill the influencer possessed in handling and using the product. In search of consumer attitude towards the trustworthiness of the Instagram influencer they follow. The survey sample was given option to choose only one from the given choices. Through the response it can be concluded that 66% respondents feel that the Instagram influencer are sometimes trustworthy whereas 25% respondents felt that they are very often trustworthy, 6% of the respondents felt that they can never trust an Instagram influencer, 1% felt that they don't know . 2% collectively responded as it depends on the information that the Instagram influencer conveys to them though the post. It was found that the majority of the respondents trust the bloggers only sometimes. Quarter of the sample size trusts them often and only 1% believes bloggers depending on the content they produce
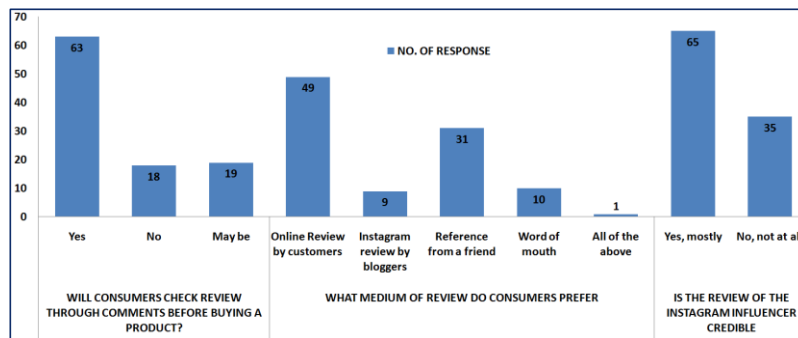

Fig.10. Respondents attitude towards review

The effect of various forms of reviews had to be studied and henceFig.10 depicts the reviews through comments and their effect, medium the consumers prefer for their review and the review given by the influencer. It was found that the respondents make sure that the product really lives by the promise by the influencer through the comments and reviews shared by other buyers. Respondents are not merely carried over the claims by the influencer but rather cross verify these claims by the actual user of the product to purchase a particular product. When asked about the medium that they preferred to review, 49% of the respondents were comfortable with online review by customers. 31% of respondents stated that they prefer reference from a friend. 10% preferred word of mouth and only 9% of the respondents preferred Instagram influencers for review amongst these existing medium of reviews. 1% of the sample chose the entire above medium. Observing the response from the samples it can be interpreted as 65% of the total population sample agrees that Instagram blog is a credible source of review for the products or services they portray while 35% of the sample population disagrees with this criterion. On the basis of credibility factor, Instagram blogs has a huge positive feedback.
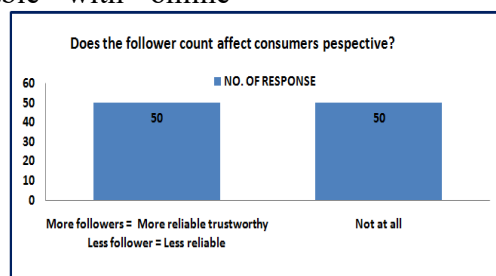

Fig.11. Respondents attitude towards follower count

The researcher in an attempt to study whether the number of followers had any significant impact on the way they perceived the influencer to be reliable, Fig. 11 shows that 50% of the respondents did not feel that this aspect has a significant effect on their reliability, 50% of respondents agree and believe that more followers has a significant effect on trust and reliability and less follower had less reliability. Through this we know that an exact half the sample size believed on the number of followers is proportionate to the reliability of the influencer even though it was an educated sample size.
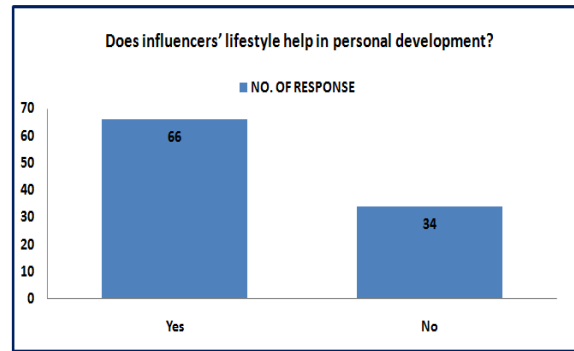

Fig.12. Respondents attitude towards influencer's lifestyle

Observing the influence and provoking criterion we find that the blog followers do get positively intimidated by the lifestyle of the Instagram influencer they follow. Fig.12 shows that 66% of the sample agrees with the fact that it helps them in personal development sometimes. The minority comprises of 34% where they disagree with the statement. Fig.12. above explains it graphically.

Conclusion

The data shows that most of the users of Social media use Instagram than other platforms. These group of respondents were interested in Photography blogs followed by Travel, Fashion and clothing, this might be due to the factor that a majority of the respondents belonged to the age group of 21-30. Through this study it is found that most of the people are aware of the concept of Social media influencers and prefer truthfulness in product promotion and not just false and tall claims to sell a product. It is seen that the respondents closely follow Influencers for the sake of entertainment and is also seen that they draw inspiration from them. Video based description interestsand influences the respondent's more than mere images or words. Although 47% of the respondents say that they are not influenced by the influencer, it is contradicted to their buying behavior, as 65% of the sample size has bought products suggested by the influencer. The respondents also get positively intimidated through the lifestyle of the influencers. The respondents were not influenced by any particular gender and a majority of the respondents said that the knowledge of an influencer is the most appealing factor to follow an influencer. Majority of the respondents consider reviews by other consumers in the comment section of the post by the influencer of that particular product before they buy it. The concept of Influencer Marketing is much welcomed than the regular advertisements by this age group. Therefore we can definitely identify a boom in Influencer marketing over traditional advertisements. Respondents have also said that they would share the post if it is impressing; therefore there is a positive feedback on Electronic word of mouth. Through this research we are able to find that millennials prefer influencer marketing as they are able to curate their want and follow particular influencers according to their interests.

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IMPACT OF DIGITAL MEDIA ON CHILDREN AND THE CHANGING ROLE OF THE FAMILY

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ABSTRACT

*Globalisation has shrunk the world as much as the media industry has. The reach of Digital media is much wider than any other form of media. Why is there a sudden surge in the obsession with digital technology? Each one of us is obsessed with a gadget in hand and is exposed to the world in a palm's length. Is that the **family** does not have the time for each other or is it an easier way to keep the children occupied. Over the last 10 years digital media has become a part of the common man's life. It is moved from 10% to above 90% among children below 4 years. **Digital Media** is a highly polarised issue in our society today, the good and bad of the media needs to visited for a fruitful upbringing of the children of this generation. Though the use of academic apps, skype facility for developing various additional skills are the plus points but the persuasive impact on the children by altering their psychological behaviour is severe. A family is one or more parents living together in a single household as one unit. Parents 'indulgence in using mobile phones is indicative of them unable to spend quality time with their children. The social insecurity is immense in the current situation depriving the children of freedom to play, interact with other children of their age, resulting in lack of social skills which includes even bonding within the family. The visible risks of digital media include change in sleep patterns, attention and retention span and most significantly exposure to desirable and undesirable content with loss confidentiality of personal content, calls for a review of our **culture** and **socialisation**. Children and teenagers being predominantly passive audience only absorb the information on screen. They neither possess the capacity nor have the exposure to diagnose and dissect the information they receive due to lack of adult supervision. Through my study, I would like to understand that in a fast moving pace, where technology is taking hold of our lives, whether we need to revert to our traditional way of bringing up children, to retain the values to minimise the dependency on the digital media. Parents need to intervene in the process of the content being shared by the media to the children. A gatekeeper is essential for the children analytically rather than being a mere observer. The changing roles of media must receive inputs from active audience and alter the content and approach to the children.*

Keywords: Family, Culture, Socialisation, Digital Media

Introduction

A census 2011 study reports that every fifth person in India is a teenager and nearly 20% of Indian population is teenagers. Nurturing and guiding at the right time will definitely produce them as responsible citizens.

The behavior of children varies based on the demographics and psychographics. It is astounding to understand their behavior, be it desirable or undesirable. Children of today are aware of issues, we find difficult to comprehend. They are very aware of their environment and their curiosity alarms us. This is the consequence of the uncontrolled exposure by the media. The surge in the access to the MEDIA available to choose is the reason for the tremendous boost in the information as well as awareness among children. The mobile apps has caused the narrowing of the proximity to the world of media. Outdoor activities have reduced amongst children due to civic hazards in our society. Parents are at ease with mobiles or the idiot box to keep them occupied and secure within their premise leading to lack of social skills in their growing stage. This pattern is observed in children from the age group of 3 , being the formative years of a child.

History suggests that how the FCC views television's influence has an effect on the amount of violence that is broadcast. In 1961, for example, FCC Chairman Newton Minnow, in a well-publicized speech, referred to television as a "vast wasteland," after he had monitored television programming over a one-week period. His observation was followed by an agreement among broadcasters to assign a significant share of the UHF spectrum to public broadcasting. Twenty years later, FCC Chairman Mark Fowler publicly proclaimed that he, too, had monitored the television programming of his time. But unlike Minnow, he found in 1981 a vast richness of

programming and opportunity and little need to regulate television, which he described as just another appliance, a "toaster with pictures." Fowler's observations were followed by a deregulation of children's television, which led to an increased amount of advertising and the highest violence index rating for Saturday morning children's shows in 20 years of monitoring -- 32 acts of violence per hour.

What is Digital Media?

Digital media is a broad term, covering a number of different products, industries and job roles. There are the things you can see: pictures, videos, articles; and then there is behind the scenes: web development, apps, video production, coding and data. The field is changing so quickly that there are new products being invented every day. So Digital Media professionals can be experts in social media, virtual reality, web development, storytelling, or know a little about everything! The field is diverse and fast-moving, perfect for anyone looking for a challenge.

Effects of Digital Media

Development is inevitable, so is the dynamics in a society. The changing dimensions in every walk of life are indications of a progressive society. The digital media has emerged as an integral part of every individual as it is used not only for entertainment but also for access to information, gaining knowledge, demonstrative teaching aid to explain topics better and in depth. On one hand we see that social media is a being used as a tool to access information, be abreast with current affairs etc. but it is more of a bane than a boon. Use of social media can also negatively affect teens, distracting them, disrupting their sleep, and exposing them to bullying, rumor spreading, unrealistic views of other people's lives and peer pressure. They might grow up with more anxiety and less self-esteem.

To elaborate further, before everyone had an Instagram/ Whats app accounts teenagers kept themselves busy, too, but they were more likely to do their chatting on the phone, or in person when hanging out at the mall. It may have looked like a lot of aimless hanging around, but what they were doing was experimenting, trying out skills, and succeeding and failing in tons of tiny real-time interactions that kids today are missing out on.

Mass Media and Attitudes
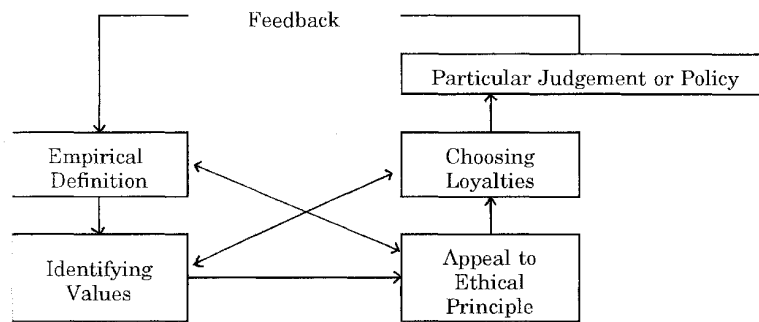
Ethical decision making - a process of adjusting to mores and commitments of a given community.

Mass media perform several functions but all of them may not be of equal importance to every individual among the recipients. The individuals perception is based on frames of reference. The frames of reference are comprised of the past experience, attitudes, beliefs and values of the individual. The determinants of attitudes are genetic factors, physiological factors, direct experience with the stimulus object, individual's experience with total environment, social communication and of all the most important being the values of an individual. The family is the most important primary group in society. The individual is born in a family and is brought up by the parents and others. The behaviour of an individual is influenced by the family in which he or she is brought up and the influence of the family on the individual depends on the relationship of the family to other families in the society. The system of social relationships in a society grows and changes in accordance

with the changing attitudes and the interests of

Objectives of the study

I propose to study the dependency of children on digital media in their day to day activities.

- With the invasion of the media how far does the family play a role in their development?

Review of Literature

"Integrating Principles of social Psychology" by Copper and McGaugh examines in detail man's Social motivation, learning process, communication and language, social organization, leadership and prejudice. The authors believe that "human behaviour may be better understood by viewing it alongside and in contrast to infrahuman social behaviour." According to this book socially significant human behaviour is learned. Every child is faced with the task of learning to think, want, believe and act in ways similar to those of his elders. Socialization implies more than learning, it implies the acquisition of tendencies to behave in certain ways. It implies the control of performance as well as the acquisition of knowledge.

B.Kuppuswamy in his book "An Introduction to Social Psychology" discusses the social development among children and the socialization process. Just as social behaviour in the animals gives a perspective to understand social behaviour among human beings, similarly an acquaintance with the social development in infancy and in early childhood will help to understand the social behaviour among adolescents and adults, says the author. Schaffer and Smer son made a longitudinal investigation of infant social attachment during the first eighteen months and report that satisfaction of physical needs is not a necessary precondition to the development of attachment.

D. Maryline Flinsi , in the International Journal on Pediatric Nursing, in the article "Impact of Technology and Social Media on Children" says that Social media is rapidly evolving in front of our eyes and it is practically difficult to reject and hide our children from this latest technology. The magnitude of media exposure is predominantly high. Survey says that and 73% of Indian children are cell phone users and the percentage of children addicted to gaming and internet has been increasing every year. She also speaks about e- addiction in her

its members.

- How much has the interpersonal relationship in the family affected by the usage of digital media?

article. "It is the emerging problem nowadays. Magnetic resonance imaging (MRI) results reveal how addiction to social media is affecting the brain and behaviour of children. Recent studies validate the reality of Internet Addiction Disorder (IAD)."

Ferguson (2017) found a small but significant positive association between time use and feelings of depression and delinquency only for those children who repeatedly reported more than six hours' screen time per day. Ferguson (2017) suggests based on these findings that youth seem to be quite resilient to screen consumption at much higher levels – up to six hours daily - than is typically recommended by most policy statements. This perspective is further supported by a recent cross-sectional, large-scale, pre-registered study conducted in the UK with over 120,000 15-year-old children, where Przybylski and Weinstein (2017) found that the time children spend using digital technology only had negligible impacts on mental well-being. In this robust inquiry, Przybylski and Weinstein (2017) studied the impact of a variety of digitally-mediated activities on children's mental well-being, such as watching TV and movies, playing video games, using computers and using smart phones. The activities differed somewhat in their respective impact, but the authors conclude that in general, no use at all was associated with lower mental well-being, while moderate use seemed small positive effect on mental well-being up to a certain point.

Daniel Kardefelt-Winther, Research Coordinator, UNICEF Office of Research - Innocenti says that the evidence reviewed is mixed as regards the impact on children's physical activity and does not provide much clarity. While some studies found that screen time was associated with a reduction in physical activity, other studies suggested that this relationship is not direct, andthat reducing screen time will not necessarily motivate children to spend more time on physical

activity. Focussing on Emotional Development and Relationships with Parents and Peers, in the book Children and Electronic Media, the author says , Increasingly of late, discussions about electronic media have focused on the social implications of the various technologies. Barbara Wilson, of the Department of Communication at the University of Illinois at Urbana–Champaign, considers the evidence for children and concludes that programs designed to promote pro-social behaviour do increase social capacities such as altruism, cooperation, and tolerance of others. On the flip side, the content of some entertainment and news programs can instil fear and anxiety in children. For older children and youth, media technology is now integral to communication with peers and parents. KaveriSubrahmanyam and Patricia Greenfield, of the Children's Digital Media Center, UCLA/CSULA, explore whether online communication has made youths more socially isolated, by curtailing time that they spend with friends "offline," or whether it has strengthened their social connections. The authors also investigate whether new media forms have opened up novel ways of communicating. Children and youth use electronic media mainly to communicate with their offline friends. Contrary to popular perception, adolescents today primarily use these tools to enhance communication with people they know. A recent report in the Lancet (Child and Adolescent Health) Journal has pointed out that social deprivation and reduction in peer contact threaten to have long term consequences on the impressionable minds of our young population.

Social media influencers have a prominent impact on teenagers especially in India. They are people who post sponsored content on Instagram, Snapchat, You Tube and Facebook on various brands ranging from fashion and beauty to travel and fitness. There is a lot of peer pressure to have followers on social media who flaunt the teenagers of today. Three leading researchers have published Youth Connections for Wellbeing, an integrative review paper that illuminates how teens support each other through digital media during times of stress and isolation. Leveraging their expertise across the fields of cultural anthropology, developmental psychology, and clinical psychology, scholars Mimi Ito, Candice Odgers, and Stephen Schuler discuss the potential of digital media to support youth well-being.

"Television and the Socialization of the Minority Child" edited by Gordon L.Berry and Claudia Mitchell - Kernan discusses the nature and intensity of the impact of television on the growing child provoking numerous studies and debate. The thoughts after reviewing literature on the use of Digital Media and analyzing its impact on the changing roles of family, I deciphered a few problems which need to be addressed.

Research Methodology

The major findings in "A Study on the Impact of Digital Media on Teenagers in Tamilnadu during Covid Pandemic", published in the Journal of Education , were

- It was very evident that almost 90% of the teens have the access to smart phones, 74% of respondents have the access to Television and 62% of the teens have laptop.
- 24% of respondents are using digital media for more than 8 hours .
- 65% of respondent primarily use digital media for entertainment, watching videos and social Networking.
- 38% of respondents reflect their family do not impose restrictions on the time consumption of digital media. 84% of the respondents discussed about entertainment with their friends and family.
- 73% of the respondents accept that media diverts their focus and gets them addicted to the gadgets.
- I would like to conclude that the invasion of the technology has affected the entire growth pattern of the teenagers.
- As this study progresses, I would like to submit the data obtained to the government to help them alter cyber access policies.
- To bring in a code of ethics in media content

This study is specific to a children across districts who have access to a smart gadget, also being completely aware that every household has a digital base to communicate, a smart phone being bare minimum. The

responses obtained is primarily from private schools and colleges because they have a mix of all socio-cultural groups. The method adopted for data collection were -**Scheduled Questionnaire** - To investigate further we carried out a research by scheduling a questionnaire and collected their feedback on the effects of Digital media. Questionnaire were collected from children from semi urban and urban background to assess the use of digital media and if the invasion in technology **Problems** Viewing media content through Mobile Apps has increased.

The sample size of the teenagers was 150 and the parents were80.

has affected the relationship pattern in the family.

Personal Interview – To understand the perspective of parents, a scheduled questionnaire was conducted to assess the role and understanding the social behaviourand family roles based on the reflections made by the parents.

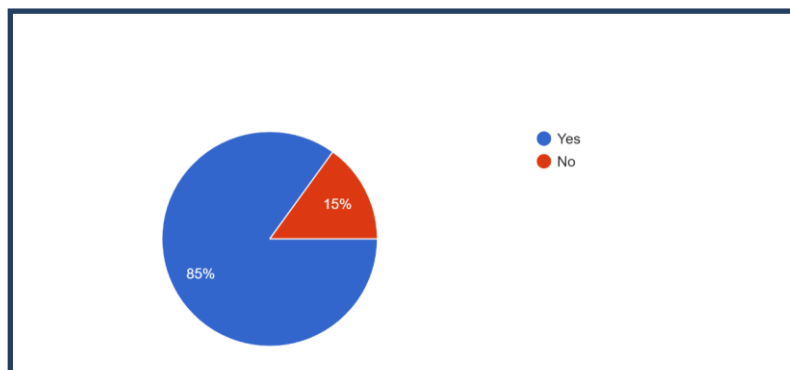- Parents expose the children to this technology to ease out their pressure.

Analysis of Data

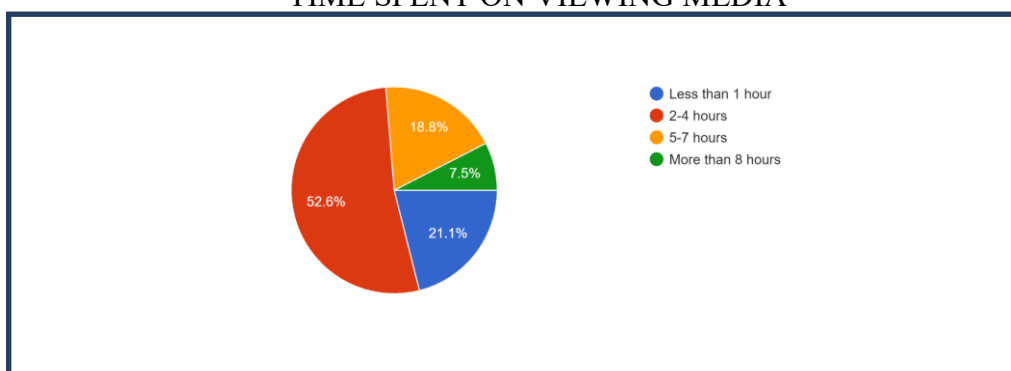### AWARENESS ABOUT DIGITAL MEDIA
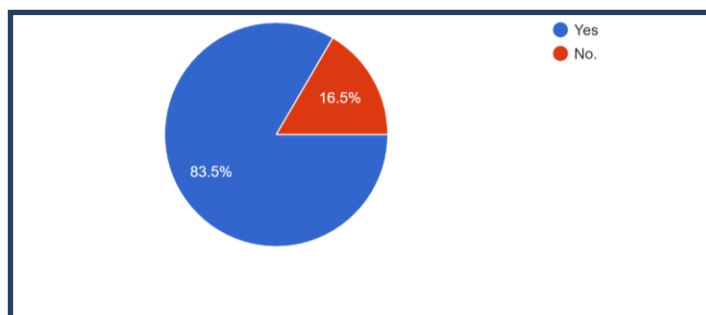
The 83.5 % of the children today from the age of 10 are aware of the invasion of the digital media.
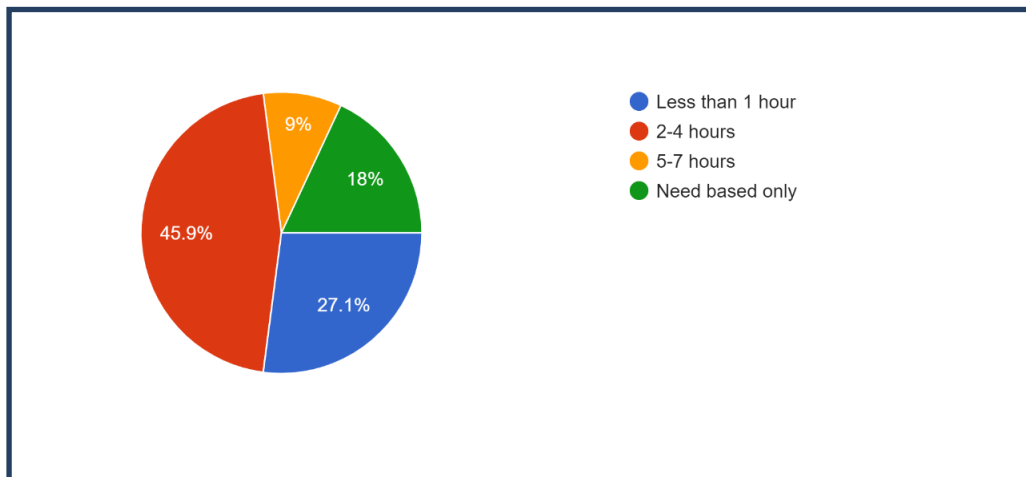
POSSESSION OF A SMART GADGET

In our society today, one can find 85% own a smart gadget, the rest use their parents' gadgets.

TIME SPENT ON VIEWING MEDIA

Maximum media viewing habit is only for 2-4 hours but we find that 7.5% use it for more than 8 hours.
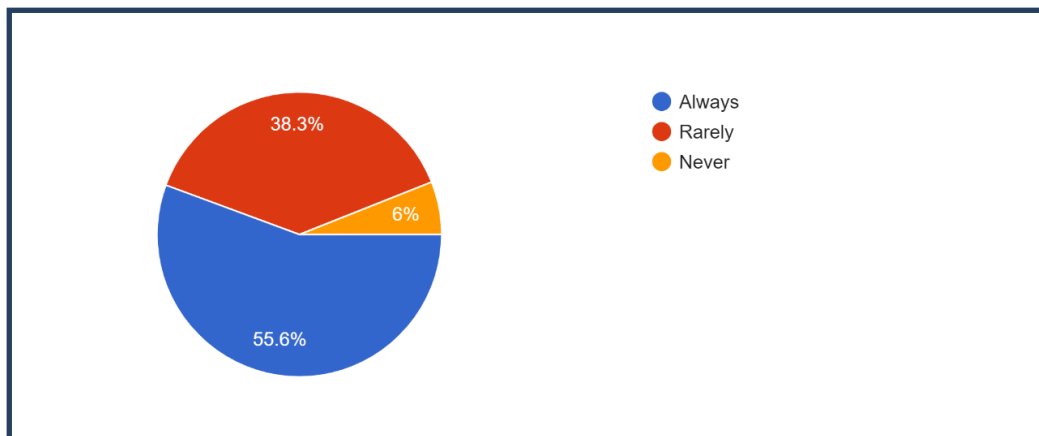
TIME SPENT WITH PARENTS

The time spent by the children seems to be changing with time. 18% of the children feel that they need to interact only if there is any interaction. Casual conversation in the family seems to be minimising.
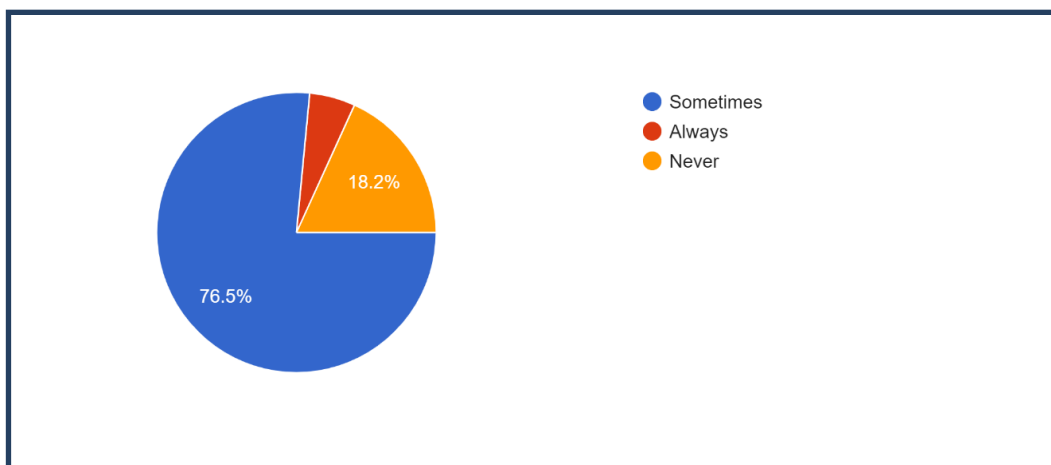
INFLUENCE OF PARENTS IN DECISION MAKING

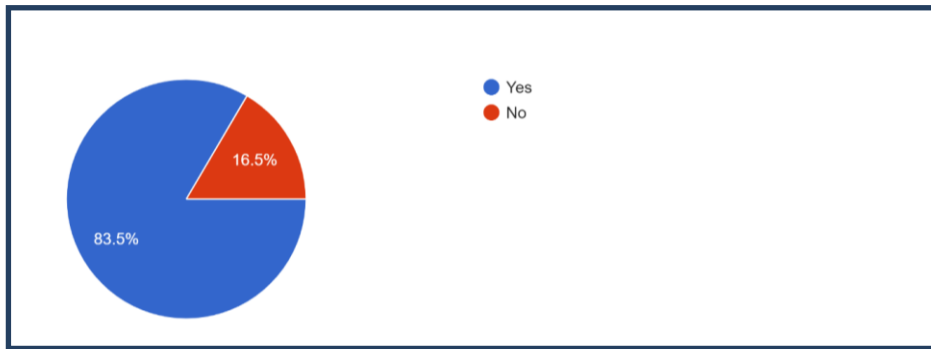There is a sizable balance with the parents influencing the children. There does seem to be an element of discussion with the parents by their children.

INFLUENCE OF MEDIA ON BEHAVIOUR

We observe here that as per Comstock's
Psychological model, display behaviour seems
to be having increased.

<div align="center">ISSUES DISCUSSED WITH FAMILY</div>

The awareness level has increased with children discussing general issues within the family. This indicates the transparency in the relationships within the family.

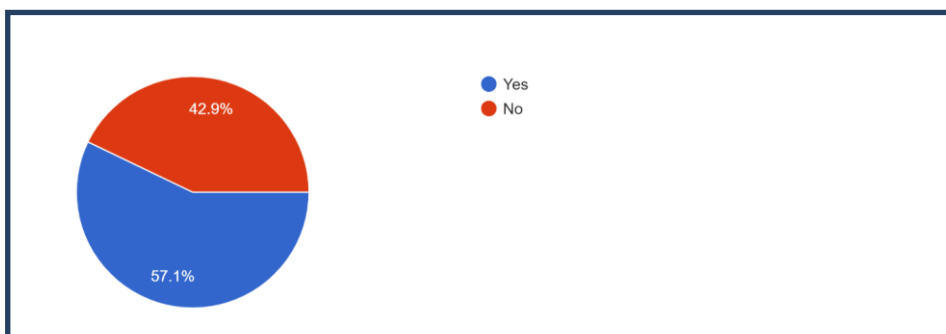<div align="center">INVOLVEMENT IN DECISION MAKING</div>

Parents have become progressive by involving the children in their decision making giving respect to their views.

PARENTS ENCOURAGEMENT TO SWITCH TO MEDIA DUE TO THEIR SCHEDULE
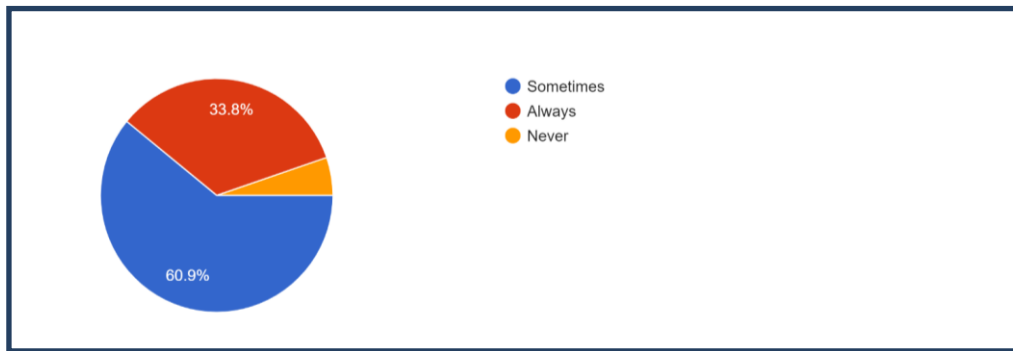

Parents are realising the menace caused by media and only 43.6% resolve to media for company.

<div align="center">MEDIA AND SOCIAL RESPONSIBILITY</div>

57.1% feel that media delivers information that is socially responsible, indicating the dependency on the media for information.

ATTENDING FAMILY FUNCTIONS

Larger family gathering seems to be on the decline as children prefer staying at home.

PRIORITY OF BEING A MENTOR
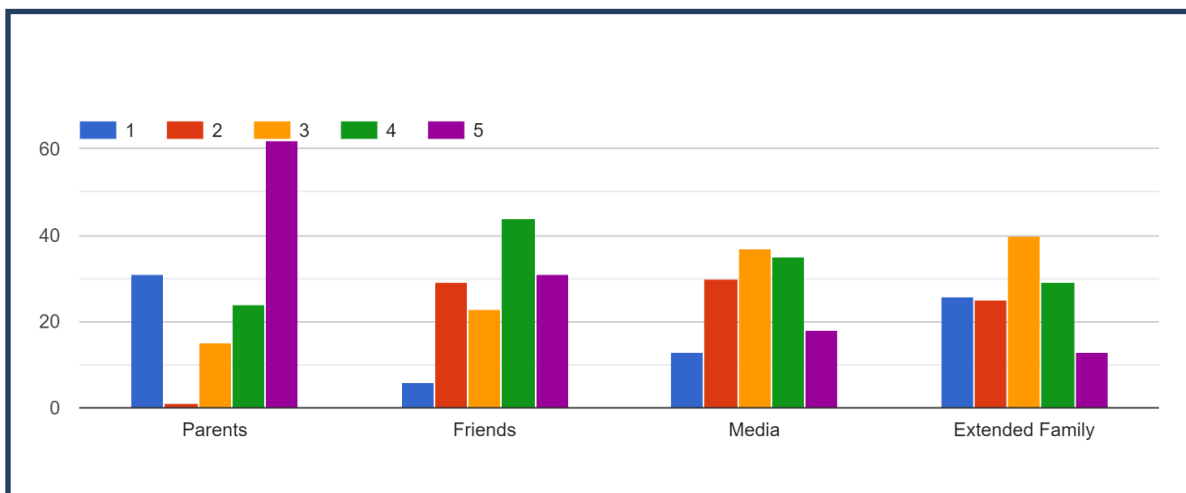
Children despite the invasion of technology, are dependent on their parents and look up to them for guidance.

OUTCOME OF THE INTERVIEW DONE WITH PARENTS

The study aimed to focus on children and their family relationships and the impact of Digital Media on family communication. Scheduled Questionnaire was administered for collecting Data across the districts in Tamilnadu. To substantiate the study further, a few interviews were conducted with parents to understand the behavioral patterns as well as dependency on the digital media. It was found tandem to the responses of the children.

TIME SPENT ON SOCIAL NETWORKING
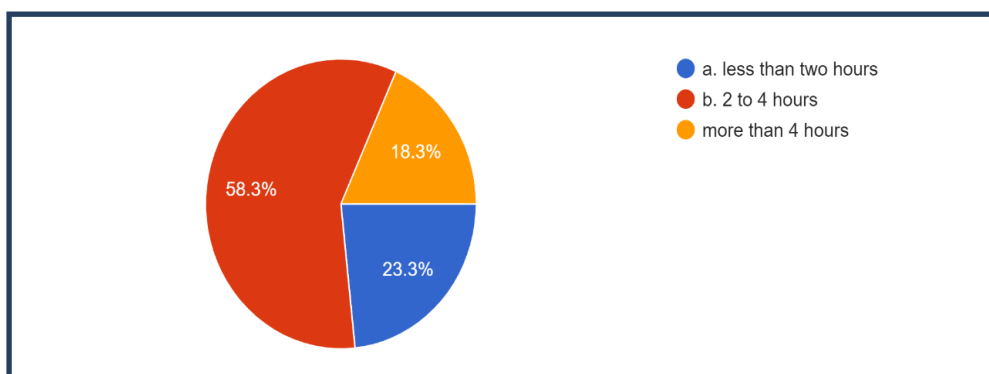
TIME SPENT WITH FAMILY MEMBERS
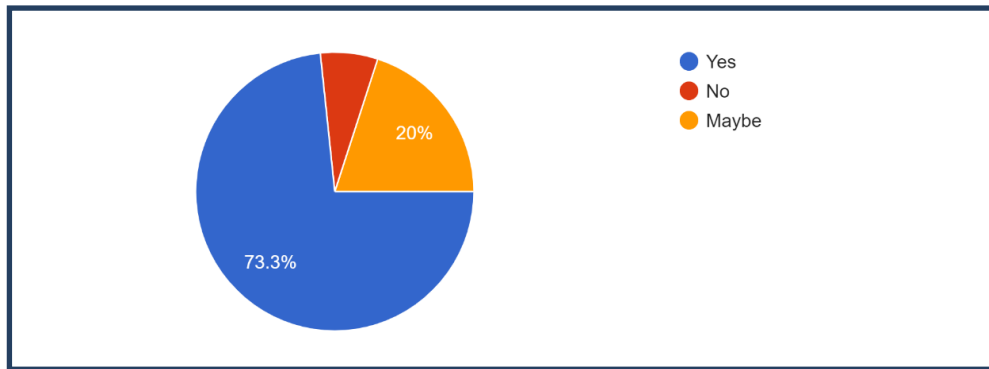
NEGATIVE IMPACT OF SOCIAL NETWORKING ON FAMILY INTERPERSONAL COMMUNICATION
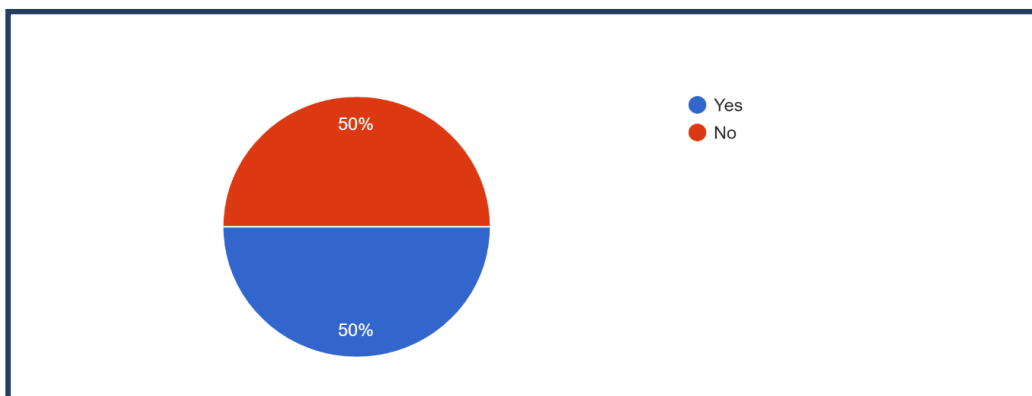
CONCERN REGARDING CYBER CHEATING
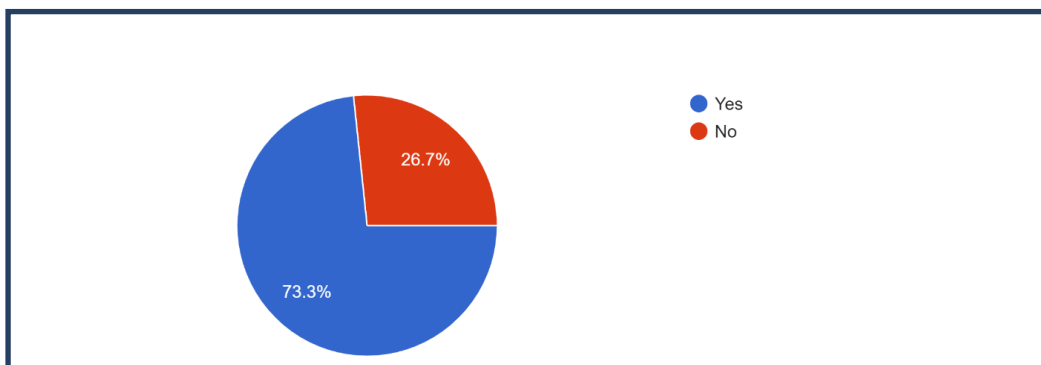
PARENTAL CONTROL ON THE APPS AND SOCIAL MEDIA ACCOUNTS
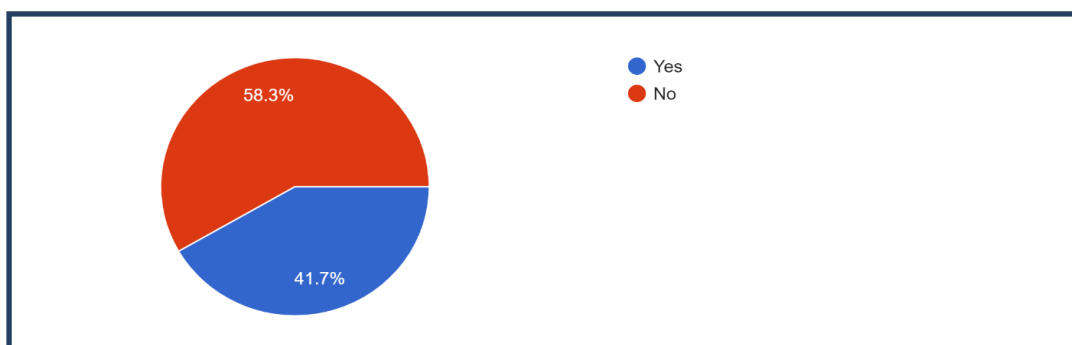
DEPENDENCE ON SOCIAL MEDIA
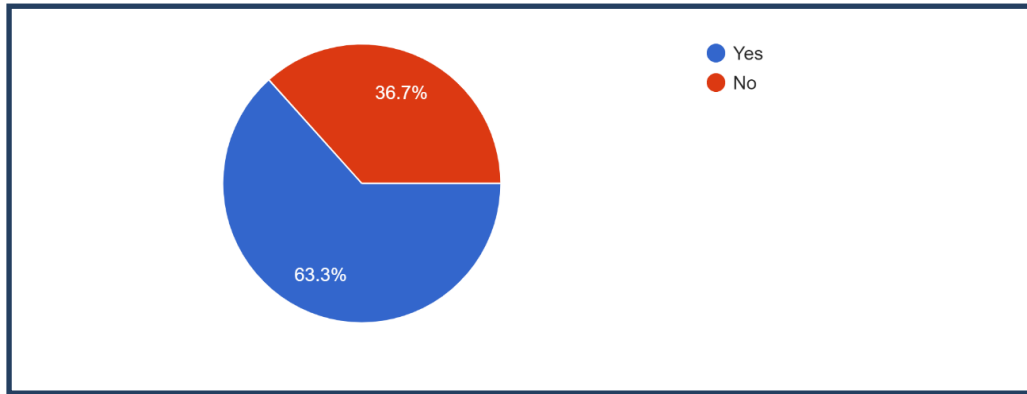
PARTICIPATION IN DECISION MAKING
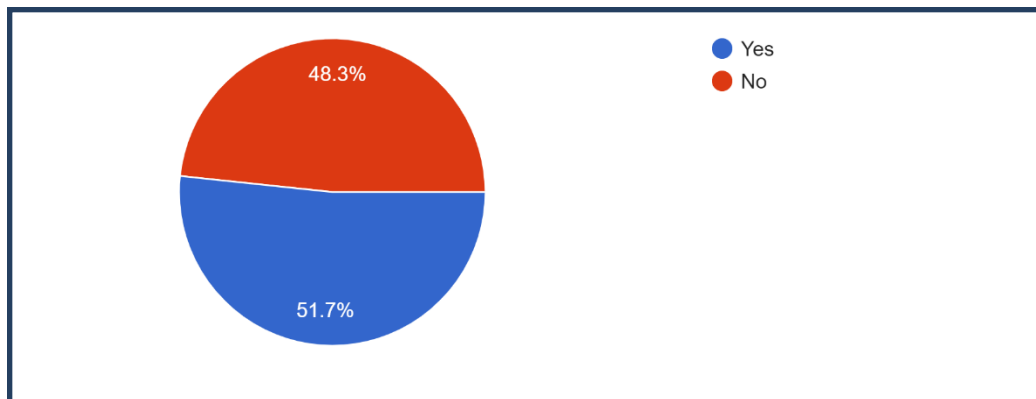
INHIBITIONS DISCUSSING SOCIALLY TABOO TOPICS
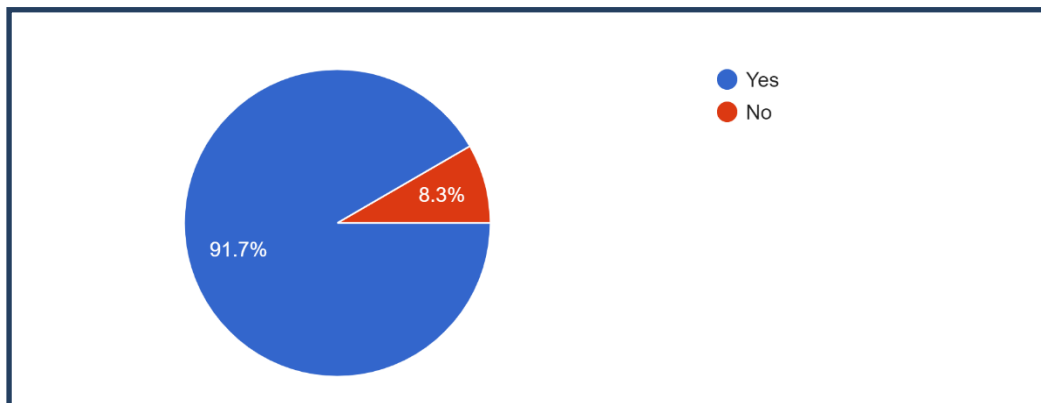
MAJOR FINDINGS

- The study reflected that 95.5% of the children had working fathers and only 31.6% of the mothers were working, indicating that the children had one of the parents' at home for support.
- 85% of the children own a smart gadget.
- Only 7.5% use the media for more than 8 hours.
- 69.2 % of the children are involved in decision making in the family.
- Parents are realising the menace caused by media and only 43.6% resolve to media for company.
- Children still feel that parents are better mentors than friends, media or the extended family.

The interview sample was of parents of the children who were the respondents for the study. This was done to understand the

family dynamics and communication. The parents felt that the children were :

- Addicted to the gadget was inevitable as educational institutions are conducting online classes.

- 51.7% of the parents feel that dependency on the digital media has increased yet they do consult the family members before making a decision.

- 91.7% of the family believes in taking decisions democratically in the household.

- It was found that children would prefer outdoor activity rather an interacting with friends throughthe social media.

- 41.7% parents are skeptical about discussing socially taboo topics with their children.

- 73.3.% of the parents were concerned about cyber cheating.

CONCLUSION AND SUGGESTIONS

The invasion of technology and shrinking of the Globe to a palm's size has its pros and cons. From the study done we understand that the stereotypical tradition of not making a the children a part of family discussions is transforming with parents becoming progressive by involving the children in their decision making.

The dependency on the digital media has increased drastically, at the same time the dependency on family has not declined. The family communication is still alive and they indulge in discussionson socialto political to cultural aspects. Family still remains a central unit for mentoring the children.

At the beginning of the research, the problem that was critically thought of was the changing roles of the family with the surge in media usage, but post the study we conclude that the socialisation process still holds its roots in the family and the bonding prevails irrespective of the age.

Family needs to play a significant role in shaping the children and makethem aware of the prescribed and proscribed behaviour, build character. With young children, quality time is best spentwith the media turned off and spending time together or engaging with media known tohave substantial benefits for children, such as reading.

Institutions should educate the students about the ill effects of the digital technology and to recommend alternative measures for knowledge enrichment. Online class hours to be reduced and to give more projects based on life skills encouraging for more interpersonal communication with the family.

With the advancement of IOT, Big Data etc.government and regulatory authorities should monitor apps, games, content viewing anddaily reports should be shared with family members to know the dimension of the psychological changes. To move forward to a healthy and knowledgeable society, government should conduct more awareness programmes about the usage of digital media by organizing camps at schools and colleges and also making it a part of curriculum.

The social media offers many opportunities for information gathering, entertainment and social interaction. Indeed, many positive effects can be experienced from time spent online. Nevertheless, sexual salutation and exposure identity treats, cyberbulling, online addiction should not be ignored by parents. Child educators and pediatricians could assist parents in child internet access through these;

- Discuss with parents the importance of supervising online activities via active participation and communication as opposed to remote monitoring with a "net-nanny" programme to monitor the internet in the absence of parents.

- Discuss with families the need for a family online-use plan that involves regular family meetings to discuss online topics and checks of privacy settings and online profiles for inappropriate posts. The emphasis should be on citizenship and healthy behaviour and not punitive action unless truly warranted.

- Advice parents to talk to their children and adolescents about their online use and the specific issues that today's online kids face

- Advice parents to work on their own participation gap in their homes by becoming better educated about the many

technologies youngsters are using.

- Pediatricians and child educators are expected to increase their knowledge of digital technology so that they can have a more educated frame of reference for the tools their parents/clients and families are

using.

- Families can be provided with information on challenging issues that kids face online and reputable online resources like tips on sexting, public education site, healthy children.org and social media.

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TAMARIND JUICE CATALYZED COST EFFECTIVE AND GREEN SYNTHESIS OF 1, 4-DIHYDROPYRIMIDINE DERIVATIVES

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ABSTRACT

Tamarind juice act as a cost effective and green catalyst for the efficient synthesis of 1,4-dihydropyrimidine derivatives. This Hantzsch reaction is achieved using ethyl acetoacetate, ammonium acetate and different aromatic aldehyde at 80 °C under solvent free condition. The important features of present protocol are easily available, nontoxic catalyst, solvent free condition, shorter reaction time and good to excellent yields. Operational simplicity, simple workup procedure, formation of no by-product is some of the additional features of this protocol.

Keywords: *Tamarind juice, natural catalyst, solvent free condition, 1,4-dihydropyrimidine, green synthesis.*

Introduction

In the last couple of decades prevention of pollution and waste management arises as a major issue. In order to prevent pollution organic chemist tries to develop green and efficient method which does not involve the use of hazardous reagent, expensive catalyst and toxic solvents. Many of the organic transformations are carried out in hazardous solvents such as benzene, toluene, methanol, etc. and use expensive catalyst. Development of environmentally benign protocol is the challenging task in front of organic chemist during the synthesis. In order to achieve these goals; various methods are developed such as ball milling [1], grinding [2], and solvent free reactions [3]. Reactions carried out under solvent free conditions avoid use of hazardous solvent. Due to this reason solvent free conditions has get an attention and many of organic transformations are carried out under this condition [4-5].

Now a day's plant roots, plant tubers, vegetable extract, aqueous extract of fruit juice has got a considerable interest as a biocatalyst in organic transformations [6-8]. Fruit juice is easily available, inexpensive, non toxic, safer and eco-friendly hence gets attracted by organic researchers [9]. Fruit juices such as lemon, coconut, banana, pineapple, tamarind, etc. are used now a day in the synthesis of organic compounds [10-13].

1,4-Dihydropyridines (1,4-DHPs) is an important class of heterocyclic compounds synthesized first by the German chemist Arthur Rudolf Hantzsch in 1881[14]. The derivatives of 1,4-DHPs found in natural products and bioactive compounds [15]. Now a day's various drugs are available in the market such as amlodipine, felodipine, nifedipine, nicardipine, nitredipine, nimodipine, etc. having biological activities [16-21]. Literature survey shows that they also shows the activities such as anti-cancer, anti-diabetic, anti-HIV, anti-bacterial, anti-tubercular and anti-arrhythmic agent [22-27].The classical Hantzsch synthesis is carried out by refluxing β-diketones, ammonium acetate and aldehydes in ethanol. This method suffers from the drawback of harsh condition with low yields. Various attempts were carried out by scientist to improve the yield and simplify the reaction conditions. Several catalyst were employed for the synthesis of 1,4-dihydropyridines such as baker's yeast [28], L-proline [29], ZnO [30], SiO2-HClO$_4$ [31], p-TSA[32] and Fe$_2$O$_3$/ZrO$_2$ [33]. All these methods have their own merits but with the same time they have some limitations such as low yield, longer reaction time, harsh reaction condition tedious workup procedure use of hazardous solvents etc. In order to overcome these limitations there is need to develop an eco-friendly method for the synthesis of 1,4-dihydropyridine derivatives. In continuation of our research work for the synthesis of bioactive compounds using eco-friendly methods [34-37] here, we report an efficient and green synthesis of 1,4-dihydropyridine derivatives catalyzed by tamarind juice under solvent free condition (Scheme 1).

Scheme 1: Synthesis of 1,4-dihydropyridines
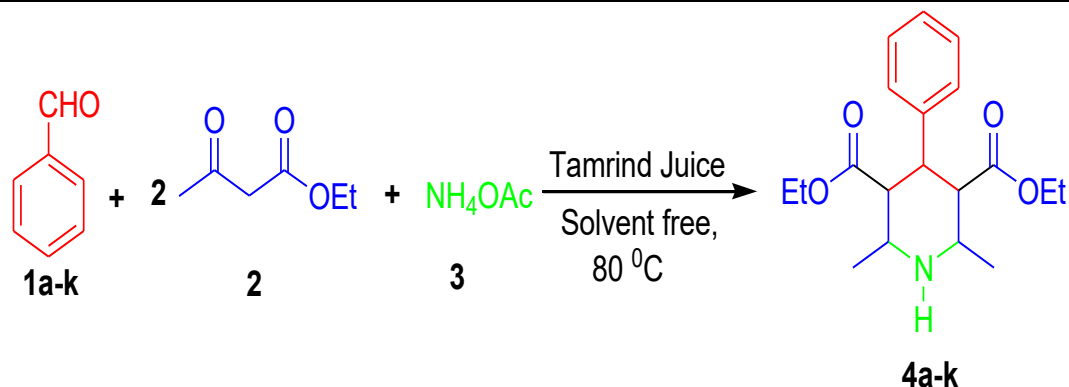
Result and discussion

For the optimization of temperature initially reaction is carried out by using 3-nitro benzaldehyde, ethyl acetoacetate and ammonium acetate at different temperature for the synthesis of 4e. When reaction is carried out at 50 °C, it takes 90 minutes to complete the reaction with very low yield of product. When reaction temperature slowly increases form 50 °C to 100 °C time reduces from 90 minutes to 45 minutes and yield of product increases slowly. At 80 °C time require in minimum with excellent yield (Table 1). From these observations further reactions are carried out at 80 °C. During the optimization of amount of tamarind juice it is observed that 3 drops of tamarind juice is sufficient in order to precede the reaction in foreword direction with minimum amount of catalyst with excellent yield (Table 2). Further increase in the amount of tamarind juice does not show significant effect on the yield and reaction time.

Table 1 Optimization of temperature for the synthesis of (4e)[a]

Sr. No.	Temp. (°C)	Time (Min.)	Yield[b] (%)
1.	50	90	55
2.	60	75	62
3.	70	60	75
4.	80	45	93
5.	90	45	93
6.	100	45	88

a: isolated yield.

Table 2 Optimization of amount of catalyst for the synthesis of (4e)[a]
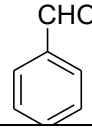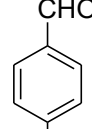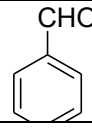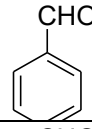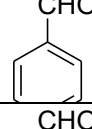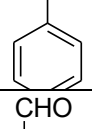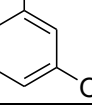
Sr. No.	Drops	Time (Min.)	Yield[a] (%)
1.	--	60	trace
2.	1	60	55
3.	2	60	76
4.	3	45	93
5.	4	45	93
6.	5	45	88

a: isolated yield.

Encouraged by these results we have examined various aromatic aldehyde containing electron donating and withdrawing groups and the reaction proceeds without any difficulty. Aromatic aldehyde having electron donating groups react slowly as compared with electron withdrawing groups to give corresponding 1,4-dihyropyridines. Aldehyde having heterolytic groups also reacts easily to give excellent yields of product (Table 3).

Table 3 Synthesis of 1,4-dihydropyridines[a]

Entry	Aldehyde	Product	Time (Min.)	Yield[b] (%)	M. P. (°C)
1	CHO	**4a**	60	83	155-157
2	CHO	**4b**	45	83	146-148
3	CHO	**4c**	90	90	228-230
4	CHO	**4d**	45	87	128-130
5	CHO	**4e**	45	93	162-164
6	CHO (O)	**4f**	45	93	160-162
7	CHO (S)	**4g**	45	91	170-172
8	CHO	**4h**	90	81	156-158
9	CHO	**4i**	60	80	140-142
10	CHO	**4j**	60	77	162-164
11	CHO (OH)	**4k**	60	83	180-182

Reaction Conditions: a: aldehyde (2 mmol), ethyl acetoacetate (4 mmol), ammonium acetate (4 mmol), tamarind juice (3 drops), 80 °C, b: isolated yield.

Experimental

1. General

All chemicals were purchased from sd fine and used without further purification. All yields were referred to isolate products after purification. Melting points were determined by open capillary method and are uncorrected. IR spectra were recorded on KBr discs on a FT IR Jasco-4100 type A and the values are expressed as v_{max} cm^{-1}. Nuclear magnetic resonance (^{1}H and ^{13}C NMR) spectra were recorded on a Brucker avance II 400 NMR spectrophotometer using TMS as an internal standard. The Chemical shifts values are reported in parts per million (δ), coupling constants (*J* values) are reported in Hertz (Hz). The progress of the reaction was monitored by TLC using silica gel-G (Merck). All products are known compounds and were characterized by comparison of their spectral and physical data with literature values.

2. Procedure for extraction of Tamarind Juice

The upper shell and inner grain of unripe tamarind fruit were removed with the help of a knife. The hard green 10 g pulp was boiled in 50 ml water, cooled and it was centrifuged. The clear portion of the aqueous extract (pH 3) of tamarind fruit was used as catalyst for the reaction.

3. General procedure for the synthesis of biscoumarin derivatives

A mixture of aromatic aldehyde (2 mmol), ethylacetoacetate (4 mmol) and ammonium acetate (4 mmol) was taken in a 50 ml round bottom flask, then tamarind juice (3 ml) was added to the same reaction mixture and stirred at 80°C to complete the reaction (Table 1). The initial syrupy reaction mixture was solidified during the process of reaction. After completion of the reaction (monitored by TLC, ethyl acetate: n-hexane = 2:8) reaction mixture was treated with cold water. The solid crude product was separated by simple filtration, dried and crystallized from ethanol to afford pure product.

Spectral data of some compounds

Diethyl1,4-dihydro-2,6-dimethyl-4-phenylpyridine-3,5-dicarboxylate (4a)

IR (KBr) υ_{max}: 3344, 2998, 2952, 1697, 1650, 1217, 1121cm^{-1}; ^{1}H NMR (400 MHz, DMSO-d_6): δ = 1.19 (t, 6H, 2×CH$_3$ester), 2.29 (s, 6H, 2×CH$_3$), 4.00 (q, 2×CH$_2$ ester), 5.00 (s, 1H, C-H), 5.67 (s, 1H, N-H), 7.10 (t, 1H, Ar-H), 7.18 (t, 2H, Ar-H), 7.27 (d, 2H, Ar-H) ppm; ^{13}C NMR (100 MHz, DMSO-d_6): δ= 14.05, 18.17, 38.84, 58.79, 101.90, 125.59, 127.35, 127.54, 145.15, 148.19, 166.90 ppm; MS (ESI+): m/z 330.00 (M+H)$^+$

Diethyl1,4-dihydro-2,6-dimethyl-4-(4-hydroxyphenyl) pyridine-3,5-dicarboxylate (4c)

IR (KBr) υ_{max}: 3349, 3239, 3027, 2971, 1708, 1650, 1237, 1098cm^{-1}; ^{1}H NMR (400 MHz, DMSO-d_6): δ = 1.16 (t, 6H, 2×CH$_3$ester), 8.90 (s, 1H, OH), 2.25 (s, 6H, 2×CH$_3$methyl), 4.00 (q, 4H, 2×OCH$_2$ ester), 4.74 (s, 1H, C-H), 6.55 (d, 2H, Ar-H), 6.94 (d, 2H, Ar-H), 8.50 (s, 1H, NH)ppm; ^{13}C NMR (100 MHz, DMSO-d_6): δ= 14.15, 18.14, 37.79, 58.84, 102.25, 114.47, 128.25, 138.88, 144.74, 155.40, 167.00 ppm; MS (ESI+): m/z 346.29 (M+H)$^+$

Conclusion

We have developed simple, cost effective and environmentally benign protocol for the synthesis of 1,4-dihydropuridine derivatives by condensation of aromatic aldehyde, ethyl acetoacetate and ammonium acetate catalyzed by tamarind juice under solvent free condition. Shorter reaction time, good to excellent yields, avoid of hazardous solvents, simple workup procedure, etc. are the advantages of present protocol.

Acknowledgement

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COMPARISON OF THE RESULTS OF DIFFERENTIAL EQUATION BY ORDINARY METHOD AND EULER'S METHOD USING SCILAB

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ABSTRACT

The study of the differential equations has been done by Euler's method and ordinary method using Scilab. In the study it has been found that both methods give the same results when executed by a programming through Scilab. The differential equation is constraint with initial conditions.

Keywords: Scilab, ODE & Euler's method.

Introduction

We are familiar about the differential equations. Differential equations are very important in the branch of science in mathematics as well as other branches. Simple harmonic motion, oscillatory motion and periodic motion these are all belongs to differential equations. Simple pendulum & compound pendulum make the oscillations in a period are the examples of simple harmonic and periodic motions, all these belongs to differential equations. There are different kinds of the differential equation such as linear differential equations and nonlinear differential equations but in this paper we are taking only linear differential equation. We are discussing the comparison between ordinary differential equation and Euler's method. In daily life there is use of differential equations. In this paper we are solving the first order differential equations by two methods one is ordinary method and second is Euler's method. Methods are frequently used in physical sciences and mathematical sciences. Scilab is a advanced computaional package which is free of cost. For installing it on the device or system there need not much space on hard disk of your device and noneed of high RAM. All the numerical and mathematical operations can be done easily with it. Many operations and problems were performed using this Scilab software [1,2]. Plotting and solution of the differential equations is very easy with Scilab. The Scialb is an open source software which has applications in companies, industries and research institutions etc. [3]. The author found, when the political heat is generated then political entropy increases and the political remains temperature constant [4].Their problem also can be solved using X-cos simulation. It is very important tool for solving any dynamical problems numerically. X-cos having much more functions or we can say that much more multiple functions can be performed by X-cos simulation. The kernel of the application had been developed by open technologies using SciLab/Xcos environment [5].Scilab is a free software which can be easily arranged and installed on the device. Four different operating systems the software is also different another word we can say that there are three versions one is window second is Mac and third is Linux. Only few commands may vary from one operating system to other operating system. Due to its limitations this software is incapable to display the solution of differential equation as we solve manually, it is the main drawback of this software but there is no doubt that numerically it can solve all the differential equations. A detailed study of the equations had been discussed by the authors,providing the comprehensive study [6,7,8]. In numerical techniques many times we face the problem based on Euler's and modified Euler's method and Euler's method, these problems had been doneby Salleh [9]. The brief history about statistics named Fermi-Dirac statistics was discussed by applying the necessary computing tools [10].The software having much applications all branches of science and engineering, in digital & communication system, numerical techniques, in geographical problems, in biological sensors etc.

Theory & Brif Discussion

Euler's method is so simple and oldest one method. Consider the differential equation of the form $\frac{ds}{dm} = f(m, s)$ with $s(m_0) = s_0$

$$\ldots\ldots\ldots(1)$$

The solution is obtained numerically step by step method as we start from $s(m_0)$ then

proceed stepwise to compute $s_1, s_2, s_3 \ldots \ldots \ldots s_i$

$where\ s_i\ is\ the\ solution\ at\ m = m_i = m_0 + ih$

, i= 1, 2, 3……….

The approximation formula is given by

$s_{n+1} = s_n + hf(m_n, y_n)$

$$\ldots\ldots\ldots..(2)$$

In this paper two different problems have been studied and comparison of these done by Euler's method and ordinary solution. The given differential equation has the form with initial conditions as

$$\frac{dS}{dm} = m - 2S$$ with initial conditions S(0)=1 and m(0)=0.

SCILAB CODING:

(i) Solution By Ordinary Method:

```
clc;
funcprot(0);
function Sdot=f(m, S)
```
OUTPUT
```
Sdot=m-2*S;
endfunction
S0=1;
m0=0;
m=0:0.1:3.5;
S=ode(S0,m0,m,f)
plot(m,S,'m.--')
xlabel('m','fontsize',4)
ylabel('S','fontsize',4,'rotation',0)
title('Solution by Ordinary Method','fontsize',3)
```

[Figure (1): Solution method]   by ordinary
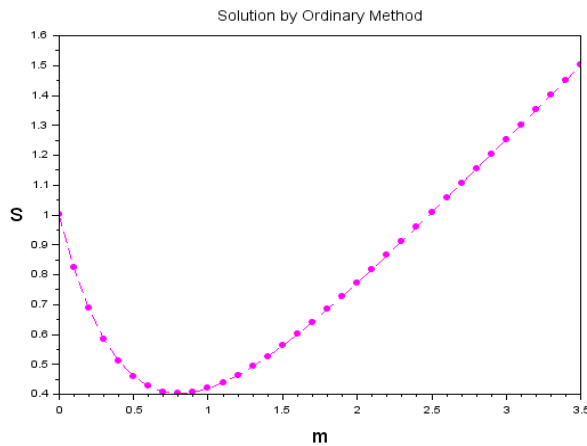
h=0.08;
disp('x values   y values')

(ii) Solution By Euler's Method:

```
clc;
funcprot(0);
function dS=f(m, S)
dS=m-2*S
endfunction
S0=1; S=1.16//y1=y0+h*f(x0,y0)=1.16
m0=0;
```

```
for i=1:40
 m(i)=m0+i*h;
S(i+1)=S(i)+h*f(m(i),S(i))
disp([m(i),S(i)])
plot(m(i),S(i),'<-r')
end
```

xlabel('m','fontsize',4)　　　　　　　　　　title('Solution by Eulers Method','fontsize',3)
ylabel('S','fontsize',4,'rotation',0)
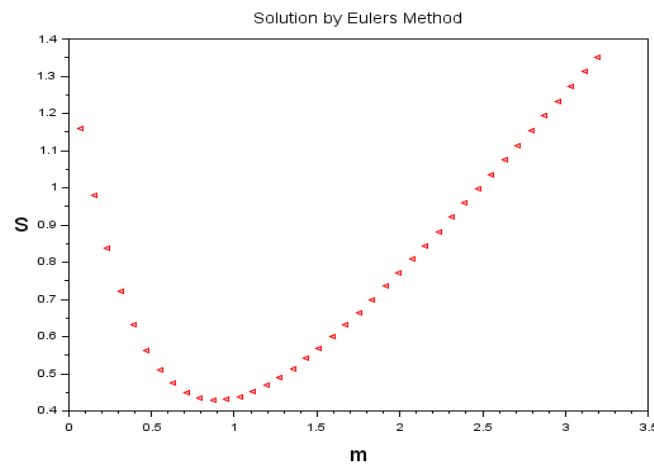
[Figure(2): Solution by Euler's method]

Results

The programming has been done by the Scilab. We execute the program which run successfully. The output in both figures is same. So it is observed that both methods give the same results. The line style, marker and colour coding has been used in figures

Conclusion

The Scilab programming has been successfully done. The problems have been solved by both methods and it is observed that both methods give the same results. The programming has been. Here we did not use of X-cos simulation. Using some commands the graphs has been decorated. The magentacolour in the plots indicates that the solution has been done by ordinary differential equations while the red colour indicates by Euler's method.

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AN ENHANCED VIDEO ASSISTED HEALTH EDUCATION MODULE ATTITUDE SCALE

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ABSTRACT

The content validity of the Video Assisted Health Education Module Attitude Scale (VAHEMAS) was established by the investigator. Content validity is a type of test validity in which the content of a test is judged to be representative of a large domain of the content. The content of a test is judged to be representative of a large domain of the content. An attitude scale namely Video Assisted Health Education Module Attitude Scale (VAHEMAS) was developed by the investigator, in order to find out the changes in attitude of secondary teacher trainees towards Video Assisted Health Education Module in enhancing knowledge, attitude and skill among secondary teacher trainees.

Keywords: *Video modelling, Online Education, Health Education.*

Introduction

Schools and teachers are instruments of public health. "Hygiene must be instructed in primary school as well as in secondary school, if taught in schools and espoused by schools, it will truly become regular practice". Despite all this, this health education has taken different procedures at different times, and must be re-assessed persistently. The role of health education in the school system must. Therefore not be considered in terms of a body of knowledge, but as a way of re-assessing the teaching profession and reinforcement the core of the school system: an education in "how to be a citizen". In other words, the aim is to ensure that health education supports a flow of ideas towards a integrated vision of the role of the teacher, rather than a drive away from this central vision.

Health education, if it is not perceived of as the transmission of imperceptible rules, can be an excellent way of drawing out and making clear the tensions between potentially conflicting areas of education activity, and of discovering ways in which these tensions may be reduced. Health education is a integral part of any humanities education programme. The idea that positive health behaviours can be assimilated in childhood has led the political authorities to assign schools the task of prevention.

In-Service Teacher Training providers like NCTE and the prospective teachers those who choose their profession as teacher should understand their responsibility and step ahead through the use of strategies such as:

- Utilizing In-service health education programs.
- Employing highly qualified and effective health education technology.
- Ensuring recommended health education instruction for secondary level.

The impending for school health education to improve health and save lives is significant. If we as a nation want to keep children and adolescents healthy, it is essential to find better ways to deliver quality school health education. Providing health education for prospective teachers will leads our young buds life in a healthy way.

Objectives and Research

The objectives of the present study are to develop Video Assisted Health Education Module, to find out the effectiveness of Video Assisted Health Education Module (VAHEM) in enhancing knowledge, attitude and also find out the attitude of Secondary Teacher Trainees towards Video Assisted Health Education Module. The main objective of the experimental study is to enhancing knowledge, attitude and skill in health education. The main objective of this study is enhancing knowledge, Attitude and skill among the Secondary Teacher trainees. So the study is intended to prepare a tutorial type of enriched learning environment to acquire the specific objectives.

Research Methodology

An attitude scale namely Video Assisted Health Education Module Attitude Scale

(VAHEMAS) was developed by the investigator, in order to find out the changes in attitude of secondary teacher trainees towards Video Assisted Health Education Module in enhancing knowledge, attitude and skill among secondary teacher trainees. The steps involved in the construction of Video Assisted Health Education Module Attitude Scale (VAHEMAS) are given below. The scale was administered before and after the experimentation. This tool was developed based in three phases

- Pre-pilot phase
- Pilot phase
- Finalization phase

Pre-pilot phase is concerned with item pooling it consists of

- Item coverage
- Sources of items and
- Criteria for item selection

Item coverage: The attitude scale covered the application of interactive Video Assisted Health Education Module and its multifaceted utilities in learning environment.

Sources of items:

- The preliminary item pool was made by drawing items from the following sources.
- Discussion with experienced computer resource person
- Discussion with experienced educational psychologist
- Discussion with learners
- Discussion with experienced educational experts and
- Review of thematic and research work
- By careful analysis of the above source, statements were collected and tabulated. Thus a toll of 50 items was gathered during this stage.

Criteria for item selection: The collected statements were not directly administered, but they were subjected to screening. The following criteria were considered while screening. Some of the statements were deleted, a few items were added and some items modified.

- The language of the statements should be simple, concise and unambiguous
- The rater should clearly know that he/she is rating at five point scale.

- The direction should be clear for hones rating
- Each and every statement should be short
- The compound and complex sentences should be avoided.

Pilot Phase: The pilot study is concerned with screening of items selected during the pre-pilot study. The reselection of the item was done on the basis of Judgment analysis. The entire selected item was again given to the subject experts to determine the suitability and objective of the items pooled. It has been sent to the jury council. It consists of 3 faculty members from Alagappa University, 3 members from Government College of Education, Pudukkottai and 2 from Arumugam Pillai Seethai Ammal College, Thiruppathur. On the basis of jury council's judgement, some items were deleted and some were restructured and irrelevant and ambiguous items were eliminated. At last 30 items were retained.

Finalization Phase: This stage is concerned with the random distribution of final items in the attitude scale. The items numbering 20 were randomly distributed in the attitude scale.

Scoring Procedure: The attitude assessment scale is a liker type of scale with five anchoring points.

- A point of 1 is assigned to 'Strongly Disagree' response
- A point of 2 is assigned to 'Disagree' response
- A point of 3 is assigned to 'Undecided' response
- A point of 4 is assigned to 'Agree' response
- A point of 5 is assigned to 'Strongly Agree' response

Validity of the Video assisted health education module attitude scale (Vahemas)

The content validity of the Video Assisted Health Education Module Attitude Scale (VAHEMAS) was established by the investigator. Content validity is a type of test validity in which the content of a test is judged to be representative of a large domain of the content. The content of a test is judged to be representative of a large domain of the content. The content validity can be ensured by the systematic plan and procedure of the test construction. DeCecco and Crawford noted the content validity tells whether the

items in a test are constructed around appropriate content. Nunnally maintained that rather than testing the validity of a test after construction, one should ensure validity of the plan and procedure of the test construction; the two standards by Nunnally are,

- A representative collection of items and
- A sensible method of test construction

After a careful analysis, the attitude items were properly structured. Some ambiguous items were modified and some were omitted. This is based on the standard formulated by Nunnally. Hence it is concluded that the Video Assisted Health Education Module Attitude Scale (VAHEMAS) possesses content validity.The attitude scale consists of 30 statements regarding the usage of Video Assisted Health Education in enhancing the knowledge, attitude and skill among secondary teacher trainees. The statements were in the form of likert's five point scale. The attitude scale was constructed by the researcher to measure the student attitude towards using the computer and multimedia courseware and it was administered

before and after the subjects completed the Video Assisted Health Education in enhancing the knowledge, attitude and skill. The subject has to select and tick in one of the five columns following: 'Strongly Disagree', 'Disagree', 'undecided', 'Agree' and 'Strongly Agree'.

Experimental Results

In the present study, the reliability of VAHEMAS was established by applying split half method. The method shows the inter correlation of the items in the test and the correlation of the items as a whole. A sample of 15 secondary teacher trainees was selected for the administration of attitude scale. The items in the tools were classified as odd and even number items. Then product Moment Correlation Coefficient was computed between the scores of odd and even number items. The correlation coefficient computed was further corrected by applying Spearman Brown Prophecy formula. The following Table-1, Figure-3 and the Product Moment Correlation and Spearman-Brown Prophecy Coefficient computed.

Scale	Product Moment (r)	Spearman – Brown (r)
VAHEMAS	0.796	0.886

Table – 1: Split-half reliability Co-efficient of Video Assisted Health Education Module Attitude Scale (VAHEMAS)
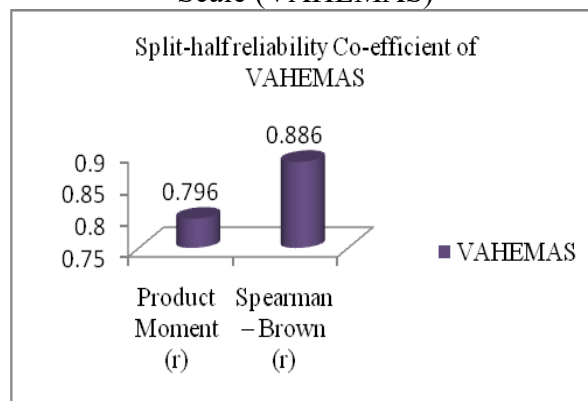
Figure – 3: Split-half reliability Co-efficient of Video Assisted Health Education Module Attitude Scale (VAHEMAS)

The judgment analysis eliminated 20 items from 40 items, so at the end only 20 items were retained in the attitude scale. The final draft of the attitude scale is shown in the appendix.

The results of the dependent-test on the data obtained for mean scores of pre and post attitudes of secondary teacher trainees towards video assisted health education module have been presented inTable-2 and Figure-4.

TEST	Mean	SD	t value	Significance at 0.01 level
Pre-Test	2.8844	2.4624	5.4038	Significant
Post-Test	4.2866	3.7597		

Table-2: Significance of Difference Between Pre and Post Attitude Mean Scores of Secondary Teacher Trainees Towards Video Assisted Health Education Module

The null hypothesis is rejected, since the obtained 't' value 5.4038 is greater than the table value of 2.55 at 0.01 level. Hence there is significant difference between the mean scores of pre-attitude and post-attitude towards health education module. Thus the stated hypothesis that there is no significant difference between the pre and post attitudes of secondary teacher trainees towards video assisted health education module is rejected. The average of post attitude test is greater than pre-attitude test score. The mean score show that secondary teacher trainees have significant enhancement after the intervention of Video Assisted Health Education Module.
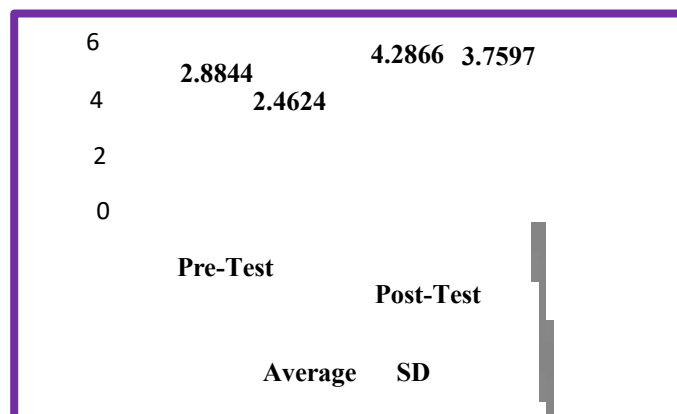
Figure- 4: The Pre-Attitude and Post-Attitude t Mean and SD values of secondary teacher trainees towards Video Assisted Health Education Module

The results of the dependent-test on the data obtained for mean scores of pre attitude mean scores of Female and Male secondary teacher trainees towards video assisted health education module have been presented in Table-3 and Figure-5.

Pre-Test	Mean	SD	t value	Significance at 0.01 level
Male	0.722	1.24	1.38	Not Significant
Female	2.16	2.12		

Table-3: Significance of Difference between Pre Attitude Mean Scores of Female and Male Secondary Teacher Trainees Towards Video Assisted Health Education Module
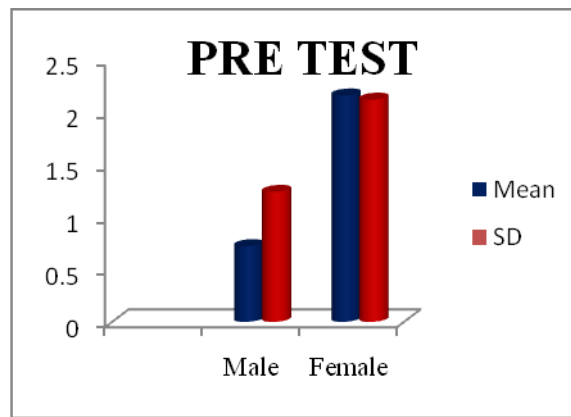
Figure-5: Significance of Difference between Pre Attitude Mean Scores of Female and Male Secondary Teacher Trainees Towards Video Assisted Health Education Module

The null hypothesis is accepted, since the obtained 't' value 1.38 is less than the table value of 2.55 at 0.01 level. Hence there is no significant difference between the mean scores of pre-attitude and post-attitude towards health education module.

The results of the dependent-test on the data obtained for mean scores of post attitude mean scores of Female and Male secondary teacher trainees towards video assisted health education module have been presented in Table- 4 and Figure-6

Pre-Test	Mean	SD	t value	Significance at 0.01 level
Male	1.45	2.18		
Female	2.83	3.06	0.8939	Not Significant

Table-4: Significance of Difference between Post Attitude Mean Scores of Female and Male Secondary Teacher Trainees Towards Video Assisted Health Education Module
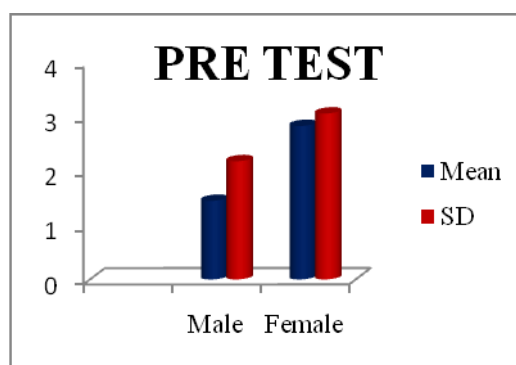
Figure-6: Significance of Difference between Post Attitude Mean Scores of Female and Male Secondary Teacher Trainees Towards Video Assisted Health Education Module

The null hypothesis is accepted, since the obtained 't' value 0.8939is less than the table value of 2.55 at 0.01 level. Hence there is no significant difference between the mean scores of pre-attitude and post-attitude towards health education module.

Conclusion

The present study reveals that the Video Assisted Module is very effective than the traditional method of enhancing Knowledge, Attitude and Skill among Secondary Teacher

Trainees. The potential for Secondary Teacher Trainees health education to improve health and save lives is significant. If we as a nation want to keep children and adolescents healthy, it is important to find better ways to provide quality school health education. One of excellent way is providing health education for Secondary Teacher Trainees it will enhance the Knowledge, Attitude and Skill competencies of the future teacher and also leads our young buds life in a healthy way.

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SOLUTION OF WAVE EQUATION BY DOUBLE LAPLACE AND DOUBLE SUMUDU TRANSFORM

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ABSTRACT

In this paper, we solve the one dimensional wave equation by using double Sumudu transform..Further we compare the results with the results of double Laplace transform.

Introduction

Sumudu transform, is proposed in the early 1990s. Sumudu transform has many interesting advantages over other integral transforms especially the unity feature. This feature could provide convenience for solving the differential equations [11]. The wave equation is an important second order linear partial differential equation which generally describes all kinds of waves, like sound waves, light waves and water waves. It is of the form

$$\frac{\partial^2 u}{\partial t^2} = c^2 \, \nabla^2 u$$

where c is speed of the wave. It arises in different fields, such as acoustics, electromagnetic, and fluid dynamics. Wave equations are found in quantum mechanics as well as general theory of relativity. Hassan Eltayeb and Adem Kilicman [7] studied double Sumudu transform and double Laplace transform in 2010.

Integral Transform [3],[6] is one of the most known methods to solve partial differential equations. Gani, et al [9], study basic analogue of double Sumudu transform and used it to solve special functions arising in partial differential equations. Tchuenche and Mbare [13] used double Sumudu transform on special functions, those arise in the solution of evolution equations of population dynamics and partial differential equations. In 2017 Eshag [5] solved one dimensional heat equation by using double Sumudu transform. Ahmeda et al [1] used double Sumudu transform to obtain the solution of Volterra integro-partial differential equation. The Wave equation and Heat equation as the fundamental equations in

mathematical Physics and these equations occur in Physics, in applied mathematics as well as in engineering. Eltayeb and Kilicman [8] solved general linear telegraph and partial integro-differential equations by using the double Laplace transform. In 2011 [2], Aghilli and Moghaddam proved certain theorems on two dimensional Laplace transform and applied on non-homogeneous parabolic Partial differential equations. Recently, in 2013 [4], R. R. Dhunde, et al has discussed and proved different properties of Double Laplace transform.

The one-dimensional wave equation was discovered by D. Alembert in 1746, and the three- dimensional wave equation was discovered by Euler within the next ten years. The one dimensional wave equation can be formally shown by $\frac{\partial^2 u}{\partial t^2} = c^2 \frac{\partial^2 u}{\partial x^2}$

In recent years, many researchers have paid attention to find the solution of partial differential equations by using various methods like variable separable method, variational iteration method [10], etc. Among these use of the integral transform for finding the solutions of boundary value problems have been proposed recently to deal with the boundary value problems.

Laplace Tranceform

Laplace transform is an integral transform method, which is particularly useful in solving linear ordinary differential equation. Any function f(t) has Laplace transform, if it satisfy the following Dirichlet conditions [12]:

(i) f(t) must be piecewise continuous which means that it must be single valued but can

have a finite number of finite isolated discontinues for t > 0.

(ii) f(t) must be exponential order which means that f(t) must remain less than $s\,e^{-at}$ as t approaches∞, where S is a positive constant and a0 is a real positive number. If any function satisfies the Dirichlet boundary conditions, then,

$$L\{f(t)\} = F(s) = \int_0^\infty e^{-st}\,f(t)dt \qquad (2.1)$$

we assume that this integral exists.

Definition: Double Laplace transform: Let f(x; t) be a function that can be expressed as convergent infinite series and let $(x,t) \in R_+^n$ then the double Laplace transform of a function f(x; t) in positive quadrant of x_t-plane is given by,

$$L_xL_t[f(x,t);(p,s)] = \int_0^\infty \int_0^\infty f(x,t)e^{-(px+st)}\,dx.dt = F(p,s) \qquad (2.2)$$

where $x,t > 0$, and p; s are transform variables for x and t respectively whenever the improper integral is convergent.

If f(x; t) is a continuous function have second partial derivative, then double Laplace transform of partial derivative of the first and second order are as follows:-

1.Double Laplace transform for first order partial derivative with respect to t is

$$L_xL_t\left[\frac{\partial f(x,t)}{\partial t};(p,s)\right] = \int_0^\infty \int_0^\infty \frac{\partial f(x,t)}{\partial t} e^{-(px+st)}\,dx.dt = s\,F(p,s) - F(p,0) \qquad (2.3)$$

2.Double Laplace transform for first order partial derivative with respect to x is

$$L_tL_x\left[\frac{\partial f(x,t)}{\partial x};(p,s)\right] = \int_0^\infty \int_0^\infty \frac{\partial f(x,t)}{\partial x} e^{-(px+st)}\,dx.dt = p\,F(p,s) - F(0,s) \qquad (2.4)$$

3.Double Laplace transform for the second order partial derivative with respect to t is

$$L_tL_t\left[\frac{\partial^2 f(x,t)}{\partial t^2};(p,s)\right]$$
$$= \int_0^\infty \int_0^\infty \frac{\partial^2 f(x,t)}{\partial t^2} e^{-(px+st)}\,dx.dt = s^2 F(p,s) - sF(p,0)$$
$$= \frac{\partial f(p,0)}{\partial t} \qquad (2.5)$$

4. Double Laplace transform for second order partial derivative with respect to x is

$$L_xL_x\left[\frac{\partial^2 f(x,t)}{\partial x^2};(p,s)\right]$$
$$= \int_0^\infty \int_0^\infty \frac{\partial^2 f(x,t)}{\partial x^2} e^{-(px+st)}\,dx.dt = p^2 F(p,s) - pF(p,0)$$
$$= \frac{\partial f(p,0)}{\partial x} \qquad (2.6)$$

Sumudu Transform

Sumudu transform is introduced by G. .K. .watugala in 1993. This transform has many interesting properties. This transform is defined over the set of functions

$$A = \left\{ f(t): \exists v_1, v_2 > 0, |f(t)| < M\,e^{\frac{|t|}{v}} \;\; if \;\; t \in (-1)^j \times [0,\infty) \right\}$$

Sumudu transform of a function f(t) is defined for all real number $t \geq 0$ as the function S(f(t)), given by:

$$S[f(t)] = M(s) = \frac{1}{v}\int_0^\infty e^{-\frac{t}{v}}\,f(t)dt$$

Let the function [f(t)] can be expressed as convergent infinite series and let $(x,t) \in R_+^n$, then the double Sumudu transform of the function of f(x; t) in first quadrant of xt -plane is given by

$$S_2[f(x,t);(v,v)] = \frac{1}{u}\frac{1}{v}\int_0^\infty \int_0^\infty f(x,t)\,e^{-\left(\frac{x}{u}+\frac{t}{v}\right)}dx\;dt \qquad (3.2)$$

where $x,t \geq 0$, and u; v are transform variables for x and t respectively whenever the improper integral is convergent.

If f(x; t) is continuous function and have second order partial derivative, then Sumudu transform of partial derivative of the first and second order are as follows:

1. Double Sumudu transform for first order partial derivative with respect to t is

$$S_2\left[\frac{\partial f(x,t)}{\partial t};(u,v)\right] = \frac{1}{u}\frac{1}{v}\int_0^\infty \int_0^\infty \frac{\partial f(x,t)}{\partial t} e^{-\left(\frac{x}{u}+\frac{t}{v}\right)}dx\;dt = \frac{1}{v}[M(u,v) - M(u,0)] \qquad (3.3)$$

2. Double Sumudu transform for first order partial derivative with respect to x is

$$S_2\left[\frac{\partial f(x,t)}{\partial x};(u,v)\right] = \frac{1}{u}\frac{1}{v}\int_0^\infty \int_0^\infty \frac{\partial f(x,t)}{\partial x} e^{-\left(\frac{x}{u}+\frac{t}{v}\right)}dx\;dt = \frac{1}{u}[M(u,v) - M(0,v)] \qquad (3.4)$$

3. Double Sumudu transform for second order partial derivative with respect to t is

$$S_2\left[\frac{\partial^2 f(x,t)}{\partial t^2};(u,v)\right] = \frac{1}{u}\frac{1}{v}\int_0^\infty \int_0^\infty \frac{\partial^2 f(x,t)}{\partial t^2} e^{-\left(\frac{x}{u}+\frac{t}{v}\right)}dx\;dt$$
$$= \frac{1}{v^2}[M(u,v) - M(u,0)] - \frac{1}{v}\frac{\partial M(u,0)}{\partial t} \qquad (3.5)$$

4. Double Sumudu transform for second order partial derivative with respect to x is

$$S_2\left[\frac{\partial^2 f(x,t)}{\partial x^2};(u,v)\right] = \frac{1}{u}\frac{1}{v}\int_0^\infty \int_0^\infty \frac{\partial^2 f(x,t)}{\partial x^2} e^{-\left(\frac{x}{u}+\frac{t}{v}\right)}dx\;dt$$
$$= \frac{1}{u^2}[M(u,v) - M(u,0)] - \frac{1}{u}\frac{\partial M(u,0)}{\partial x} \qquad (3.6)$$

Application

In this section we apply double Sumudu transform for solving wave equation. Here we assume that the inverse double Sumudu transform exist. We apply the inverse double Sumudu transform to find the solution of the wave equation in one dimension with initial and boundary conditions.

Example 1: Consider the wave equation

$$U_{tt} = c^2 U_{xx}$$

with conditions,

$$U(x,0) = \sin x \ ; \ U_t(x,0) = 2U(0,t) = 2t \ ; \ U_x(0,t) = \cos ct \qquad (4.2)$$

Solution: we use the double Laplace transform to equation(4.1), and get

$$s^2 F(p,s) - s F(p,0) - \frac{\partial F(p,0)}{\partial t} = c^2\left(p^2 F(p,s) - p F(0,s) - \frac{\partial F(0,s)}{\partial x}\right) \qquad (4.3)$$

Applying single Laplace transform for initial conditions,

$$F(p,0) = \frac{1}{p^2+1} \ ; \ \frac{\partial F(p,0)}{\partial t} = \frac{2}{p} \ ; \ F(0,s) = \frac{2}{s^2} \ ; \ \frac{\partial F(0,s)}{\partial x} = \frac{s}{s^2+c^2} \quad (4.4)$$

By substituting equation (4.4) into equation (4.3),we get

$$s^2 F(p,s) - \frac{s}{p^2+1} - \frac{2}{p} = c^2\left(p^2 F(p,s) - \frac{2p}{s^2} - \frac{s}{s^2+c^2}\right) \qquad (4.5)$$

$$\therefore F(p,s) = \frac{1}{p^2+1}\cdot\frac{s}{s^2+c^2} + \frac{2}{ps^2} \qquad (4.6)$$

Applying inverse double Laplace transform on the equation (4.6) gives the solution of wave equation

$$U(x,t) = 2t + \sin x \cdot \cos(ct) \qquad (4.7)$$

By applying the double Sumudu transform on the equation (4.1), we get

$$\frac{1}{v^2}(M(u,v) - M(u,0)) - \frac{1}{v}\frac{\partial M(u,0)}{\partial t}$$
$$= c^2\left[\frac{1}{u^2}(M(u,v) - M(0,v)) - \frac{1}{u}\frac{\partial M(0,v)}{\partial x}\right] \qquad (4.8)$$

The single Sumudu transformation for the condition gives,

$$M(u,0) = \frac{u}{1+u^2} \ ; \ \frac{\partial M(u,0)}{\partial t} = 2 \ ; \ M(0,v) = 2u \ ; \ \frac{\partial M(0,v)}{\partial x} = \frac{1}{1+c^2u^2} \qquad (4.9)$$

Substituting equation (4.9) into equation (4.8), we get

$$\frac{1}{v^2}\left(M(u,v) - \frac{u}{1+u^2}\right) - \frac{2}{v} = c^2\left[\frac{1}{u^2}(M(u,v) - 2u) - \frac{1}{u}\frac{1}{1+c^2u^2}\right] \qquad (4.10)$$

$$\Rightarrow M(u,v) = 2u + \frac{1}{u^2+1}\cdot\frac{1}{1+c^2u^2} \qquad (4.11)$$

Applying inverse double Sumudu transform of equation (4.11), gives the solution of wave equation in the form,

$$U(x,t) = 2t + \sin x \cdot \cos(ct) \qquad (4.12)$$

Example 2: Consider the wave equation

$$U_{tt} = U_{xx} - 3U + 3 \qquad (4.13)$$

with conditions,

$$U(x,0) = 1 \ ; \ U_t(x,0) = 2\sin x \ ; \ U(0,y) = 1 \ ; \ U_x(0,t) = \sin 2t \qquad (4.14)$$

Solution: By taking the double Laplace transform of equation (4.13),we get

$$s^2 F(p,s) - s F(p,0) - \frac{\partial F(p,0)}{\partial t}$$
$$= p^2 F(p,s) - p F(0,s) - \frac{\partial F(0,s)}{\partial x} - 3 F(p,s) + \frac{3}{ps} \qquad (4.15)$$

The single Laplace transform of initial conditions gives,

$$F(p,0) = \frac{1}{p} \ ; \ \frac{\partial F(p,0)}{\partial t} = \frac{2}{p^2+1} \ ; \ F(0,s) = \frac{1}{s} \ ; \ \frac{\partial F(0,s)}{\partial x} = \frac{2}{s^2+4} \qquad (4.16)$$

By substituting equation (4.16) into(4.15), we get

$$s^2 F(p,s) - \frac{s}{p} - \frac{2}{p^2+1} = p^2 F(p,s) - \frac{p}{s} - \frac{2}{s^2+4} - 3 F(p,s) + \frac{3}{ps} \qquad (4.17)$$

$$\therefore F(p,s) = \frac{1}{ps} + \frac{1}{p^2+1}\cdot\frac{2}{s^2+4} \qquad (4.18)$$

Applying inverse double Laplace transform of equation(4.18) gives the solution of wave equation in the form,

$$U(x,t) = 1 + \sin x \sin 2t$$

By taking double Sumudu transform of equation(4.13),we get

$$\frac{1}{v^2}(M(u,v) - M(u,0)) - \frac{1}{v}\frac{\partial M(u,0)}{\partial t}$$
$$= c^2\left[\frac{1}{u^2}(M(u,v) - M(0,v)) - \frac{1}{u}\frac{\partial M(0,v)}{\partial x}\right] - 3M(u,v) + 3 \quad (4.20)$$

The single Sumudu transform of initial conditions gives

$$M(u,0) = 1 \ ; \ \frac{\partial M(u,0)}{\partial t} = \frac{2u}{1+u^2} \ ; \ M(0,v) = 1 \ ; \ \frac{\partial M(0,v)}{\partial x} = \frac{2u}{1+4u^2} \qquad (4.21)$$

$$\Rightarrow M(u,v) = 1 + \frac{u}{u^2+1}\cdot\frac{2u}{1+2^2u^2} \qquad (4.22)$$

Applying inverse double Sumudu transform of equation (4.22)gives the solution of wave equation in the form

$$U(x,t) = 1 + \sin x \sin 2t \qquad (4.23)$$

Conclusion

Double Sumudu transform is applied successfully to obtain the solution of one dimensional wave equation. Further the results are compared with results obtained by using double Laplace transform. The wave equation in one dimensional under the boundary conditions, give similar results, by applying double Sumudu transform or double Laplace transform.

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COMPARISON BETWEEN LAPLACE, ELZAKI AND MAHGOUB TRANSFORMS FOR SOLVING SYSTEM OF FIRST ORDER FIRST DEGREE DIFFERENTIAL EQUATIONS

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ABSTRACT

In this paper we discuss some relationship between Laplace transform , Elzaki transform and Mahgoub Transforms .We solve first order ordinary differential equations using both transforms and show that Elzaki transform and Mahgoub transform are closely connected with the Laplace transform.

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Keywords: Laplace transform ,Sumudu transform, Elzaki Transform , Mahgoub Transforms Differential equations.

1. Introduction

Recently, In 2016 Mahgob introduced a useful technique for solving ordinary & partial differential equations in the time domain [1]. Hassan Eltayeb, introduced some relationship between Sumudu and Laplace transforms, further; for the comparison purpose and applied both transforms to solve differential equations to see the differences and similarities[2]. In 2016 , P.R.Bhadane observed in that the new method using Elzaki transform was presented to solve system of homogeneous and non-homogeneous linear differential equations of first order and first degree with constant coefficients and satisfying some initial conditions. The solution obtained for the system of homogeneous and non-homogeneous linear differential equations of first order and first degree is also discussed. These results prove that the Elzaki transform new method is quite capable, well appropriate to solve such types of problems[5].

Recently In 2016 Abdelbagy A. Alshikh, Mohand M. Abdelrahim Mahgob discussed some relationship between Laplace transform and the new two transform called ELzaki transform and Aboodh transform and solved first and second order ordinary differential equations using both transforms, and show that ELzaki transform and Aboodh transform are closely connected with the Laplace transform[3]. In 2007 , Jun Zhang discussed An algorithm based on Sumudu transform was developed. The algorithm can

be implemented in computer algebra systems like Maple. It can be used to solve differential equations of special form[7]. In 2010, Hassan Eltayeb and Adem Kılıcman introduced some relationship between Sumudu and Laplace transforms, further; for the comparison purpose and applied both transforms to solve differential equations to see the differences and similarities. Finally, he provide some examples regarding to second order differential equations with non constant coefficients as special case[8].

In this paper, the basic theory of solutions of system of linear differential equations of first order and first degree by Laplace transform, Elzaki transform and Mahgoub Transforms are discussed and it is showed that the three methods are powerful and efficient to find the solution of system of linear differential equations of first order and first degree with constant coefficient and satisfying some initial conditions.

2. Definitions and Standard Results

2.1 The Laplace Transform:

Definition : If f(t) is a function defined for all positive values of t,then the Laplace Transform is defined as

$$L[f(t)] = F(s) = \int_0^\infty e^{-st} f(t)dt$$

Provided that the integral exists.Here the parameter s is a real or complex number.The corresponding inverse Laplace transform is that the integral exists.Here the parameter s is a real or complex number.The corresponding inverse Laplace transform is

$L^{-1}[F(s)] = f(t)$. Here f(t) and F(s) are called as pair of Laplace transforms.

2.1.1 Laplace Transform of some functions :

(i) $L(1) = \frac{1}{s} = F(s)$

Inversion Formula : $L^{-1}\left(\frac{1}{s}\right) = 1 = f(t)$

(ii) $L(t^n) = \frac{n!}{s^{n+1}} = F(s)$

Inversion Formula : $L^{-1}\left(\frac{1}{s^{n+1}}\right) = \frac{t^n}{n!} = f(t)$

(iii) $L(e^{at}) = \frac{1}{s-a} = F(s)$

Inversion Formula : $L^{-1}\left(\frac{1}{s-a}\right) = e^{at} = f(t)$

(iv) $L(\sin(at)) = \frac{a}{s^2+a^2} = F(s)$

Inversion   Formula   :
$L^{-1}\left(\frac{1}{s^2+a^2}\right) = \frac{\sin(at)}{a} = f(t)$

(v) $L(\cos(at)) = \frac{s}{s^2+a^2} = F(s)$

Inversion   Formula   :
$L^{-1}\left(\frac{s}{s^2+a^2}\right) = \cos(at) = f(t)$

2.1.2 Laplace Transform of derivatives :

(i) $L[f'(t)] = sF(s) - f(0)$

(ii) $L[f''(t)] = s^2F(s) - sf(0) - f'(0)$

2.2 The Elzaki Transform :

Definition :

Over   the   set   of   functions,
$= \{f(t)/ \exists M, \tau_1, \tau_2 > 0, |f(t)| < Me^{\frac{|t|}{\tau j}}, if\ t \in (-1)^j \times [0, \infty)\}$
, the Elzaki transform is defined by

$E[f(t)] = T(u) = u.\int_0^\infty f(t)e^{\frac{-t}{u}}dt\ ,t \geq 0, K1 \leq u \leq K2, 0 \leq t \leq \infty$

Elzaki Transform of some functions :

i) $E(1) = u^2 = T(u)$

Inversion Formula : $E^{-1}(u^2) = 1 = f(t)$

ii) $E(t^n) = n!.u^{n+2} = T(u)$

Inversion Formula : $E^{-1}(u^{n+2}) = \frac{t^n}{n!} = f(t)$

iii) $E(e^{at}) = \frac{u^2}{1-au} = T(u)$

Inversion Formula : $E^{-1}\left(\frac{u^2}{1-au}\right) = e^{at} = f(t)$

iv) $E(\sin at) = \frac{au^3}{1+a^2u^2} = T(u)$

Inversion   Formula   :
$E^{-1}\left(\frac{u^3}{1+a^2u^2}\right) = \frac{\sin at}{a} = f(t)$

v) $E(\cos(at)) = \frac{u^2}{1+a^2u^2} = T(u)$

Inversion   Formula   :
$E^{-1}\left(\frac{u^2}{1+a^2u^2}\right) = \cos(at) = f(t)$

Elzaki Transform of derivatives :

(i) $E[f'(t)] = \frac{T(u)}{u} - uf(o)$

(i) $E[f''(t)] = \frac{T(u)}{u^2} - f(0) - u.f'(0)$

2.3 Mahgoub Transform :

Definition :

A new transform called the Mahgoub transform defined for function of exponential order we consider functions in the set A defined by :

$A = \{f(t)/ \exists M, \tau_1, \tau_2 > 0, |f(t)| < Me^{\frac{|t|}{\tau j}}, if\ t \in (-1)^j \times [0, \infty)\}$

For a given function in the set A, the constant M must be finite number, k_1, k_2 may be finite or infinite. The Mahgoub transform denoted by the operator M(.) defined by the integral equations

$M[f(t)] = H$

(v) $= v\int_0^\infty e^{-vt}f(t)dt.\ t \geq 0\ ,k_1 \leq v \leq k_2.$

(3)

Mahgoub Transform of some functions :

i) $M(1) = 1 = H(v)$

Inversion Formula : $M^{-1}(1) = 1 = f(t)$

ii) $M\left(\frac{t^n}{n!}\right) = \frac{1}{v^n} = H(v)$

Inversion Formula : $M^{-1}\left(\frac{n!}{v^n}\right) = t^n = f(t)$

iii) $M(e^{at}) = \frac{v}{v-a} = H(v)$

Inversion Formula : $M^{-1}\left(\frac{v}{v-a}\right) = e^{at} = f(t)$

iv) $M(\sin at) = \frac{av}{v^2+a^2} = H(v)$

Inversion   Formula   :
$M^{-1}\left(\frac{v}{v^2+a^2}\right) = \frac{\sin at}{a} = f(t)$

v) $M(\cos(at)) = \frac{v^2}{v^2+a^2} = H(v)$

Inversion   Formula   :
$M^{-1}\left(\frac{v^2}{v^2+a^2}\right) = \cos(at) = f(t)$

Mahgoub Transform of derivatives :

(i) $M[f'(t)] = vH(v) - vf(0)$

(i) $M[f''(t)] = v^2H(v) - vf'(0) - v^2f(0)$

3. Application :

In this section, the effectiveness and the usefulness of Laplace, Elzaki and Mahgoub transform technique are demonstrated by finding exact solution of a system of homogeneous and non homogeneous Linear differential equations of first order and first degree with constant coefficients and satisfying some initial conditions.

Example : (1) Find the solutions of the system of equations

$$dx/dt + y = 2cost$$

(4)

$$dy/dt - x = 1$$

(5)

With initial conditions x(0) = -1 and y(0) = 1

Solution: Applying the Laplace transform of both sides of Eq. (4) and   (5)

$$L[dx/dt] + L[y] = 2L[cost]$$

$$L[dy/dt] - L[x] = L[1]$$

Since $L[x(t)] = F_1(s)$ and $L[y(t)] = F_2(s)$

$$sF_1(s) - x(0) + F_2(s) = 2/(s^2 + 1)$$

(6)

$$sF_2(s) - y(0) + F_1(s) = 1/s$$

(7)

Solving these equations for $F_1(s)$ and $F_2(s)$;

$$F_1(s) = 2s^2/(s^2 + 1)^2 - 1/s(s^2 + 1) - 1/(s^2 + 1) - s/(s^2 + 1)$$

(8)

$$F_2(s) = 2s/(s^2 + 1)^2 + s/(s^2 + 1)$$

(9)

Appling Inverse Laplace transforms.

Thus required solution of given differential equations are

$$x(t) = tcost - 1 \quad and \quad y(t) = tsint + cost$$

(10)

2: Applying the Elzaki transform of both sides of Eq. (4) and (5)

$$E[dx/dt] + E[y] = 2E[cost]$$

(11)

$$E[dy/dt] - E[x] = E[1]$$

(12)

Since $E[x(t)] = T_1(u)$ and $E[y(t)] = T_2(u)$

$$T_1(u)/u - ux(0) + T_2(u) = 2u^2/1 + u^2$$

(13)

$$T_2(u)/u - uy(0) + T_1(u) = u^2$$

(14)

Solving these equations for $T_1(u)$ and $T_2(u)$
Then Appling Inverse Elzaki transforms.

Thus required solution of given differential equations are

$$x(t) = tcost - 1 \quad and \quad y(t) = tsint + cost$$

3: Applying the Mahgoub transform of both sides of Eq. (4) and (5)

$$M[dx/dt] + M[y] = 2M[cost]$$

(16)

$$M[dy/dt] - M[x] = M[1]$$

(17)

Since

$$M[x(t)] = H_1(v) \quad and \quad M[y(t)] = H_2(v)$$

$$vH_1(v) - vx(0) + H_2(v) = 2v^2/(v^2 + 1)$$

(18)

$$vH_2(v) - vy(0) + H_1(v) = 1$$

(19)

Solving these equations for $H_1(v)$ and $H_2(v)$
Then Appling Inverse Mahgoub transforms.

Thus required solution of given differential equations are

$$x(t) = tcost - 1 \quad and \quad y(t) = tsint + cost$$

(20)

Example : (2) Find the solutions of the system of equations

$$dx/dt + \alpha y = 0$$

(21)

$$dy/dt - \alpha x = 0$$

(22)

With initial conditions x(0) = c_1 and y(0) = c_2, where c_1, c_2 are arbitrary constants.

Solution: Applying the Laplace transform of both sides of Eq. (21) and (22),

$$L[dx/dt] + \alpha L[y] = 0$$

(23)

$$L[dy/dt] - \alpha L[x] = 0$$

(24)

Since $L[x(t)] = F_1(s)$ and $L[y(t)] = F_2(s)$

$$sF_1(s) - c_1 + \alpha F_2(s) = 0$$

(25)

$$sF_2(s) - c_2 - \alpha F_1(s) = 0$$

(26)

Solving these equations for $F_1(s)$ and $F_2(s)$;

$$F_1(s) = \frac{c_1 s - c_2 \alpha}{s^2 + \alpha^2} \quad and \quad F_2(s) = \frac{c_1 \alpha + c_2 s}{s^2 + \alpha^2}$$

Appling Inverse Laplace transforms, we get general solution of given differential equations are

$$x(t) = c_1 cosat - c_2 sinat \quad and \quad y(t) = c_1 sinat + c_2 cosat$$

Squaring and adding ,we get

$x^2 + y^2 = c_1{}^2 + c_2{}^2$ which represents a circle.   (28)

2: Applying the Elzaki transform of both sides of Eq. (21) and (22),

$E[dx/dt] + \alpha E[y] = 0$ (29)

$E[dy/dt] - \alpha E[x] = 0$ (30)

Since $E[x(t)] = T_1(u)$ and $E[y(t)] = T_2(u)$

$T_1(u)/u - ux(0) + \alpha T_2(u) = 0$ (31)

$T_2(u)/u - uy(0) - \alpha T_1(u) = 0$ (32)

Solving these equations for $T_1(u)$ and $T_2(u)$ Then Appling Inverse Elzaki transforms.

Thus required solution of given differential equations are

$x(t) = c_1 cosat - c_2 sinat$ and $y(t) = c_1 sinat + c_2 cosat$ (33)

3: Applying the Mahgoub transform of both sides of Eq. (21) and (22),

$M[dx/dt] + \alpha M[y] = 0$ (34)

$M[dy/dt] - \alpha M[x] = 0$ (35)

Since $M[x(t)] = H_1(v)$ and $M[y(t)] = H_2(v)$

$vH_1(v) - vx(0) + \alpha H_2(v) = 0$ (36)

$vH_2(v) - vy(0) - \alpha H_1(v) = 0$ (37)

Solving these equations for $H_1(v)$ and $H_2(v)$ Then Appling Inverse Mahgoub transforms.

Thus required solution of given differential equations are

$x(t) = c_1 cosat - c_2 sinat$ and $y(t) = c_1 sinat + c_2 cosat$ (38)

Example : (3) Find the solutions of the system of equations

$\frac{dx}{dt} + y = e^t$ (39)

$\frac{dy}{dt} - x = -t$ (40)

With initial conditions x(0) = 0 and y(0) = 0

Solution: Applying the Laplace transform of both sides of Eq. (39) and (40),

$L[dx/dt] + L[y] = L[e^t]$ (41)

$L[dy/dt] - L[x] = -L[t]$ (42)

Since $L[x(t)] = F_1(s)$ and $L[y(t)] = F_2(s)$

$sF_1(s) - x(0) + F_2(s) = 1/(s-1)$ (43)

$sF_2(s) - y(0) - F_1(s) = -1/s^2$ (44)

Solving these equations for $F_1(s)$ and $F_2(s)$;

$F_1(s) = (s^3 + s - 1)/s^2(s-1)^2(s+1)$ (45)

$F_2(s) = 1 - 2s/s(s-1)^2(s+1)$ (46)

Appling Inverse Laplace transforms.

Thus required solution of given differential equations are

$x(t) = e^t/2 - 1/2cost - 1/2sint$ and $y(t) = -1 + e^t/2 + 1/2cost - 1/2sint$ (47)

2: Applying the Elzaki transform of both sides of Eq. (39) and (40),

$E[dx/dt] + E[y] = E[e^t]$ (49)

$E[dy/dt] - E[x] = -E[t]$ (50)

Since $E[x(t)] = T_1(u)$ and $E[y(t)] = T_2(u)$

$T_1(u)/u - ux(0) + T_2(u) = u^2/(1-u)$ (50)

$T_2(u)/u - uy(0) - T_1(u) = -u^3$ (51)

Solving these equations for $T_1(u)$ and $T_2(u)$ Then Appling Inverse Elzaki transforms.

Thus required solution of given differential equations are

$x(t) = e^t /2 - 1/2cost - 1/2sint$ and $y(t) = -1 + e^t /2 + 1/2cost - 1/2sint$

(52)

3: Applying the Mahgoub transform of both sides of Eq. (39) and (40),

$M[dx/ dt] + M[y] = M[e^t]$

(53)

$M[dy/dt] - M[x] = -M[t]$

(54)

Since

$M[x(t)] = H_1(v)$ and $M[y(t)] = H_2(v)$

$vH_1(v) - vx(0) + H_2(v) = v/(v-1)$

(55)

$vH_2(v) - vy(0) - H_1(v) = -1/v$

(56)

Solving these equations for $H_1(v)$ and $H_2(v)$ Then Appling Inverse Mahgoub transforms.

Thus required solution of given differential equations are

$x(t) = e^t /2 - 1/2cost - 1/2sint$ and $y(t) = -1 + e^t /2 + 1/2cost - 1/2sint$

(57)

Example : (4) Find the solutions of the system of equations

$\frac{dx}{dt} = x + y$

(58)

$\frac{dy}{dt} = 2x + 4y$

(59)

With initial conditions x(0) = 1 and y(0) = 2

Solution: Applying the Laplace transform of both sides of Eq. (58) and (59),

$L[dx/dt] = L[x] + L[y]$

(60)

$L[dy/dt] = 2L[x] + 4L[y]$

(61)

Since $L[x(t)] = F_1(s)$ and $L[y(t)] = F_2(s)$

$sF_1(s) - x(0) = F_1(s) + F_2(s)$

(62)

$sF_2(s) - y(0) = 2F_1(s) + 4F_2(s)$

(63)

Solving these equations for $F_1(s)$ and $F_2(s)$ and Appling Inverse Laplace transforms,we get

Thus required solution of given differential

equations are

$x(t) = e^{2t} - 2e^{-t} - 2t + 1$ and $y(t) = e^{2t} + 4e^{-t} + 2t - 3$

(64)

2: Applying the Elzaki transform of both sides of Eq. (58) and (59),

$E[dx/dt] = E[x] + E[y]$

(65)

$E[dy/dt] = 2E[x] + 4E[y]$

(66)

Since $E[x(t)] = T_1(u)$ and $E[y(t)] = T_2(u)$

$T_1(u)/u - ux(0) = T_1(u) + T_2(u)$

(67)

$T_2(u)/u - uy(0) = 2T_1(u) + 4T_2(u)$

(69)

Solving these equations for $T_1(u)$ and $T_2(u)$ Then Appling Inverse Elzaki transforms.

Thus required solution of given differential equations are

$x(t) = e^{2t} - 2e^{-t} - 2t + 1$ and $y(t) = e^{2t} + 4e^{-t} + 2t - 3$

(70)

3: Applying the Mahgoub transform of both sides of Eq. (58) and (59),

$M[dx/dt] = M[x] + M[y]$

(71)

$M[dy/dt] = 2M[x] + 4M[y]$

(72)

Since

$M[x(t)] = H_1(v)$ and $M[y(t)] = H_2(v)$

$vH_1(v) - vx(0) = H_1(u) + H_2(u)$

(73)

$vH_2(v) - vy(0) = 2H_1(u) + 4H_2(u)$

(74)

Solving these equations for $H_1(v)$ and $H_2(v)$ Then Appling Inverse Mahgoub transforms.

Thus required solution of given differential equations are

$x(t) = e^{2t} - 2e^{-t} - 2t + 1$ and $y(t) = e^{2t} + 4e^{-t} + 2t - 3$

(75)

4. Conclusion

The main goal of this paper is to conduct Comparison between Laplace, Elzaki and Mahgoub Transforms for Solving system of First order First Degree Differential Equations .The three methods are powerful and

efficient and Elzaki and Mahgoub Transforms is a convenient tool for solving Solving system of First order First Degree differential equations in the time domain without the need for performing an inverse Elzaki transform and inverse a Mahgoub transform. Therefore connection of Elzaki transform and a Mahgoub transform with Laplace transform goes much deeper.

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INTERNET OF THINGS: USER CASES, CHALLENGES AND ISSUES

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ABSTRACT

Internet of things is a popular catchphrase in the IT industry (IoT). The Internet is the fastest growing segment, and it will transform real objects into artificial intelligence. The Internet of Things (IoT) promises to link everything within our environment together under a unified infrastructure, giving us access to it along with control. not only of what is around us, but also of whether they're presently. The Internet of Things (IoT) will maintain its critical role in the growth of society and in the field ofITC (information and communication technology). This paper is a general survey of the potential applications and challenges of Iot and security threats.

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Keywords: *Denial of Service, m- commerce, WSN, Internet of Things, DDoS .*

Introduction

Iot (Internet of things)

In the sphere of communications The Internet of Things (IoT) has been a relatively new technology that is gaining acceptance quickly.In the modern field of wireless telecommunications the main goal of things and objects communicating over wireless networks interacting and cooperating is to achieve the goal established for them as a group. Interconnected UAHE constitute a mesh of devices that supply information and develop a worldwide network of genuine physical items for IoT. In this context, IoT is a technology that allows loosely connected, decentralized systems of collaborating smart products and autonomous physical-digital gadgets.

Iot is composed of three parts:

- The 'things' (objects)
- The networks that link them together.
- Data streaming from and to objects using computer systems

Application

The IoT's capabilities enable the development of a wide range of applications, however just a few are already in use. Smart homes and offices, smart transit systems, smarter hospitals, smart enterprises, and smart industries will mostly benefit through intelligent applications in the future. In the subsections below, we'll look at some of the most notable IoT examples.

- Health care and medical :-

The (IoT) will have abundantuses in the healthsector, with the possibility of using such technology to improve patient care. To monitor medical parameters, a mobile phone with sensor capabilities has been developed. As well as drug delivery the benefit gained is in prevention of peculiar disease and efficient monitoring of patient health. In the event of an accident, ad hoc diagnosis and speedy medical consideration are required. Health records can be stored on wireless devices,that can protect a patient's life.

- Entertainment and Media :-

The usage of IoT technology enables for the monitoring of news based on the devices' location.users. The news may be gathered by querying the Internet of Things to identify which smart devices are present at a given place, and then sending them a offer to collect it. A unique event's multi-media coverage. Near-field communication tags can be used. There is a lot of information on the poster for linking the reader to a Web site that provides further information.

- Agriculture and Animal Husbandry:

Tracking of animals and their actions require the use of technology like the internet of Things (IoT), which allows for real-time animal detection, such as during disease outbreaks.Moreover in many circumstances, countries pay subsidiesbased on the quantity of animals in a herd and other needs. As the determination of the number is complicated, there is always the risk of scams.Single farmers may be able to deliver the goods using IoT.Crops are delivered directly to consumers,

not just in a small area as in direct marketing or shops.But over a larger area this will alter the entire supply chain, which is currently dominated by one companyCurrently, huge corporations, but this could change in the future to a more direct and shorter link between customers and manufacturers.

- Education and studies:-

IoT has the likely to transform the approachin which colleges operate and improvement of student learning.At all level and in a variety of disciplines. It has enormous potential for universities and other educational institutions.if well-prepared to assure widespread and successful arrangement byManagement, staff, and apprentices are all involved. Academics,Researchers and students are in a unique position to spearhead the creation and discovery of the Iot Systems, devices, applications, and services are all examples of this.

- Self-sustained Living:

By monitoring daily actions through wearable devices, IoT apps and services will have a largeinfluence on independent living.Wearable sensors and ambient sensors are used to track social interactionsChronic medical condition is diagnosed using wearable dynamic sensors and in-body sensors.WithPattern recognition and machine learning techniques are becoming more common, and the objects in a patient's environment are changing as well.

The patient's environment would be able to keep an eye on him or her. Things have the ability to learn on a consistent basis. In the event of an abnormality, the routines will raise an alert or send out a notification. These options are available to be integrated with the services of medical technology.[1]

- M –commerce:-

In the coming years, IoT in mobile commerce will no longer be viewed as a stand-alone technology, but will instead operate in tandem with a variety of different technologies to improve the intelligence of mobile commerce stores and shopping experiences.

M-commerce, or mobile commerce, is an e-commerce activity that takes place on a mobile device. Smartphones and tablets are examples of mobile devices. To look at it another way, buying and selling goods and services across a network or the internet using mobile devices

M-commerce is the word given for this type of interaction which has made life much easier for many people around the world by allowing them to conduct daily transactions. M-Commerce is a type of online transaction that allows people to disclose information about themselves and services relating to certain businesses, goods, individuals, or groups

M-wirelessly, which is more convenient, but it also offers significant security risks. M-commerce is the combination of e-commerce and wireless web. Kevin Duffy invented the term "mobile commerce" in 1997 to describe the delivery of e-commerce expertise straight into the customer's hand,

M Commerce is all about wireless E Commerce, which is when a mobile device is used to access the internet for commercial transactions, either in the B2B or B2C sector. With the move from second to fourth generation wireless technology, mobile communications is currently considered a relatively established technology. In addition to voice communication, 4G offers a number of services and capabilities, including multimedia data transfer, video streaming, and full internet access more quickly.[2]

Security Attacks

DOS attacks on WSN security include the following:-

- Collision
- Battery exhaustion
- Homing
- Sybil
- Traffic misdirection and Spoofing replaying
- Hello flood attack
- Telephony denial-of-service
- Node tampering
- Acknowledgment flooding
- worm hole
- flooding
- Jamming
- Unfairness

- TTL expiry attack [3]

Challenges and Concerns

The researched enterprise environment, home, office, and other smart surroundings will be characterized by different-organization

interaction, necessitating the operation of extremely dynamic and ad-hoc agreements in future. Only a small quantity of ICT support is currently accessible.

Main challenges

❖ Confidentiality, security, and privacy

There are multiple barriers in the area of security.

(a) Protecting the Internet of Things (IoT) architectural design –At both the design and execution stages, security must be ensured. Protection of IoT against uncontrolled cyber-attacks (e.g. DoS and DDoS attacks) and exploitation, and also (c) proactively identification and protection of IoT against cyber-attacks. Viruses are malicious software. The specific issues in the sphere of user privacy are as follows:

Control over private information (privacy concerns) and physical position and movement of an individual (location privacy),

(b) The requirement for confidentiality and integrity technologies as well as strict privacy laws and regulations

(c) For user and object identity management, there are standards, approaches, and technologies.

The specific issues in the sphere of trust include follows:

(a) the demand for a simple and natural transfer of essential, protected, and sensitive data— for example, sensor nodes will interact on behalf of users with trusted services, and

(b) IoT should always be established with trust in mind.

❖ Organization Variability:-

Managing several apps, environments, and devices is a major challenge.

Configuration of the network –

Internet architecture's limitations in terms of mobility, availability, administration, and adaptability are one of the key barriers to IoT.[1]

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EVALUATION OF THE LONGEVITY, HEDGING AND SAFE HAVEN CHARACTERISTICS OF BITCOIN BASED ON RECENT TRENDS, ANDA STUDY OF CENTRAL BANK DIGITAL CURRENCIES AS AN ALTERNATIVE TO CRYPTOCURRENCIES

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ABSTRACT

Cryptocurrencies have been at the forefront when it comes to grabbing attention from swarms of investors or the paparazzi. While other cryptocurrencies are gaining traction as well as investors' attention, more eminently, it is bitcoin which is hailed as the holy grail when one appraises its performance returns with respect to other assets classes, more importantly during the past one year.However, in the past few weeks of May 2021, cryptocurrencies' frenzied sell-off reminded market participants of its still uncertain status overbroader acceptability and regulatory concerns. A substantial fall in cryptocurrencies during this period has raised concernsabout their potential as mainstream investments. Bitcoin prices crashed by 30% while ether prices crashed by~40% in the last week of May 2021. This paper tries to evaluate bitcoin against various parameters such as its longevity, whether it can serve as a safe haven asset and a hedge against other assets. The paper also studies the upcoming Central Bank Digital Currencies and its comparison with cryptocurrencies. It can be safely said that cryptocurrencies are here to stay longer than expected.

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Keywords: *Cryptocurrency, Bitcoin, Safe Haven Asset, Hedge, CBDCs.*

Introduction

The story of blockchain and cryptocurrencies started in 2008, when the whole world was facing a financial crisis of unprecedented proportions. The year witnessed the downfall of the most powerful banks, a mortgage crisis coupled by a rising unemployment rate. While, the world was sinking into recession, an entity with the pseudonym of Satoshi Nakamoto, published a whitepaper on the Bitcoin blockchain, where he introduced a system which could obliterate the entire financial system. Today, more than 12 years have passed and the concept of blockchain and cryptocurrencies has gained an unfathomable momentum, surpassing market capitalizations which could never have been thought of. Investors with surplus cash and bottomless risk appetites have suddenly turned attention to this new found asset class, which many governments have no idea who to handle. However, this asset class comes with incredible speculation and tremendous volatility. It is observed that, the crypto market exhibits an oligopolistic structure, with Bitcoin and Ethereum taking clear leadership positions. Empirically, Bitcoin has strongly correlated with equities during market downturns, putting diversification arguments into question. It has displayed risk characteristics in the form of drawdowns and volatility which are higher than the majority of investment assets, thus indicating that Bitcoin is principally a speculative investment, and not yet a store of value.

Review of Literature

Nikolaos A. Kyriazisin his article "Is Bitcoin Similar to Gold? An Integrated Overviewof Empirical Findings" concludes that Bitcoin hasa long way to go to replace Gold asa safe haven asset. He also suggests that Bitcoin seems to be an efficient hedge against oil and stock market indices but its hedging with gold is not similarly consistent. Despite having some similarcharacteristicsas traditional assets, it is observed that Bitcoin can be agood hedging tool in portfolios which have a combination of gold. Furthermore, evidence reveals that gold still retain its crown by being a better and a morestable safe-haven investment as compared to Bitcoin. Farell, Ryan, in his Research paper "An Analysis of the Cryptocurrency Industry" (2015) studies the sudden momentum gathered by various cryptocurrencies along side the emergence of Bitcoin.

He suggests that though major retailers have begun to accept Bitcoin yet many are reluctant to do so. A larger acceptance shall be achieved

when cryptocurrencies become more mainstream and major governments start accepting them as an alternate payment systems. However, he has also commented that the euphoria around bitcoin is due to the fact that it is decentralized and unregulated and that any regulation shall juxtapose it with traditional assets and hence lead to a lesser mass hysteria.

Aswath Damodoran, a finance professor at New York University, expresses "While it might struggle with the vision of some Bitcoin progressives, the Bitcoin economy may require its very own financial arrangement that is controlled and maybe even guaranteed by a unified element". This, notwithstanding, would not just test the vision of "a few" Bitcoin pioneers, yet the excellent motivation behind Bitcoin in any case. This would once again introduce the idea of "trust" into the framework, which is by and large what Bitcoin's authors planned to dispense with by subbing cryptographic confirmation components. Faber and Haddersin their article on "Towards a blockchain enabled social contract for sustainability, Creating a fair and just operating system for humanity" (June 2016) have underlined the latent of blockchain technology to generate an substructure to device "new social contracts for sustainability", leadingto the advancement of the transformation to sustainable development. They express that blockchains give foundation to information exchanges that doesn't need unified capacities supporting genuine associations and connections among individuals to take care of issues. Along these lines, this innovation conquers the current plan of action, which is primarily overseen by old standard regulatory and power foundations like political groups, banks, local governments, etc.

Objectives

This research paper encompasses the following objectives by evaluating the current trends in the cryptocurrency market.

- To studyand comment on the future of Bitcoin with respect to its longetivity.
- To analyze if bitcoin is a good store of value/safe haven asset.

- To analyze if bitcoin can be a hedge against other asset classes.

- To studythe evolution of Central Bank Digital Currencyas an alternative toCryptocurrencies

Future of bitcoin with respect to current trends – Fad or Forever?

Bitcoin and other cryptocurrencies are not backed by physical assets, which makes them speculative in nature. Massive swings in cryptocurrencies highlight their speculative nature. Recent examples highlight the speculative nature of Bitcoin and other cryptocurrencies.

On 18th May 2021, Bitcoin's price dived to a low of USD 30,000, which was 55% lower from its high of ~USD 65,000 inmid-April 2021. Ether's price dropped to USD 2059 on 23-May, 50% lower from its high level of USD 4143on 11-May-21. ~USD 780 bn has been wiped off the market capitalization of the entire crypto market from 17th May till 24thMay 2021 (source: CoinGecko)

Tesla chief Elon Musk, a big crypto investor and evangelist said that the company would stop acceptingBitcoin payments. The People's Bank of China disqualified cryptocurrency to be used as a form of payment,thus accentuating the regulatory risk looming over cryptocurrencies. Furthermore, the country also proclaimed that itwill crack down on Bitcoin mining and trading activities. Separately, the US Treasury Department calledfor new rules (on 20th May 2021) that would require large cryptocurrency transfers to be reported to theInternal Revenue Service. (The Federal Reserve had previouslyhighlighted the risks that cryptocurrencies posed to financialstability)

Such a sharpsetback in cryptocurrency prices and a fall in market capitalization to the tune of ~ USD 800 bn in the last week of May raises the uncertainty and the ambiguity whethercryptocurrencies are a passing fad or are imminent. Moreover, enormous swings in crypto value raises questionson its potential as a medium of exchange. Current market capitalization of crypto currencies eased to USD1.47 trn on 24th May-21 vs. ~USD 2.6 trn as of 12th May-21 (source: CoinGecko).
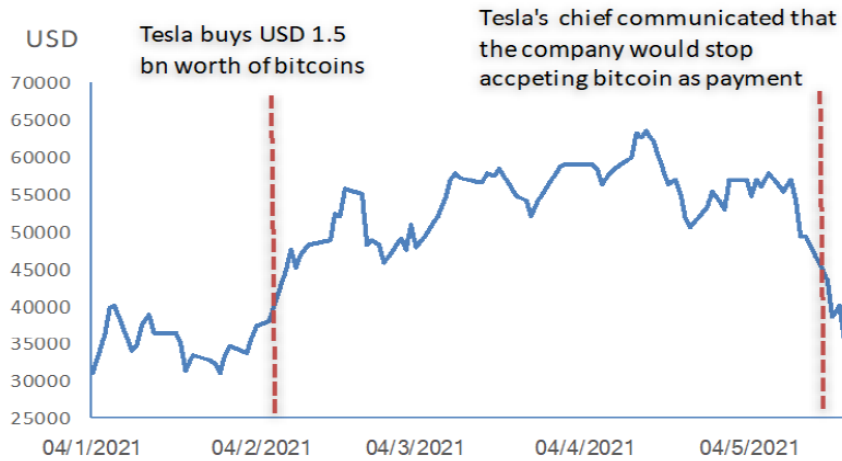
To reminiscence, Tesla'sstatement in February 2021which highlights the acceptance of Bitcoin by the company sent Bitcoin to a high of USD 65,000.However, Bitcoin price fell sharply (in mid-May 2021) after Tesla chief Elon Musk expressed concerns overits power consumption and said that the company would no longer accept Bitcoin as payment. This led to speculations in the market that Elon Musk might sell all of his bitcoin holdings worth USD 1.5 bn, which put further pressure on theprice of Bitcoin. Later, a tweet demonstrating his support for bitcoin helped the assets inverse some of itslosses.

Apart from the above events, there is a strong correlation between bitcoin prices and google searches which further labels Bitcoin as a fad. The bottom-line is that it seems to be highly speculative.

Bitcoin prices likely to be driven by internet attention (Monthly google trends for searches using'bitcoin' as keyword)
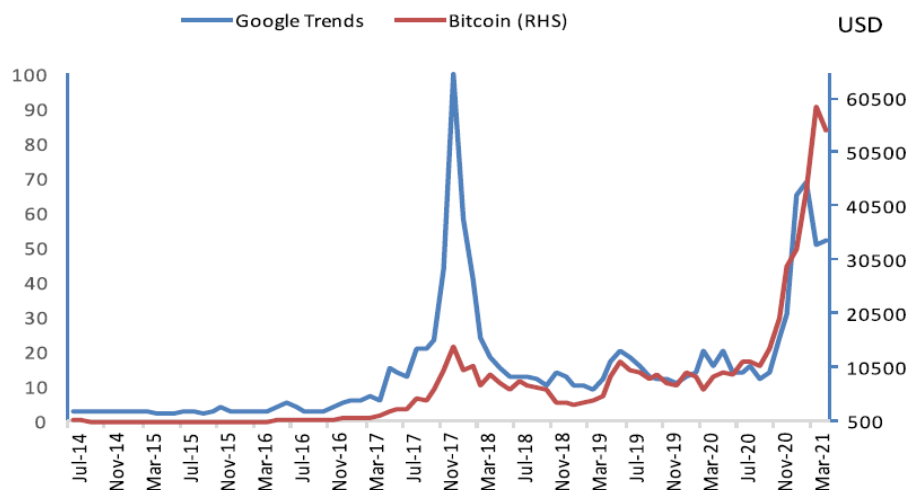
On the other hand, the fact that cryptocurrencies are one of the best performing assets, with Bitcoins returnsat 10869% since 2015 as compared to the returns of 102% of S&P, 184% of NASDAQ and 59% of gold, in thesame time period make a case for Crypto believers that Bitcoin will grow in importance as an asset class.

	Bitcoin	Ether	Dogecoin	S&P	NASDAQ	Gold
Returns in 2021 till June 2021	36%	272%	7544%	17%	6.0%	0.2%

Furthermore, an increasing appetite for cryptocurrencies as gauged by number of addresses (Bitcoin address indicates the source or destination of a Bitcoin payment) with non-zerobalancesuggest that cryptocurrencies are here meant to be here in the long term. This is illustrated by the fact that the number of Bitcoin addresses with a non zero balance were 33 million as on December 2020 in contrast to only 3.9 million in 2014 which marks an astounding growth of over 746 per cent during this period.

Bitcoins : Number of addresses with Non Zero Balance rose to 33 mn in 2020

Number of Bitcoin Addresses with Non zero Balance (in million)

2014   2015   2016   2017   2018   2019   2020

Source : Statista

Note : Data is as of year end

The number of Blockchain wallet user also rose to a whopping 73 million in June 2021 in contrast to just 2.71 million in 2014 which represents a growth of 2593 per cent in just a 7 year period.

Number of Blockchain Wallet Users (in million)

2.71 5.34 10.69 21.51 31.91 44.51 63.48 72.98

7/6/1905 7/7/1905 7/8/1905 7/9/1905 7/10/1905 7/11/1905 7/12/1905 5/1/2021
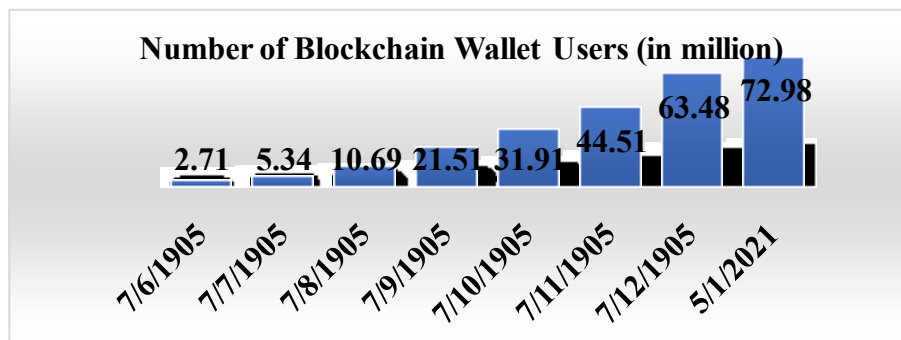
Source :Statista

Note : Data is as of year end

Bitcoin transactions per day remained in a narrow range in May 2021 despite heightened volatility

Transactions per day (000s)
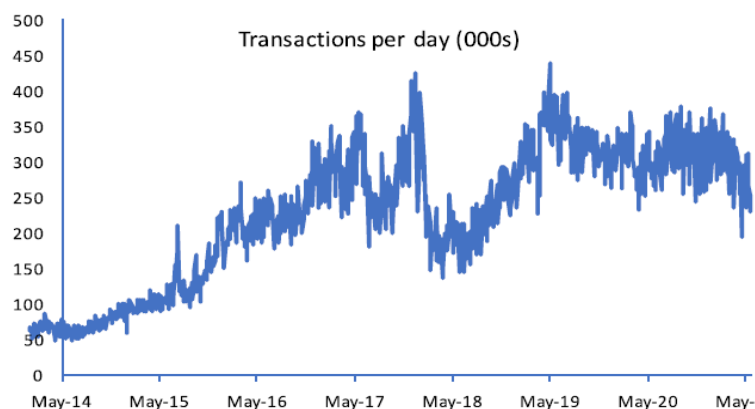
Source: Investing.com

Market capitalization of Cryptocurrencies (in USD bn)

Market Capitalization of Cryptocurrencies (in USD bn)	2014	2016	2018	2020	May 2021
Bitcoin	4.38	15.5	65.3	539	734
Ether	0.068	0.713	12.24	84.9	328
Dogecoin	0.017	0.024	0.28	0.6	46
Total	**4.5**	**16.8**	**129.5**	**875**	**1700**

The above statistics indicate that Bitcoin, although gained traction as fad and still remains speculative, the trends indicate that it is here to stay in the long run.

Bitcoin a good store of value/a safe haven asset?

Bitcoin is often hyped as a probable replacement for the traditional metals as a store of value. However thereare problems.The first one being that the price of Bitcoin is extremely volatile and is much higher when compared to safe haven and other riskier assets. Aslo, if we compare the standard deviation of Bitcoin daily returns it is observed that it much higher as compared to other riskier and time tested assets such asS&P, NASDAQ and even the safe haven assets such as the US 10-year yield, Gold and the DXY.The second cause of concern is concentrated ownership. This is one factor which leads to extreme volatility levels and makes this asset class extremely fragile. The ownership of Bitcoin is highly concentrated asmore than 94% of all Bitcoins are held by just 2.14% of accounts.

Volatility: Bitcoin (BTC) is highly volatile as compared to other riskier assets

Daily Return	S&P	NASDAQ	BTC	DXY	Gold
Mean	0.05	0.07	0.35	0.01	0.03
Std. Deviation	1.14	1.29	4367	0.43	0.89
Skewness	-0.66	-0.65	0.28	0.10	-0.16
Kurtosis	19.31	11.74	8.61	2.24	3.44

Time period : July 2014 to June 2021; BTC : Bitcoin, DXY : Dollar Index

Bitcoin price rose and fell substantially as compared to other assets.
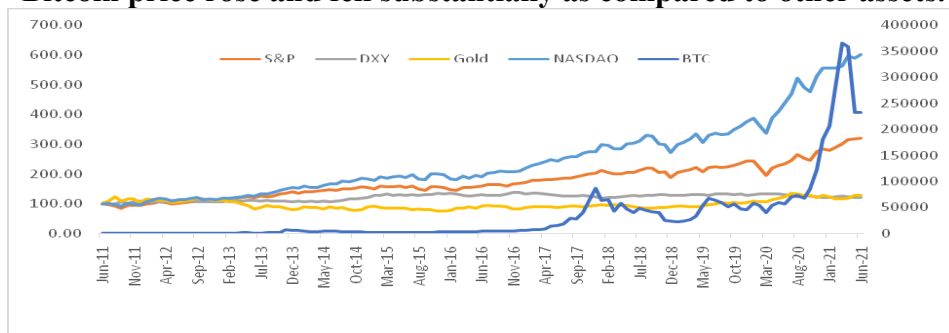
All price levels are rebased to 100.
Source : investing.com
High volatility of Bitcoin as evaluated by standard deviation of monthly returns

Standard deviation of monthly return (3-month rolling window)
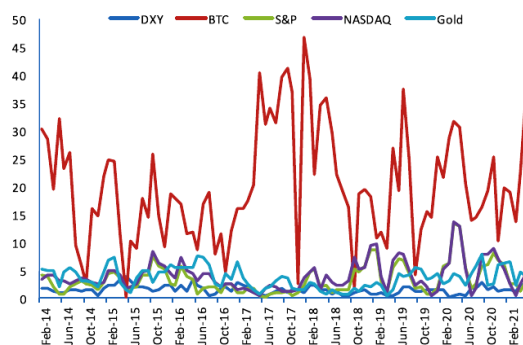
Source : investing.com

Bitcoin fulfils most of the characteristics attributed to a safe haven asset such as High Liquidity, Limited Supply (A total of 21 million bitcoins can be ever mined) and continuous demand however the endurance in the long term can be tested only with time. Similarly there are liquidity concerns which arise if Monetary authorities of countries enact laws which put the status of cryptocurrency in danger.Also volatility in Bitcoin due to its speculative nature, further purports the argument about it being a safe haven asset.

Bitcoin: A hedge against other asset classes?

For this we check the correlation of Bitcoin with Time Tested Asset Classes such as S&P 500, NASDAQ, US Dollar Index and Gold.

Correlation	2014 to June 2021	Jan 2015 to Jan 2017	Jan 2017 to June 2021	May 2018 to March 2018	May 2019 to June 2021	March 2020 to June 2021
BTC and S&P	0.12	0.02	0.15	0.13	0.23	0.35
BTC & NASDAQ	0.12	0.02	0.15	0.14	0.23	0.38
BTC & DXY	-0.01	0.02	-0.02	-0.05	-0.10	-0.11
BTC & Gold	0.07	0.03	0.11	0.17	0.23	0.24

Just as gold is, Bitcoin can also gradually advance into a major asset class. It is remarkable thatthere exists a positive correlation betweengold and Bitcoin's daily returns. Albeit, the correlation was weak to start with but it has been rising and in the right direction. From the above table it can also be observed that Bitcoin has a positive correlation with S&P and NASDAQ. Though the correlation is low for the time being, however, this can change in the near future.

It has also been observed that there is a growing concern in the market that the extreme volatility in Crypto Currencies may have a spill over effect on other financial markets. Given the fact that the correlation between bitcoin prices and other assets(US stocks, NASDAQ and the DXY) is weak, we can reckon that the volatility in the crypto currencies will have nothave a substantial impact on other financial assets. Thus, based on this evidence, it is safe to concur that Bitcoin has the properties of being a good hedge from the perspective of portfolio diversification.

Low but rising correlation between gold and Bitcoin prices
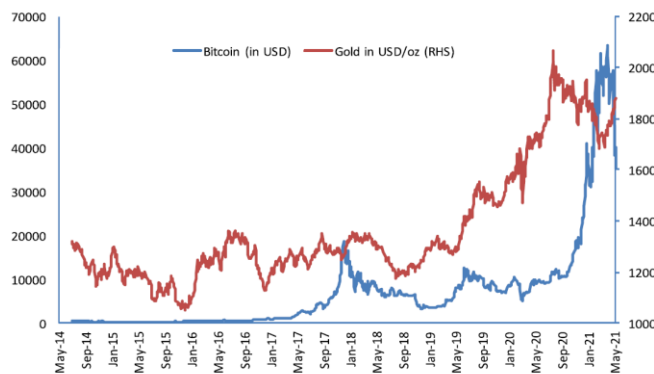
Central Bank Digital Currency (CBDC) – A game changer?

The possibility of competition from cryptocurrencies has prompted central banks to design their own digitalcurrencies, which shall besupported and controlled by the central banks.

CBDC is the electronic version of cash in the banking system and it shall be issued by a central bank. Such an electronic virtualcurrency will be backed by an appropriate amount of monetary reserve such as gold or foreign currency reserves.

How CBDC is evolving and being planned in different countries of the world

• **Global Experience**

The Bahamas has already rolled out a CBDC in Oct-20 called as the Sand Dollar which is the virtual equivalent of the Bhamian Dollar. Sweden has also accomplisheda technical pilot while theEuro Zone plans to launch a digital euro by 2025. Similarly, the UKgovernment has initiated a 'Britcoin' task force.

USA

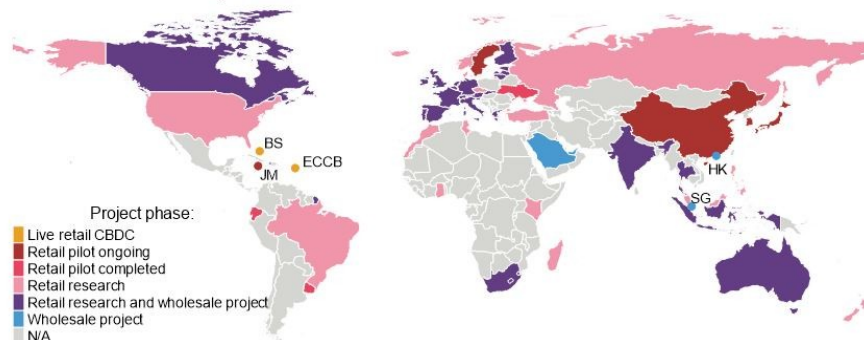The Fed plans to publish a research paper on CBDCs in 2021. This paper shall be based on the fact that the pandemic has accelerated the use of contactless payment.

China

China conducted a pilot study in May 2021 in the Suzhou city where more than 180,000 people were given 55 digital yuan which was equivalent to the value of actual 55 yuan, which was a success. This digital yuan is based on the block chain technology where the central bank decides, who can use it. Its further supplemented by features it can be tracked by the Chinese Government and will also be internationally viable.

CBDC research and pilots around the world

Project phase:
- Live retail CBDC
- Retail pilot ongoing
- Retail pilot completed
- Retail research
- Retail research and wholesale project
- Wholesale project
- N/A

BS = The Bahamas; ECCB = Eastern Caribbean Central Bank; HK = Hong Kong SAR; JM = Jamaica; SG = Singapore. The use of this map does not constitute, and should not be construed as constituting, an expression of a position by the BIS regarding the legal status of, or sovereignty of any territory or its authorities, to the delimitation of international frontiers and boundaries and/or to the name and designation of any territory, city or area.

Source: R Auer, G Cornelli and J Frost (2020), "Rise of the central bank digital currencies: drivers, approaches and technologies", *BIS working papers*, No 880, August.

Source :Rise of the central bank digital currencies: drivers, approaches and technologies, BIS working paper No 880, R Auer, GCornelli and J Frost (2020)

Differences between CBDC and Cryptocurrencies

• CBDCs would be centralized and regulated by a central bank. However, cryptocurrencies are decentralized and the authority is delegated to the user base.

• CBDC users will not be anonymous as their identity would be mapped to an existing bank account while Crypto currency users enjoycomplete anonymity.

• CBDC will have the support and backing of a central bank. Once CBDC's are introduced, one cando both retailand wholesale payments. Cryptocurrencies are mined privately by anonymous users. The government or central bank has no affiliation to it.

• CBDCs lower volatility as they are backed by Central Banks and alsopossess greater security as compared to the highly volatile and speculative cryptocurrencies

Benefits of digital currencies

• Reduces the cost of managing and transferring cash

• Financial inclusion: Those who are unbanked can get easier and safer access to money on their phone

• Improves cross border payments efficiency: 'A future CBDC may offer needed functionality and controlsthat could transform the role of central bank money in international transactions, reduce risks and increaseefficiencies of cross-border and offshore payments' (CBDC: Changing the geography of central bank money,Mandeng May 17th 2021)

Can CBDCs be inflationary?

While we do not know what impact the digital currencies will have on monetary policy actions and inflation,but one channel through which digital currencies could limit the impact of monetary policy actions oninflation is by reducing thedeposit funding of commercial banks.

Supposedly, when inflation rises, the central banks perform the role of sucking out the excess liquidity in the system by using their

Open Market operations and thus sellinggovernment and corporate bonds to the banking sector. Tighter monetary conditions help to control theinflation. Once CBDCs are introduced, and if all the money in commercial bank accounts is converted into electronic cash, then commercial banks would lose their deposit. Thus, the role of the mechanism of the monetary policy would become limited due to such lower deposit funding.

In such a scenario where Monetary authorities sell government and corporate bonds with aim of controlling inflation, commercial banks, whose deposits have reduced might be instigated to use their idle cash to purchase bonds from the central bank. This may not have a major impact on systematic liquidity thus rendering the monetary policy less effective. Also, CBDCs could help countries introduce stimulus measures during a crisis/economic stress, thus creating an upward pressure on prices.

RBI's stance on Digital currencies (Crypto and CBDCs)

In 2018, the RBI banned banks and other regulated entitles from dealing in transactions related tobitcoin and other crypto currencies citing a threat to the financial stability of the economic system. In March 2020, the Supreme Courtoverturned the ban and allowed lenders to extend banking facilities for such transactions. According toindustry estimates, there are ~10 mn crypto investors in India with total holdings of ~USD 1.36 bn.

The RBI has shown that it is much considering the prospect a launch of a CBDC.

Conclusion

Like most conservative investors, it is difficult to come to an agreement about the often conficting properties of cryptocurrencies. On one hand they help to hedge against sharp movements in other asset classes but on the other hand its own volatility that seems to befostered primarily by sporadicspurts of strong interest (the number of Google searches for instance or a tweetfrom a major investor) is a somewhat of a party pooper. The entry of a well know Asset Management Company Black Rock which has two fundsinvesting in Bitcoin, can change the rules and lead to larger adoption of Bitcoin as a Safe Haven Investment or also as hedge. With newer concepts such as Bitcoin wallets earning interest, for Bitcoins stored in the wallets, further solidifies the position of Bitcoin and its gradual acceptance towards an alternate currency system. However,with the entry of the Central Banks into the Crypto game through CBDCs,the crypto space can have seemingly unpredicted competition which can either purport or endanger its existence.

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DISABILITY AS INSPIRATION

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ABSTRACT

As we all Know one thing that every person is suffering or struggling in his whole life whether he is rich and poor .The life is nothing but overcoming from the obstacles which are encountered and suffered from, similarly Helen Keller, Christy brown, Octavia e butler and many more well known writer   suffered a lot in their life because of their disabilities. Now a days most of the people don't care to help other people and if we talk about any disabled person help. Others then no one will believe in it. But these writers were different from others. They are an inspiration for others.They never gave up because of deafness and blindness but they dedicated their life to help others and made change in the world despite their disability. People with many disabilities can achieve incredible feats and success in spite of the limitations they face on a day to day basis, can live meaningful and productive lives that can challenge all of us.

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Keywords: Profound, Determined, Cerebral palsy, Vitiated, Activating

Introduction

Helen keller used to show herself that she was more capable of taking care of herself. Even Helen was unable to hear, speak and see but what she wanted, she expressed in terms of acting and with sign language. She used to act so perfectly that the observer could easily understand what she wanted ,for example, when she wanted a piece of toast , she acted as she was making a toast, if she needed a ice cream she acted as she was opening the freezer and pulling out the ice cream. It is so wondering how could she know about these things and she expressed so perfectly about these.

Although she acted for her wants but as she was unable to see, speak and hear, so some time it became very difficult to understand what she actually wants. It can be easily explained by an incident. She accidentally locked her mother in a room for whole day. Her mother knocked the door alot but she couldn't hear that and she did not know that her mother was locked in the room. This made a mess as her mother had no option expect wait for someone to come and unlock her.

If we read Christy Brown's account of his childhood and the unflinching faith his mother placed in him, without the help of his mother, he would never have been able to do those things he was able to do. The doctors said that it was a interesting but a hopeless case. Many told her that Christy was mentally defective. But she refused to accept this. She was determined women. She refused to believe that the boy was beyond cure, beyond saving and beyond hope. She could never believe that the boy was stupid. She decided to take the matter into her hands. She was very caring and affectionate towards him. she did not neglect him. She did not keep him in isolation. She decided everything possible for her son out of love for the child. we can see that it was her belief in his intellect that kept him going and gave him the necessary strength and self-confidence to continue believing in himself and also to conquer his own intense frustrations and Christy Brown, through his writing and finding some way to express himself, manages to transcend his profound physical limitations and free his body from the troubles that he has to struggle with. Through this process, he attains peace and a sense of freedom. This is something that all of us can learn from: all of us in different ways and to varying degrees struggle from various limitations, obstacles,physical or otherwise, yet with commitment, dedication and courage, we can transcend those limitations just as Christy Brown transcended his limitations.

 His mother was the person who never lost the trust in him, who always tried to encourage him to keep on trying; who spend hours and hours with teaching him although she had so many other things to do .She tried her best to bind Christy and his sisters and brothers with strong bond. For them it surely was not easy task, it was very difficult to live together with Christy who was abnormal and suffered from cerebral

palsy. It was most important for their mother to get involved with Christy as much as possible to improve his mental and physical condition, to help him to get the possibility of doing at least one of the most important things in the world that is communication, so that he could talk to others .During the first years of life when Christy was unable to tell anyone what he felt, what he wanted, he felt that he lived in a prison. There was no other way for him to express his feelings to others because he was unable to speak neither to write anything. Imagine not being able to speaking - you are unable to tell anyone what you feel, what you want, what you imagine, what is your need and many more things. This must be an absolute horror! .This was one of the reasons why Christy during the first years of his life did not have any strong bond with his siblings, when he learned about sign language his whole situation changed because he was even able to write with his left foot and with the help of sign language he could communicate with others, he could express his feelings.. Surely it was very hard work for Christy as well as for his mother and it take long time to understand all these things but gradually he was able to write sentences that were understood by his family but it was worth it because this was the only way to his mental freedom - for the very first time in his life Christy was able to tell his family what he wanted - for the very first time he was able to express his feelings, his imagination, his thoughts.

Conclusion

A wonderful insight into the mind of an amazing woman. Helen's work seems to be a response to those who think that the blind or the blind/deaf cannot experience reality but poorly.I think that one of the strongest messages that comes out of Brown's work is the idea that individuals must be able to activate their own sense of voice in order to make sense of the predicament that envelops them.   For Brown, this becomes vitally important. Brown understands the frustration and pain that is intrinsic to his condition and state of being in the world.   Rather than capitulate to this in terms of suicide and self-despair, his painting and sense of voice through which he is able to advocate for his own needs and understand his own voice of experience is what allows him to endure and eventually prevail over the pain of his being in the world. The message here is that human voice is an essential part of being in the world. When individuals understand the power of their own voice as activating meaning to one's own sense of being in the world there can be a greater sense of redemption from the pain and difficulty that often accompanies human consciousnessFeelings of anger.

Christy was a born cripple. Doctors and others had declared the case beyond cure, even the relatives and friends of Christy's mothers told Christy's parents that they should treat Christy kind and sympathetically but they should not take him seriously. But her mother was unique in one sense. She was determined to prove that he was not a cripple. The opportunity came. he learnt to write by holding a chalk tightly between the toes of his left foot. It was a miracle. Had he been in another family, he would have been ignored. Nobody else would be bothered about his mental development. The credit for this goes to her mother. Such mother deserves to be honoured with a medal in child care.

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EXPLORING DIMENSIONS OF BRAND PERSONALITY: A STUDY OF APPLE I-HONE

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ABSTRACT

In today's world. Companies have recognized the importance of brand personality.Brand personality refers to the human-like qualities or characteristics associated with a brand that give it practical and emotional features.Many consumers choose products from brands that match their personalities. Customers who use smartphones areno exception as well. This researchaims to explore the brand personality of the Apple I-phone using Jennifer Aaker's Brand Personality Construct in the Indian context. Through the use of the convenience sampling technique, 200 questionnaires were circulated to the youth of Haryana. The personality dimensions identified with Apple I-phone were then detected using exploratory factor analysis. The findings of this study revealed 4 Brand personality dimensions associated with Apple I-phone which are Sensational, Steadfast, Elite, Popular,.The research will be vital for the marketers in their decision making because they can now can use these personality dimensions carefully in their branding success.

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*Keywords: Emotional features, Brand Personality, Apple I-phone.*

Introduction

Consumers view brands to have a personality that they use as a means of self-expression or to enjoy the emotional advantages that the brand provides. Consumers can reinforce optimistic attitudes towards brands as they develop trusted relationships with them. Consumer tastes are influenced by brand personality. Brand personality is a construct studied in the field of relational marketing. It refers to the human-like qualities or characteristics associated with a brand that give it practical and emotional features, as well as assisting it in developing its own identity and connecting with its customers. It means the personification of the brands. When we associate individual qualities and attributes with a product or company's brand, we create its personality. Brand Personality is a kind of symbiotic relationship between individual traits and the product's benefits Brand personality is important in ensuring brand loyalty and developing a positive attitude toward the brand. Consumers buy brands not only for their utilitarian purposes but also for the abstract associations associated with the name. Marketers can improve their results by successfully expressing powerful brand identities. Brands are a reflection of the consumer's personality. Brands may be used to convey one's true self or a person's ideal self. Consumers may form some kind of relationship with the brand with the aid of brand personality. In today's Indian market, there are a plethora of brands. Consumers' interests are piqued by brands based on the personality they represent. As a result, each brand has a distinct personality that manifests itself in different ways depending on the situation. The individuality of a brand is a critical factor in its growth. Companies have recognized the importance of brand personality in shaping consumer behavior and have incorporated it into their brand promotion campaigns.Thus, Brand personality is used as a viable metaphor for recognizing customers' views of products and creating a distinct presence in their minds as brands strive to become distinctive. It is seen as a competitive tool because it aids in product differentiation and brand image development.

Brand Personality Dimensions

Jennifer L. Aaker (1997) outlines five dimensions of brand personality and divided brand personality along these lines. Sincerity, Excitement, Competence, Sophistication, and Ruggedness are some of these measurements. While human personality and brand personality are not often said to be alike, as Aaker suggests, customers believe that the brand's personality closely suits their own, which has an impact on their brand preference. Figure 1.1 depicts brand personality dimensions along with its five components that have been further divided into sub-components

Figure 1.1:   Five Dimensions of Brand Personality
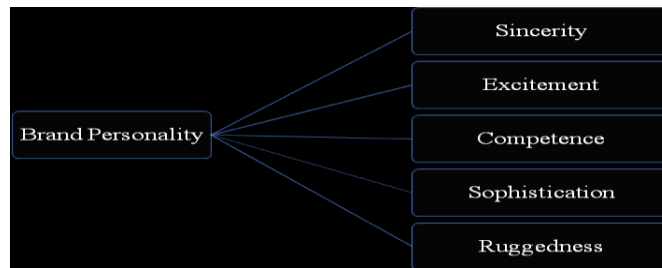
Source: *Adapted From Aaker (1997)*

These measurements aid in the recognition of a product's or brand's personality. It establishes the groundwork for determining the brand's personality. Since no one brand may have all of the characteristics or qualities, the personality must be found somewhere along the scale. Aaker's five dimensions are mentioned below:

1. Sincerity

It means the quality of being sincere, genuine, honest, and trustworthy. The sincerity focuses on the product should focus on providing those benefits that it promises to provide. According to the Aaker model, Sincerity includes down-to-earth, honest, cheerful, and wholesome attributes. The brands like Dove, hallmark, titan depicts these features.

2. Excitement

The state of being excited. The brand shows the quality of having great energy and enthusiasm.. The users of this type of brand are energetic, youth people with high spirit and cool attitude. The excitement dimension includes traits like daring, spirited, imaginative, and up-to-date features. The brands like Fastrack, Gucci, MTV depict an exciting personality.

Statment Problem

The prevalence of smartphone brands in the industry is a well-known reality. Marketers add several new features regularly. Cell phone advertisers are well aware of the factors that influence customer decisions when buying mobile phones, including not only technical considerations such as speed, accessibility, and special features, but also psychological factors such as personality, lifestyle, and brand loyalty. This recognition is exemplified in cell phone ads and advertising, which highlight elegance

3. Competence

It means having sufficient skills and knowledge. It works on the foundation of confidence and reliability. The attribute competent includes reliability, intelligence, and success. The brands like Bata, pc jewelers are competent brands showing full dedication and commitment.

4. Sophistication

The brand personality shows features like enlighten, classy, luxurious, and charming. It includes the upper class and charming features. Brands like Rolex, Armani shows traits of sophistication.

5. Ruggedness

It reflects features like strong, robust, sharp, sturdy, rough, and tough. According to Aaker, it includes outdoorsy and tough attributes. Brands like Nike, puma shows this type of personality.

Every product can fall into one of the dimensions given by Jennifer. After knowing the brand personality, the marketer can alter the product and provides it according to the needs and wants of users.

and passion while demonstrating how a phone can change a consumer's lifestyle.Apple delivered 3.2 million iPhones in India last year, up from 1.7 million in 2018. With the support of the first Indian online store, which launched last year, Apple saw a 60 percent increase from 2019 to 2020. In this study,researchers are attempting to discover the personality dimensions associated with the Apple iPhone.

Literature Review

Kim (2000) investigates how female shoppers in the United States equate and shape opinions

on rival national fashion brands. Consumer perceptions of five brand personality characteristics for different clothing products are the focus of the research. The study also investigates the connection between brand personality and brand choice, as well as whether brands within product categories can be clustered based on brand personality characteristics that are identical and how brands can be distinguished. Consumers expect the trait competent to be present in all brands.

In their study, **Govers and Schoormans (2005)** sought to determine whether product personality congruence influences customer preference positively or negatively. The study also looked at whether this effect was irrespective of the user's picture congruence. A two-phase analysis was carried out. Product personality congruence was measured in the first phase, and consumer image congruence was measured in the second. Users favor brands with product personalities that complement their self-image, according to the results, and these beneficial effects seem to be independent of customer image congruence.

Pandey (2009) used Jennifer Aaker's BP scale to test the personality of the Dove brand in her study to see if Jennifer's brand personality scale was accurate in India. Respondents in the survey were young and middle-aged city dwellers. Dove is seen as an honest, sincere, true, young, plain, down-to-earth, upper class, beautiful, feminine, contemporary, enduring, new, dynamic, stable, original, and charismatic brand, according to the study's findings. The Jennifer BP scale was also found to be irrelevant in the case of grooming items in India. Using Aaker's BP scale, **Romero et al. (2012)** conducted an exploratory study of brand personality measurements among males and females in Mexico. Success, Hipness/Vivacity, Sophistication, Sincerity, Domesticity/Emotionality, Ruggedness, and Professionalism were discovered to be seven variables. Success and Hipness/Vivacity were ranked higher by women, while Domesticity/Emotionality, Ruggedness, and Professionalism were rated higher by men.

The applicability of Aaker's brand personality measurements to fashion products for generation Y is investigated by **Erdogmus et al. (2015).** According to the study's results,

generation Y's brand personality in Turkey can be categorized into six dimensions: honesty, passion, integrity, elegance, authenticity, and traditionalism. Brand managers should build a brand identity for their products based on their personality options, according to the author, and convey it to customers. The factor ruggedness was not removed in this analysis, but a new clothing brand personality dimension, individuality, was discovered.

Brand personality as a vehicle to convey practical benefits of a brand; brand personality as a reflecting symbol of the self of the customer; and brand personality as a means to create the consumer-brand relationship were defined by **Ahamad and Thyagraj (2015)**has three modes of action of the brand on consumer behavior. According to the results of the report, the congruence of a customer's personality and a brand's personality plays a critical role in influencing a customer's behavior, so brand managers can imbue their products with a distinct brand personality.

Research Objectives

- To evaluate the demographic profiles of the Apple I-phone users.

- To explore the model validity of Jennifer Aaker's brand personality scale.

- To measure the brand personality of the Apple I-phone.

Research Methodolody

The present research study is based on the brand personality measures propounded by Aaker (1997). The Aaker Brand Personality Model (1997), which specified Sincerity, Excitement, Sophistication, Competence, and Ruggedness as the five aspects of a brand personality, was adopted and modified to analyze perceptions of brand personality. The descriptive single cross-sectional study research design is adopted. The purposive sampling method was used to collect the data from 200 respondents of Haryana. They were given a well-structured questionnaire for data collection. The questionnaire was divided into two parts. In section, A respondents were asked to indicate the extent to which of Aaker's (1997) personality traits they used to describe the Apple I-phone.24items from the brand

personality scale were included. Respondents were asked to rate the items of personality traits on a five-point Likert scale. Demographic questions were included in section B. Only youngsters ranging from the age of 15 to 35(According to national youth policy) were targeted in this research. As youth is considered, the most valuable market for Apple's I-phone.Youth have comparatively more purchasing power so they have been targeted for this research.

Data Analysis

Table 1 - Demographic profiles of Apple I-phone users.

Demographic variable	CATEGORY	PERCENTAGE
Gender	Male	55.10%
	Female	44.90%
Age	15-20 Years	9.40%
	20-25 Years	65.90%
	25-30 Years	18.80%
	30-35 Years	4.30%
	Above 35 Years	1.40%
Educational qualification	Up To Senior Secondary	4.30%
	Undergraduate	21.70%
	Postgraduate	49.30%
	Professionals	22.50%
	Others	2.20%
Marital status	Single	64.60%
	Married	35.40%
	Others	0
Monthly income	Below Rs 20,000	34.10%
	20,000 To 40,000	16.70%
	40,000 To 60,000	13%
	60,000 To 80,000	8%
	80,000 To 100,000	13%
	Above 100,000	15.20%

Source: Researcher calculations

Table 2:ReliablityAnalysis

Factors	Cronbach's Alpha
SENSATIONAL	.952
ELITE	.938
POPULAR	.895
STEADFEST	.788
Total	.961

Source: Researcher calculation through IBM SPSS 22.0

The Aaker Brand Personality Model (1997), which specified Sincerity, Excitement, Sophistication, Competence, and Ruggedness as the five aspects of a brand personality, was adopted and modified to analyze perceptions of brand personality. Table 2 shows the reliability of all the factors and in total. All the factors achieved a high Cronbach's alpha coefficientsuggesting high internal reliability (greater than 0.6 as recommended by Nunally and Bernstein). The overall Cronbach's alpha coefficient of all 24 items is 96.1%.

Table 3:KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.946
Bartlett's Test of Sphericity	Approx. Chi-Square	4357.310
	df	276
	Sig.	0.000

Source: Researcher calculation through IBM SPSS 22.0

The Kaiser Meyer Olkin Measure of Sampling Adequacy analysis revealed that KMO is greater than 0.5 i.e. (0.946) (as recommended by Kaiser) describes sample adequacy, and Bartlett's Sphericity test is highly significant. As a result, factor analysis is acceptable, and the variables are related. Following that, all 24 items of Aaker's brand personality model were subjected to exploratory factor analysis using SPSS 22.0. Factor extraction was done using principal component analysis with varimax rotation.

Table 4: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	12.699	52.912	52.912	12.699	52.912	52.912	5.949	24.790	24.790
2	2.704	11.266	64.178	2.704	11.266	64.178	4.911	20.462	45.252
3	1.435	5.980	70.158	1.435	5.980	70.158	4.123	17.178	62.430
4	1.113	4.638	74.796	1.113	4.638	74.796	2.968	12.366	74.796
5	.687	2.862	77.658						
6	.623	2.597	80.255						
7	.576	2.398	82.653						
8	.452	1.885	84.538						
9	.426	1.776	86.315						
10	.376	1.565	87.880						
11	.328	1.367	89.247						
12	.325	1.353	90.600						
13	.281	1.171	91.771						
14	.280	1.168	92.939						
15	.234	.974	93.913						
16	.215	.897	94.810						
17	.209	.871	95.681						
18	.186	.777	96.458						
19	.184	.767	97.225						
20	.168	.699	97.924						
21	.142	.590	98.514						
22	.139	.580	99.094						
23	.129	.538	99.632						
24	.088	.368	100.000						

Source: Researcher calculation through IBM SPSS 22.0

For the derived 4 factors, the eigenvalue was higher than the prescribed standard of 1 according to the results of factor analysis. This revealed that only 4 dimensions were derived from the 24 brand personality items used in the factor analysis, with a cumulative variance of

74.796 percent. This meant that the 4measurements accounted for 74.796 percent of brand personality variation. However, among these 4 measures, factor 1 has the highest eigenvalue with 12.699% variance. This shows measures 1 explains the maximum variance among 24 items.

Table 5: Rotated Component Matrix

	Component			
	1	2	3	4
COOL	.870			
YOUNG	.789			
TRENDY	.776			
EXCITING	.775			
UNIQUE	.733			
CHEERFUL	.722			
WHOLESOME	.704			
IMAGINATIVE	.689			
UPPERCLASS		.845		
GLAMOROUS		.836		
CHARMING		.835		
GOOD LOOKING		.817		
UP-TO-DATE		.813		
WESTERN		.808		
ORIGINAL			.760	
CORPORATE			.730	
LEADER			.723	
REAL			.722	
CONFIDENT			.683	
SUCCESSFUL			.644	
CONTEMPORARY				.735
INDEPENDENT				.732
INTELLIGENT				.724
RELIABLE				.722

Extraction Method: Principal Component Analysis.
 Rotation Method: Varimax with Kaiser Normalization.[a]
 a. Rotation converged in 6 iterations.

Source: Researcher calculation through IBM SPSS 22.0

Table 5 shows the result of factor analysis with varimax rotation based on the technique of principal component analysis method. The following is how the factors can be derived from the table:

*Dimension 1:*indicates cool, young, trendy, exciting, unique, wholesome,imaginative,and cheerful which can be termed as Sensational

Dimension 2: indicates upper class, glamorous, charming, good looking, up to date & western as Elite

Dimension 3: indicates original, corporate, leader, real, confident, and successfulwhich can be termed as Popular

Dimension 4: indicates contemporary, independent, reliable, and intelligent which can be termed as Steadfast

Hence we infer that number of dimensions of brand personality is 4 which explains 24 items from a brand personality from the Jennifer model. Thus we can say that Jennifer's Brand personality scale is not relevant in the context of studying the Apple iPhone in India.

Brand personality of Apple I-Phone

The apple I-phone is seen as a fashionable, cool and stylish brand among millennials since it is quite popular and people utilize it extensively for self-expression. It denotes glamorous, appealing, and attractive qualities which imply Apple I-phone is an Elite brand. It's also considered Steady since it's western, independent, and modern. It is considered a craze among youngsters to have Apple-iPhone since they agree that the Apple iPhone is a very classy brand that allows them to express themselves.Thus we can say that Apple I-phone is considered an Artistic, creative, and sophisticated brand.

Discussion and Conclusion

The primary purpose of this study was to use Jennifer Aaker's proposed brand personality scale to assess the Apple I-brand phone's personality measurements. The main characteristics of a brand's identity have now been revealed. Marketers should concentrate on shaping their campaigns by stressing the key personal attributes of their brands. Based on these brand personality dimensions, brand managers may build a brand identity for the brand.

The limitation of the study was that the data was only obtained from youngsters of Haryana. The analysis was limited to the Apple I-phone's brand personality. As a consequence, the findings cannot be applied to all regions, products, or age groups.Studying the effects of each sub-dimension, as well as the role of brand personality on contextual variables and assessing how consumers personify the brand, maybe promising areas for future studies.

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INCLUSION OF TRANSGENDER COMMUNITY AND ECONOMIC DEVELOPMENT

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ABSTRACT

There have been various discussions regarding the relation between inclusion of marginalized communities and economic development of a country.Discussion about inclusion of transgender community , who have been excluded from the mainstream society must be laid focus in this regard.Transgender is one of the preferred current-day adjective used to describe any individual whose gender identity and expression does not align stereotypically with the gender assigned to them at birth.There is a positive relation between the inclusion of transgender community and economic developement which can be analysed both theoretically with the help of theories like Human Capital Approach,Capabilities Approach, and The Post-Materialist Hypothesis and on the basis of real life problems like Police Abuse, Workplace Discrimination,Lack Of Access To Health Care, Lack Of Access To Education e.t.c.

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Keywords: *Transgender, Inclusion, Economic Development, Human Capital.*

Introduction

Many economists across the world, in the recent decades have put forward the idea that inclusion of marginalized groups will promote prosperity and economic development.When we discuss about the social inclusion of marginal communities,a major focus should be laid upon the transgender community and other sexual minorities whom have been excluded from the mainstream society due to their identity. The diverse subgroups in this group are people who identify themselves as Transwoman(MTF-Transitioning from ,Male to Female), Transman(FTM-Transitioning from Female to Male),Transsexuals-securing surgery and/or hormones, Gender Queer-not identifying with 'male'or 'female' and many others. The word 'trans' was introduced in Britain during the second half of the nineties and was promoted by the activists at that time to replace words such as 'transsexual' which were seen as more problematic.(Christine Burns,2018).

How the marginalization and exclusion impacts a trans person's life is interconnected ; stigma and transphobia drive isolation,poverty,violence,exploitation,lack of social and economic support systems,and compromised health outcomes.The members of transgender community who express their gender identity at an early age gets rejected by their families.They either gets cast out of their homes or gets shunned within their households which results in lack of opportunkities for education and skill development and no attention given to their physical and mental health needs.Transpeople who reveal their gender identity later in their life faces rejection from the mainstream society as they go about undoing gender socialization. From, cradle to grave, the people of transgender community have to face discrimination ,socially,economically and politically which continues through their entire life and hinders them.From school itself, the students from transgender community have to face prejudice,intolerance,discrimination,violence and various kinds of exploitation that disrupts their ability to learn and leads to lower attendance rates and higher drop out ratios.

In principle, as the members from the transgender community are denied participation in the mainstream society .Due to their identities,their human rights are being violated.The exclusion and violence they face are likely to have a negative impact on a country's level of economic development.Yet,only a few empirical studies have tested this hypothesis and virtually no research has examined the broader concept of LGBT inclusion and the lived experiences of LGBT persons in a macro-economic famework (Berggren and Elinder, 2012, Badgett et al., 2014).

The Realation between transgender inclusion and economic development: The oretical perspective

The full inclusion of LGBTQ community in social, political and economic levels is well-linked to the improved well-being in the macroeconomic level, an assertion which is well supported by scholars across disciplines on different dimensions and aspects of inclusion.

One of the apt theory to frame the link between inclusion of the transgender community and economic development is the Human Capital Approach. Human Capital refers to a set of skills, ability, knowledge, health and values that improves the productivity of an individual. According to this approach, the inclusion of transgender community results in greater access to education, improved heakth care and access to training and skill development which improves their productivity, increases the opportunities available to them and thus expands the human capital stock of the economy.

The discrimination theory put forward by Gary Becker states that employers who discriminate may end up with lower profits as they refuse to hire minority productive workers s (Becker, 1971). The workers facing such discrimination might end up in low productive/ low paid jobs or no job at all. In both the cases, human capital is not utilised efficiently.

Post-materialist Values hypothesis drawn from the work of political scientist Ronald Inglehart states that as the countries develop economically and become more economically secured, they are more likely to value the minority rights. This is because with greater economic security, the country's focus shifts away from the concerns about survival towards values of self-expression, inclusion and respect for minority's rights. Studies of Inglehart and others have shown that in countries with higher per capita income, attitudes towards sexual minorities are more tolerant and accepting (Stulhofer & Rimac, 2009; Reynolds, 2013).

The causal link from inclusion of transgender community to economic development can be explained with the help of capabilities approach. The capabilities approach conceptualizes development as an expansion of freedom for individuals to make choices about what they can do and be, with that expansion not dependent uponindividuals' membership in certain identity groups (Nussbaum, 2001; Sen,

1999). This approach views increased monetary income , the traditional measure of development as just an input into an individual's ability to convert goodds and servvices into the actual achievement of their goals and identity. Discrimination in employment and education, violence and harassment, stigmaand rejection, criminalization and non-recognition in law, all translate into a lack of freedom for LGBTindividuals to make choices about what they can do and be (Waaldijk, 2013). Thus, from this perspective, inclusion is crucial for human well-being and economic development. As per the capability approach, there are five freedoms the sexual minorities need inorder to live with their identity and to achieve what they want and thus contribute to economic development. They are: freedom from police abuse, freedom from workplace discrimination, freedomfrom violence, freedom for access to health care and education.

The relation between transgender inclusion and economic development: Real life analysis

1. Workplace discrimination

The Transgender people are not productive when they face discrimination in workplaceThe transgender people might be working in lower positions than they are qualified for, as the Human Capital Approach suggests, as the employers refuse and also because they won't be having any proper identification documents to be hired in more productive jobs. The discrimination they face in the workplace also reduces their incentive to invest in human capital through training and education as those investments doesn't necessarily mean a promotion or higher wage. As revealed by a Workplace-related research on LGBTQ Community, transworkers are marginalized and excluded from gainful employment as discrimination occurs at alll phases of the employment process, including recruitment, training opportunities, employeee benefits and access to job promotion.

2. Police abuse

According to the International Covenant on Civil and Political Rights of 1966, all people including those from the transgender

communityhave the right to be free of police abuse.Police officers,whether through enforcing anti-transgender laws like Section 377 of the IPC and the Immoral Trafficking Prevention Act,or on behalf of their personal prejudice,have unjustly arrested,detained,jailed and humiliated the transgender people.Police abuse causes negative economic impacts.First,there is the unnecessary cost of jailing and lengthy court proceedings-the resources which could have been used for some economically productive purpose.Secondly, the transgender people who have been targeted by the police would reduce the labor force participation and it can also reduce their participation in political activities or formation of organisations which promote social capital development. As stated by A.Revathi , a Transgender Activist in her book 'A Life in Trans Activism' , "On November 25,2014, 200 hijras were picked up and put in the infamous Beggar's Colony near Magadi Road in Bangalore under the Karnataka Prohibition of Beggary Act,1975.Even hijras who were not begging ,but going to the market to buy provisions for their houses were picked up.Just being a hijra is criminal under law,it seems.No employment opportunities are given to us and when we do the jobs that are available to us-sex work and begging-we are punished for it.Laws that are meant to protect us instead criminalize us."

3. Access to health care

There are certain barriers to health for transgender people living in developing countries.While many people in the developing countries may rely on family members for health care, the transgender people who have been rejected by their familities lacks this resource.Lack of health care ,both physical and mental leads to the reduction of their productivity. A study published by the American Journal of Psychiatry last year pointed out that,individuals with gender congruency are six times more likely to have mood swings and suicidal tendency compared to the normal population.Lack of access to health care have become even worst for the transgender persons during the lockdown.Societal stigma resulting in discrimination leads to the systematic exclusion

of the transgender community from the health care sector.According to National Centre for Transgender Equality(NCTE) , the compromised immune system of transgender people is at a higher risk of corona virus infection(Choudhary,2020).The transgender people weren't even able to get food and hormone kits during the wake of the pandemic.The transgender and non-binary persons who have undergone sex reassignment surgery have to take hormone pills regularly ,which has become impossible during the lockdown. "The Government is yet to sanction the medicine for 15 days which is usually given to transmen or transwomen after they undergo the sex reassignment surgery.Delay in taking timely medication can lead to more complications.Besides,members of the transgender community are facing severe stress and anxiety,says Ananya, a member of the transgender community who lives in Ernakulam,Kerala.

4. A ccess to education

Both the Universal Declaration of Human Rights and our constitution has granted right to education to all citizens irrespective of caste,race and sex .But this right is often violated in the case of transgender people.They face discrimination in schools from teachers and peer groups which discourages them from getting education or hampers their ability to fully take advantage of their schooling opportunities.Even the few transgender persons who bravely withstands this discrimination and studies further faces the problem of lack of access to resources and lack of financial support.COVID-19 and continuous lockdowns has also affected the studies of transgender students as they lack the resources for attending online class."Not just me, many students from the transgender community are facing difficulties with online classes.They don't own a smartphone or laptop.Many have to fend for themselves since there is no support from families.Although,my mother has been helping me , the amount is not enough for my expenses", says Manusha Ahlad, a transwoman pursuing her M.A. in Political Science at Kerala University,Karyavattom.The economic impact caused by lack of access to education is very much clear: it excludes the transgender students from the opportunities to improve

their knowledge and skills(human capital) and thereby reduces their chance to get employed in higher-skilled jobs that contribute to overall economic productivity.

Conclusion

The theoretical analysis and real life analysis supports the fact that there exists a positive relationship between inclusion of the transgender community and economic development of a country.More rights will allow the transgender people to achieve their fuller economic potential as they get education , training and get treated equally in the labor market which improves their productivity(The Human Capital Approach).Increased choices and freedom would enhance individual's well-being by expanding their capabilities to be and do what they value (The Capabilities Approach).Increased economic development would push countries to respect the minoriries' rights and freedom (The Post-Materialist Hypothesis).

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