COMPARING & ANALYSING VIRTUAL &TRADITIONAL ON BOARDING PRACTICES

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ABSTRACT

To compare & contrast the differences between the traditional & virtual on boarding processes and which of the above two will have been a better on boarding experience for the management interns. The study is specifically intended to address the on boarding mechanism of the b-school interns. In order to find out the above difference's opinions of two sets of people i.e. people who had traditional on boarding and people who had virtual on boarding. A questionnaire is also floated to know how well were the specific aspects of on boarding conveyed to the management intern thus enabling him to a smoother transition into the organization & the perception of how these aspects are carried during the on boarding process. The significant differences in the way the two ways of on boarding is conducted & the level of clear goals established in the minds of management interns are found out.In this changing way the organizations function with a shift to virtual world, this paper gives organizations specific aspects of on boarding activities that must be taken care of & the emphasis required on them during the on boarding process.

This paper includes insights which are original with the data collected from various people who are onboarded at various organizations.

Keywords:*On boarding, Virtual On boarding, traditional on boarding, socialization.*

Introduction

On boarding is the first process which a joiner employee encounters when he joins any organisation. Employee on boarding also called as assimilation or organizational entry and socialization, is the process by which a new employee is introduced to an organization and its values, vision & mission. Regardless of whether the employee is an internal or external candidate, it is "the process of acquiring, accommodating, assimilating and accelerating new team members to the organization". On boarding starts when a new employee is offered a job in any organisation and ends when the employee becomes functional fully. It covers the whole range of employee needs like the equipment, accounts, training, networking and is strategic in focus. Employees actively participate in the on boarding process. It is majorly done in order to acquit the new the new joiners in order to socialize with the other fellow employees & help them know better about their organisation. It encompasses various processes, activities, sessions that are conducted by the organisation to help the employee make a smooth transition into the organisation.

The world has been running on wheels until recently with even the on boarding activities being held at the company location. The traditional on boarding has been proven to be effective in many ways to onboard the employees in a smoother way. Many theories, frameworks & methodologies have been researched, proposed & implemented to make this happen. The recent covid-19 pandemic around the world has brought the running world to a halt & has turned the world upside down. It has also impacted the way in which organisations have to function & run their daily activities. The work from home culture has become the daily norm & the employees have started adopting to these working conditions. Every activity of an established company has shifted online & this is an unusual situation which the world has never faced before. Specifically speaking even the on boarding of newly joined employees which was previously done at the company location has now been shifted online & the virtual on boarding process .Under this circumstances the process of virtual on boarding needs to be designed keeping in mind the aspects of the traditional on boarding so as to serve the primary purpose of on boarding& make sure the psychological connected established is the same. The virtual on boarding has to be custom tailored according to the business of the organisation thus conveying the key essence of their purpose of mission & vision.

Literature Review

The literature review is done to capture the key essences of what activities must/are doing included during a formal on boarding process. These activities included the processes which were established with respect to the traditional on boarding practices. These practices can be used as a reference serve the purpose of developing a framework for a virtual on boarding.

Onboarding and Socialization

There is a vagueness in the literature around the understanding of on boarding and socialization. Sometimes the two are used interchangeably but we view them as separate constructs based on key conceptual differences. For example, socialization can be defined as something which happens within the individual & how he interacts with others, whereas

on boarding refers to discretionary ways in which the organization can help in facilitating the socialization process. Additionally, on boarding occurs when an employee joins in an organization, whereas socialization is a non-stop process that lasts whole through the tenure of an individual with an organization and across organizations whole through one's career (Klein,2015) Another distinction suggests that individuals will be proactive in terms of their socialization, and considerable amount of research exists which highlights the proactive behaviours of newcomers (An individual's activities and plans to help facilitate their own socialization – sometimes referred to as transition activities (Klein ,2012) – are, however, distinct from the on boarding policies, practices, and programs put in place by organizations or their agents(e.g., supervisors, leaders, co-workers, administrative assistants, mentors, HR representatives).

These aspects of on boarding& socialization are quite easy & natural when the on boarding happened at the company location. The one on one interactions, on the job learning & visibility factor between the employer & the new employee have made the above things quite easy. But the shift to the virtual world has affected the socialization chances of new employees which began on the day one itself when the on boarding happens. The personal level of connect which happened usually at the company is one major aspect missing.

The on boarding process has also a significant impact on the way an employee perceives himself as a proper organizational fit or not. Typically, the on boarding process has a correlation to the organizational fit of any new joiner. The initial impression which the company imbibes in the starting days through the on boarding lasts for a very long period.

On boarding Success and Organizational Fit

On boarding success can be a major factor which a company can link to its new comers intention of feeling that he/she is proper "organizational fit". If the new employees experience is positive, he will feel confident & comfortable in getting his assigned job done. If the experience is negative, he feels disorganized, disengaged & productivity hamper. These initial on boarding activities, training, support—are usually provided in the primary stage of any new employment in an organization. If these aspects aren't delivered in a smooth regulated manner the on boarding process is not much successful one (Pratiwi,2018). All these aspects have been a success in recent years with increased research in terms of conducting an on boarding process very effectively. Many frameworks and theories have been developed to make the traditional on boarding effective in getting the employee organization assimilated quickly. The shift to a virtual on boarding process has posed a challenge to the existing system about how to frame the on boarding process in a virtual context & which aspect to focus on in order to get things sorted for the new employee. In the longer term, organizations will also be interested in whether employees feel that their on boarding process has been an effective one or not. The challenged posed by this shift to virtual world is also that the employer needs to have an understanding of what are the expectations of a new employee & what specific aspects he would appreciate having in his on boarding process. Studies have demonstrated that an individual's "socialization trajectory" and becoming part of the core group in a team takes time and effort (Klein,2015) This aspect also has to be considered in a virtual context since it is the inter dependability of employees on one other for guidance & support which plays a major role in coordinating & getting the jobs done on a timely basis.

A systematic review of literature revealed that the traditional on boarding process done at the company generally covered 4 major aspects i.e. clarification, compliance, connection & culture.

Clarification

Clarification is related to context of an individual job which he needs to perform, It also requires necessary resources of the job, the standard expected for the completion of work. The earlier the employee expectations are made clear, the more early he/she becomes more skilful and contributes with more enhanced productivity towards the organisation.

Compliance

Compliance is a basic explanation given to the new employee about the company rules and regulations, policies. It also informs the employee about email, work related documents, , email account and workstation as per the requirements of a particular job. Company which exercises compliance effectively will make its employee company ready more easily & quickly. This also makes sure that they don't face ambiguity about what, where, when, which, why and how about any question relating to the company.

Connection

Connection addresses the interpersonal relationship and network of information management that have be formed by the new employee at the time he joins the organization.

Culture

Culture refers to making the new employee understand the organization's culture & work environment. Every company has a unique, different culture & addresses employees needs and requirements in a different way. The kind of this embedment of the organization culture during the on boarding into its new employee is a key aspect in getting him culturally assimilated into the organization at a quick pace. The quicker the employee understands the company culture and subcultures, the better is the chance for his successful tenure at any company.

These aspects must be clearly needing to be communicated to the employee irrespective of whether it is a traditional on boarding or a virtual on boarding. Its much challenging task to present the same in a virtual set up due to the lack of physical resources & the on the job learning effect. Keeping the new employee engaged & making sure the points are conveyed effectively is also a challenging job.

On boarding Content

The management interns won't be working with the organization for a longer tenure of time hence certain aspects of the on boarding program can be omitted which are applicable during the on boarding of full time employees (Pasternak,2018).On boarding content typically includes welcome, introductions and Office/Facilities Tour, Description of company policies & operating model, Organizational Structure, How Position Fits Within the Department, Culture and How Interns fit expectations, Procedures , overview of position and responsibilities, meeting with Supervisor, system overview, Mentoring/ buddy program (Pasternak,2018). Certain aspects among all the above aspects of the on boarding content are a key parameter to set the tone right & make the internship program a success. A model called intern on boarding pathway model was framed highlighting the definite mandatory contents that needs to be included in a management intern on boarding program (Pasternak,2018).

Management Intern Expectations

Management intern from a B-School who typically does his internship is given a chunk of work which revolves around an issue pertaining to the organization in which he is working. The work revolves around a number of aspects starting from getting to understand the main business of the company. The provides a solid ground work for him in order to understand what is expected out of him & making his deliverables clear. The management internship also has an on boarding process which typically lasts Specifically, the on boarding needs for a management trainee at organizations need a special attention. The management trainees who specifically is intended to solve a business issue i.e the company is on-boarded the necessity of making clear expectations of the deliverables of him is much more higher. There are certain aspects which are considered as key for a successful on boarding of a management trainee at any organization. The following are some of the management trainee landscape features in both the traditional & virtual on-boarding set up.

Description of company policies & operating model

The new employees joining an organization expect a clear explanation of the company policies, the reward system, The performance appraisal system, their business model & their sources of revenue streams. This understanding & information pertaining to the of the basic outliners of the company are yet proven to be effective to be included in the on boarding process since it raises the morale & motivation towards working. These particular aspects needs to be included in the virtual on boarding space as well.

Addressal of queries

The process of addressal of queries which arise during the on boarding process needs to be addressed especially in the virtual context. Unlike traditional on boarding process where the query can be resolved on the spot with the availability of tools & resources at ready disposal. Thus, in a virtual on boarding process it is more significant to address the same issue.

Interactive session with Fellow employee

The idea of the interactive session with fellow employees is to have a formal introduction of each other, get to know their background & better establish a communication flow among them. Seeking some information from an unknown person is problematic & the communication barrier is formed. People tend to feel shy or might face issues in communicating to a complete stranger even if he/she is her fellow employee when it is for the first time. Having a friendly interactive session helps them as an icebreaking activity, help them know their background along with the skill set they possess. This eases the unfamiliarity feeling while communicating & thus nurtures in having a smooth seamless communication among individuals.

Assigning a buddy/mentor for guidance

Any new employee needs an assistance for addressal of his minor queries which he encounters on a daily basis. For this purpose, a buddy is assigned to all the new employees in order to help him with these minor queries. The buddy can also act as a key resource who can be contacted in case of emergency queries. Allotting the buddy immediately on the first day of on boarding or beforehand itself can

Providing Resources

A new employee needs to be provided with few necessary handbooks with information sources, contacts & reference materials to do his job assigned. These reference materials would come in handy at times when some particular information is need to the employee. He could refer to this material & use relevant information as & when needed. A pool of internal sites & access to intranet portals would be needed. The insights about this also needs to be included in a proper on boarding process.

The way this information is conveyed & carried to the management interns is quite distinct. A deeper understanding needs to be developed on how the interns perceive about their on boarding experience with all these landscape features distinctively mentioned & addressed in the on boarding process.

Research Questions

Considering the current scenario of a virtual set up & the transition of even on boarding into virtual environment has left a vague impression in terms of how well the on boarding has been done & how well the management intern gets a better understanding of the job to be done.
Considering the above factors leaves a question of how well on boarding activities of management interns are implemented & perceived by the people who are doing it. This paper aims to address the perceived implementation levels of these aspects & how well each of the aspects are communicated to the interns.
Next 4 hypotheses are tested concerning each individual aspect from the intern on boarding pathway model in order to check if there is a significant difference in the responses of population set 1 & population set 2.

Hypothesis 1

Ho – There is no significant difference in the responses between the population 1 & population 2 in terms of understanding the company business.
Ha – There is a significant difference in the responses between the population 1 & population 2 in terms of understanding the company business.

Hypothesis 2

Ho – There is no significant difference in the responses between the population 1 & population 2 in provision of necessary documents, reference materials.
Ha – There is a significant difference in the responses between the population 1 & population 2 in provision of necessary documents, reference materials.

Hypothesis 3

Ho – There is no significant difference in the responses between the population 1 & population 2 in understanding the explanation of roles & responsibilities.
Ha – There is a significant difference in the responses between the population 1 & population 2 in understanding the explanation of roles & responsibilities.

Hypothesis 4

Ho – There is no significant difference in the responses between the population 1 & population 2 in terms of getting their queries addressed.
Ha – There is a significant difference in the responses between the population 1 & population 2 in terms of getting their queries addressed.
The hypothesis testing is performed using Paired T test is chosen to analyze the responses derived from the Likert scale questionnaire floated around.2 sample paired t test is performed on the two population groups comparing the aspects 6 aspects mentioned in the framework developed. The Paired T test yields us the results showing if there is significant difference in the responses from the two populations in each of the aspects from the framework. A sig value of ($P < 0.05$) is the to be proved in order to show that the difference is significant. The test is performed MS-Excel in order to find out the sig value.

Research Method

3.1 Sample Specification

To study & understand the differences in perception of on boarding practices in traditional & virtual way, two separate data sets needs to be collected from the management interns at B-schools. These 2 sets of population are the batches who has received an on boarding at the company location & those who got their on boarding process done virtually in a remote setup.
For this 2 sets of population, two different batches are approached. 1st set is those who had a traditional on boarding& the 2nd are the ones who had virtual on boarding.

Population Set 1

The 1st set of population represented the MBA graduates from the batch of 2018-20 who have done their internship at their respective companies. The batch of 2018-20 was specifically selected since they have done their internships in an offline set at the office location &got onboarded in a traditional set up . The level of interaction & the kind of experience &

exposure is completely different in an office set up. For the same batch of 2018-20 a questionnaire has been floated with the with these shortlisted activities. The questionnaire was floated to a sample of 109 people who had the traditional on boarding. The idea was to have an understanding of the perception about the perception of how well they feel their on boarding activities have made initial learnings of the company easier

3.3 Population Set 2

The 2nd set of population are the people who had their on boarding process done virtually. They were offered internships initially by various companies to work at their respective company locations. Due to the ongoing pandemic around the world they have shifted to a virtual means of on boarding. In order to understand the on boarding perspective in a virtual scenario specifically the batch of 2019-21 is selected. The sample size is 109 from this 2019-21 batch. The above population are across various specializations of MBA including HR, Marketing & Finance. The sample is mixture of both experienced candidates & freshers. Few among these people have previously received a welcome gift & the company has been in continuous touch with them.

A questionnaire is then floated across the above Population set 2. The aim of the questionnaire was to find out the key aspects of their virtual on boarding. The set of key on boarding activities shortlisted from the population set 1 are added & the virtual interns are asked about how well they were satisfied with the way the company has onboarded them virtually through various activities, sessions & programs.

The following list of aspects were covered in the questionnaire which includes Interactive session with Fellow employees, Addressal of queries, Description of company policies & operating model, Providing Resources.

Results & Analysis

Results from Population Set 1

4.1.1Company Business

Table 1: Calculations for company business aspect

	Rating Scale				
	1	2	3	4	5
The description of the company business & its policies was given clearly	9 %	7 %	0 %	41 %	43 %

The above table shows the data results for the briefing of the company business during the on boarding process. As per the criterion based on the interval classification, 1 – strongly disagree, 2-Disagree, 3 – Neutral, 4 – Agree, 5 – Strongly Agree. At an overall rating level, the ratings 4,5 are considered as the positive response which is the cumulative percentage obtained by the individual percentages of rating 4 & rating 5 from the population, 3 is considered as a neutral response & 1,2 is considered as a negative response which is the cumulative percentage obtained by the individual percentages of rating 1 & rating 2. Based on these criteria, the briefing of company business aspect has 9 % response in rating 1, 7% in rating 2, rating 3 has 21% of responses, rating 4 has a 41 % response & rating 5 has a 43 % response. At an overall rating level, the briefing of company business practice has 16% negative response, 0% of neutral response & 84% of positive response.

Providing necessary reference materials, documents & contacts

Table 2: Calculations for providing reference materials

	Rating Scale				
	1	2	3	4	5
I got the necessary resources which includes reference sites, materials, contacts	6 %	9 %	28 %	30 %	27 %

The above table shows the data results for the providing necessary reference materials, documents & contacts during the on boarding process. Based on these criteria, the briefing of the job, roles & responsibilities to be performed has 9% response in rating 1, 16% response for 2, 28% response for rating 3, 30% of responses for rating 4 & 27% response for rating 5. At an overall rating level, the briefing of company business practice has 15% negative response, 28% of neutral response & 57% of positive response.

Explaining roles & responsibilities

Table 3: Calculations for explaining the roles & responsibilities

	Rating Scale				
	1	2	3	4	5
During my on boarding the roles & responsibilities of me are clearly explained	7 %	8 %	25 %	34 %	26 %

The above table shows the data results for the briefing of the jobs, roles & responsibilities to be performed during the on boarding process. Based on these criteria, the briefing of the job, roles & responsibilities to be performed has 7% response in rating 1, 8% in rating 2, rating 3 has 25% of responses, rating 4 has a 34% response & rating 5 has a 26% response. At an overall rating level, the briefing of company business practice has 15% negative response, 25% of neutral response &60% of positive response.

Addressal of queries

Table 4: Calculations for addressal of queries

	Rating Scale				
	1	2	3	4	5
I had a proper chance to ask for any queries i had during my on-boarding process	12 %	10 %	9 %	35 %	30 %

The above table shows the data results for the addressal of queries during the on boarding process. Based on these criteria, the addressal of queries has 12 % response in rating 1, 10 % response for 2, 9 % response for rating 3, 35 % of responses for rating 4 &30 % response for rating 5. At an overall rating level, the addressal of queries practice has 22% negative response, 9 % of neutral response &65% of positive response.

Leadership talks & interaction with HR

Table 5: Calculations for sessions with HR

	Yes	No
Interaction session with HR	72 %	28 %

The data results for interns who had traditional on boarding at their company revealed that 72 % of these people had an interaction session with their HR & leadership. While, there were 28 % of the respondents stated that didn't have any interactive session with their respective HR & leadership.

Assigning a buddy / mentor

Mentor / Buddy assignment has been done in every organization that has been surveyed.

Table 6: Calculations for assigning a buddy / mentor

	Yes	No
Mentor / Buddy Assigned	100 %	0 %

The data results for interns who had traditional on boarding at their company revealed that 100% of these samplehad a buddy/mentor allotted.

Results from Population Set 2

Company Business

Table 7: Calculations for company business aspect

	Rating Scale				
	1	2	3	4	5
The description of the company business & its policies was given clearly	25 %	39 %	11 %	10 %	16 %

The briefing of company business aspect has 9 % response in rating 1, 7% in rating 2, rating 3 has 21% of responses, rating 4 has a 41 % response & rating 5 has a 43 % response. At an overall rating level, the briefing of company business practice has 16% negative response, 0% of neutral response & 84% of positive response.

Providing necessary reference materials, documents & contacts

Table 8: Calculations for providing reference materials

	Rating Scale				
	1	2	3	4	5
I got the necessary resources which includes reference sites, materials, contacts	40 %	40 %	10 %	11%	0 %

The above table shows the data results for the providing necessary reference materials, documents & contacts during the on boarding process. Based on these criteria, the briefing of the job, roles & responsibilities to be performed has 6% response in rating 1, 9% response for 2, 28% response for rating 3, 30% of responses for rating 4 & 27% response for rating 5. At an overall rating level, the briefing of company business practice has 15% negative response, 28% of neutral response & 57% of positive response.

Explaining roles & responsibilities

Table 9: Calculations for explanation of roles & responsibilities

	Rating Scale				
	1	2	3	4	5
During my on boarding the roles & responsibilities of me are clearly explained	28 %	32 %	12 %	11 %	17 %

The above table shows the data results for the briefing of the jobs, roles & responsibilities to be performed during the on boarding process. Based on these criteria, the briefing of the job, roles & responsibilities to be performed has 28% response in rating 1, 32% in rating 2, rating 3 has 12% of responses, rating 4 has a 11% response & rating 5 has a 17% response. At an overall rating level, the briefing of company business practice has 60% negative response, 12% of neutral response &28% of positive response.

Addressal of queries

Table 10: Calculations for addressal of queries

	Rating Scale				
	1	2	3	4	5
I had a proper chance to ask for any queries i had during my on-boarding process	35 %	41 %	10 %	4 %	10 %

The above table shows the data results for the addressal of queries during the on boarding process. Based on these criteria, the addressal of queries has 35 % response in rating 1, 41 % response for 2, 10 % response for rating 3, 4 % of responses for rating 4 &10 % response for rating 5. At an overall rating level, the addressal of queries practice has 76 % negative response, 10% of neutral response &14% of positive response.

Leadership talks & interaction with HR

Table 11: Calculations for providing reference materials

	Yes	No
Interaction session with HR	72 %	28 %

The data results for interns who had traditional on boarding at their company revealed that 72 % of these people had an interaction session with their HR & leadership. While, there were 28 % of the respondents stated that didn't have any interactive session with their respective HR & leadership.

Assigning a buddy / mentor

Mentor / Buddy assignment has been done in every organization that has been surveyed.

Table 12: Calculations for providing reference materials

	Yes	No
Mentor / Buddy Assigned	87%	13%

The data results for interns who had traditional on boarding at their company revealed that 87 % of these people had a mentor / buddy assigned to them. There were also 13 % of the respondents who stated that didn't have any interactive session with their respective HR & leadership

Discussions

Based on the above results obtained after the analysis of the questionnaire that has been floated there has been some difference in each of the activities that have been listed down as the common practices across organizations during the on boarding of the management interns from B – schools. The paired t test is performed in order to see if there is significant impact on each of the aspects when compared in the traditional & virtual context

Company Business

Table 13: T-test calculation on both populations

	Population 1	**Population 2**
Mean	4	2.5229
P(T<=t) two-tail	0.00007	

The above table shows that sig value is 0.0007 which is significantly lower than the threshold value of 0.05. Hence for case of the hypothesis 1 we reject the Ho – null hypothesis & the Ha – alternate hypothesis holds true showing that there is a significant difference in the responses between the population 1 & population 2 in terms of understanding the company business Providing Necessary Reference Materials, Documents & Contacts:

Table 14 t-test calculation on both populations

	Population 1	**Population 2**
Mean	3.6330	2.7614
P(T<=t) two-tail	0.002	

The above table shows that sig value is 0.002 which is significantly lower than the threshold value of 0.05. Hence for case of the hypothesis 1 we reject the Ho – null hypothesis & the Ha – alternate hypothesis holds true showing that there is a significant difference in the responses between the population 1 & population 2 in provision of necessary documents & reference materials

Explaining the roles & responsibilities:

Table 14 t-test calculation on both populations

	Population 1	Population 2
Mean	3.688	2.633
P(T<=t) two-tail	0.003	

The above table shows that sig value is 0.003 which is significantly lower than the threshold value of 5%. Hence for case of the hypothesis 3 we reject the Ho – null hypothesis & the Ha – alternate hypothesis holds true showing that there is a significant difference in theresponses between the population 1 & population 2 in addressal of queries aspect.

5.4. Explaining the roles & responsibilities:

Table 14 t-test calculation on both populations

	Population 1	Population 2
Mean	3.6330	2.7614
P(T<=t) two-tail	0.002	

The above table shows that sig value is 0.002 which is significantly lower than the threshold value of 0.05. Hence for case of the hypothesis 1 we reject the Ho – null hypothesis & the Ha – alternate hypothesis holds true showing that there is a significant difference in the responses between the population 1 & population 2 in provision of necessary documents & reference materials

Interaction with HR

Table 17. Calculation of having /not having interaction with HR for population 1

	yes	**no**
Virtual on boarding	72%	28%

Table 18 Ccalculation of having /not having interaction with HR for population 2

	yes	**no**
Traditional on boarding	100%	0%

The aspect which was about the interaction of the intern with the HR 72 % of the population had the interactive session with their HR & 28 % of them didn't have an interactive session with their HR in the virtual setting. In the traditional set up 100 % of the respondents had an interactive session with their HR.

Assigning a mentor / buddy

Table 19 Buddy assigned / not assigned

	yes	*no*
Virtual on boarding	87%	13%

Table 20. Buddy assigned / not assigned

	yes	*no*
Traditional on boarding	100%	0%

The 87 % of the population in the virtual set up stated that they had a mentor / buddy assigned to them whereas 13 % of the population didn't have a mentor / buddy assigned. In the traditional set up 100 % of the respondents had a mentor / buddy assigned to them.

Conclusion

- Designing a proper on boarding process is a key function for any organization. As analysed & discussed the virtual on boarding clearly has areas of concerns in comparison with the traditional on boarding practices.
- The various common aspects which include briefing company business, providing necessary resources,explaining roles & responsibilities, addressal of queries has shown that the virtual onboarded people's responses had significant statistical difference in comparison with the traditionally onboarded people.
- Each individual aspect of the management intern pathway model was more clearly communicated in the traditional on boarding setup.
- Buddies / mentors were assigned in majority of the cases in both traditional & virtual cases.
- Interactions with HR has been 100% in a traditional set up & only 72% in case of virtually onboarded people

Recommendations

The world has seen a complete transformation to a virtual way of functioning for the first time since the ever & the we are not sure about how long this situation is going to prevail. There have been organizations which have already declared that they will be working from home for foreseeable future. Under this situation making sure an employee is motivated, engaged & connected continuously is a key challenge. It all begins with the on boarding which happens in the beginning that will have a lasting impression about the company in the minds of the employees. At the management interns level the on boarding redesign & convey the on boarding aspects to the people onboarded thus making the virtual on boarding a much more smooth & organized activity.

Limitations

- The data collected & results highlighted is specifically intended for management interns at top b-schools. The same result might not be true in case of people who were onboarded for various roles at different organizations.
- The on boarding aspects shortlisted is specific to the management interns & the aspects of on boarding are subject to change in case of on boarding for other roles & position

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ANALYSIS OF INDIA'S CHARGING INFRASTRUCTURE TO ACCOMMODATE ELECTRIC VEHICLES

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ABSTRACT

The market for Electric Vehicles (EV) in India is still in the embryonic stage. Given the emerging need of electric vehicles this study critically examined the present electric vehicle charging infrastructure in India to check if it has all the required facilities in order to facilitate the switch of bringing 30% electric vehicles on road by 2030. The purpose of the study is to examine the current market scenario of the electric vehicle charging infrastructure and understand the different specifications related to it. The paper also analyses the impact these charging stations would have on the national grid and discusses about the various challenges and barriers that stand in the way of successful operational installation of charging stations.Further, the paper gives a brief idea about the different policies and initiatives given by the Government of India to the manufacturers as well as the buyers to enhance this electric vehicle adoption on a much bigger scale. The last part of the paper talks about a charging station algorithm model that can be developed so as to reduce the charge anxiety and range anxiety in customers. This algorithm helps them find the nearest charging station based on their current location.

Keywords**—***Electric vehicles, infrastructure, sustainable mobility, charging stations*

Introduction

India is the fourth largest emitter of greenhouse gases and the transport sector accounts for thirteen percent of the carbon emissions. This means that there is an urgent need for the requirement of sustainable as well as green mobility like electric vehicles. The shift from conventional vehicles to alternatives is not an easy one. The National Electric Mobility Mission Plan (NEMMP 2020) was announced recently to incentivize use and production ofelectric vehicles (EVs) in India with in order to mitigate severe environmental impacts of vehicles and to enhance energy security as well as reduce our dependency on imported oil.

There is a huge potential in the market for electric vehicles today. The automobile business, based on the exceptionally old Internal Combustion Engine (or ICE) and controlled by petroleum derivatives, is confronting all-round disturbance. At a higher level, governments, including India's, are stressing over environmental change, pollution and import oil and energy security. [1]

Today, almost the whole world is looking for alternate sources of transportation given the problems associated with climatic conditions. Experts are consistent that the move towards EVs is fast approaching and inescapable. A report by Bloomberg New Energy Finance (NEF) indicates that by 2040, 57% of all vehicle deals and 30% of passenger vehicle deals will be electric. But currently this figure is subjected to change due to the worldwide pandemic of corona virus.

People in India still have not adopted electric vehicles on a larger scale. In FY19, about 126,000 electric two-wheelers and 500,000 electric three-wheelers were sold in the country. Sale of electric cars was negligible. The only segment where EV adoption is taking off is in three-wheelers as they have become a popular last-mile connectivity option in the NCR region especially by cab fleet services like Ola and Uber. Most existing car players have started changing gears. From buses to cars, bikes to three-wheelers, organizations all over the world are drawing out their EV plans. Mahindra Electric and Hero Electric, as of now with an EV portfolio, are firing up their dispatch motors. Organizations like Tata Motors, Kinetic Motors, Maruti Suzuki and Hyundai Motors are for the most part preparing their EV models for a 2020 dispatch.

The adoption of electric vehicles can be encouraged only if we have sufficient charging infrastructure in order to facilitate the switch. Currently there are only 250 charging stations accessible to the public in India. In the coming years, the infrastructure of electric vehicles was said to witness a growth of 40% but this might be affected due to the pandemic. The Indian government is planning to set up 2600+ electric charging stations across the country. We have to deep dive into the fact to check if 2600 chargers would be enough to accommodate our target of 30% electric vehicles on road by 2030.

LITERATURE REVIEW

"Challenges of Electric Vehicle adoption in India" by Satis Chandra and Minal S begins by discussing the Per Capita energy consumption of India over the years. The paper discusses the current state of e-mobility in India and other countries while bringing to the forefront peculiar challenges faced by Indian EV sector along with the various policies favouring faster EV adoption in the country. It talks about the four main identified global challenges of EV adoption

- High purchase price of EVs
- Insufficient public infrastructure
- Lack of products comparable to conventional products
- Less investment in augmenting EV manufacturing capacity

Apart from this, the paper goes on to point out that "Range Anxiety" -the fear of running out of electricity before reaching another charging station-also poses to be a huge problem. In India, the electricity requirement for EVs is projected to be 79.9 gigawatt hours (GWh) by 2020 which will rise up to 69.6 terawatt hours (TWh) by 2030 [2] which means that a substantial increase in electricity production is required to offset theoverloading of local transformers and the grid. It goes on to suggest that incentives like tax rebate, toll waivers, registration fee waivers, free parking will motivate potential buyers to buy EVs which in turn will result in increased production.

"Future of sustainable personal mobility solution in India" by Dr. Chhabi, Sinha Chavan analyses the problem of sustainability of fuel for passenger vehicles.in India. It examines the feasibility of other alternatives of fuel. The paper also discusses the future of electric vehicles in India and the impact of Government regulations on electric vehicles. It identifies that high upfront costs and "service anxiety around recharging or maintaining facilities" are the two main barriers of sales growth. The paper goes on to discuss electric scooters and compares it to the fuel run two wheelers. The last part of the paper talks about the policies of the Indian government to help the consumers adopt electric vehicles and lists out incentives given by various countries like Italy, France, US, UK, Japan and Norway.

"Is India Ready for e-Mobility?" by Sita Mishra, Gunjan Malhotra is an explanatory study to understand the purchase intention of Electric Vehicles by Indian customers. This paper has examined the intentions of consumers of electric vehicles in India and have suggested a theory based on psychological and economic studies. Data collection method used was questionnaires distributed in a mall in the NCR and around 230 samples were analysed. They identified six main factors that influenced the purchasing power of customers while buying electric vehicles:

- Cost of ownership
- Performance features
- Financial advantages
- Environmental concerns
- Social influence
- Infrastructure support

The study found various relationships between the different factors and it was established the two main factors cost of ownership and infrastructure support were imperative to electric vehicle adoption in India.

"Electric Vehicles in India Policies, Opportunities and Current Scenario" by Siddharth Pandit and Dinesh Kapur talk about the main factors that affect the electric vehicle adoption in India namely:

- Government policies and schemes
- Market Size
- Environmental Concerns
- Allied Opportunities (Target 100Gwof Solar by 2022)

The paper goes on to discuss about the two main policies- FAME and NEMP 2020- the budget allocations, incentives announced and concession in custom duties. The paper also describes the various barriers and challenges present to the growth of Electric Vehicles in India. It also proposes a business model for e-rickshaws in India, discussing the market opportunities and challenges. The authors conclude the paper by quoting different electric vehicle case studies in India and the initiatives taken by various State Governments.

"Potential Need for Electric Vehicles, Charging Station Infrastructure and its Challenges for the Indian Market" by Praveen Kumar and Kalyan Dash examine the required facilities needed in terms of infrastructure for adoption of electric vehicles in India, mainly charging stations and the challenges in the Indian scenario. The paper has given out a comparisonbetween three different types of fuel and the expenditure incurred in the long run. They have come to the conclusion that even though the investment in electric vehicles is high in the investment side, we can recover back the money in the first couple of years.

The paper goes on to discuss the impacts of electric vehicles on grid and supply and the requirement of smart chargers. The paper concludes by saying that there should be proper planning of place, population, traffic density and safety before implementing the large-scale charging infrastructure.

Research Methodology

Secondary research has been the main methodology followed for this paper. The study begins with examining the current market scenario of the charging infrastructure in India. Data was gathered from several journal publications and news articles to understand the market conditions and the various initiatives by public as well as private players. Several policy notifications by the government of India and the annual reports of different automobile players were referred to in order to make an informed analysis. A detailed study was done in order to understand the charging infrastructure. The challenges of installation of electric vehicle charging stations have been discussed along with the various schemes and policies offered by the government. Finally, an algorithm for selection of a charging station is proposed which can be brought into the market in a few years.

A. Analysis of Current Market

In the current market scenario, there are around 250 charging stations and there are only 15 companies that have set up charging stations in India out of which only 3 companies are involved in the charging of four wheelers like RRT Electro Power. They are a company in Chennai involved in manufacturing of battery chargers and they have been a regular supplier to Mahindra. Another such company is Mass Tech Controls in Mumbai. They are alsomanufacturers of battery chargers and have been a regular supplier of Tata motors in all their projects related to Electric Vehicles. There are around 12 companies involved in charging infrastructure of two wheelers. A lot of international players have been looking to invest in the electric vehicle charging market, specifically charging of four wheelers and are exploring the technology and business models which they implemented in other countries and checking the feasibility of its implementation in India.

Following are the features of the current market:

- The current Electric vehicle market in India is still in the early budding stages. There are very few players in the market who are involved in charging of commercial vehicles.
- Even the current players involved right now are not any of the big companies. Most of the companies we see are original equipment manufacturers and small and medium businesses who do not have the required technology or funds to carry out the project on a big scale. The high potential of this market has to be recognized by some of the big multinational companies. [3]
- The business models established now in place do not have a proper structure. Only one or two small firms have a proper business model.

B. Initiatives Taken by Public Sector Companies

The NitiAyog plan has provided a major thrust for the public sector companies in electricity to come up with various schemes and plans:

1. National Thermal Power Corporation

It has drawn out a plan for setting up and installation of 1,00,000 charging stations across India. Currently it has set up charging stations at Noida and Delhi. NTPL hasapplied for a license called that would give them accessibility to set up charging stations across the world. It has also applied for National Distribution License which would allow them to make their charging stations' service to all vehicles as right now their charging stations can charge only Mahindra cars. Their main goal is promotion of energy which is clean and green in transportation.

2. Bharat Heavy Electricals Limited

The Indian Space Research Organization has developed the lithium technology used to make lithium batteries at a low cost and has a high efficiency. The two have collaborated as BHEL has a plan to manufacture batteries using this particular technology. BHEL also has tie-ups with Tata Motors and Ashok Leyland for the production of their electric vehicles. BHEL is targeting at standardizing the batteries of electric vehicles throughout India.

3. Energy Efficiency Services Limited

It is involved in the procurement of electric vehicles and electric chargers. Tenders were issued to source around 4000 electric chargers and 10,000 electric vehicles in two phases. In the first phase it is procuring only 1000 electric vehicles whereas in the second phase it will procure the rest of the targeted vehicles. In terms of Electric chargers, 300 are to be procured in the first phase and the remaining 3700 in the second phase. EESL mentions that all equipment related to charging must be certified by CE and must be tested before delivery as per the norms.

C. **Initiatives by Private Companies**

• Tata power has set up electric vehicle charging stations in several cities like Mumbai, Hyderabad and Delhi. The first charging station was installed in Mumbai in a place called Vikhroli. The chargers by Tata Power have the ability to regulate the status of the charging and the units consumed when a vehicle is charged.
• Mahindra has collaborated with Ola Cabs who have their own fleet of electric vehicles called Ola Electric for setting up of charging stations.
• Ola has more than 2000 cars in its electric fleet which was supplied by Mahindra. An investment of about 50 crores was made for this project. It was first launched in Nagpur where the company set up more than 50 charging stations. The ranges of these vehicles vary from 150-200 kilometres per day. Usually on a full charge the vehicles are able to make around 7 trips. The charging stations are able charge the vehicles in a time frame of about 60-70 minutes. It is much easier to set up these charging stations in Tier 2 cities rather than in Tier 1 cities. Currently Ola has its fleet in Nagpur, Bangalore, Delhi and Gurugram. [4]
• A company called Lithium Urban technology which has completely transferred its fleet of four hundred busses into electric vehicles is planning of setting up around 50- 60 charging stations as instructed by the government of India. They are a transportation company which mostly cater to other corporates and provide them with bus facilities in Delhi and Bangalore. Since they switched their mode, their customers have been able to save up more than 30 % on transportation costs, naturally making them the first choice in the market. Their vehicles can run on an average of 300 km. [5]

Based on secondary research it has been estimated that in the coming years most of the two wheelers and three wheelers will be charged at home and the commercialized charging stations will exist only for four wheelers. With the given pandemic situation, it is very difficult to land on a concrete idea if companies would be willing to invest in electric charging stations in the next two years as the economy has suffered a major hit throughout the world. Considering the government's supportive initiatives (mentioned in the paper later) and the potential for the market we can expect around 25,00,000 electric cars to be on road by 2026. There should be about 1 charging station for every 5 electric vehicles which means we can expect 5,00,000 charging stations to be installed in the next 5 to 6 years. Every charging station would have about 4 to 5 chargers. [6]

Discussion and Analysis

Let us consider cost of transportation as 5000 rupees and check the ranges up to which three types of vehicles can travel. [7]

Table i. Comparison of Different Types of Fuel

Fuel	Electricity	Petrol	Diesel

Per Litre Cost (INR)	5	70	60
Consumption	870kWh	67Lr	83Lr
Range/month(km)	3623	1333	1667
Range for 1 day (km)	121	44	54
Range for 1 Year(km)	44000	17000	20000
Range for 1 hour charge (km)	12.8	51.5	150
Common Uses	Charging of residential buildings	Homes or commercialized charging	Office garages/ commercialized charging stations

The above table is a clear inference that for the same amount of transportation, electric vehicles have the maximum range. Even though the investment is huge initially, it can easily be recovered within the first couple of years.

Charging infrastructure is of utmost importance for a country to fully adapt electric vehicles. Charging time of electric vehicles varies with its charger characteristics like efficiency, density, weight and volume. EV charger should make sure that the effect on the electric grid is very minimal.

D. EV CHARGING LEVELS

EV charging can be classified into three categories based on their charging levels:

- Level 1 type of Charging
- Level 2 type of Charging
- Level 3 type of Charging [8]

Level 1 is the type of charging which is the slowest mode and it requires a single phase of supply and 120Volts/15Amperes. It is used for charging at a lower level like at our homes or garages. Level 2 charging is used for commercial as well as private applications. It requires dedicated supply equipment and requires 208/280 Volts. Level 3 charging is used for commercial purposes like in highways or petrol pumps. [9]

Table ii.Llevels of Charging

Charging Type	**Level 1**	**Level 2**	**Level 3**
Charging Time (hours)	22	8	0.5
Location of charger	1 phase	1/3 phased	3 phase
Level of Power (kW)	1.2-2	Up to 19.5	55-160
Supply Voltage (v)	120	240	250-600

EV chargers can be on board or off board and can have unidirectional or bi-directional flow of power. Bi-directional flow of power means it gets charge from the grid and at the same time energy is injected back into the grid. On board charges have a lot of restrictions in terms of size and weight and are used in Level 1 and Level 2 of charging. Chargers that are off board are used for quick charging purposes like in Level 3 of charging.

E. Planning of Charging Infrastructure

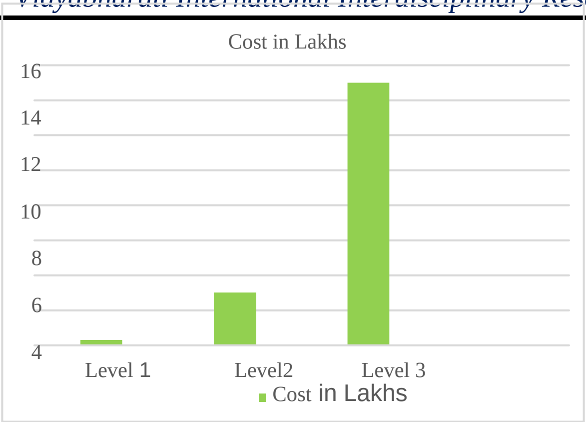
Deployment of electric vehicles in India is fully dependent on the availability of charging infrastructure. The existing power systems we have in place should be able to handle the new sudden load. A charging system which is consumer friendly as well as grid friendly is required in place. Commercialized charging stations are necessary due to the following reasons:

- It will help in diversion of the peak load in charging from peak demand of the network.
- It would transform the mobile load of EV's into stationary load which would be simpler for prediction purposes. [10]
- At times when there is bulk charging of the load, it would be easier to regulate the power factor and harmonics.

Commercialized fast chargers are more user friendly than Level 1 and Level 2 chargers as the former helps in quick charging.

Proper planning of the charging infrastructure is required to incorporate all of this. An ideal location should be selected which is a win-win situation for the customer as well as the grid system. It should satisfy the following conditions:

- The location should be in the area where there are a lot of electric vehicle customers
- The location should be in the heart of the city such that it is in the midst of populated



areas where there are a lot of offices, complexes, malls, etc.

- Location should be in such a manner that the limits on voltage are not exceeded and also should make sure there is minimum losses.

In order to determine how many charging stations are required to sustain the electric vehicles on road, it is quite necessary for us to understand the types of electric vehicles with different battery capacities. Along with battery capacity, humidity, temperature also play a major role in determining the efficiency of electric vehicles

Let us consider the average battery capacity of 30kWh. A fully charged vehicle of this battery capacity will consume around fifteen units of power and can sustain the vehicle for 2-3 days on normal usage. India will need about 15 Mn Kwh of electricity per day to accommodate about 2 Mn electric vehicles on road.

F. Cost Estimation

Setting up of EV charging stations is a costly affair, it includes equipment cost, cost of installation, operation and maintenance cost as well. Initially the cost of equipment is very high but as EV deployment increases, the costs associated with it are expected to come down. The cost of equipment also varies from manufacturer to manufacturer. The cost of installing the chargers includes the basic civil works cost, transmission and distribution cost, installation of charger and connection with the grid, setting up of new network or upgrading of existing network. It is cheaper to work with an existing network rather than to set up a new one.

In locations where low or medium powered chargers are needed, the price estimated varies from 36,000 to 87,000. For commercialized places where fast charging and Level 3 chargers are required, it is more expensive and costs about 2,50,000 and more. Operation and maintenance costs are usually 10% of installation costs.

The following graph shows the cost estimated for setting up Level 1 type of charging at 1kW, Level 2 type of charging at 6.5kW and Level 3 charger at 50kW in Delhi

Fig. 1. Cost estimation of chargers

The rate of charging per kWh is Rs 5 so for a 30kWh battery, it would cost around 75 Rupees per day to charge it. For one million EV's it would cost around 7.5 Crore / day. This is just an approximate calculation and is subjected to vary.

G. Impact on Grid

Factors like Mileage, capacity of the batteries, duration of charging influences the behaviour of EV charging. Some of the impacts of connection of chargers with grid are given below:

- It increases the complexity of the distribution planning network, there are a lot of limitations in the Supply- demand of electricity and the design layout of the charging stations.
- Best of class equipment is required to facilitate the connection with the grid and it requires a high-powered distribution transformer with a huge capacity to avoid complications like over loading, voltage deviation, etc.
- There would be a huge difference in peak due to low load periods and high volatility of charging loads, which will ultimately lead to low utilization efficiency.
- Quality of the power in the distribution network reduces due to the several electronic convertors used. [11]

H. New Technologies
Smart Charging

With the EV deployment in India increasing, it would be like a huge load on the grid. Optimal scheduling should be done well in advance in order to avoid failure of grid and blackout. The grid must be balanced at all times especially when multiple chargers are being used at the same time, they should be monitored continuously. In India the energy demand on a daily basis is usually low during the late-night hours as well as mid-day hours. These are times when the load is really low and ideally Level 1 and Level 2 chargers must be charged during these hours. A two-way system has to be established in place so that consumers know when it is a good time to charge their low utility vehicles. This will enhance the functioning of the grid without over loading. The energy can also be stored during these low peak hours and used as back when high power is needed during the day times. Smart chargers can also cut off power to vehicles when the vehicle is charged upto 70 or 80% rather than full charge so that the remaining power can be diverted to other vehicles. This will make sure all cars are charged in a common place like parking lots of malls or offices. Smart chargers will make sure gird's resources are made use of in the most optimal manner efficiently and also the reliability factor increases when smart grids are involved

Battery Swapping

Battery swapping is an alternative mode of charging electric vehicles. It reduces the waiting time for vehicles to get charged as charging usually takes around 60-90 minutes and battery swapping is the fastest type of charging where you just have to swap the batteries. This willalso reduce the size of the electric vehicle as well as the area required to set up charging stations. At the same time cars in a battery swapping station will be much higher than vehicles involved in the regular charging station. Batteries in this technology need less power compared to the lithium ion batteries. Companies like Sun Mobility and Kymco are already exploring this opportunity. Cab services like Ola and Uber also brought their own fleet of three wheelers which were adaptable to battery swapping. This battery swapping technology will enhance the pace of electric vehicle adoption in India. One of the major concerns in this technology is that all the batteries produced by different companies have to be standardized in terms of specifications, capacity, etc. Only then this method will be a success.

For battery swapping to work, the life cycle of a battery must be satisfiable to the consumers. The batteries' performance must be up to the mark. In case of lithium ion batteries, they are costlier and also constitute to around forty percent of the cost of the electric vehicle. They can be charged up to a maximum of 700 times after which their life cycle ends. The battery also keeps deteriorating over time as even during idle times, it keeps discharging its battery life. If the battery is idle for a very long time, it will lead to reaction of chemicals inside the battery which might lead to some permanent damage. [12]

The life of the battery can also be affected by factors such as excessive discharge, temperature, humidity, over charging. Companies involved in battery swapping technology can make sure that they develop a battery that is robust in all conditions. This will not only reduce the over all cost of the vehicle but also the operation and maintenance costs involved in it.

I. **Barriers**

As the Indian electric vehicle market is still not prevalent in India, there are a lot of challenges that need to be addressed in terms of infrastructure, supply chain,technology, policies, etc. It is not an easy switch. Following are some of the challenges discussed:

• India has a very low reserve of lithium ions which are used to make high density batteries. Lead acid batteries have low energy density and are also much bulkier which in turn increases their weight. That is why high energy densities are preferred.

•There are a lot of challenges in terms of market and infrastructure. There are very few commercialized charging stations at public places like in garages or parking lots. There are no dedicated lanes also for electric vehicles. A model has to be built which increases the trust worthy factor of consumer's investment in electric vehicles.

•There is a need for a well-defined policy framework and stricter regulations in terms of EV production and selling. The Indian government has to provide more incentives in the research areas of Electric vehicles and customers in the EV market. [13]

Electric vehicle consumers often suffer from something called as range anxiety. It is the worry of consumers of whether they would find a charging station before they run out of charge Similar to range anxiety, charge anxiety is a common problem amongst the EV users. Charge anxiety also involves concerns like if the charging station is working properly or whether their vehicle is getting charged or not. It is mainly to do with the quality of electric current being supplied to the vehicles as the power keeps fluctuating a lot.

J. Govrnment Policies and Schemes

In order to achieve our target of 30% electric vehicles on road by 2030, it is not only necessary to push the electric vehicle manufacturers but also to incentivise installation of charging stations.

EESL

In December 2018, the government of India proposed to spend 5000 Crores by 2025 by installing charging stations in 70 cities and 20% of highways. The Energy Efficiency Services Limited (EESL) has been committed to promoting and installation of electric chargers across the country. EESL has collaborated with United States Agency for International Development and the Ministry of Power for building a sustainable and reliable model for scaling up the public charging stations in India. Following are the advantages of taking EESL into the picture for installing public charging stations:

- Well experienced individuals involved in decision making in matters regarding EV's
- Will make sure prices of charging are competitive as well as affordable by the common man
- Fast paced installation of EV's in all states

There were two amendments to the guidelines after December 2018. One in October 2019 as it was becoming very difficult to cover 70 cities in a short period of time with no existing base at all. The amendment of June 8th 2020 mentioned the tariff rates for the public charging stations. It mentioned that the tariff will not exceed the average cost of supply in addition to fifteen percent of the rate mentioned.

Currently EESL has set up more than 300 charging stations across India. In the view of this current pandemic EESL has decided to scale up and has set a target of installing 2000 charging stations in the Financial Year 2020-21. The firm has tie ups with BSNL, Maha Metro, BHEL and HPCL for setting up of charging stations. The main requirement for installing these stations is land which is provided free of cost by municipal corporations as the company has collaborated with the Union Local bodies of several cities like Hyderabad, Ahmedabad, Chennai and Jaipur. EESL is also looking into the feasibility of implementing smart grids and smart chargers.

National Electric Mobility Mission Plan (NEMMP 2020)

It was initially rolled out in 2011, to incentivise electric vehicle manufacturers in an amount worth 14,000 Crores. The target was to bring 6 million electric vehicles on road by 2020 but that has taken a backward step due to the pandemic. The goal of NEMMP is to make sure electric vehicles are the first choice of consumers while considering automobiles. Following are some of the features of the policy:

- Incentivizing the demand side so that electric or hybrid vehicles can be acquired in a simpler way.
- Investing more on the research and development technology of batteries, infrastructure, etc
- Promotion of installation of charging stations
- Incentivizing the supply side ie. The electric vehicle manufacturers
- Making sure the installation of charging stations is sustainable

The main objectives of this policy are:

- Achievement of energy security across the country
- Reducing the impact of automobiles on the environment
- Encouraging Indian manufacturers to grow more in the automobile sector

The government has also taken steps in reduction of tax of customers who purchase electric vehicles. GST rates on electric vehicles have been reduced from 28% to 12 % with no cess. The electricity which is sold for charging has been classified as a service. This initiative is bound to attract a lot of private investment in the charging infrastructure.

Faster Adoption and Manufacturing of Electric Vehicles (Fame India)

This scheme was launched under NEMMP in 2015 and initially budgeted at 75 Crores. It was drafted in an attempt to provide major push towards the electric vehicles by creating demand and thrusting more vehicles into the market. Under the FAME II, 10,000 Crores has been budgeted till 2022. It aims at providing holistic and sustainable development of Electric vehicles and technology and infrastructure related to it. The government is said to be providing incentives for buses 4 wheelers and three wheelers which are going to be used commercially. This scheme is said to support the manufacturers in with an idea first create a huge market for the EV's. The central government has asked all the states to provide support in terms of finance and non fiscal support to the manufacturers as well as consumers of EV's.

Under this scheme, the centre has allowed participation of public as well as private players for investment. The government has promised to set up one Level 3 or fast charging station for 10 electric buses as well as one Level 1 or Level 2 charging station for every electric bus. The charging infrastructure technology will also include research into flash charging as well as pantograph charging. The scheme encourages electricity produced through renewable resources and connecting them with the charging infrastructure.

Table iii. Fund allocations under Fame

Financial Year	Fund allocated (Crores)
2015-16	75
2016-17	144
2017-18	165
2018-19	145

Niti Ayog

The NitiAyog roadmap for electric vehicles was launched in 2017. The main motive was to transform the mobility solutions for the public. The main features of this plan were:

- Integration of systems

Information has to be shared uniformly across all verticals for easy enabling of a newer eco system. All the data that is related to transportation must be available to the energy sector and vice versa. This will enable the adoption of newer mobility solutions on a bigger scale.

- Infrastructure Development

Development of Infrastructure is of utmost necessity in order to adopt an electric vehicle ecosystem. The design of the eco system should be in such a way that it is suitable for urban areas where it can be easily adopted by public transportation. This will enable easier penetration of electric vehicles. Integration of vehicle and grid plays a major role.

- Scaling up of Manufacturing

Market has to be created for generating demand in consumers and that is possible by incentivizing the automobile manufacturers. The supply chain of electric vehicles has to be designed in such a way that everybody has easy access to it. [14]

RECOMMENDATIONS

Charging Station Selection

From the discussions, it is evident that India needs more of charging stations and the customers need to be aware of the locations of the charging stations in order to reduce theirrange anxiety and charge anxiety. The following algorithm mentioned will enable customers to identify the charging stations within their range with the help of just a touch.

The algorithm for charging station selection (CSS) detects the current location of the electric vehicle and determines the minimum range it can travel with the present charge. It detects all the charging stations within the acceptable range. It also lets us know the present traffic conditions and how much time it will take to reach the charging station. Just like google maps, it suggests all possible routes to reach the charging station in the shortest time possible. The customer selects the type of charging required based on the battery type and other specifications and books a slot in order to reduce the waiting time. All of this can be done though an application developed for this sole purpose. The CSS would also show the prices of charging in different stations so that the consumer can make an informed decision. The prices usually vary according to peak demand times and are lower during the night.

Navigation Map
↓
Location Track
↓
Charging Stations in vicinity
↓
Charger Type
↓
Waiting Time

↓
Slot Booking

For the Charging Station Selection to be a success, there should be enough number of stations set up in a city and there should be symmetric flow of information between the Charging stations and the server.

LIMITATIONS& FUTURE SCOPE

In this study, it wasn't taken into consideration whether India would have sufficient power capacity in order to accommodate the charging infrastructure. The required amount of electricity needed to facilitate the switch to 30% electric vehicles by 2030 wasn't taken into account. Due to the global pandemic, the factors and numbers mentioned in the paper wouldvary it would take quite some time for the economy to be revived back. It cannot be determined with exact precision on the condition after this pandemic is over.

The future scope of the study includes conducting a primary research and knowing the conceptions of common man on how much he is willing to pay for charging stations and how much investment they intent to do on electric vehicles in the next few years given the tough situation in this pandemic as a lot of people have been put out of jobs or are on salary cuts. This would help us get a clear idea if India would be able to bring 30% electric vehicles on road by 2030 or not.

CONCLUSION

We have seen that even though electric vehicles are cheaper than petrol and diesel vehicles in terms of operations, people will resort to it only if there is adequate charging infrastructure available. Government should allow foreign investment in order to scale up the building of charging infrastructure in next few years. People should be made more aware of the costs estimated with electric vehicles and government should give more subsidies to people opting for these eco friendly vehicles and the research and development associated with it. As a starting step, home charging can be taken up instead of focusing on building large charging stations as it is a long way ahead due to the current pandemic. Proper planning and site location to be taken into consideration for setting up of commercialized charging stations.

Integration of information across all verticals of energy and transportation is necessary for charging stations to be set up on a large scale which will make it more sustainable and reliable.

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STUDY OF THE MOTIVATION FACTOR OF VOLUNTEERS WORKING IN NGO

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ABSTRACT

A non-governmental organization (NGO) is any non-profit organization comprising of citizens actively seeking to give voluntary hours for meeting the societal needs. Generally, NGOs are goal-oriented and driven by voluntary citizens with a common goal. NGOs performs plethora of service and humanitarian task, bring concern of citizens to Government. It is predicted that if India has to achieve the living standards of the developed countries, NGO sector would play a major role. Although volunteer motivation scales are available

The study tries to understand what factor drives the motivation of the volunteers. The research is conducted with a sample of 50+ NGO employees across multiple NGOs. The data is collected with set of questionnaires intended to understand the perspective of the volunteers. The objective is to understand what are the particular factor and practices that NGOs needs to maintain in order to drive motivation and engagement.

Keywords:*Non-governmental Organization, Motivation, Engagement, Volunteer, Retainment*

Introduction

A non-governmental organization (NGO) is any non-profit organization comprising of citizens actively seeking to give voluntary hours for the development of the society. Generally, NGOs are task-oriented and drive by people with common goals. NGOs generally perform plethora of humanitarian tasks and services with each task specifically targeting for a particular social cause like Human rights, health, environment, woman empowerment, etc. They provide us with ground level data to understand the criticality of a particular problem in the society which helps in providing analysis and early warning mechanism to monitor those problems on regular basis.

Elding, Tobias and Walker (2006) state that one of the most important roles of management is to motivate the organizations workforce to work efficiently in order to achieve its objective. There exist multiple theories of motivation. Kreitner and Kinicki (2007) have defined motivation as that psychological process that causes arousal, gives directions and ensures persistence of voluntary actions that are target directed. These actions which can involve volunteering and it can serve functions in order to motivate the volunteers.

India is estimated to have around 31 lakh NGOs as per the latest data released which is equivalent to 1 NGO for every 419 Indian. It is predicted by economists and financial experts that if India has to achieve a better lifestyle compared to the current scenario, NGO sector would play a key role in ensuring that and it has to grow faster than the pace of overall Indian economy. Importance of NGO has increased in leaps and bounds and Government having realized this wants to systematically tabulate the data of NGO. Most of the NGOs though small in type are effective in doing exemplary ground-work however they don’t follow any sort of management practices.

If the rising need of development and societal reformation need to be carried on, NGO sector has to grow and there is even more necessity for more citizens to voluntarily join the current employment force in NGO. There has been quite a number of researches carried out in the country regarding NGO, however the motivation factor of the volunteers in NGO are something which is not much discussed about. In order to ensure the performance of the NGO Volunteers are maintained the motivation factor needs to be given serious attention. NGO employees are to be considered as important resources

Research across major countries has tried to look around for characteristics of the non-profit workforce, particularly to understand what are the factors that attracts individuals to take up volunteering in NGOs and then pursue it over years. This study tries to understand what factor drives the motivation of the volunteers and what are the practices that NGO can adopt in order to drive performance and productivity. As the factor varies from person to person depends upon its perceived values, all the aspects need to be incorporated and kept in mind in daily work of the NGO.

A. What is a non-governmental organisation?

A non-governmental organization is defined as an entity that operates its functions for the betterment of the society and its targets are also not motivated by building wealth or profit making. There are different types of NGOs people work voluntarily like Make-a-wish foundation while on the other hand, there are others who have paid volunteers like Teach India which have the provision of paid teachers who are giving education. According to Salamon et al, social organizations that operate as the non-profit and voluntary independent sector, share quite a number of commonalities such as:

- The organization has a properly organized structure
- The organization is owned by a private entity and the state has no control over them
- The organization exists as a non-profit distributing center as it does not generate profit

to the stakeholders

- The organization have control over its own business policies, rules and regulations
- they are run by contribution from voluntary member in form of time or money.

As per Anheier (2005, p.45) another definition of a non-profit organization, says that the salient feature that demarcates the NGO sector from others are their turnover structures. They earn majority of the revenue in form of donation by members and well-wishers. NGO can operate for the purpose of development in different fields related to social causes (Anheier, 2005, p.40). However, the organizations that are included as a part of our research are mainly the India based NGO. We will look at NGOs with lesser managerial structure. This is because smaller organizations do not work specifically related to motivation in an active manner over a continuous period of time and hence at time retaining volunteers becomes a major challenge, which is why it is more important to do our research on NGOs that we believe will need improvements in the areas of retaining volunteers and improve productivity and retention in the organisation.

B. What is motivation?

The word motivation is derived from the Latin word *motivus*which stands a moving cause. Motivation in the workplace depends on its perceived value. Motivation is generally associated with social means as well as financial factors. Some organizations and their respective industry sectors are merely revenue and profit centric than others. Hence, such kind of sectors attract a people who are primarily motivated by monetary factor while others are motivated by social factors like a sense of belongingness or social status as per Maslow’s Hierarchy of needs. Motivation gives us the extra push to help us strive towards out goal. Steers, Mowday and Shapiro (2004, p.379) states that motivating employee is key for managers in the field of management to improve the employee productivity and thus improve organization efficiency. Motivation boosts efficiency and thus improves productivity. Cappellari, Turati and Ghinetti (2011) in a primary research explored the behaviour of employees towards volunteer work by studying on 1400+ Italian NGO workers in which they explained internal motivation is critical in driving volunteer motivation. Frey (1992, p.162) in his paper explains as one is said to be intrinsically motivated when the volunteering activity is perceived as reward. As we can see both the external and internal factors can drive motivation however it can be seen its internal motivation which takes the driving seat in most cases. (Cappellari and Turati, 2004, p.620). External motivation on the other hand, such as monetary rewards and incentives, is what mostly drives people (Lee and Wilkins, 2011, p.45). From what the previous research that has been conducted on the same subject by Christauskas, Petrauskiene and Marcinkeviciute (2012, p.522) they concluded the possible psychological motivation in voluntary work is personal satisfaction. However, it was not explained on the context of motivation. Hence this creates a gray area, as there may be such organizations where external motivation such as pay, rewards or incentives can be implemented if they don’t take pride in the volunteering work they do.

C. What is volunteer turnover andRetaining?

In any organization, lower turnover generally indicates a stronger and an efficient organization which indicates higher volunteer satisfaction and ensures the volunteer is engaged. Nowadays, we find a large number of NGOs investing a lot in time and money on their volunteers right from organizing training, developing and thus retaining them in the organization. (Sowa, Selden and Sandfort, 2004, p.719) In a research by Fidalgo and Borges Gouveia (2012) it shows higher turnover leading to higher cost in hiring and training new recruits. This is why volunteer turnover in NGO is one of the most critical issues it faces and especially NGO's function depends on human resources. (Fidalgo and Borges Gouveia, 2012, p.1) NGO depends on availability of voluntary citizens that can suffice the need of volunteers in the area in which NGO is functioning in. Asa result, in most of the cases non-governmental organizations forecasts about the work keeping in mind there will be shortage of volunteers. Many organizations have volunteers as they have a scheduled process, which is why the organization's regular work will suffer if they are irregular or they leave. For an organization to be able to plan their work and make their decision forecasting of employees plays an important role. Hence, if the organisation's management is assured that the volunteers can be retained the work and schedule can be planned accordingly. In non-governmental organizations volunteer turnover is an accepted problem that most NGO management are aware of. Thus, volunteer turnover creates an uncertainty when it comes to functioning of NGO and its operation (Anheier, 2005, p.45) and hence higher turnover is considered an alarming sign. (Alatrista and Arrowsmith, 2003, p.537)

Literature Review

There are multiple reasons why volunteers give their time, effort and money for NGO. Researches on motivation factor of volunteers (Phillips, 1982; Rehberg, 2005) said that the main motivating factor when it comes to volunteers is that they want to help people in need. However, other factors should also be considered and based on their feasibility should be considered in order to ensure events are managed effectively. Contemporary thought process that goes with volunteering is that it involves more task specific expectations when it comes to spontaneous participation from the volunteer's end (Rehberg, 2005). On this aspect, multiple researches on social services of volunteers have found varied factors such as selfless concern, social networking, self-satisfaction, area of interest, and emotional needs (Yeung, 2004). Now if we consider volunteering as a leisure activity, the literature suggests that "co-production motives" may be the factor that drives motivation. Parker (1997) defined it as dedicating a person's time and energy not only to help others in need for a cause in which one believes; but they do it primarily to have a leisure experience from these activities. Silverberg, Ellis, Backman, and Backman (1999) suggest that volunteers may work directly or can work on behalf of anyone known to them or in memory of someone. A study by Shibli, Nichols, Taylor Gratton and Kokolakakis (1999) which focused mainly on volunteers in UK and it was identified that personal benefits generally drive their volunteer. Shibli, et al. (1999) suggested that though quite a number of individuals volunteered out of a strong will in order to support and help others but also to meet the needs of the individuals volunteering for the cause. In another study conducted, Farmer and Fedor (2001) stated that both the financial and altruistic motives are the reasons for joining an organization. The complexity of framework related to volunteer motivation depends on the type of the vent being organized by the NGO. Now to understand how complex the volunteer motivation issues are, Cnaan and Goldberg-Glen (1991) , the authors had observed two or more model to motivate volunteers and analysing the respondent's survey it showed a 22 item unidimensional scale labeled the Motivation to Volunteer Scale (MVS) which reflects both intrinsic and extrinsic motivation, which suggests that volunteers not only work in order to help the organization, but also in expectation of some type of personal reward for their volunteering efforts. Clary, Snyder, Ridge, Copeland, Stukas, Haugen, and Miene (1998) stressed about analyzing volunteering style to understand what are the varied types of motivational process and practices that NGO leverages. Clary mentioned there are 6 major categ which are served by volunteering; 1) Opportunities to help others in needs out of corner mainly driven by humanitarian aspects (Values), 2) opportunities to enrich one's learning experience and apply that knowledge in events and functions (Understanding), 3) opportunities to work and socialize with friends and known acquaintances (Social), 4) experiences that one can obtain from taking active part in volunteering events (Career), 5) helps in understanding other's problem and try to help all those who are in needs (Protective), and 6) higher maturity in order to organize vents leading to growth and development (Enhancement). Clary (1998) suggested that better the volunteering experience, higher will be the satisfaction score. While the Clary (1998) scheme giving us a considerable understanding of volunteering, it has not addressed some of the specific features leaving gray areas in volunteering especially in the sporting event context where participation of volunteers is quintessential considering hosting a major event with accumulation of spectators is concerned. In fact, there have been very few studies which have focused on volunteer motivation strategies at special sports events like FIFA World Cup, Wimbledon, etc. Farrell et al. (1998) studied the motivation factor and satisfaction index of volunteers by adapting Cnaan and Goldberg-Glen's (1991) MVS method. The study had developed a 28-item framework which was called the Special Event Volunteer Motivation Scale (SEVMS). The SEVMS grouped volunteer motivation framework was bifurcated into four major categories; 1) a wish to do something purposeful useful by contributing to the society (purposive), 2) creating network, socializing and maintain relation (solidary), 3) continuing family legacy and fruitful utilization of leisure hours for volunteer work (external traditions), and 4) linking other's expectation with personal target (commitments). Twynam's (2002/2003) in a study identified the four factors which drives motivations: commitment, purposive, solidary, and external traditions after doing a study based on the samples taken at a sporting tournament event. In Farrell (1998) SEVMS, volunteer motivation at any event is somewhat similar to that of motivation framework in any other sporting events. Andrew (1996) investigated into the volunteer's motivation at an Australian Sporting event and suggested that "the enjoyment of being involved" in the top priority list of the motivating factors, then comes "gaining more skills and experience" and "being part of the event". The above study highlights the fact that motivation factor behind volunteers volunteering in a special event actually may vary from those who are volunteering in some other cause. The above result implies that further research on developing a scale to measure the volunteer motivation is necessary. Further research by Bang and Chelladurai (2003) on the same area highlighted there are majorly six volunteer motivational factors which drives motivation in an international sporting event. The model suggested is an upgraded version of the already existing SEVMA and was known as the Volunteer Motivations Scale for International Sporting Events (VMSISE). The results of the factor analysis highlighted six areas of volunteerism in sporting events; 1) concern to take care of others and make the event successful (Expression of Values), 2) feeling a sense of pride in saving the country (Patriotism), 3) networking, socializing and forming relations with people (Interpersonal Contacts), 4) getting the opportunity with some dignitaries and experienced people in the field (Personal Growth), 5) gathering experience, getting to learn and making useful career connection (Career Orientation), and 6) getting more facilities and physical rewards (Extrinsic Rewards). Chelladurai and Bang' s (2003) in their study also mentioned about the motivation of volunteers at a sporting event is mainly influenced by a sense of belongingness and pride for one's own country. An interesting observation was also noted by Chelladurai and Bang (2003) that since the event was an international one, hence the motivating factor subtly changed from the prime motive of helping others to sense of patriotism for one's own country. However, there was a major limitation in their study. It did not individually check the relevance of each motive that that could trigger the motivation to volunteer for an event. For example, someone may love to volunteer for a sporting event for the mere love for sports which explains why people from different countries applies for volunteering in international sporting events. Studies have shown a directly proportional relation between experience and satisfaction. Farrell et al. (1998) has also suggested there is some relation between motivation, satisfaction, and actual experience when it comes to volunteering. When volunteers are satisfied and their motivational needs are met, then they would likely to come back and nominate themselves for any kind of NGO events. Self-determination theory plays an instrumental role in explaining why individuals extend general motivational orientations when they are given full autonomy and control to perform any activity. Autonomy generally pushes and motivates the volunteers to take up the volunteering work with personal target. If volunteers being controlled with restrictions, it creates a sense of pressure, and take away the zeal where they want to push themselves like engaging in the actions to obtain reward or incentive or may be to avoid negative consequence (Deci & Ryan, 1985a). From this self-determination theory, individuals will mostly be motivated to volunteer for any future events as long as they are psychologically satisfied working for any event in NGO. The satisfaction with volunteering experiences leads to positive commitment to the organization resulting in improved productivity and higher efficiency. That is when the role of a non-governmental organization come in to play to create strategies for a meaningful experience of the volunteers and when the volunteers are made to feel responsible for the outcomes of an event, they start taking responsibilities on their own. Providing volunteers with continual positive feedback may result in increasing volunteer motivation and satisfaction while at the same time would encourage other volunteers in future events.

Research Methodology

3.1 Research Type: The research design used for this study is descriptive in nature. The main goal of this type of research is to describe the data and discuss about the characteristics about what is being studied.

3.2 Population: Survey was floated randomly. However, the analysis was done on those who have had past volunteering experience or are working actively in Non-Governmental Organisation.

3.3 Sampling Method: Probability sampling method is used as population is known. Purposive sampling was followed. Purposive sampling is a method where the researcher chooses the relevant sample based on which they think would be appropriate for the study.

3.4 Sample Size: 97 samples were collected for the study out of which 47 were taken into consideration who had prior experience of volunteering in NGO.

3.5 Data Collection Method

Primary data: Primary data is collected with the survey questionnaires.

Secondary data: Secondary data sources are mainly articles, journals and previous research papers.

Data Analysis & Findings

A major 70.2 % of the NGO employees are of the age category of 18 to 30 years. The second highest numbers of volunteers (25.5%) are of the age category of 30 to 45 years and the least number of them (4.3%) are aged between 45 to 60 years. The number of female NGO employees is less (31.9%) in comparison to the number of male employees (68.1%).

Around 97.8% of respondents say the work they did in NGO was non-paid while rest 2.2% of respondents say they were paid for the work they had done.

As per the survey, around 48.9% of respondents says they have experience of less than 1 year of working in NGO. The second highest percentage of respondents is of 29.8% where they have work experience from 1 year to 2 years. The third highest percentage of respondents is of 12.8% where they have work experience from 2year to 5 years and the least number of them is 8.5% of respondents where they have work experience more than 5 years.

Around 70.2% of the respondents said they are highly satisfied and 29.8% of the respondents say they are satisfied with the overall experience of working in the NGO.

Around 85.1% of respondents said that it is highly likely and 14.9% of respondents said it is likely would refer the NGO to family, colleagues and friends.

Now let us try to understand what opinion does the respondents has regarding the motivating factor. We find 80% of respondents says they strongly agree with commitment towards social changes while 14.9% says they agree with that the commitment towards social changes while 5.1% of respondents says they disagree with commitment towards social changes.

As per job availability being a motivating factor, 36.2% highly disagrees that it is a motivating factor, 31.9% disagrees that is a motivating factor whereas 25.5% agrees and 6.4% highly agrees that it is a motivating factor.

As per remuneration being a motivating factor, 42.5% highly disagrees that it is a motivating factor, 21.3% disagrees that is a motivating factor whereas 25.5% agrees and 10.7% highly agrees that it is a motivating factor.

As per monetary incentive being a motivating factor, 42.5% highly disagrees that it is a motivating factor, 14.9% disagrees that is a motivating factor whereas 25.5% agrees and 17.3% highly agrees that it is a motivating factor.

As per religious belief and humanity being a motivating factor, 34% highly disagrees that it is a motivating factor, 14.9% disagrees that is a motivating factor whereas 23.4% agrees and 27.7% highly agrees that it is a motivating factor.

As per life experience being a motivating factor, 2.1% highly disagrees that it is a motivating factor, 2.1% disagrees that is a motivating factor whereas 31.9% agrees and 63.8% highly agrees that it is a motivating factor.

Now, when it comes to finding volunteer motivational practices, we find there are 12 major practices which we have come across.

As per leveraging academic skill being a motivating practice, 10.6% disagrees that is a motivating factor whereas 55.3% agrees and 34.1% highly agrees that it is a motivating practice.

As per involvement in decision making being a motivating practice, 2.3% disagrees that is a motivating factor whereas 22.8% agrees and 74.9% highly agrees that it is a motivating practice.

As per Rewards/Recognition being a motivation practice, 14.9% highly disagrees that it is a motivating factor, 23.4% disagrees that is a motivating factor whereas 34% agrees and 27.7% highly agrees that it is a motivating practice.

As per feeling useful & productive being a motivational practice, 17% agrees and 83% highly agrees that it is a motivating practice.

As per post volunteering correspondence being a motivating practice, 4.3% disagrees that is a motivating factor whereas 53.2% agrees and 42.5% highly agrees that it is a motivating practice.

As per post fulfilling needs of the volunteer being a motivating practice, ,2.13% highly disagrees 4.3% disagrees that is a motivating factor whereas 44.7% agrees and 48.9% highly agrees that it is a motivating practice.

As per strong performance culture being a motivating practice, 2.1% disagrees that is a motivating factor whereas 29.8% agrees and 68.1% highly agrees that it is a motivating practice.

As per setting clear job expectation as a motivating practice, 2% highly disagrees, 4% disagrees that is a motivating factor whereas 43.7% agrees and 50.3% highly agrees that it is a motivating practice.

As per celebrating success as a motivating practice, 10.6% highly disagrees, 23.4% disagrees that is a motivating factor whereas

34% agrees and 31.9% highly agrees that it is a motivating practice.

As per continuous feedback as a motivating practice, 2.1% highly disagrees that is a motivating factor whereas 36.2% agrees and 61.7% highly agrees that it is a motivating practice.

As per organizational support as a motivating practice, 2.1% highly disagrees that is a motivating factor whereas 23.4% agrees and 74.5% highly agrees that it is a motivating practice.

As per organizational support as a motivating practice, 2.1% disagrees that is a motivating factor whereas 42.5% agrees and 55.3% highly agrees that it is a motivating practice.

We ran reliability test to check the acceptability of the data. And we have found the Cronbach's alpha to be 0.851 and hence the data can be used for analysis purpose.

TableI : Reliability Analysis

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.851	.851	47

Ranking of factors influencing volunteer motivation

Hypothesis:

H0: All the factors influencing volunteer's motivation have the same mean values.

H1: All the factors influencing volunteer's motivation don't have the same mean values.

TableII : Friedman Test Analysis

Test Statistics[a]

N	47
Chi-Square	115.990
df	5
Asymp. Sig.	.000

a. Friedman Test

Here, Null Hypothesis (H0) is rejected because the significance value (.000) is less than 0.05. Hence, Alternate Hypothesis is accepted.

Table III: Mean rank of the motivation factors

Motivation factors	Mean Rank
Commitment towards making social changes	5.06
Backed by life experiences	4.78
Religious belief of service and humanity	3.19
Monetary incentives	2.80
Job availability	2.60
Remuneration	2.57

The ranks in the six factors are not the same which clearly shows the motivating factor have different mean values. The order of importance of motivating factors is understood from the above mentioned descriptive statistical table, the most important factor is commitment towards social change (mean rank 5.06) followed by life experiences (mean rank 4.11). ranked 3rd is the religious belief of service and humanity (mean rank 3.19) whereas monetary incentives (mean rank 2.80), availability (2.60) and remuneration (mean rank 2.57). This clearly shows the motivating factors are driven mainly by the intrinsic rather than the extrinsic.

Now, that we have got a fair idea among the priorities of the volunteer as to what are those driving factors that motivated them to take up volunteering in NGO. It is also interesting to know if age has any influence on these factors. Hence, ANOVA test was performed on the surveyed data.

The difference in factors influencing motivation in volunteering roles based on age

Hypothesis

H0: Age does not have an influence on the factors influencing motivation in volunteering role.

H1: Age does have an influence on the factors influencing motivation in volunteering role.

Table IV : ANOVA Test value on the motivation factors

Motivation Factors	Sig.
Commitment towards making social changes acts as an inspiration to pursue the job at the NGO	.295
Job availability is the major reason for accepting the current job opportunity in the NGO	.815
Remuneration as the most important aspect when considering the job	.860
Monetary incentives as a confirmation to their decision to pursue the job for the future	.868
Religious belief of service and humanity as a driver to their career choice	.564
Decision to work at an NGO being backed by life experiences	.012

The significance values of all the factors commitment to social changes as an inspiration (0.295), job availability (0.815), remuneration (0.860), monetary incentives (0.868) and religious belief or service and humanity (0.564) are greater than 0.05. Hence, null hypothesis is not rejected for the above mentioned 5 specified factors. However, we find motivating factor which is backed by life experience is influence by age as the significant value is less than 0.05. Hence, we can say age does have an influence on the motivating factors backed by life experience which motivates people to do voluntary work in NGOs.

Now, let us try to understand at the correlation between the factors which are the factors which are directly proportional to each other. This will give us a clear idea what are the factors that have mutual effect on each other

Table 5: Correlations among the different motivation factors

		Commitment towards making social changes acts as an inspiration to pursue the job at the NGO	Job availability is the major reason for accepting the current job opportunity in the NGO	Remuneration as the most important aspect when considering the job	Monetary incentives as a confirmation to their decision to pursue the job for the future	Religious belief of service and humanity as a driver to their career choice	Decision to work at an NGO being backed by life experiences
Commitment towards making social changes acts as an inspiration to pursue the job at the NGO	Pearson Correlation	1	.055	-.021	-.040	-.071	.342*
	Sig. (2-tailed)		.715	.889	.787	.636	.019
	N	47	47	47	47	47	47
Job availability is the major reason for accepting the current job opportunity in the NGO	Pearson Correlation	.055	1	.650**	.589**	.254	.086
	Sig. (2-tailed)	.715		.000	.000	.085	.566
	N	47	47	47	47	47	47
Remuneration as the most important aspect when considering the job	Pearson Correlation	-.021	.650**	1	.836**	.268	-.005
	Sig. (2-tailed)	.889	.000		.000	.069	.975
	N	47	47	47	47	47	47
Monetary incentives as a confirmation to their decision to pursue the job for the future	Pearson Correlation	-.040	.589**	.836**	1	.218	.069
	Sig. (2-tailed)	.787	.000	.000		.140	.646
	N	47	47	47	47	47	47
Religious belief of service and humanity as a driver to their career choice	Pearson Correlation	-.071	.254	.268	.218	1	.188
	Sig. (2-tailed)	.636	.085	.069	.140		.205
	N	47	47	47	47	47	47
Decision to work at an NGO being backed by life experiences	Pearson Correlation	.342*	.086	-.005	.069	.188	1
	Sig. (2-tailed)	.019	.566	.975	.646	.205	
	N	47	47	47	47	47	47

From the above correlation table, we tried to find what are the factors which seems to be aligned with each other.

We find from the table that there is a strong positive correlation (0.650) between job availability and remuneration as a motivating factor. This clearly indicates the external motivation where the remuneration is high people tend to take up the job role in NGO which drives their motivation. On the other hand, we see a very strong correlation of about (0.836) between remuneration and monetary incentive showing how these two factors goes hand in hand in driving extrinsic motivation. We can also see from the table that we have a moderate correlation between job availability in NGO and monetary incentives. This shows both of these factors goes hand in hand and shows if someone is doing a job that is available in the NGO, it's the monetary incentives that add the extra motivation factor to stay and work in NGO.

Ranking of practices influencing volunteer motivation

Hypothesis

H0: All the practices influencing volunteer's motivation have the same mean values.

H1: All the practices influencing volunteer's motivation don't have the same mean values.

Test Statistics[a]

N	47
Chi-Square	123.048
df	11
Asymp. Sig.	.000

a. Friedman Test

Here, Null Hypothesis (H0) is rejected because the significance value (.000) is less than 0.05.

Hence, Alternate Hypothesis is accepted. Now we need to find out the priorities of the motivating practices among the volunteers. Hence, we will find that using Friedman test to find the ranking.

Table VI : Ranking of Motivation practices

	Mean Rank
Feeling useful & productive	8.46
Organizational Support	7.90
Strong performance culture	7.62
Involvement in decision making	7.55
Continuous feedback	7.23
Relevant skills	7.05
Fulfilling needs of the volunteer	6.47
Post volunteering correspondence	6.12
Clear Job expectation & evaluation	5.64
Leveraging academic skills	5.43
Celebrating Success	4.49
Rewards/Recognition	4.04

The ranks in the above 12 practices are not the same which clearly shows the motivating factor have different mean values. The order of importance of motivating practices is understood from the above mentioned descriptive statistical table, the most important factor is making the volunteers feel useful & productive in the NGO surrounding (mean rank 8.46) followed by organizational support (mean rank 7.90), strong performance culture (mean rank 7.62), involvement in decision feedback (mean rank 7.55), continuous feedback (mean rank 7.23), monetary incentives (mean rank 2.80) whereas leveraging academic skills (mean rank 5.43), celebrating success (mean rank availability (2.60) and remuneration (mean rank 2.57). This clearly shows the motivating factors are driven mainly by the intrinsic rather than the extrinsic.Now, that we have got a fair idea among the priorities of the volunteer as to what are those driving practices that motivated them to take up volunteering in NGO. It is also interesting to know if age has any influence on these practices. Hence, ANOVA test was performed on the surveyed data based on the volunteer's response on the motivating practices.

The difference in factors influencing motivation in volunteering roles based on age

Hypothesis

H0: Age does not have an influence on the practices influencing motivation in volunteering role.

H1: Age does have an influence on the practices influencing motivation in volunteering role

Table VII : ANOVA test vale on the motivation practices

Motivation Practices	P-Value
Leveraging academic skills	0.099
Involvement in decision making	0
Rewards/Recognition	0.897
Feeling useful & productive	0.026
Post volunteering correspondence	0.061
Fulfilling needs of the volunteer	0.761
Strong performance culture	0.888
Clear Job expectation & evaluation	0.994
Celebrating Success	0.571
Continuous feedback	0.117

From the above ANOVA Table, we can find that age has a significant relationship and impact on certain motivation practices where we see with age involvement in decision making and making them feel useful and productive at work becomes ones of the major factor driving motivation in NGOs.Here, Null Hypothesis (H0) is rejected because the significance value (.000) is less than 0.05 for the above two factors. Hence, Alternate Hypothesis is accepted.

Table VII :Correlation on volunteering experiences

	overall experience	overall satisfaction score	Likely to recommend	Feeling valued	Likely to volunteer again
Overall experience	1				
overall satisfaction score	0.343	1			
Likely to recommend	0.250	0.075	1		
Feeling valued	0.018	0.052	0.163	1	
Likely to volunteer again	0.061	0.062	0.147	0.664	1

Now, that we have got a fair idea among the priorities of the volunteer as to what are those driving factors that motivated them to take up volunteering in NGO. We have also run a correlation based on the following question asked to understand the volunteer's perspective when it comes to having an experience in NGO. We have found that there exists a strong correlation between how valued you feel in the organisation with whether you want to rejoin the NGO again or not. This shows if one feels his or her contribution is valued that particular person will volunteer again in any event of the NGO. We can also see from the correlation table that there exists a moderate correlation between how a person's experience with the NGO and his satisfaction level. So, with better experience in the NGO one would definitely tend to have better satisfaction level. Further, if one has a good experience in the Ngo that person is going to be an advocate for the NGO and would refer new volunteers to join the NGO and participate actively.

Rest all the factors have positive correlation but the correlation coefficient is not that high hence there will not be much effect of one practice on another.

Managerial Implications

This research paper primarily understands what are the motivating factors and practices that drives a volunteer. It is very essential to understand multiple such

factors play role in different framework of volunteer motivation. This framework helps us to understand which parameter is relevant for what kind of events. The research outcomes would also help the manager understand what are the factors that one needs to be kept in mind in order to drive motivation. For a volunteer who is motivated by extrinsic things rewards, monetary incentives or tangible rewards needs to be kept in mind. However, for those employees who are driven by passion and inner desire motivation can be in form on continual feedback, guidance or giving them autonomy to drive the project. Thus, these research paper would help them get a basic understanding of the motivation framework, however the fine level tuning needs to be done at the organizational level based on the real scenario.

Conclusion

It is important to again mention that this study draws from a small sample of respondents, and perhaps a broader survey with a larger sample would be essential to confirm the patterns visible in the quantitative data. Nevertheless, there are enough observations identified in the results of this study that indicate NGO employees in developing India are motivated to take their jobs for non-monetary reasons like personal satisfaction or life experience over monetary factors like remuneration and other monetary incentives. Employees are drawn towards their NGO careers by a desire to create a difference to the society in altruistic manner and do something worthwhile, Research shows they are often willing to sacrifice financial rewards in order to attain this sense of purpose. Commitment to making social change and decision backed by life experiences are among major factors that influence career choices of NGO employees. The major factors that influence NGO employees are Commitment to social change, Life experiences and religious belief or influenced by humanity.

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THE INSIDE OUT OF ALCOHOL CONSUMPTION IN THE MOST POPULATED STATE OF INDIA

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ABSTRACT

India has a rich history of alcohol consumption. Cause for thousands of road fatalities and domestic violence, the consumption graph has seen a sharp and steady growth. A high of amount of western influence can be seen on the consumption pattern of alcohol in India. Alcohol is a state subject and hence drastic differences can be seen in the consumption patterns across states. The Legal Drinking Age in Uttar Pradesh is 21 years and as the state is a large cultivator of sugarcane from which molasses is obtained to make alcohol, it also has high proliferation of country liquor. Alcohol industry in India is a media dark industry and hence brands use surrogate marketing as a way to promote their brand. Study was conducted to understand the alcohol consumption pattern in Uttar Pradesh. Questionnaire was used as the primary tool to collect data. The study also tries to understand the factors which affect the consumption pattern and the current trends in the alcohol industry. This study highlights the need for companies to advertise their products more responsibly and also focuses on the need to consume alcohol in light doses.

Keywords: *Alcohol, Consumption pattern, Uttar Pradesh, Drinking habits.*

Introduction

Traditionally known as a Whisky Drinking Nation, the preference of type of alcohol has seen a sharp change among the youth and the rich. Alcohol consumption in India increased from 2.4 litres in 2005 to 5.7 litres in 2016, men leading the increase by 4.2 litres and women by litres (*Per capita alcohol consumption more than doubled in India from 2005 to 2016* 2018). The market of alcoholic drinks has increased from 4670.8 million litres in 2014 to 5784.2 million litres in 2019 (*Alcoholic Drinks in India* 2019). Craft has changed the beer Industry and the fight to appease the palate of young India has become more intensewith

entry of brands like Bira91 and Simba. Wine consumption is gaining a lot of ground, with brands focusing more and more on premiumisation of their portfolio. More and more people want to consume as a unique experience then to just get drunk. Pubs and Bars are no longer a weekend affair and has become a team building and get together spot for corporate India.

Mouth feel and smoothness are gaining more prominence in selection of a brands with so many brands in the market competing to gain an upper hand. Men are seen to consume more brown spirits and women prefer white spirits. Alcohol has gained more social acceptability in the urban areas where more and more women have started drinking as compared to rural areas where few women drink. Alcohol has become an important part of weddings and social gatherings. In order to continuously innovate Restaurants now offer fun games, live music & stand-up comedy to engage the audience on specific days. Alcohol companies like Diageo have come-up with initiatives like Black & White Platter which is a series of pop-up dinners featuring celebrated dishes from popular cuisines. Companies also employ bar tenders who visit premium outlets and serve cocktails to consumers. The per capita income of Uttar Pradesh at the end of 2018-19 was Rs. 66,511 against Rs. 1,26,521 of the country (Directorate of Economics and Statistics, 2020) and average literacy of 67.68% against 74.04% of the country as per 2011 census, hence, the state is not a big market for costly foreign liquor. As per government data around 16 crore people are regular drinkers of alcohol in India. Though no state in India has legal drinking age below 21, 75% youth start drinking before the age of 21 years (*Economics, statistics of liquor sale forces government to open alcohol shops* 2020). Several factors which have catapulted the growth of Indian alcoholic beverages industry are **Favourable demographics** of India: more than 60% of the country's population lies in the age bracket of 15-45 years with more and more youngsters being added to the legal drinking age. **Urbanisation:** As the migration from rural to urban is increasing, so is the exposure towards different varieties of alcohol. **Changing societal norms:** asmore and more acceptance is being given to alcohol consumption, the consumption of alcohol at social gatherings by youth and women is increasing. People also consume alcohol for its health benefit, soldiers in cold terrain consume rum to keep their bodies warm, parents give their children brandy to get rid of cold and cough. **Rise in disposable income:** India is one of the fastest growing economies in the world with bulging middle class and rising income levels, hence the consumption is also witnessing a sharp spike. **Increasing availability and accessibility of alcohol:** With social media, it's easy to connect with the consumers, moreover the government has also relaxed rules as alcohol is one of the biggest sources of revenue for them and as a result a huge variety of alcohol is now easily available at nearby alcohol outlets [10]. The directive principles of the state policy state that "the state shall endeavor to bring about prohibition of the consumption except for medicinal purposes of intoxicating drinks and drugs which are injurious to health". Except Gujarat, Bihar, Nagaland, Mizoram and Lakshadweep sale of alcohol is permitted in the rest of the country.

Over the years various scientific research,

Literature Review

Alcohol is one of the most consumed beverages in the world. The type of alcohol which is consumed by people is Ethyl Alcohol or Ethanol. Alcohol is made by fermenting grains, fruits or vegetables. Beer and Spirits are made up of cereals and grains, Wine is made up of fruits and Vodka in its early days was made from potatoes (2020). The actual distillation in India was introduced from Middle East. Delhi Sultanate was quite popular for alcohol consumption by the 14th century ("History of alcoholic drinks", 2020). Edward Dyer was the first person to set up an actual brewery in India in Kasauli in 1830, which is currently being operated by Mohan Meakin. By 1882 the number of distilleries increased to 12 [4]. Malted grain whisky's production in India was started by Amrut Distilleries in 1982. As

health agencies and universities around the globe have identified strong correlation between alcohol advertising and alcohol consumption, especially among initially non drinking youth. Because of this reason several countries have imposed some or complete restrictions on the advertisement of alcohol. India is one the countries which have imposed several restrictions on the advertisement of alcohol. As the companies cannot show visuals of their bottles or even people consuming alcohol in advertisements on mass media, they use surrogate advertising to promote their products.

Surrogate advertising is a type of advertising where products of different category under the same brand name are advertised to promote the brand name among the consumers. Many alcohol companies use CDs, Soda, Mineral Water as surrogate products to promote their alcohol brands. For example, Bagpiper uses soda and Imperial Blue uses music CDs.

However, these brands can advertise alcohol to masses on social media. But to make sure that the advertisement reaches only the desired audience, most companies have kept a general age limit for the people who can watch their posts, that age limit is 25 in India. An argument that is being made is that these advertisements focus on creating brand awareness and not increase sales of the product or promote alcohol consumption [8].

of December 2018, top 5 alcohol companies on the basis of total annual sales are: 1. Anheuser-Busch InBev (US$56.4 billion) 2. Heineken Holding (US$24.7 billion) 3. Asahi Group Holdings (US$ 19.4 billion) 4. Kirin Holdings (US$16.6 billion) 5. Diageo (US$15.7billion) (Workman, 2020). Alcohol has always been in the news mostly for its negative effects but some people also consume it for its positive effects. According to few studies, moderate consumption of alcohol can promote health and can result into reduced low mortality risk, it also enhances a person's sociability, it also becomes a means of celebration specially for young people, it also gives confidence while communicating to the people of opposite sex. More the merrier is not the case with alcohol as higher the consumption the more harmful effects it has. The negative effects of alcohol include immorality, crimes, domestic violence, unsafe sexual practices, premature death and poor nutrition among family. In most scenarios people are aware of the harm caused by drinking alcohol but they still drink it because of addiction. According to a study the harmful effects of drinking alcohol emphasised by females were mainly social issues like domestic violence and rape whereas males emphasised on thefts, diseases, road accidents and other crimes [5]. Alcohol also tends to increase the consumption of other sin goods like cigarettes as it is a common tendency to smoke more while consuming alcohol. Alcohol consumption also increases the risk-taking tendency among people and hence resulting into haphazard behaviour. Alcohol use Disorder (AUD) refers to the pattern of alcohol consumption that involves problems dictating your consumption, continuing to consume alcohol even after it causes harm, increased drinking to get high, or having withdrawal symptoms when a person stops drinking or suddenly starts consuming less alcohol. Europe has the highest prevalence of AUDs (7.5%). According to Sample Registration Survey 2014, In India, the prevalence of drinking habits among adult males was 10%, in the year 2010 the prevalence of AUDs was 4.5%. Health problems which are faced by the victims of alcohol abuse are hypertension, increased risk of oral/esophageal cancer, anaemia, dementia, depressive symptoms like sadness, lack of interest. The suicidal tendency is higher among people who abuse alcohol [9]. A person’s consumption largely depends upon people he regularly interacts with [3]. The types of alcohol which are consumed in India are Indian Made Foreign Liquor (IMFL), Country Liquor, Illicit Liquor, Beer. IMFL consists of western style distilled beverages like Whisky, Vodka, Rum, Gin and Brandy in which maximum permissible alcoholic content is 42.8%, the most popular among them is Whisky. When people travel abroad and get exposure to foreign liquor, they tend to develop a taste for it and that is how the market for foreign liquor is rapidly expanding. Apart from the high price, the excise duties, the addition of custom duty makes it more expensive. The demand for foreign liquor is also high near the tourist spots from where foreign tourists tend to buy alcohol. Because of increased preference for a healthier lifestyle another trend which has recently gained momentum is the consumption of non-alcoholic beverages. The global non-alcoholic beer market was estimated at USD 13.5 billion in 2016 which expected to grow with over 7.5 CAGR up to 2024. As alcohol is a state regulated subject, the route to market is different in every state, in some states you can buy alcohol in malls whereas in some it’s not permitted. Though the Indian society is quickly shedding its inhibitions towards alcohol, people still shy away to admit that they consume alcohol especially to their family members. Some other factors which may affect a person’s alcohol consumption behaviour are group size, social norms and compliance drinking effects. Studies suggest that the drinking level of an individual highly correlates to the average drinking level of the group he/she is in if the drinking norm of the group is higher than the individual, however in the groups which have lower drinking norms than the individual, such behaviour has little effect on how much the individual drinks. The real or imaginative behaviours of others can also exert influence on the behaviour of people. Often youngsters set norms for their group to which all the group members must conform and that behaviour is regarded as normal, hence, people who join the group are also asked to consume alcohol. Many a times, a request from others also becomes an influence on people’s behaviour and more often people tend to comply with those requests specially in larger groups [3]. For young consumers peer pressure, curiosity, the perception of alcohol consumption being a fashionor status symbol, getting a sigh of relief from the daily stress and addiction are some of the common reasons of alcohol consumption [5]. Because of the restrictions imposed by the government on advertisements of alcoholic beverages on TV, print media and outdoor banners and hoarding, Social media is extensively used by companies to advertise alcohol. A strong presence on social media helps these brands capture audience’s attention and also helps to create strong brand advocacy especially among the young. These brands ride on the trending wave and post content which the current generation can easily relate to, memes. To make their products more appealing and innovative these brands come up with ideas to use the trending things on internet. An example of that is, because of the immense popularity of the TV series The Game of Thrones, Diageo for its alcohol brand Johnnie Walker, came up with special edition of the variants of the product called JW White Walker, JW A Song of Ice & JW A Song of Water. Another way of increasing the brand visibility is through sponsorship, organizing concerts. Kingfisher is the sponsor of Royal Challengers Bangalore in Indian Premier League. Moreover, alcohol companies also spend a lot on on-trade and off-trade promotions to increase the visibility of the brand among the consumers.

Research Methodology

This is a descriptive research which revolves around observing patterns of alcohol consumption and identify the recent trends in the Industry. The aim was to identify the alcohol consumption pattern and understand the factors which affect the consumption. A questionnaire was circulated which generated responses from 107 respondents and their data was then analyzed. Focus group discussions were conducted with the industry experts in order to better understand the consumption pattern.

Objective of the research

1. To understand the consumption pattern of alcohol consumers in UttarPradesh.
2. To understand the factors affecting the consumption pattern.

Data Analysis

The data is analyzed using SPSS and test conducted are cross tabulation and chi square tests. Chi square test is the test of how two nominal variables are dependent or independent of each other. The Pearson's chi square value depicts the condition where the null hypothesis is accepted or rejected. If the value of Pearson's chi square value is less than alpha (significance level 0.05), we generally reject the null hypothesis and accept the alternate hypothesis.

Chi square test of gender and type of alcohol

H0: The consumption of type of alcohol is independent of gender of the respondent Ha: The consumption of type of alcohol is dependent on gender of the respondent.

Table 1. Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	30.964a	6	0
Likelihood Ratio	26.866	6	0
Linear-by-Linear Association	4.301	1	0.038
N of Valid Cases	108		

a. 9 cells (64.3%) have expected count less than 5. The minimum expected count is .39.

As per the results by SPSS, the Pearson chi square value is 0.00 which is less than significance level. Hence, the null hypothesis is rejected. The test proves that the type of alcohol consumption is dependent on the gender of the person.

Chi square test of age group and type of alcohol

H0: The consumption of type of alcohol is independent of age group of the respondent Ha: The consumption of type of alcohol is dependent on the age group of the respondent

Table 2. Chi-Square Tests

Value	df	Asymptotic significance(2-sided)

Pearson Chi-Square	44.656a	24	0.006
Likelihood Ratio	35.017	24	0.068
Linear-by-Linear Association	2.868	1	0.09
N of Valid Cases	108		

a.29 cells (82.9%) have expected count less than 5. The minimum expected count is.06.

As per the output, the Pearson chi square value is 0.006 which is less than the significance level. Hence it proves the alternate hypothesis that the choice of the alcohol is dependent on the age group of the people.

Chi square test of consumption pattern and gender of the respondent

H0: The consumption pattern of alcohol is independent of gender of the respondent Ha: The consumption pattern of alcohol is dependent on the gender of the respondent

Table 3**. C**hi-Square tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	11.692a	4	0.02
Likelihood Ratio	13.584	4	0.009
Linear-by-Linear Association	11.431	1	0.001
N of Valid Cases	108		

a. 3 cells (30.0%) have expected count less than 5. The minimum expected count is 1.75.

The value of Pearson chi square is 0.020 which is less than the significance level. Hence the alternate hypothesis is accepted which states that the consumption pattern is dependent on the gender of the respondent.

Chi square test of age and consumption pattern

H0: The consumption pattern of alcohol is independent of age group of the respondent Ha: The consumption pattern of alcohol is dependent on the age group of the respondent

Table 4. Chi-Ssquare tests

	Value	df	Asymptotic Significance(2-Sided)
Pearson Chi-Square	48.218a	16	0
Likelihood Ratio	41.163	16	0.001
Linear-by-Linear Association	11.548	1	0.001
N of Valid Cases	108		

a. 18 cells (72.0%) have expected count less than 5. The minimum expected count is .25.

The Pearson chi square value is 0.00 which is less than the significance level 0.05. Hence, the null hypothesis is rejected. The above cross tabulation highlights how the consumption pattern of alcohol is dependent on the age group of the people. Higher the age, higher is the chance of consumption of alcohol.

Discussion

Alcohol is a sin good which has its first mention in Rig Veda as Sura, which was the favourite drink of Lord Indra. Alcohol is highly regulated in India and is the golden goose of the state governments as it is a major source of revenue for them. Many welfare schemes run by the government are sponsored from the taxes collected from the sale of alcohol. This was also the reason that state governments were so eager to open the alcohol shops as their cash reserves were getting dry during the nation-wide lockdown. The most populated state consumes about 56 crorelitres alcohol a year in 2017 (*UP was 'high' on liquor consumption in election year: Lucknow News - Times of India* 2017). Uttar Pradesh is a major supplier of sugarcane, from which molasses is obtained which is used to make alcohol. Because of low income levels, a large portion of the population consumes country liquor.

Thecompanies compete in a highly price sensitive market where a large proportion of the drinkers buy nip on a daily basis. A large proportion of drinkers consume their drink outside the shop itself and then go to their homes and hence many a times companies give free water bottles as a part of their promotional activities so that the consumer won't have to spend additional Rs.10 to purchase water. Counter Sales Men play a vital role in pushing a brand as they are theones who interact with consumers and hence companies run a lot of schemes for them in order to get a larger share of the cake. Alcohol has gained a lot of acceptance in the society in the past decade and hence becoming a common affair in the Indian weddings andfunctions.

Most people start drinking during their college days and hence consume their drinks in Hostels &PGs. Many brands run special engagement for outlets in areas where hostels and PGs are located to attract young consumers. These young consumers don't drink just to get high; they seek an experience with the brand and hence try new cocktails and food combinations offered by the restaurants. Unlimited buffet and drinks also have increased per capita consumption of young consumers as they find it value for money. As these young consumers drink socially their buying pattern is also different than a normal drinker in UP. These young consumers buy bigger SKUs like Quart and Pint as against an individual drinker who tends to buy a nip. Vodka is a drink which has recently gained a lot of prominence with some famous brands like Absolut, Smirnoff, Ciroc, Kettle One and Magic Moments. Young consumers also attach themselves with a brand which continuously renovates and offers them variety and hence Magic Moments, a brand of Vodka by RadicoKhaitan which has 8 flavours and hence has gained a lot of popularity among youth. Beer consumption has also gained a lot of ground among youth with popular brands like Kingfisher, Tuborg, Heineken, Carlsberg&Bira recently joining the race by popularising craft. Craft has gained a lot of popularity because it is smoother and less bitter than normal beer and hence it appeases the palate of young consumers who are worried a lot about the mouth feel. Wineconsumption has also seen hike because of possible health benefits attached to it. But the popularity has largely remained restricted to high income groups where it is consumed during celebrations and get togethers.

Indian Society is quickly shedding its inhibitions related to alcohol as it is gaining more social acceptability. The rise in disposable income around the country has led to increase in demand of costlier alcohol like IMFL (Indian Made Foreign Liquor) and imported spirits.

New year is an occasion where alcohol consumption increases by leaps and bounds and as most of the people tend to go out, the cases of drink and drive also skyrocket in the country. The statistics reveal that on new year eve alone, sales almost doubled at every liquor vend in Uttar Pradesh, the data does not include the alcohol guzzled by people stocking in their homes or hostels. 18 lakh IMFL bottles, 23 lakh beer bottles and 31 lakh litres of country liquor were sold on that day itself. Data also reveals that on an average 1.6 crore IMFL bottles & 2.9 crore beer bottles were sold every month in 2018 (Service, 2019).

In December 2016, the apex court of the country took a decision to ban all liquor shops within the range of 500 metres of national and state highways across the country. The above decision was amended in 2017 to allow the liquor shops to operate which are within city limits for the respective municipalities ("Two months after SC clarified liquor ban order, sales almost back to normal in Pune", 2017).

Conclusion

Uttar Pradesh is one of the biggest alcohol markets in the country because of its huge population which is expected to reach 22 crores in 2021 ("2020 Uttar Pradesh Population: Predicted Numbers, Sex Ratio, Literacy", 2020). Western influence can also be seen on alcohol consumption pattern in Uttar Pradesh. In developed cities like Lucknow, Ghaziabad, Kanpur, Noida people frequently visit bars and pubs to consume alcohol. Alcohol consumption is affected by various factors like economic, social, religious and geographic. Climate also plays a vital role in the consumption as people tend to drink whiskey and rum more during winters whereas in summers beer and vodka are consumed more.

In a state like UP where a large part of the population is heavily dependent on agriculture, their consumption increases after the harvest as they have more money in their pockets.

Because of its lower income levels, Uttar Pradesh is majorly a nip market where people are highly price sensitive.

West UP is more developed than East UP because of more industries being established in the region and hence the Western UP is a bigger market for costlier brands like Johnnie Walker, Chivas Regal, Teachers and other imported liquor brands.

As like the rest of the country, in Uttar Pradesh also female prefer Vodka and Beer over brown spirits. Young consumers consumption pattern is different as they are social drinkers hence, they prefer to buy larger SKUs. Social drinking also increases the tendency to consume more alcohol and cigarettes.

For most of the people, alcohol consumption starts with friends, where people find it a norm to drink with others and remain involved in the group. With increasing income levels, companies like Diageo are focusing on premiumisation and brand communication. Restaurants and bars are also competing to offer better value to their consumers through music nights, and buffets and special offers on drinks.

Social media is also playing an important role as young consumers prefer to associate themselves with a brand which engages them and hence during the nation-wide lockdown, brands like 8PM whiskey ran online music sessions in order to engage their consumers.

Brands also use memes to connect with the young consumers. Social media influencers are also being used now a days to promote brands and attract young consumers.

Though Uttar Pradesh has lower income and literacy levels but it is also not far behind in following the trends which are being followed in the metros of India. With increasing income levels and availability of internet, more and more western influence can be seen on the consumption patterns in the region.

The very first brand of alcohol which a person consumes is influenced by recommendations that he/she get from friends and family or the brand which the person sees getting consumed by his parents or relatives.

Consuming costlier brands of alcohol is also a status symbol in India, people drink costly champagnes like Dom Perignon, Laurent Perrier, Krug etc.

Limitations

One of the limitations of this study is that questionnaire was circulated using social media platforms hence the sample the sample was not controlled. Hence, the research was not able to include every consumer type in Uttar Pradesh.

Another limitation of the research is that alcohol is a sin good and hence people tend to deny its consumption and even if they accept it, they tend to tell people that they consume less.

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UNDERSTANDING THE PSYCHE OF CUSTOMERS AND THE PARAMETERS THAT AFFECT THEIR BEHAVIOUR OF BUYING THE OTT SERVICES

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STRUCTURED ABSTRACT

Purpose *- This paper presents a exhaustive overview of the cultural mix required by an OVER THE TOP platform in order to capture the maximum share in the market, i.e., we will look for the parameters that define the buying behaviour of the customers towards such services and what are the distinguishable factors and characteristics that the customers seek when they are exploring out for making a purchase for such services.*
Design/Methodology/Approach – *This is an exploratory study which is conducted involving various responses from the subscribers as well as non-subscribers of these platforms within India in order to get a holistic view about the current situation of the OTT services.*
Practical implications –*This paper will try and identify the factors and the parameter that make any OTT platform popular among the people and provides great traction which ultimately leads to its dominance in the market.*
Originality/Value – *Existing research is restricted to either addressing the scope of the OTT platforms or how they will be changing the way the entertainment industry will evolve. This paper, for the very first time, does a comprehensive and combined research about the cultural mix required to dominate the market.*

Keywords – *Entertainment, Marketing, Culture, Culture mix, customer psyche, buying behaviour, content, consumer, subscription, mobility, convenience, digital, Over-The-Top, Adoption, Video, Internet, Millennial, Engagement, Multi-media, Innovation*

Introduction

The fast development of broadband system and keen gadgets is ever changing as the example of substance utilization and empowering advancement in different Video streaming administrations. OTT is characterized as a platform which provides its subscribers with the benefit of entertaining themselves at home or on the go as per their own convenience via the Internet on their personal devices which may include smart phones, laptops, desktops, tablet etc. The main worldwide OTT supplier is Netflix, which currently has its operation and services spread across almost 190 nations around the globe having subscriber pool of 83 million. A fun fact about its enormous community that almost 42 percent of the pool consists of individuals who are not Americans. Around 33% revenue for Netflix is generated from worldwide trade. Netflix keeps on growing its universal activities and is yearningly looking for an opportunity to fulfill the ever rising request from its fans across the pacific and give them a taste of what Americans enjoy on daily basis. In September 2015, Netflix unraveled the passageway it will be following to arrive in Asian markets by propelling the services in Japan. In 2016, Netflix amazed the business by reporting a synchronous dispatch into 130 extra new locales, including Korea, in a move that denoted "the introduction of a worldwide Internet TV organizes."

The field of universal advertising has seen a lot of discussion on the globalization-confinement issue, with not many ends then again, actually a large number of variables impacts this choice. In general, the writing concurs that the specialized procedure of advertising is established on all inclusive ideas. It is the social procedures that differ from culture to culture and require the adjustment of showcasing innovation. It follows that the examination of significant social measurements and their impact on buyer conduct ought to go before choices on the normalization of advertising programs.

Though some exploration has concentrated on the impacts of culture on customer conduct, most examinations have been restricted to matched nation correlations, the utilization of nation as an intermediary for culture, and apparently post hoc clarifications as opposed to testing hypothesis by estimating the important social measurements. Albeit a few of these examinations have announced huge contrasts in inclination for items or responses to the promoting blend, it has been hard for advertisers to actualize these divided discoveries. Existing models, for example, those of Sheth and Sethi (1977) and Clark (1990), don't completely address the connection among culture and purchaser conduct. Truth be told, the promoting writing has made not many endeavors to relate culture to purchaser conduct and the structure of showcasing programs. [7]

Over-The-Top (OTT) content is turning into a major popular expression in the present innovation and frameworks empowered condition. Being probably the biggest economy on the planet, Indian broadcast business is going to gather incomes of more than Rs. 975 Billion by 2019. With the full power endeavors to expand the across the country web [1] infiltration, India is probably going to observe in excess of 500 million Internet clients by June 2018. In this advanced period, Over The Top (OTT) content has risen among millennial as the new independent computerized multi-media stage where multi-link or direct communicate satellite TV don't disseminate or control content, prompting media and customer self-sufficiency of utilization. Watchers will currently have total self-sufficiency as far as picking their own substance and evaluating, remembering the specific kind and measure of substance they need to see. [3]

Another significant pattern rising in TV content review is the development of OTT stages by singular media houses. This pattern is essentially fuelled by increment in the quantity of gadgets that help these stages alongside huge ascent in the quantity of web and versatile information supporters. The ascent of OTT stages has additionally observed development with the consistent however constructive increment in the quantity of individuals who are needing and requesting both 'Delivered for-TV' just as selective newly fermented content on request whenever of the day, in this manner making it probably the greatest open door in the video and substance area in media houses. As of now, India has more than 11 OTT stages with the significant one's being HotStar by Star Network, VooT by Viacom18, Sony Liv by Sony, Spuul, Netflix, Eros Now, and Hooq. There are other numerous autonomous substance makers like TVF who are currently thinking of their individual OTT stages like TVF Play so as to contend legitimately with the mainline stages by giving newly blended substance over the others. In this manner it is turning out to be obvious that OTT substance and the stages related with it are turning out to be significant wellsprings of correspondence and income streams for corporate associations.

With huge OTT administrations going very substantial on showcasing for procuring and snatching client's eyeballs, the Video-On-Demand (VOD) advertise is near the precarious edge of a huge departure. Components like digitization, decreased portable information costs, fast web, and multi screen infiltration across geologies and classes and fixed line broadband development, conjecture colossal potential in the segment of OTT administrations in India, which is probably going to develop complex in the coming years. A pattern of individuals seeing numerous substance channels simultaneously, alongside interest for more up to date and increasingly elite substance has prompted numerous media houses and accomplices to begin their own OTT stages. Despite the fact that the income and plan of action of the stage continues as before as a conventional TV channels, that is paid publicizing, the possibility of the equivalent has been addressed in different discussions. Numerous stages have anyway asserted that the footing that is created by the free substance as a rule helps gather more lucrative membership base. In this way an exploration in this field would open up numerous open doors for fluctuated stages and empower advertisers to comprehend and better their methodology in regards to the equivalent. [5]

Literature Review

An overview about the OTT market

There has been a colossal ascent in media utilization in advanced organizations over the world. The shoppers today have the freedom to get to his preferred media substance whenever anyplace. This has been conceivable only due to the factor that there has been a significant amount of increase in the devices which support the advanced applications and fast browsing speeds. The ascent of Amazon, Apple TV, Netflix, Hulu, and so on have begun testing the matchless quality of the customary TV. The advanced media overall is anticipated to increment to 118 billion dollars by 2021 with a compound yearly development pace of eleven percent somewhere in the range of 2016 and 2021. Keeping in accordance with the worldwide patterns, India has additionally demonstrated an expansion in the utilization of a wide range of substance going from text, sound or video on various computerized stages. After China, India is the second biggest online market with more than 460 million web clients. By 2021, it will hop to 635.8 million clients. A ton of ideal elements like improved systems, better access to web, sight and sound service capable cell phones and application advancement environment have added to an enormous increment in media utilization on computerized stages. After US, India is the next big player with respect to application engineers with around 300,000 application designers.

If we look at the trend of video content consumption over smartphones and other portable devices then we can clearly see a steep increase in the curve. According to Ernst and Young, 2016 report, we can see an increase in the number of hand held devices aka mobile phones going up to 520 million by 2020. Also, the broadband connections are predicted to increase by 26% till 2020. This climb will be instrumental in an extraordinary move of media usage from standard to automate. There has been abatement in the degree of Indian Consumers who lean toward viewing shows up on TV from 47% to 10% over the span of the latest one year. (Accenture, 2015)

While TV shows are seen on PCs and work regions, phones are used to watch short video cuts. Thusly, there is a tremendous move from the standard TV study to electronic viewership and a lot of segments has added to this move. Hand held PDAs have gotten logically moderate and precisely advanced. Indian government changes and progressions to move towards modernized. Associations like Facebook, You tube, Hotstar, Saavn, Buzzfeed, and so on are extending a ton of theories. Exchange is moving from separated to on the web. Web of Things will be a nuclear family thought sooner rather than later. All these huge examples and moves will moreover drive people to put more vitality in cutting edge mediums.

The overall flexible traffic is required to augment very nearly seven overlap from 2016 to 2021. As indicated by the data open till February 2017, phones spoke to 49.74% of site page sees worldwide with Asia and Africa sticking out.

In India, around 60% of customers prefer to stream their entertainment online rather than watching it on a plugged in Television (Deloitte, 2017). People in India are shifting to automated and convenient technology to make their lives easier and this trend has been almost doubled in a matter of three years. It has risen to a huge 24% in 2020 from 12% in 2017. As stated clearly by the data which we have with us till January 2017, phones spoke to Seventy-Nine percent of site page finds in India. Web get to is mainstreaming among Indian purchasers and the use of convenient is heightening. More people contribute more vitality electronic using a collection of automated gadgets and areas for content usage. India at present is the third most prominent country in regards to web customers on the planet with as much as 121 million Indians getting the chance to web. There has been 25% improvement in Indian web customers longer than a year. 59% of the Indians get to the web by methods for their mobiles. The typical time spent by means of electronic systems administration media is 3 hours and 70% of Internet customers watch online accounts. An ordinary flexible web customer in India customers 6.2 extensive stretches of media step by step which incorporates 102 minutes of compact media and 79 minutes of online media use. Web based life and redirection including both music and video. 21 % of the hard and fast time is spent by youth on sound and video beguilement.

Among the Social media stages, Facebook and Twitter speak to 47% and 42% of when all is said in done chronicles saw on the web. The remaining 11% have a spot with OTT organizations like Hotstar, Netflix, Amazon Prime video, Jio TV and VOOT. There are 24 million OTT customers in India. The market for OTT enrollment is foreseen to create to

4,000 crore by 2020. Right now, the ordinary total went through month to month for paid substance is Rs.255. (Video OTT versus DTH players: How Netflix, Amazon Prime, Hotstar cornered Indian market, 2017)

OTT or "Over-the-top" insinuates video content spilled through web and not through impart or advanced TV. It consolidates enrollment based organizations, free, ad maintained organizations and pay-to-watch streams offered by organizations including iTunes and Video on demand.

OTT organizations are either offered to no end or at a little month to month participation charge. Models of OTT contraptions fuse Smart TV looks like Google TV and LG Electronics Channel Plus, various gaming devices like Xbox One, PlayStation, sharp set-top boxes like Apple TV, tablets and propelled cell phones like iPhones and Android phones. OTT stages have therefore tried the ordinary substance and master associations.

Various factors are driving paid participations like necessity for first rate accounts, better observing experience, basic passage and progressively broad substance choice. Anyway the gushing pace gave by Internet Service Providers in India is around one – third of what the globe has regularly, he perfect data speed nearby increasingly agreeable data costs would add to a quick advancement of the spilling administrations in India.

With 75% of Indian web customers in the age social affair of under 35 years and the greater part of wireless application customers developed between 18 to 24 years, OTT stages are concentrating on a progressively energetic portion.

With 70 million video watchers in India and about 1.3 million OTT paid-video endorsers, the amount of Indian customers inclining towards OTT stages is growing rapidly. However, the numbers change every month. Hotstar cases to have 5 million watchers all the time which could climb to 100 million during IPL season.OTT organizations in India uses top-down approach in India yet to be productive eventually, a base up approach to manage reach at each segment of web clever masses. [4]

Growing broadband invasion and multi screen openness have upheld the improvement of selective substance use through internet spilling administrations. Shown up at the thought from the computerized set top box benefits, an OTT stage is normally comprehended as a medium through which individuals can expend content by means of Internet (Goncalves, Evans, Alves, and Ballon, 2014). The FCC permits a practically identical seeing, however it additionally characterizes the organization as it starts from selective substance suppliers who give the way to diversion by means of any versatile or non compact gadget approaching web. Different assortments may be available, yet the composition on OTT video benefits dependably emphasizes that they should avoid different structure managers, for instance, interface or advanced TV and pass on programs by methods for web affiliations. [5]

There has been huge improvement in OTT organizations which is checked by increment in number of buyers, who expend content at whatever point, wherever, and on any contraption (Moyler and Hooper, 2009). Netflix being the pioneer in OTT master community, different players of different beginning stages have joined the transient pattern to bring an enthusiasm into the novel pattern and example. For example, OTT organizations are passed on through stage and device providers (e.g., Apple), arrange managers which engage customers to devour the substance and benefit the highlights of multi screen plans (e.g., Comcast), VOD stages and substance providers and TV heads who grant clients to discover TV content. Kwon and Lee (2015) furthermore consolidate convenient IPTV and Stick OTT authority associations for example of another mix of substance, stage and gear related organizations.

Research Methodology

The accompanying segment characterizes the factors and relations in the model by utilizing hypothesis from customer conduct to decipher Triandis' (1994) model of social conduct into a model of customer conduct. The framework contains the proposed customer conduct model, with adjustments to Triandis' (1994) conceptualization showed by dabbed lines speaking to extra area explicit factors and relations. Every factor is characterized in customer conduct terms. It basically helps us in identifying the key areas which have the maximum weight in order to influence the decisions of the customers. We are also looking at the point whether the purchase made is completely an individual choice, i.e. the product does not have any significant impression on the society because of which the culture is more of individualistic choice or whether the product has the masses so much attracted towards itself that the companies make note of the reactions of public as they determine the sales of the same. [11]

Variables that influence the Behavioral Decision Making

Triandis (1994) distinguished three factors that influence social conduct: abstract culture, past experience, and the social circumstance. [12]
Emotional culture, speaking to the classifications, affiliations, norms,roles, and values inaculture(Triandis, 1994), is conjectured to impact demeanor toward the item, saw buy outcomes, buy influence, self-definitions, referent desires, and propensities through traditions and past experience. Characterized in that capacity, emotional culture can be estimated through the accumulation of individual shopper's classifications, affiliations, standards, jobs, and qualities. Along these lines, Triandis (1994) distinguished four social disorder: multifaceted nature, independence, community, and snugness. [10]
With the end goal of this article, the hypothesis of independence and community is applied to the model to survey the effect of this part of abstract culture. While the burdens of utilizing just a single social condition incorporate the presentation of mistake in light of expected communications with different disorder, for example, snugness detachment (see Triandis, 1995), there are a few focal points. Independence and community hypothesis has been acknowledged in the writing as a significant general, or etic, example of social contrasts in conduct (e.g., Hofstede, 1980; Triandis et al., 1986), and in any event at the nation level, found to affect shopper conduct. Likewise, on account of the hypothesis' stage of improvement, explicit elements of every condition have been distinguished and things have been produced for both the social and individual degrees of estimation. Having the option to concentrate on the individual distinction level gives a more grounded trial of the hypothesis and precludes some puzzles that limit our comprehension at the nation level.
Independence and cooperation hypothesis has made considerable progress since Hofstede (1980) initially proposed the exactly determined uni-dimensional build at the social level (see Kim, Triandis, Kagitcibasi, Choi, and Yoon, 1994). Independence and community are presently perceived as multidimensional builds at both the social and individual levels (see Kim et. a]., 1994; Triandis, 1995). To evade disarray, Triandis, Leung, Villareal, and Clark (1985). Perceiving that every one of us have the two propensities to a more noteworthy or lesser degree, proposed the terms invidualism (in light of independence) and collectivism (in view of cooperation) for the individual distinction develops. Triandis (1995,pp.434) recognized the accompanying four elements of invidualism and collectivism: (an) associated (allocentric)/free (idiocentric) self-idea (Markus and Kitayama, 1991); (b) need for individual objectives (idiocentric)/shared objectives (allocentric); (c) an attention on standards, commitments, and obligations (allocentric)/mentalities, individual needs, rights, and agreements (idiocentric); and (d) an accentuation on looking after connections (allocentric)/money saving advantage examinations of relationship (idiocentric).
In particular, allocentrics will in general example the related self all the more regularly, prompting a more noteworthy thought of standards, commitments, and obligations than do idiocentrics. Allocentrics will in general have less in-bunches that are longer term and increasingly hard to enter. They will in general underscore in-bunch closeness and regularly show practically no qualification between in-gathering and individual objectives. In correlation, idiocentrics tend to test the free self all the more frequently, prompting a more prominent thought of mentalities, individual needs, and rights than do allocentrics. Idiocentrics will in general have more in-bunches that are shorter term and simpler to enter. They will in general separate themselves

from their in-gatherings and offer need to individual objectives over in-bunch objectives.

Since every one of us has allocentric and idiocentric inclinations, the striking nature of the propensity relies upon the circumstance. For example, allocentric conduct is definitely almost certain with in-bunch than with out-bunch individuals, particularly in collectivist social orders (see Rhee, Uleman, and Lee, 1996; Triandis, 1995). Until this point in time, the greater part of the exploration on these inclinations has been led in social settings. In this way, it is as yet hazy what impact these propensities will have on a person's shopper conduct, in spite of the fact that it is normal that the impacts will be more grounded in social settings with in-bunch individuals.

Past experience, speaking to the thought, use, and acquisition of the item, is theorized to impact disposition toward the item, saw buy outcomes, buy influence, self-definitions, referent desires, and propensities through traditions. In buyer conduct, past experience has commonly been characterized as far as item recognition or earlier information. As per a research done in 1991 by Johnson, Payne and Bettman, customers may likewise increase earlier inquiry experience from "companions, family, or sales reps, or read about items in item evaluating distributions or claim to fame magazines.[5]

Understanding allocentric needs proposes that the impact of others can be stretched out past asking or considering other's recommendation to incorporate the information on in-bunch past understanding alongside close to home past understanding. By and large, the information on in-bunch past experience is relied upon to expand the general degree of past involvement in an item, particularly for allocentrics.

View of the circumstance, speaking to both the environmental factors and encouraging conditions (Triandis, 1980). is speculated to impact disposition toward the item, saw buy outcomes, buy influence, self-definitions, referent desires, and propensities. Belk (1975) arranged purchaser situational impacts into five arrangements of elements, including the physical environmental factors, social environmental factors, worldly point of view, task definition, and precursor states. It is normal that social impacts, for example, partaking in the buy or utilization of an item, will be progressively vulnerable to social impacts, particularly for allocentrics. Furthermore, encouraging conditions including impression of the accessibility of assets (e.g., time furthermore, cash) is probably going to straightforwardly impact buy goals, as proposed by Ajzen (1985). For instance, the view of an expansion in assets on account of a deal cost could legitimately impact the development of a goal notwithstanding the mediating impact of disposition toward the buy.

Precursors to Attitude toward the Purchase

Past experience, emotional culture, and the view of the circumstance are completely connected to disposition toward the buy through propensities, demeanor toward the item, saw buy outcomes, buy influence, self-definition, and referent desires.

Propensities, speaking to visit practices that have gotten programmed under specific conditions, are decidedly identified with mentality toward the buy and furthermore legitimately to the conduct. Numerous regular practices are just halfway constrained by aims, recommending that probably a portion of these practices might be legitimately affected by propensity (Eagly and Chaiken, 1993). As indicated by Triandis (1994), propensities shaped by past understanding and customs are enhanced by excitement, making ongoing buyer practices particularly likely in specific situations. For instance, this may impact motivation buying.

Disposition toward the item, speaking to the weighted worth (i.e., significance) of the added traits of an item, is emphatically identified with mentality toward the buy. Both Eagly and Chaiken (1993) and Triandis (1994) consolidated disposition toward the objective into their models, clarifying that a conduct may appear to be alluring on the grounds that the mentality toward the objective ring a bell, without thought of the likely results of that conduct.

Seen buy results, speaking to the apparent outcomes of activities and the estimation of those results, is emphatically identified with demeanor toward the buy. Despite the fact that this build is theoretically like Fishbein what's more, Ajzen's (1975) conduct and regulating convictions, Triandis (1980) recognized "convictions that interface the demonstration to future outcomes" from influence, being "convictions that connect feelings to the demonstration, happening right now of activity" (p. 220).

Buy influence, speaking to the direct passionate reaction to the idea of the conduct right now of activity, is decidedly identified with disposition toward the buy. In his definition, Triandis (1980) alluded to sentiments of happiness, delight, nauseate, or disappointment related with a specific demonstration.

Self-definitions, speaking to the manner in which individuals see themselves comparable to the acquisition of an item, is decidedly identified with disposition toward the buy. Markus and Kitayama (1991) distinguished two generally stable self-interpretations that underscore how much individuals consider themselves to be isolated from or associated with others.

The maverick self is free, with an "idea of the self as a substance containing noteworthy dispositional traits, and as disconnected from setting." The collectivist self is associated "with the encompassing setting, [where] it is simply the 'other' or the 'comparable to other' that is central in singular experience" (p. 225). The viewpoint of the self that is striking figures out which type of impact is no doubt in a circumstance. In collectivist social orders, the related self is bound to be striking, prompting standards, jobs, and estimations of the in-bunch turning into the "clearly" right approach to carry on (Triandis, 1990).

Referent desires, speaking to the apparent desires for the in-gathering, is decidedly identified with demeanor toward the buy and buy goals. Albeit a few models limit the immediate effect of standards to either disposition toward the demonstration (Triandis, 1994) or expectations (Fishbein and Ajzen, 1975), the ID of a double impact may clarify some less predictable discoveries featured by Sheppard, Hartwick, and Warshaw (1988). What's more, this develop isn't bound to standardizing convictions about the apparent results of a conduct; it additionally incorporates the less intentional thought of others. For instance, a customer may buy a games utility vehicle without considering the prizes or disciplines from their in-gathering, despite the fact that their conduct may mirror the regularizing impacts of living in a cultivating network. It is normal that referent desires will affect disposition toward the buy and aims for allocentrics than for idiocentrics.

Disposition toward the buy, speaking to a rundown of the considerable number of impacts that decide how individuals train themselves to act, is decidedly identified with buy aims and conduct. This definition is more extensive than Fishbein and Ajzen's (1975) definition. It is normal that demeanor toward the buy will all the more firmly impact aims for idiocentrics than for allocentrics. Buy aims, speaking to an individual's cognizant arrangement or self-guidance to complete a conduct (Triandis, 1980), is emphatically identified with buy conduct. Buy conduct speaks to the real acquisition of a item or administration. The likelihood of a buy happening is an element of procurement goals, increased by the target situational components that make the person's aims simple or hard to complete (Triandis, 1994).

Measures

Buy expectations were estimated on three 7-point (not in any manner likely) scales identifying with each OTT stage (Netflix, Amazon Prime, HotStar and so forth.) being picked for the buy (an) in the event that you were the main individual to utilize it, (b) if your family would likewise utilize it, and (c) if your companions would likewise utilize it. These things framed two proportions of aim, extending from a 1 (low) to 7 (high) expectation to buy each help type: (a) for sole-use and a normal of (b) and (c) for shared-use goal.

As an outline of the considerable number of impacts that decide how individuals train themselves to act, demeanor toward the buy was estimated on three 7-point scales: "How fulfilled do you figure you would be in the wake of buying an" OTT administration type (not under any condition - fulfilled); "What is your general assessment of the accompanying OTT stages, contrasted with the others" (poor-great); and "When I purchase or buy in to any

OTT stage I should purchase and utilize a" the stage (not in any way likely). A composite of a 1 (horrible) to 7 (great) assessment of every OTT platform was made.

Influence toward the buy was estimated on two 7-point scales identifying with the degree of energy about buying a stage (not in any manner energized) and how pleasant it is buy an OTT stage (not in any way truly agreeable). A composite of a 1 (low) and 7 (significant) level of effect toward the acquisition of a stage were made.

Buy outcomes was estimated on three 7-point scales identifying with the attractive quality of each OTT stage as far as significant highlights, the responses of your family, and the response of your companions to your acquisition of every stage. A composite (weighting the attractive quality of loved ones by .5 every one) of 1 (not in any manner) to 7 (entirely alluring results) was made for every stage type.

Disposition toward the item was estimated by rating the impression (poor-superb) of each characteristic (content, convenience, screen sharing, video quality, and cost) on 7-point scales for every OTT platform. This was weighted by the significance (not in the slightest degree significant) of each property, going from a 1 (ominous) to 7 (ideal) assessment of every OTT platform, to shape a composite.

Self-definition was estimated on two 7-point scales identifying with the degree to which the respondent is the sort of individual who might purchase every OTT platform and the degree to which the respondent is the kind of individual who might utilize every OTT platform (not in the slightest degree likely). A composite of a 1 (low) to 7 (elevated) level of similarity with every OTT platform was made.

Referent desires was estimated on two 7-point scales identifying with the probability that family and dear companions would anticipate that them should purchase every OTT platform (not in any way likely). A composite of a 1 (low) to 7 (significant) levels of referent desires for every OTT platform was made.

Results & Analysis

The method which was taken up in order to get to the bottom of the behavior of the customers with respect to the adoption of the OTT services was a detailed survey. The survey contained questions which could point out to the variables and the parameters defining the psyche of a customer which influenced him / her to buy a particular OTT service.

The initial responses received were near 185 out of which some 40 responses were found invalid as they could not afford the services due to their family income. Going forward, the analysis was made on the basis of the remaining 145 responses.

The different variables which were kept in mind included Age, Family income, Employment status, the reason why a particular platform is chosen over the other by the customer etc.

Then there were factors of the video quality, content availability, screen sharing features and more.

Almost 30% of the respondents had subscriptions to two OTT platforms and almost 18% of the respondents had subscription to more than 3 platforms. This shows that the current culture totally supports the OTT platforms and they look forward to the content being fed to them through these digital services.

There majority of the respondents were from the age group of 17-25 and the next big group consisted of people within the age group of 26-32. This clearly indicates that the people who have a bias or some inner compass pointing toward the OTT culture is the youth of the society and they actually look for such kind of services in order to entertain themselves at their own convenience.

Some major findings which came into light after the research are:

- More than 55% of the responses said that they choose a particular platform because of the viewing quality it offers
- And almost one – third of the interviewee agreed to the fact that they prefer a platform of the other if it allows them to adjust the video quality manually
- Screen sharing and timely update of content were the next big influencing factors in order to shift the purchase decisions from one court to the other

Apart from the factors and the variables mentioned above, there was one factor which was subtly felt and recorded, the acceptance of the service by the society. More than 33 percent of the purchases were made on the basis of past experience of the equivocator's family and friends.

Limitations

There are a few confinements in these investigations that feature territories for future examination. To begin with, a portion of the measures utilized in this examination need further refinement, including independence and community. Albeit a few estimation instruments are currently accessible to quantify these measurements, there are issues. For example, all things considered, these two measurements are incorporated inside an individual to a more noteworthy or lesser degree and become remarkable in various circumstances. The different circumstances where these components are probably going to become an integral factor need further examination. What's more, there is an inquiry regarding the exactness of the measure of independence and community that can be caught at any one point in time. In particular, the inspirational degree of the respondents to accomplish the fulfillment of these fundamental qualities might be affected by earlier activities. The later the fulfillment of gathering association inclinations, for example, the acquisition of family related items, the less significant these propensities will appear at the hour of estimation.

Second, the review respondents in this examination were accommodation tests comprising of understudies and their more seasoned companions and family members. In spite of the fact that these examples can't be viewed as illustrative of the populace, the utilization of understudy tests for coordinating reasons for existing is a for the most part acknowledged strategy in culturally diverse examination. The strategy utilized here extends the coordinated example to incorporate understudies and their family members, which assists with enhancing the example while keeping the comparability on significant segment qualities. This is significant in light of the fact that few investigations have referred to astounding outcomes in the measure of independence and cooperation in understudy tests. The suggestions for the understanding of past exploration, which has generally utilized understudy tests, and plan of future examination must be investigated. For occurrence, the nonconformist inclining in understudies may demonstrate the chance of a brief switch in values or "social break" marvel. Societies may have an acknowledged time span in which individuals can briefly communicate socially degenerate qualities, understanding that they are required to acknowledge the social standards and qualities as they enter the workforce. The ramifications of a social break could be critical for understanding the shopper conduct of specific portions, for example, the worldwide high school section.

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IMPACT OF CAREER PAGE USER INTERFACE ON CANDIDATE'S APPLICATION ON JOB OFFERINGS

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ABSTRACT

E- Recruitment is one of the most convenient and cost-effective way for recruitment. With the increase in online usage in recent years recruitment through career page website of a company has become a convenient way for talent acquisition. Career page in a company website is a convenient way for the recruitment process both for company and candidates. A career page is used in various manners by companies, it is used to provide potential candidates various information about the company which are necessary to understand the work culture of the company. Companies use their career page for employer branding. Companies use their career page for employer branding by showcasing their work culture, employee experience their mission, vision, and values. Most important purpose of career page is to attract relevant talent pool across location through a click of a button. Most of the people that log into the company's career page are casual web surfers, so it is for the company to create a user-friendly environment to convert casual onlookers into candidates. Various factors work into converting them into candidates such as a good user Interface, easy navigation, eye catching fonts and colours, hassle free application, Easy navigation to the apply button, easy navigation to the job listings, job classification based on location etc. This research was conducted so as to understand what the potential candidates looks for in a good career page and to understand the importance of each and every factor that affect their decision for job application.

Key words: *Career page; Company Website; Job Application; Online Recruitment.*

Introduction

Career page in a company website is an easy way for the recruitment process both for company and candidates. "An effective careers page showcases your employer brand and entices candidates to apply to your open roles"(Pavlou, n.d.). "A careers page is a landing page on your company's website dedicated to hosting job listings. Candidates visit your careers page to learn more about your company and work life"(Pavlou, n.d.). "The best careers pages are dynamic. They include photos, videos and employee testimonials"(Pavlou, n.d.). "The careers page is the personal pitch to candidates"(Bika, n.d.). "It's a place to show job seekers why the company is attractive and make it easy for them to apply to open roles"(Bika, n.d.). Companies use their career page for employer branding by showcasing their work culture, employee experience their mission, vision and Values. Some companies also promote their company by showing their Corporate social Responsibility initiatives. Most of the people that log into the company's career page are casual web surfers, so it is for the company to create a user-friendly environment to convert casual onlookers into candidates. Various factors work into converting them into candidates such as a good user Interface, easy navigation, eye catching fonts and colours, hassle free application, Easy navigation to the apply button, easy navigation to the job listings, job classification based on location etc. This research was conducted so as to understand what the potential candidates looks for in a good career page and to understand the importance of each and every factor that affect their decision for job application.

Literature Survey

"Traditionally, organizations depended on low technology, including newspaper advisements and employee referrals to locate and attract qualified candidates. Other traditional tools used for recruitment include radio, television, hand delivery/dispatch riders, handbills, postal services, and courier service. But now a days the traditional recruitment method has been revolutionized by the wave of internet. E-Recruitment is the latest trend and it has been adopted by large and small-sized organizations"(Okolie &Irabor, 2017)."The reason for the shift towards online recruitment activities and use of web 2.0 technology for more Human Resource Management functions is most due to the inadequacy of the paper-based process. Most hiring managers and line managers indicated that the lack of systematic log of information and improper storage of paper applications lead to inevitable delays in application processing time. This increase the time to hire and thus cost to hire, while compromising the quality of hire due to incompetent practices, human errors and biases" (Depardieu & Islam, 2008). "Internet allows Human Resource Professionals to post open positions in detail online so applicants can review the information at their own time, thus minimizing the time requirements by the recruiter on this phase of the process. Companies of all sizes typically have, at minimum, a website which allows them to conduct part of their business online"(Okolie & Irabor, 2017)."Career websites are valuable in broadening pupils' ideas, providing access to comprehensive and easily updated information and in allowing some pupils to be more 'experimental' in their career thinking that they might be with a careers adviser or teacher. As has been seen, pupils perceived websites as an important source of information and advice"(Howieson & Semple, 2013)."The growth in the use of e-learning to provide 'anywhere, anytime' access to school-based resources for learning has been paralleled by the growth of web-based resources including e-mail, web chat, and SMS to support a range of CEG activities"(Bosley, Krechowiecka, & Moon, 2005).

"Major benefits of the use of the hard core ICT, otherwise known as internet recruitment include cost saving, time saving, generation of expanded pool of applicants, and global catchment opportunity"(Mathis & Jackson, 2006).

"A careers page is a landing page on the company's website dedicated to hosting job listings"(Pavlou, n.d.)."Job seekers want to find out whether the company is worth applying to. It is why they visit sites like Glass door or the LinkedIn company page: to get behind-the-scenes information about the business. Personalize the careers page by featuring team members' opinions"(Bika, n.d.)."Any information that may motivate candidates to apply is worth sharing. Candidates visit the careers page to learn more about the company and work life"(Pavlou, n.d.). "Candidates evaluate the company based on their careers page"(Pavlou, n.d.). "Benefits, learning and development opportunities and employees' stories help the company create a good first impression"(Pavlou, n.d.)."Sixty-four percent of job seekers not only visit company careers sites but consider them valuable resources during their job search"(Pavlou, n.d.). "A good career page requires an updated list of all current job openings at the company"(Pavlou, n.d.). "Navigation should be easy and positions should be categorized by department and/or location"(Pavlou, n.d.). "Careers pages connect companies with potential candidates"(Pavlou, n.d.). "A careers page will boost the employer brand and bring you more and better candidates, as long as it's well-designed"(Pavlou, n.d.).

"Careers page are ineffective if: They're hard-to-find, Making sure the careers page is easily accessible from the corporate site"(Pavlou, n.d.). "Broken links, large application forms and non-responsive design repel candidates"(Pavlou, n.d.). "Making sure candidates have a positive experience when visiting the careers page and that they can easily access all sections"(Pavlou, n.d.). "The more specific you are about requirements, the more likely candidates are to self-select out of the hiring process"(Bika, n.d.). If a person sees a position that they are mostly qualified for, but are missing one or two flexible elements, you may miss out on an excellent candidate (Bika, n.d.). "Web Literacy plays an important role in determining how much benefit people derive from the internet when making career choices or seeking career support"(Hooley, Hutchinson, & Watts, 2010).

"One of the main measurements of the success of the careers page is its conversion rate. A careers page conversion rate measures what percentage of visitors actually applied to a job on the page. So, if 1,000 job seekers visit the careers page and 150 of them applied, the conversion rate is 150/1,000 = 15%"(Bika, n.d.). "Comparing the conversion rates of the careers page over time can be instructional (for example, you can measure the impact of a careers page redesign by monitoring changes in the conversion rate.)"(Bika, n.d.).

"To successfully engage candidates, the careers page should clearly describe the job openings, work environment, company employees and company values"(Pavlou, n.d.). "Good careers pages cater to the recruiting needs, showcase the company culture and help you attract candidates who want to work for you"(Pavlou, n.d.)."Instead of solely listing the job openings, good companies highlight what differentiates them from other companies. They think of the job description and requirements as an advertisement"(Bika, n.d.)."Don't list out every job requirement on the careers page, especially those that are particularly cumbersome or would be better discussed in person"(Bika, n.d.). "Job descriptions that are too long or too short can deter job applicants from even the best company career pages"(Bika, n.d.). "Job descriptions between 4,000 and 5,000 characters get the most job applications"(Forman, 2015). "Lengthy, complex, and time-consuming applications act as a barrier to applicants"(Forman, 2015)

"When job seekers land on a careers page, they look for Job listings, The company's values, Employee testimonials, Products and services, Reasons why employees work there, Reasons why employees choose to stay"(Pavlou, n.d.)."Careers pages should answer about the job opportunities, benefits, offices design, current employees, employee testimonials, and how to apply for an open role? And why should the candidate work there"(Pavlou, n.d.)?

"The career page content should convey the general idea of the open positions and highlight the most enticing aspects"(Bika, n.d.). "A careers page should not just be informative"(Pavlou, n.d.). "It should pique potential candidates' interest in the company"(Pavlou, n.d.). "Some of the different proven ways to make the career site more attractive: Instead of reading about how great the company is, company should provide candidates a realistic look into the work life"(Pavlou, n.d.). "Display of pictures and write-ups from company events sharing office tours to help candidates visualize themselves as part of the team"(Pavlou, n.d.). "Keeping text concise, People tend to skim large pieces of text"(Pavlou, n.d.). "Creating a visually pleasing and easy-to-read content, using headlines, quotes from employees and lists"(Pavlou, n.d.). "People have a short attention span for online reading"(Pavlou, n.d.). "To spark visitors' interest career page needs to be engaging, use of powerful headline along with some visual aids, like images and videos are good ways to engage candidates"(Pavlou, n.d.).

"Candidates want to learn about a company's culture before they consider applying for open roles"(Bika, n.d.). "The careers page is a good place to spotlight the culture and mission and offer insights into what kind of employees you are looking for. Graphics, videos and slogans can help you communicate the message"(Bika, n.d.). "When improving the careers page, consider posting news about new offices, testimonials from recent hires or pictures from the latest team activity"(Bika, n.d.)."Optimizing companies' careers page for mobile device is also important"(Pavlou, n.d.). "Thirty-nine percent of job seekers who use their phone in their job search are likely to visit a company's career page on their phone"(Pavlou, n.d.)."Through mobile friendly career page candidates could be reached on the go with readable text, user-friendly forms, concise language and a few eye-catching visuals"(Pavlou, n.d.). Also, "minimize the page's loading speed to avoid bounces is also a very important factor for a good career page"(Pavlou, n.d.). Nine out of 10 candidates were likely to use their cell phone during their job search within the next year. Of them, 39 percent were likely to visit a mobile careers pages(9 in 10 Job Seekers to Search for Jobs via Mobile; Glassdoor State of Mobile Job Search Survey, 2014). "Some ways to make the careers page mobile-friendly are : Use of responsive design - A responsive design will adjust the page to the screen size and orientation of the device the page loads on including cell phones, tablets and computers"(Pavlou, n.d.)."45 percent of job seekers use mobile devices to search for jobs at least once a day,54 percent read company reviews from employees on mobile and 52 percent research salary information"(Cotter, n.d.).

"The design of the careers page is very important"(Pavlou, n.d.).The user interface should be such that it is easy to navigate throughout the page even for a first time user. “A good careers page design improves the candidate experience”(Pavlou, n.d.). “Job seekers can easily navigate through the open roles and submit their application within a few steps”(Pavlou, n.d.).

“Careers section should be kept prominently on the company’s site”(Pavlou, n.d.). “Paying attention to UX- Simplify navigation and eliminate unnecessary links and pop-up windows”(Pavlou, n.d.). “Job seekers should be able to navigate to it in one click, labelling of the careers page link text clearly, with words like “Careers,” “We are hiring” and “Work with us””(Pavlou, n.d.). “Most candidates quit a lengthy or complicated application process. When candidates click “Apply,” they don’t want to answer scores of questions asking for information that can be found on their resumes”(Bika, n.d.). prospective employees look through the website, they should get an idea of what it’s like to work at the company – and that can happen with a good career page design/UX (user experience). “If careers page is hidden deep in the “contact” page or requires more than one click to find, you risk losing candidates”(Pavlou, n.d.). “Candidates are 365 percent less likely to submit an application that takes more than 15 minutes to complete”(Forman, 2015). “The data suggests that recruiters can slash their cost-per-applicant by 250 percent simply by reducing the time it takes to complete an application from 15 minutes to 5 minutes”(Forman, 2015).

“The best careers pages are dynamic. They include photos, videos and employee testimonials”(Pavlou, n.d.). “They also have a clear call to action, prompting visitors to view and apply for current open roles”(Pavlou, n.d.). “Companies show original photos of the employees and workplace, create a short video or use simple graphics to display benefits or unique work processes”(Bika, n.d.). “Photos improve the careers page design and help capture the company culture”(Cotter, n.d.). “Multimedia is the best way to showcase the people on the team”(Cotter, n.d.).“Avoid stock images and opt for actual pictures of the employees at the offices”(Pavlou, n.d.). “Careers pages are effective sourcing and branding tools”(Pavlou, n.d.).” Detail like what it’s like to work , so that candidates can picture themselves at company and see if they are a good match for the culture”(Pavlou, n.d.). “They need ways to visualize themselves working for the company”(Pavlou, n.d.).

“The way the careers page looks could influence candidates’ perceptions of the company”(Pavlou, n.d.). “For example, a well-designed page that introduces team members indicates that you value employees and care to promote a healthy work environment”(Pavlou, n.d.).” Use visually-pleasing fonts and colours such as use of dark-coloured texts on a light-coloured background are easy-to-read”(Pavlou, n.d.). “Neutral fonts help the reader focus on the content”(Pavlou, n.d.). “Addition of graphics Instead of large amounts of texts, include photos of the employees and workplace, create a short video spotlighting employees or use simple graphics to display different aspects of working at the company to share a glimpse of the culture”(Pavlou, n.d.). “Organization of the text, A well-structured text is friendlier to the reader’s eye. Use lists, powerful words and images or graphics, when appropriate”(Pavlou, n.d.).

“Ninety-four percent of job seekers are more likely to apply to a job if an employer is actively managing their company brand. That includes responding to reviews and sharing details about the culture. Occasionally updating pictures, videos and copy on the careers page keeps it fresh and helps candidates visualize how the company grows”(Bika, n.d.).

Research methodology

A survey was conducted among 153 participants who were of the age group between 21 to 30 yrs. 68% of the participants were in the age group of 21-25 and 32% of the participants were of the age group 26-30. 88.3 % of the participants were students and 11.7% of participants were salaried person or working. People were asked to rate the importance of various factors which effect their decision for their job applications through a career page. Factors affecting their decision were selected through secondary research data available from the literature survey. For this survey 5-point Likert scale was used: Extremely Important (5 points), Very Important (4 points), Somewhat Important (3 points), Not so Important (2 point) and Not at all Important (1 point). This survey was used to understand the perspective of the candidates about the factors that they think affect their job application decisions. 8 Factors used for this survey were on importance of:

- Factor 1: Job openings available at minimum number of clicks (3 clicks) from main page.
- Factor 2: Hassle free and quick application while applying for a job. (Simple User-Interface).
- Factor 3: Job Listings can be classified according to Location.
- Factor 4: Easy to understand language.
- Factor 5: Use of Pictures and Videos instead of texts for company information.
- Factor 6: Use of Visually pleasing fonts and Colours.
- Factor 7: Availability of Chat bots for quick enquiries.
- Factor 8: Access to career page with mobile device.

For the Likert scale data Relative Importance Index method was used to identify the importance of the factors affecting candidate's decision for job application. "RII, Relative Importance Index, is the mean for a factor which gives it weight in the perceptions of respondents. The factor with the highest weight has RII = 1, while the next factor with lower weight has RII = 2, and so on. Weighting = Summation of RensisLikert allocation divided by number of responses"(Oyedele, 2018). For the Relative Importance Index frequencies of the response was identified through SPSS. Relative Important Index Formula was used to identify the Relative Importance Index of each factor. Each factor was then assigned a ranking based on Importance with 1 being the most important factor and 8 being the least important factor affecting candidate's decision.

Result and Analysis

Data collected Reveals that 89.5 % of the candidates had previously visited a career Page from a company website. 10.5% people mentioned that they do not prefer applying for job online rather they prefer offline traditional methods for job application. Also, people visit various other online E- Recruitment portals such as Naukri.com, Job portals, LinkedIn, Monster etc. People who have earlier visited the Career page from company website mentioned their reason, most of them mentioned the reason to visit career page was to look for job that suits their profile and they visited a career pages of a particular company so as to look for job available in that company itself. Some visited the career page for different reasons because they wanted to know about the company, company's work culture, Offerings and benefits offered by company and existing employees testimonials or experience, Interestingly 50% of people said they were casually looking for jobs over different companies' website and visited their career pages. According to the survey 41.2% of samples spend around 1 to 5 min in a company career page, 37.3% of samples spend 5 to 10 minutes in company career page, 15.1% people spend more than 10 min in a company career page.

Results According to the sample

For calculating the Relative Importance Index frequency of each responses was identified using SPSS. Not at all important column has very less response compared to other columns which shows all the factors had at least slight importance in decision for job application.

Relative Importance Index = 5 (n_5) + 4 (n_4) + 3 (n_3) + 2 (n_2) + 1 (n_1)/ 5 (n_5 + n_4 + n_3 + n_2 + n_1)Where n_5 is Extremely Important, n_4 is Very Important, n_3 is Somewhat Important, n_2 is Not so Important and n_1 is Not at all Important. Relative importance index of all the factors are calculated in the RII column according too which ranking is given to the factors.

Table 1

Factors	RII	Rank
Factor 1	0.718954	5
Factor 2	0.832680	1
Factor 3	0.768627	4
Factor 4	0.794771	3
Factor 5	0.669281	7

Factor 6	0.650980	8
Factor 7	0.705882	6
Factor 8	0.823529	2

Fig 1: Result for Relative Importance Index

From Table 1 we provide the final calculation on the relative Importance index of all the factors affecting candidate's decision. Factors are ranked according to the relative importance index. Factor 2: Hassle free and quick application while applying for a job. (Simple User- Interface) with RII of 0.832680has the highest ranking-1 followed by Factor 8: Access to career page with mobile device with RII of 0.823529 and Factor 6: Use of visually pleasing fonts and Colours have the lowest ranking 8 with RII of 0.650980. Also, Factor 1, Factor 3, Factor4, Factor 5 and Factor 7 are ranked 5,4,3,7and 6 respectively.

Analysis

According to the results of Relative Importance index, Factor 2: Hassle free and quick application while applying for a job. (Simple User- Interface) with RII of 0.832680is the most important factor for the potential candidates to apply for a job through career page websites. RII of Factor 2 is comparatively higher to other factors which shows that a simple User Interface is what an applicant requires mostly to easily apply for jobs through career pages.

Discussions

Factor 2: Hassle free and quick application while applying for a job. (Simple User- Interface) is ranked first in relative importance index with RII of 0.832679 which shows simple user interface is the most important factor for the potential candidates to apply for job through career pages. It can interpreted that if candidates face difficulty using the career page due to complex user interface they might not apply for the job through the career page instead they might look for other websites or methods to apply for the job or in the worst case scenario do not apply.

Factor 8: Access to career page with mobile device is ranked second in relative importance index with RII of 0.823529 which shows career page accessibility through mobile phones or tablets have high importance for the potential candidates while applying for job through career page. This might be due to the convenience and mobility that users have through mobile devices. With the advent of smartphones many users prefer to surf websites through mobile devices. Therefore, most user want career page to work on all the devices they operate on as it brings convenience for the user to apply for jobs.

Factor 4: Easy to understand language is ranked third in relative importance index with RII of 0.794771, It shows that language plays an important factor for users to understand the contents of the career page. It is very important for the candidates to understand what they read so that they can interact with the page. Unable to interact with the career page could be a hassle for the user and the company might lose a potential applicant.

Factor 3: Job Listings can be classified according to Location is ranked fourth in relative importance index with RII of 0.768627, This factor plays an important role as it becomes convenient for the user to search for the jobs that are available at the preferred locations. Its relative importance index is not high because even if people don't find jobs according to the location, they can search for jobs they like as per their convenience. But some people find it very convenient for them to apply for jobs which are situated in the preferred location of the user.

Factor 1: Job openings available at minimum number of clicks (3 clicks) from main page is ranked fifth in relative importance index with RII of 0.718954, This factor is important for casual web surfers who opens a career page website for a very short duration of time. These people are generally passive job seekers who have a good job but are looking for better opportunities. Their interaction span with the career page is very less so if they are not able to apply for jobs in minimum number of clicks, they will not apply for the job. It is important for the companies to showcase their job openings in minimum number of clicks to not loose these potential applicants.

Factor 7: Availability of Chat bots for quick enquiries is ranked sixth in relative importance index with RII of 0.705882. Chatbots is a nice and convenient tool for the user to quickly solve some basic queries. Chatbots also helps company respond fast to the queries of the applicants. Chatbots have been relatively ranked lower in this case because of the time duration that an applicant spends interacting in a career page is very less. This might be the reason why people have no issues if the career page does not have chatbots, queries can be solved with Emails or pages dedicated to common questions. Even though it might not be necessary for the users it adds value by its function as it makes convenient for the users to solve the queries easily.

Factor 5: Use of Pictures and Videos instead of texts for company information is ranked seventh in relative importance index with RII of 0.669281. Using Pictures and videos instead of texts make the career page more interactive to the audience. Pictures and videos can be used to convey better information to candidates about the company work culture, companies' office space etc. This can help a candidate understand if the company is a cultural fit for him or not. This factor indeed plays a role in making the career page interactive, but users do not find it necessary for this factor to be implemented in the career page.

Factor 6: Use of Visually pleasing fonts and Colours is ranked eighth in relative importance index with RII of 0.650980. Companies use pleasing fonts and colours to make their career page look updated and interactive. A good-looking career page can increase the time span of user's engagement with the page. A career page needs to attract attention of the candidates, if candidates feels that the career page looks very plain, they might ignore applying through the career page. This factor is ranked last compared to all other factors used in research, this might be because the candidates don't find it necessary for the career page to have pleasing fonts and colour for them to apply for the job openings.

Conclusions and Recommendations

It can be concluded that the most important factor that affect the decision for job applications in a career page by candidates is Hassle free and quick application for a job. The user Interface of the career page should be easy to operate and it should be convenient for candidates to navigate through the career page. It does not mean other factors are not important, other factors are also important which can bring an appeal in the candidate's mind to apply for a job in that career page on companies' website.

It should be recommended that when creating the career page company's first priority should be the user interface and then they can progress towards other factors.

Limitations

There can be many more factors which can affect the decision of the candidate to apply for a job in career page, only 8 factors according to the literature survey were compared for this research. The results do not conclude that having just a good user interface will increase job application. All the factors must work simultaneously with each other so that it could impact the job application decision of the candidate. This Research can be expanded to much larger sample size and the sample size can be much more classified on basis of lateral application or fresher's application.

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A STUDY OF GLORIFICATION OF INDIGENOUS CULTURE IN ANEES SALIM'S NOVELS, THE BLIND LADY'S DESCENDANTS, VANITY BAGH AND TALES FROM A VENDING MACHINE

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ABSTRACT

Culture is created and spread thorough mankind, by the states, social groups and individuals. Cultural research has become the new fashion in literary studies now. In it, the study is carried out from the point of view of the cultural contents and way of life of the people. In India, due to the long past foreign rule and also due to the trade and commerce worldwide, many natives have adopted the elements of a colonizing subculture which greatly influence the dresses, religions and languages of people even today. Among the mixed citizens, the indigenous peoples make it a point to preserve their religions, traditions, customs and the early way of life which are mostly associated with people, places and things of all sorts. Accordingly, indigenous cultures, traditions, languages and habits etc. are given prominence in the literary works today. Anees Salim is an Indian Author known for his works such as The Blind Lady's Descendants, Vanity Bagh and The Small Town Sea. It is likely that he chooses to represent the native Muslim community in Kerala. In line with this, nearly all his books are centered on Muslim families, their culture and way of life, except the first one, but even that has an interesting character called, Rabiya. As a member of the Indigenous culture, Anees Salim seems to glorify his traditional cultures through his works. The present study proposes to analyse how the elements of Muslim cultures, customs and languages are duly exemplified in The Blind Lady's Descendants, Tales from a Vending Machine and also in the Vanity Bagh,

Key Words: *Cultures, Customs, Religions, Traditions and Languages etc.*

Introduction

The cultural identity of India can be found in the hundreds of wonderful traditions of many religions and communities in India. India's languages, religions, dances, philosophies, cuisine, languages, music, architecture, meals and customs fluctuate from place to place. Indian culture is an amalgamation of numerous cultures. The land on which Indians live and the natural resources on which they depend are inextricably linked to their identities, cultures, livelihoods, as well as their physical and spiritual well-being.

As a Muslim Author, Anees Salim focuses on the Kerala Muslim Culture. Salim's last three books, *Vanity Bagh*, *Tales from a Vending Machine* and *The Blind Lady's Descendants* highlight the lower-working class Indian Muslim heroes and account for the particulars of their lives in a straightforward manner. He portrays social disarray with astonishing daintiness of touch. His emphasis is on multi-dimensional individuals.

The book, *The Blind Lady's Descendants* is a family novel. It follows the everyday fightings, misgivings and yearnings of an Indian Muslim family. Anees Salim weaves a story around a family, particularly a traditional south Indian family. In the family, the father and mother remain in conjugal bonds with no affection or compassion between. Each of the kids have their own qualities. Amar is the story teller in the novel. He undertakes to write a diary about the Bungalow. The book deals with the doings of the children when they were kids. It also tells about the memories, damages, revelations, and the dearly held secrets.

The blind lady is Amar's maternal grandmother, who in the end gets executed by her own daughter, Asma, the mother of the four youths. Hamsa, the father of four children, is never- endingly baffled. He stealthily married another woman at Malabar where he went every now and then on his business. Sophia, the third child fails miserably in boat mishap. Akmaldisappears after his change from a religious boy to a radical terrorist. Hasina, the most seasoned girl, got married to a local professor. Amar, is the only one who remains till the end to unveil the story.

Amar is religious and Akmal is too fanatic. Jasira and Sophiya are totally different in appearance and in character. The battles among the kin, the battle for property, the frivolous and jealous nature of the individuals in the Bungalow are brought before the audience through Amar.

What the audience get to know further of the novel is the progressive unfurling of the disintegrating condition of the physical and the psychological connections of the members of the family both inside and outside the home. The story follows the lives of the occupants of the Bungalow. It tells about the useless guardians, the mother's bemoaning over the loss of her adored children and the father's usual goings to Malabar and also of the visually impaired grandma who shapes a feeling on everything; of the uncle who composed his name on each book alongside the time he completed the process of understanding it. Also, of the kind, caring and more youthful sister who suffocates while endeavoring to pick a water lily; the egotistical, vainglorious senior sister for whose marriage the family auctions the blind lady's Bungalow; and the ardent senior sibling who says his supplications five times each day.

While describing the lives of the characters, Anees Salim weaves the string of the present day political reality such as the destruction of the Babri masjid, the death of Rajiv Gandhi, and the contrasting responses of the Muslims of the Bungalow.

In a straightforward manner, Anees describes how Amar's mind does hundred somersaults for the duration of Friday prayers, how he imagines the imam with a goatee, how he prays without his mind being in prayer, how people are instructed in Surah Maun of the Holy e-book. All these are associated with the aid of a child's reminiscences of his early days who, like the children of the most Muslim households, had completed studying the Quran before he embraced teenage.

I had already become an atheist.I embraced atheism at the age of thirteen and a bit. At thirteen, I had finished my Quran lessons, along with Akmal. I was a quick learner, quicker than Akmal, who saw the hand of Allah in everything.We had a Quran instructor who came to the Bungalow every evening on a rickety bicycle, the end of his white turban flying behind him like a kite's tail as he rode down the drive (BLD, 7).

In Tales from a Vending Machine, a lively, winsome young lady named Hasina works, at an airport vending machine. She leads a modern, self-dependent life. She wanders off in fantasy land about fighting a terrorist who attempts to 'capture' the plane. However, she sobs when she thinks of the obliteration of the Twin Towers and also she gets reminded of how the top of the building crumbled smoothly to the ground like a wedding cake.

Salim shows how a specific world can become both a cage and a sanctuary. What happens when the limits of what you should or should not do are foreordained by individuals in power and when this in turn makes an endless loop.

Hasina Mansoor is functioning as a sales young lady in the Fresh and Hot refreshments, Instant tea/espresso Vending Machine claimed by the rich-Shylock, Haji Osman. The tea is truly costly, yet it is the least estimated thing accessible in the air terminal prior. Haji Osman, is a figure of parody who speaks the incongruity and logical inconsistencies among the Muslim people's group, who does not miss an exorbitant Hajj journey every year, consistently holds two Tasbih reciting wearables in two hands yet arranges Hasina's abba that she cannot wear purdah at the candy machine as that may unfavorably influence the business.

Hasina pleasantly vindicates Haji Osman and the coupon man at whatever point they insult her by serving a tea added with two mothballs and wishes them 'Upbeat crapping'. She has a hint of desire towards her twin indistinguishable sister Shamla. Hasina pays Shamla's school expenses. Her dad is wiped out and still runs the obligation ridden Mustafa stores, a material shop lacking advancement and brilliance. Her mom is fairly apathetic and more youthful. Her sibling Ali has learning disability. On the upper story of their home, lives her dad's half-aunt, Laila, her spouse and child Eza who are in consistent battle with Hasina's family over the property. Eza and Hasina are in a secret of relationship.

In a universe of impassive individuals, unpleasant, gossiping neighbors and associates, what she clutches is the invaluable chances of meeting big names at the clinic. She meets the Pakistani cricketer, Wasim Akram at the air terminal, encompassed with the fans and supporters, who gives a signature to just her. Such minimal things light in her life.

In contrast to other young ladies, Hasina Mansoor, the Vending Machine administrator at the International Airport was resolved, goal-oriented. Actually a young lady like Hasina finds it hard to keep up even herself yet Hasina additionally takes care of her family. She even thinks about the entire Muslims. She despises Jews and America since they scorn Muslims. She is agitated about Saddam Hussain's merciless hanging. In Hasina's words,

you know why the Americans showed the hanging on television? They were simply revenging; it was their yelling at all Muslims in the world: you watched the collapse of our nice little trading centre. Now you watch the death of your hero. Bloody Muslims. I hate America… (TVM, 102)

Hasina says, she despises "juice" (Jews) who slaughter the Palestinians.

Hasina is a character whom no one can reduce to any labels. She continually proclaims I am Hasina MANsoor, I have a Man in my name.

Anees Salim is effective in depicting customary existence of Muslim individuals without turning to any emotionalism. He comes out with a story that depicts the life of a gathering of youthful Muslim young men living in a Mohalla called 'Vanity Bagh'. The men over there are roused by the legend of Abu Hathim. The 'Vanity Bagh' is mockingly considered to be a 'Little Pakistan'.

The reason was that while playing against England, Pakistan won the cricket world cup in 1992. The triumph was commended in the Vanity Bagh with a long Hank of fireworks. Quickly there was police attack requesting who observed Pakistani's triumph. Yet, the answer was that they observed England's thrashing, the ex-ruler of India. After that incident, the place turned into little Pakistan.

After 9/11, Muslims are not welcome in America even if they are the best computer expert or psychologist… if they could strip people like Abdul Kalam and Shah Rukh Khan at airports, what chances do for an infamous individual. (VB 57-58)

Vanity Bagh is about the life of a boy from the minority community. The book is not about hope. It is about hopelessness. More than anything else, it is about distress and religious intolerance that can divide humanity and win elections.

Imran Jabbari who is blamed for the 11/11 sequential impacts and condemned for sixteen years in jail, lives in Vanity Bagh, a Muslim majority mohalla, named by sensation mongering press as 'Little Pakistan', close by a Hindu larger part area Mehandi. Imran Jabbari is a child of the Imam of the Masjid-e-Mosavi.

The offspring of the region are all nonconformists at different phases of tutoring, since none is keen on schooling. There was likewise a Madrasa, however the most elevated taking in they could obtain from the point was just the capacity to peruse the letter-sets from the quran.

Many of the kids are named after heroes in the politics and cricket of Pakistan. With the novel extravagant Muslim names for youngsters supplanting the ancient old ones of seniors in theMohalla was quite normal. It was even inevitable, to be named after someone rich and famous from Pakistan…, some of singers, some of actors. Thus, there were Yahya, Zia, Benazir, Zulfikar, Nawaz Sharif. What's more, Vanity Bagh and Mehandi had, been on conflicts and banner battles in their rounds of common need to feel superior.

Summation

Anees says in one of his interview that "I don't view myself as a representative of the Muslim people group, however I might want to record its feelings of trepidation, hesitations and expectations".

By analyzing the scenes and situations described in the above mentioned novels, it is clear that the novelist has brought into limelight the nuances and intricacies found deep in the Muslim families and their indigenous culture. While referring to unique culture-based events and incidents and some of the aspects of the traditional muslims, the author has not used any synonymous or equivalent English words so as to make them explicit to the target audience. It seems to be an attempt to glorify the innate traditional Muslim culture to the wider and general audience. Thus, the narrative technique is quite enlightening, innovative and insightful and it paves the way for further analysis.

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THE OTHER SIDE OF SILENCE

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ABSTRACT

The other side of silence generally refers to the marginalized section of society whose minds were manipulated, voices were suppressed and their dreams were shattered. In correspondence to the partition holocaust or encounter the other side of silence mainly refers to the underrated section -women, children, untouchables, lower caste and ordinary people. We find a prolific litterateur Urvashi Butalia was the first to come up with an oral history of a human tragedy under the name "The Other side of Silence." She examined through interviewing diaries, letters, memoirs etc. to recount the traumas that the women in particular experienced. She hopes that giving a voice to the voiceless will help heal the trauma and repair the India Pakistan relationship very interestingly, the two female writers Baldwin and Ali with their female protagonists Roop and Nazneen and their experiences have tried to be a light at the end of the dark tunnel. "What the Body remembers" is the first English work looking at partition from a Sikh woman's perspective. The notion of what women were for actually finds the missing puzzle to connect the dots through the prescribed book "What the Body remembers".
The strength, stigma, vibrancy and determination is what Bricklane teaches us. The journey of soul growth, abandonment and evolution through the transformative Nazneen's self-discovery debunks the myth of women equivalent to men in all areas of requirements.

Keywords:*Shackle, convulsions, marginalized, patriarchy , transformation , solace ,tragedy*

Introduction

The partition of India was the highest human convulsions in history. The division of India into two countries - India and Pakistan and the massive destruction, dismay, bloodshed and violence that followed shook the nations on both sides of borders and boundaries.

The year 1947 witnessed a million deaths. Many women were abducted and raped. Huge numbers of people were displaced, countless children disappeared and most importantly homes, villages, communities, families and relationships got destroyed. More than half a century later UrvashiButalia comes up with an extraordinary oral history of a human tragedy - " The other side of silence." Through interviews conducted over a time period of 10 years and examination of diaries, letters, parliamentary documents, memoirs, Butalia connotes- the marginalised people of history- children, women, ordinary people, the lower castes, the untouchables have been affected brutally. She details the demographic and ethnic developments that affected Partition and recount the traumas that women, in particular, experienced including her own family. Butalia hopes that by putting the unspeakable into words, she will help heal the trauma and thereby help repair the India - Pakistan relationships. She presents a sensitive and moving account of her quest to hear the painful truth behind the silence. The feminist Butalia sat in conversation with Charlie Smith one day as a part of the Indian Summer Festival regarding - " The other side of silence." Smith said the book ' shattered the taboo and started a conversation.'

The twenty-first century has witnessed several women writers expressing their heartfelt disagreement, despair and dismay towards the conservative patriarchal dichotomy to enslave and cage women into the four walls of their houses.

Monica Ali's Nazneen in 'Brick Lane' is no exception. Ali is credited for picturizing the portraiture of an illiterate immigrant married Bangladeshi woman seeking her true solace. The quest towards the unknown – The journey towards self-discovery and the transformation to light metaphorically Nazneen's inner growth from being a shy, coy meek to ultimately realizing her true potential and thus her breakthrough moment. The break free, in short, a rebel in Nazneen that Ali poured was not an easy cake to digest as she had to go through severe mental transition, pebbles on her path and most importantly conflict with her educated husband. The hypocrisy hits her hard when we find the hypocrite, educated, conservative husband of Nazneen refuses her to go to college to learn.

Nazneen found her new love in Karim a radical and had a physical relationship with him but this could not satisfy her entirely and they parted their ways. At last, we witness Nazneen going for ice skating that she once dreamt only. The sole journey and soul growth with the transitional period she had in her life ultimately made her victorious. Women writers since time immemorial have gone through several cases of abuse, misconduct that has hit them hard physically, emotionally, mentally and psychologically. Feminism is a huge outbreak to stand out in protest towards all the injustices that womenfolk, in general, had to go through. The world has witnessed an urge and a quest to raise a voice for self-protection. The brutal torture that women went through during partition especially raises our goosebumps. Earlier times some of the writers stood for the cause of protecting women rights but since a few years, back a trend can be viewed amongst the writers to be a voice for the voiceless.

Shauna Singh Baldwin is amongst such writers, first in her tribe to raise awareness and courage to speak for the subjugated, dominated and marginalized section of the society. In the novel "What the Body Remembers" partition is considered as a subject matter in which Baldwin opens up the other side of the silence of women and has successfully drawn out the feminine reality of time with the depiction of Sikh women's domestic experiences and account of political turmoil. It is the first English work looking at partition from a Sikh woman's perspective. The story opens up with the beautiful 16 years old Roop married to a man 25 years her senior in 1937. Sardarji, on the other hand, has a barren first wife Satya but in fact, knowing the secret she agrees and is confident enough that she will win over her husband. When Roop bears two children she becomes compelled to give her children to Satya as Sardarji was struggling with his guilt of being unjust to the first wife. The twist of the tale turns into a roller coaster ride as the rest of the family moves to Lahore leaving angry and heartbroken Satya into isolation, pain and ultimately to suicide.

The story lights up with Roop inheriting Satya's spirit as she journeys with her children from Lahore in Pakistan to Delhi in India in search of security and safety. The conflict and struggle between the two women to assert their authority over their husbands and children serve as an allegory to the partition of the nation and ongoing political struggle. The constant changing notion of home for both women and marriage serves as a metaphor of both exile and uprooting of one's home. Baldwin challenges the projection of women as sexual objects unlike her male counterparts Khushwant Singh and ChamanNahal. Satya's infinite love for Sardarji stands very much different from that of Roop. Satya tried to win over her husband with her truth, reality and sharp mind not fluttering her eyelashes like Roop. A straightforward and outspoken woman who falls prey to the usual norms of the society of fertility or-What women are for actually? A sense of betrayal and cheating conflicts within her mindset beyond the limit of tolerance when Sardarji moves to Lahore with Roop and children: "I am not a wife, for my husband has abandoned me. I am not widow for he still lives,... no one....." (Baldwin 401).

Realising to go to a place where she can start her life without fear by her own choice, she chooses suicide that will remind Sardarji of his guilt and presence to be felt with her absence. Unlike Satya, Roop's sufferings have been told by the writer on a different level. But the basic reality of the doom of a woman is to be born as a woman. The novel in short is a gem of women's pain, bitter experiences, the trauma of the bloody holocaust with the intermixture of women's spirit that portrays through the disembodied voice of Satya who voice about the female agony during the partition in which women suffered the most.

In 1947, the predominantly Hindu region of West Bengal was made part of India, while the mostly Muslim region of East Bengal became part of Pakistan, So the act of partition perpetrated by British colonial powers led to decades of unrest and disharmony with East Pakistan suffering prejudices at the hands of West Pakistani forces. In 1971, after the Bangladesh liberation war, East Pakistan declared independence becoming the People's Republic of Bangladesh. The novel towards the end reveals the terror attacks of September 11 in the U.S shaking and shaking the Bengali residents of Tower Hamlets who were targeted in numerous racially motivated incidents.

Monica Ali's novel "Bricklane" is a splendid daring, brilliant, intensely gripping and involving one. The heart of the novel and its most assured achievement is Nazneen herself. Ali portrays her journey from submissive, teenager to hesitant independent mother with poetic intelligence.

Monica Ali is a fabulous writer and "Bricklane" is a finely observed, deeply compassionate, and tender novel. Ali writes with a mixture of passion and restraint that is totally exhilarating. Ali has an impressive command over her story.

Conclusion Soul's growth is parallel with every struggle it encompasses courageously so is the story of women's liberation psychologically into a win-win situation in the contemporary world.

The contemporary world is a kingdom of striving, seeking, yarning norm so is the demand to overcome obstacles that add to the soul's growth. The story of female folk suffering mutilating endlessly and compromising to adhere to orthodox hierarchy is a historical saga. Many female writers since time immemorial have raised their voices to spread awareness amongst people to stop the game of injustice, inhuman torture, forcefulness, physical, emotional and mental violence that results in trauma. Women in general have always been the soft targets of any battle. It is so unfortunate that the society that worships deities becomes the partner in crime to take away the peace, hope, longing for life and disregard their hearts calling.

So the process to break the chain is parallel between soul growth and women's liberation. The procedure of both as has been witnessed by us throughout the centuries is a win-win outcome. The intensity of ruthless bloodshed violence, torture that women irrespective of any caste, class or community went through, shows that women were the battleground of any massacre. These days due to the excessive torture, sufferings, womenfolk went through arouse a need of liberation, awareness, consciousness and protest. Whether it be through words written or spoken verbally women have been able to break free. Metaphorically speaking the truths of soul's growth – the process of spiritual awakening to enlightenment to moksha is not an easy cake too. All the great saints – be they Swami Vivekananda, or Gautam Buddha all had to undergo immense development internally to match up to their highest future self. Both linked up together consistently the stories of breaking free are similar. The toil, the labour and hardship the women went through caused a sort of awakening in their mind and in the collective to be the truth, to find the light, to be the love.

Objectives

(1)To present how ' voice for the voiceless, a quest to unleash the painful truth behind the silence can provide more power to the underrated section of society.

(2) To project the despair and dichotomy that conservative patriarchal hierarchy ushered to enslave and cage women being the soft target of any encounter .

(3) To transient the transformative journey of self-discovery in the process to channel the light within to break free and accomplish to subvert the myth of hush always for the subjugated.

Findings

(1) The first objective taken has been found verified and justified because in 'What the Body Remembers 'the protagonists Satya and Roop seem to vibrate to the mentality of the womenfolk in general. Baldwin is the first Sikh Canadian, first in the tribe to raise awareness to speak for the marginalized, be it through the caricature of her portraiture of a strong, stout combative lady Satya or even Roop the spirit inherited from Satya after her death to be the raising voice and rising star to support and protect for the greater cause of equality and humanity.

(2) The second objective has been verified in the sense our celebrated and unique protagonist Nazneen portrayed by Monica Ali is so inspiring to break the shackles of conventional patriarchy to establish her sense of freedom and cherish her wildest dreams.

She is an immigrant Bangladeshi uneducated married woman who from her zone of nothingness went to the heights of the fulfilment of going for ice skating for the first time.

(3) Our third objective has also been found verified and justified because both the protagonists' Roop and Nazneen took as a replica to resemble a change in the societal thinking pattern with their evolution and self-discovery has surprised us. Nazneen's journey from being an uneducated immigrant, a Bangladeshi lady who was caged into the four walls of enslavement, finally managed to access education and unleash her dream of ice skating. Whereas Roop, a shy, coy, meek, docile lady's transformation into a strong-headed woman wins our heart and we are full applauses for her as she breaks the patriarchal shackles.

(4) So, we find that all three objectives are fully justified and verified.

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AN EMPIRICAL STUDY ON INVESTMENT BEHAVIOUR AND SATISFACTION LEVEL OF BANK EMPLOYEES IN TRICHY DISTRICT

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ABSTRACT

The concept of savings is really essential to cope with the fast evolving multi-faceted social commitments. Savings and Investment are commitment of a person's funds to grow future income. Human needs are unlimited hence he has to work more. In this research paper an attempt has been made to study the bank employee's individual behaviour and level of satisfaction towards various investment alternatives. The study was made with a sample of 75 private bank employees in Trichy district, through a structured questionnaire using the statistical tools such as measures of regression analysis, analysis of variance .The results of multivariate analysis revealed that there is no significant difference between expected return satisfaction and Investment evaluation decision. Anova also revealed that there is no significant difference between expected return and the level of satisfaction of the respondents.

***Keywords:**, Satisfaction level, Expectation, Investment behaviour, Investor Information and Investment Avenues Trichy*

Introduction

Investment is common to all societies and this practice differs from person to person. In India there are various investment avenues available to meet differing needs of investors. The investors saving schemes will have a significant impact on the saving behaviour of people. A study on behaviour and level of Satisfaction assumes a greater significance in the formulation of policies for the development and regulation of savings in general and protection and promotion of small and household investors in particular. Some of these investment avenues offer attractive returns but with high risks and some offer lower returns with very low risks.

Literature Review

Ishwarya P (2014) had undertook a study the behaviour and satisfaction level of investors towards various investment alternatives available for the salaried class employees in the city of Mangalore. The study was conducted with an objective to ascertain the behaviour of salaried class employees and to measure the satisfaction level of salaried class employees towards available investment avenues. The researcher has taken a sample of 100 respondents using convenient sampling technique. It was concluded that that most of the respondents expressed their views positively towards investment activities. Majority of the respondents are not only less aware about the investment avenues but also they are less satisfied about their investment in marketable securities. The research also concluded that 36% of respondents are satisfied on their investment in non- marketable securities and 64% of respondent's satisfaction is poor. It was also concluded that 88% of respondents are satisfactory on their investment and only 12% of respondents perceived and reported to have lower degree of satisfaction on their investment in physical assets.

Vinoth R & Rajkumar R (2013) has undertaken a study titled, "Investors satisfaction, expectations and practical problems on mutual fund investments – An investigation study with special reference to Coimbatore City", with an objective to study the priority of investments over mutual funds by the investors, to study the practical problem of mutual fund and to study the expectation of mutual fund investors. The study was carried out with a sample of 150 respondents through a structured questionnaire using convenient sampling technique. It was concluded that high returns was the top priority while ranking the decision making factors. The respondents also felt that the mutual funds have not offered the expected returns for their investment. It was also concluded in the research that majority of the respondents were satisfied on the service of agents of mutual fund organisations. It was also concluded that personal factors of the respondents have no significant influence on the source of awareness of mutual funds and type of business, whereas the personal factors have significant influence on the type of scheme.

Umamaheswari S & Ashok Kumar M (2014), had carried out a study titled, "A special study on Coimbatore based salaried investors awareness, attitude, expectation and satisfaction over their investments" with an objective to explore the investment attitude of the investors to perceive their level of satisfaction about their investment policies, to observe the motivating factors for their investment policies with a special reference to expected rate of return on their investment besides exhibiting the investors decision making in opting for the investment policies. The research was carried out with structured questionnaire and a sample of 1000 respondents. It was concluded in the research that relative portion between the demographic factors and the satisfaction level of salaried class investors about their investment policies. It was also proved that the rate of return of salaried class of investors on their investment policies is necessarily influenced by their demographic constituents.

De clercq B, J.M.P.Venter & C.J.van Aardt (2012) undertook a study titled, "An analysis of the inter-relationship between savings product usage and satisfaction using a SERVQUAL framework" with a sample of 700 respondents in South Africa with an objective to study the relationship between usage and satisfaction levels attributed to various saving products. The researcher conducted correlation and regression analysis to ascertain the level of usage relating to financial products with the level of satisfaction ascribed to the products. It was concluded that very high positive correlation coefficients indicates strong relationship between the variables. Higher the usage and higher satisfaction with respect to saving products. It is also concluded that the importance of financial product providers continuously strive to improve satisfaction levels among savers so that higher usage levels can been courage, and to increase the savings base with diverse products so as to give more returns to savers over the medium to long term, cannot be over-emphasized.

Objective of the study

From the above literature review, it can be understood that the studies in respect of the level of satisfaction with reference to bank employees were not made earlier. Hence an attempt has been made to analyse the satisfaction level of the banking professionals with the following objectives.

- To study the mean, deviation, of the selected demographic variables
- To analyse the variance between investment and level of satisfaction
- To analyse the expectation and level of satisfaction and investment evaluation decision

Hypothesis

H0: There is no significant influence on demographic factors on investment.

H0: There are no significant difference between expectation, satisfaction and Investment Decision

Research Methodology

The research methodology depicts the flow of the research process and serves as guidance for the research to carry out the research study. It comprises of data source, sample size, sampling techniques and tools of analysis. In this study, the analyst has utilized the essential information acquired from 100 respondents working in banking part.

Statement of the problem

The development of any economy depends on healthy savings and proper allocation of capital for the developmental activities of any country. The avenues of investment and the investors' opinion based on their preferences vary from person to person. Liquidity and safety play a major role in the investment decision; tax exemption and other factors are also taken into consideration. Apart from the above factors, there are demographic factors which influence the decision on investment. This article discusses the factors which affect the investment behavior of individuals in the city of Trichy.

Data Analysis and Interpretation

Primary data was collected through questionnaire comprising of various parameters from the respondents. The information generated through the survey is being reported through the tabulation of categorical variables and the results are discussed below.

Table I Descriptive statistics

Particulars	N	Mean	Standard Deviation
	Statistic	Statistic	Statistic
Age	100	1.26	0.972
Gender	100	1.40	0.502
Marital Status	100	2.85	0.430
Qualification	100	2.08	0.779
Annual Income	100	3.13	0.959
Percentage of Savings	100	2.10	1.119
Annual Investment	100	4.34	0.783
Awareness	100	2.48	0.617
Grade of Employment	100	2.72	0.7 30
N	100		

Show that the mean, mode and median differences are very high. Mean value of Age is 2.72 and it shows that the majority respondent belongs to the age group between 31 and 40. 17.6% of respondents belong to less than 30 years, 48.8% of respondents belong to 31-40, and 23.2% of respondent belongs to 41-50 and the rest 10.4% belong to above 50 years. Gender shows that 80% of the respondents were male and the rest belongs to women.

The mean value of marital status is 2.85 and shows that majority of the respondents were unmarried (84.8%). The mean value of educational qualification is 2.08 and showed that 27.2% of the respondents were graduates, 37.6% of the respondents were post graduate and 35.2% of the respondents were professionals.

The mean value of annual income shows that 2.13, which shows that 25.6% of the respondents earning less than five lakhs, 48% of the respondents earnings between 5-10 lakhs, 16.8% of the respondents earnings between 10-15 lakhs. 7.2% of the respondents' earnings between 15-20 lakhs and the rest 2.4% belong to above 20 lakhs per annum. The mean value of percentage of savings is 2.10 which shows that 36% of the respondents percentage of savings is less than 10 percent, 29.6% of the respondents percentage of savings is between 10-15 percent, 23.2% of the respondents percentage of savings is between 15-20 percent and the rest 11.2% of the respondents percentage of savings above 20 percent of their earnings.

Table 2 ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Regression	13.754	5	3.173	15.783	0.000[a]
Residual	31.136	95	0.156		
Total	48.712	100			

- **Predictors:** Level of satisfaction, Return expected, Annual Income, Educational Qualification, Percentage of Savings
- **Dependent Variable:** Annual Investment

Table 3 Return expected and level of satisfaction

ANOVA (Return expected-Level of Satisfaction)

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	0.195	4	0.399	0.566	0.534
Within Groups	25.513	96	0.255		
Total	43.908	100			

Null Hypothesis: There is no significant difference between its expected return and the level of satisfaction of the respondents.

Interpretation: Based on the result generated by SPSS, the significant value is 0.566 and it is greater than 0.05. Hence the null hypothesis is accepted since there is no significant difference between the levels of satisfaction of respondents with respect to their expected return. Expected returns from investment not influence the satisfaction level of the respondents.

Findings

- Gender, Marital status, Annual Income, Annual Investment and Grade of employment shows Leptokurtic and Age, Educational qualification, Percentage of savings and awareness.
- Majority of the respondents are in the age group of 31 – 40 and more than 65% of the respondents are males.
- 48% of the respondents are in the income group of Rs.5-10 Lakhs and more than 50% of the respondents are fully aware of the investment.
- Annual Income and Percentage of savings influencing the amount of annual investment
- No significant difference between its expected return and the level of satisfaction of the respondents.
- There is no significant difference between Expected return - satisfaction versus investment evaluation decision under safety principal and liquidity.

Conclusion

It is extremely important for the policy makers and regulatory authorities to understand the investors' perceptions, preferences, and their concerns on the market. A study may be conducted exclusively for other sector of employees with a perspective to help and promote the investors. Also research may be pursued to help the middle income group in making best investments clubbed with higher return and satisfaction to the investors. Investment procedures must be simple and clear to attract more investors.

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FACTORS AND GLITCHES THAT INFLUENCE INVESTMENT DECISION - A SURVEY IN TIRUCHIRAPPALLI CITY

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ABSTRACT

Investment plays a key role for successful enrichment of post retirement life or any emergency needs or for children education and so on. Every Investor has a motive behind his investment and at the same time while making Investment there are certain factors that affect the investors investment plan. A proper awareness cum knowledge regarding the various investment avenues would help the investors to decide the appropriate avenue. Hence the present study aims at finding the investment avenue that investors are aware off, Motives behinds investment and the problems that affect the overall investment behaviourof the Investors in Tiruchirappalli city.

Key Words: *- Investment, Investors' problems, and Factors that affect investment decision.*

Introduction

Introduction of the study

Cash that is leftover meeting all the monthly expenses are generally used to make investment in any of the investment avenues with the anticipation that it will generate some additional income in the future that can beat the present inflation cum all the future requirements plus the emergency needs if any. Investors make investment according to their needs or motives behind the investment hence they should analyze, study the respective avenue before they make investment. In an economical term, an investment means procurements of goods that are not used immediately but are used in the upcoming future to generate wealth. In financial term, an investment means possessions of financial asset that will stipulate additional earnings in the future or later can be sold at a higher price for a profit.

Each and every investor hasunique motivewhile making investment like tax exemption, or they expect a good return, or they consider the duration of investment or the risk linked with the investment and at the same time while making investment investors do face certain issues, Hence according to the investors motives the investment options should be customized and a proper awareness regarding avenues need tobe provided so thatinvestors can make a perfect decision about investment portfolio, which in turn will generate incomeboth to the country's economy as well as the individual investor.

Problem Statement

The present study is carried out in Tiruchirappalli city to understand the investment behaviour pattern of the investors and the factors that influence their investment decision. While making Investment the foremostproblematic issue that arises are regarding the selection of appropriate investment avenuesaccording to their motives and how to overcome the problems faced by them while making investment. Thestatement of problemaccounts to "Factors and Glitches That Influence Investment Decision - A Survey in Tiruchirappalli City".

Objectives

1. To identify the investment behaviour pattern of investors in Tiruchirappalli City.
2. To analyze the influence of demographic factors of investors in Tiruchirappalli City.
3. To find out the overall investment behaviour performances of in Tiruchirappalli City.

Hypothesis

1. H1: There is no significant relationship between frequencies of Investment with Demographic factor in Tiruchirappalli investors.
2. H2: All the factors have equal impact for Investment pattern of investor's behaviour impact by Tiruchirappalli investors.
3. H3: Independent variables are not having significant influence on overall investment behaviour pattern of investors and problems faced while making investment

Research Methodology

In this analytical study, investors' investment behaviour pattern in Tiruchirappalli City was analyzed and for this purpose 120 investors samples were identified using purposive sampling. Their responses were collected through questionnaire and wereprocessed using SPSS version 20 software as a part for main study. For analysis, descriptive statistics, Friedman's test for k-related samples, Chi-square tests, Factor analysis, and Multiple Regression Analysis were used. The secondary data was collected with the help of reference books, journal, research papers and websitesare also used under this study.

Limitation of the Study

The study was limited to a sample size of 120 respondents only.The study was conducted only in Tiruchirappallicity.

Review of Literature

Ms. Rajaj Arora (2015) published a paper titled ***"Indian Investor Behaviour",***has concluded that time period of investment, different investment objectives, choice of investment avenues and various characteristics like return on capital, safety, corporate governance etc. is directly related to age and occupation of an investor and investors consider equity market as effective financial instrument followed by real estate and commodity market. It was also found that people depend mostly on news channels to known about financial product followed by financial advisors.

Dr. S. PoornaPrabhat, N. Srivani and Ch. Varalakshmi(2016) published a paper titled **"Investors Perception Towards Different Investment Avenues",** they have made an attempt to analyze the investment behaviour of investors against various investment avenues from Vijayawada City. They found that gender and age have no impact on investment decision of the investors while the variables like income level, occupation and education shows an impact on investment decision of the investors.

AnugrahRohiniLal& Dr. N.L. Gupta (2017) published a paper titled ***"An Analytical Study on Relationship of Age, Gender and Income with The Investment Preference towards Fixed Deposits: A Study in Uttarakhand",*** they tried to find out the relationship of Age, Gender and Income with Investment preference towards fixed deposits of investors in Uttarakhand. They found that gender and income have significant relationship while making investment in fixed deposits while age doesn't affect the investment preferences. They also found that mostly salaried class, low- and middle-income group prefer fixed deposits.

Disha (2018) published a paper titled***"A* Comparative Study on The Perception of Investor Towards Derivatives and Equity",**has analyzed the perception of investors towards Derivatives and Equity in Indore City and concluded that there is no significant difference in the investment pattern between the equity and derivatives, apart for this various factor that influence the selection of equity and derivatives were analyzed and found that derivatives are less speculative and has sufficient protection measures taken by the regulatory bodies. In case of equity, it easy and traditional, it is less risky and has sufficient protection measures taken by the regulatory bodies.

G. Velmurugan, V. Selvam and N. Abdul Nazar (2015) published a paper titled **"An Empirical Analysis on Perception of Investors' Towards Various Investment Avenues",**they have tried to explore the investors' perception towards various investment Avenues in Vellore City,Tamilnadu. They found that aged and high-incomeinvestors prefer to invest only in post office and bank deposits for safety reason.

Dr. Bharti Wadhwa, Dr. AnubhaVashisht&Ms. Davinder Kaur (2013)published a paper titled **"Investors' Attitude Towards Mutual Fund Investments",**they have concluded that return from the investments, credit rating agency is the topmost concern of the investors apart from that financial literacy of respondents is very important for making investment in Mutual funds. They also insisted that Mutual fund companiesshould promote financial awareness amongst the respondents so that their income and savings are channelized towards MutualFunds.

Prof. Samita Kher& Dr. P. N. Shende (2013)published a paper titled **"A Study of Investment Pattern of Central Government**

Employees Afterthe Implementation of Sixth Pay", they found that due to the implementation of six pay commission the amount of investment in each avenue has increased and even the central government employees are venturing different investment avenues. The major share of investment is done in insurance sector for tax benefits and high security, the investment appetite has changed from short term to middle or long-term investment.

N. Geetha &Dr. M. Ramesh (2011)published a paper titled**"A Study on People Preferences in Investment Behaviour",**has conducted the research in Kurumbalur and found the respondent are not much aware about the stock market, equity, bond and debenture. They also concluded that all the age group prefer to invest in insurance, PPF, NSC and bank deposits come income level is the important factor that effects the portfolio of investors and proper awareness regarding the stock market and their service need to be provided by the stock Brokering firms.

QiujunLan, Xuqing Xu &Xingye Hu (2017)published a paper titled**"Predictability of Investment Behaviour Based on Personal Characteristics about China's Individual Investors",**they have considered four principles to filter personal characteristics of the investors named as, "common", "easy to measure", "Stable", and "Relevant. They found that investors' personal characteristics are strong predictors of investorsbehaviour apart from those three personal characteristics as "professional knowledge levels", "investment experience" and "income level" have the most significant impact on all types of investment behaviour. Based on the selected significant personal characteristics it provides a better understanding of the individual investors and explore the irrational behaviour of investors in the financial market in China. Further these results could not only provide decision information for investor education, marketing and service personalization, but also provide clues to strengthen customers' cost control, quantitative management and risk control.

Dr. BhumijaChouhan (2020)published a paper titled **"Current Scenario of Investing Pattern of Indian Investors' with Special Reference to Northern and Western Region",** has mainly focusedon the investment pattern of the investors of northern andwestern part of India and aspects that are considered whilemaking investment decisions. He found that investors of Northern of part of India preferred FD, Saving and Life Insurance while investors of Western part of India preferred in MF, Life Insurance, PPF and FD and Saving account. The reason for selecting these investment avenues were to meet future expenses and for tax saving. There is no difference in discernment across north and west regions.

Data Interpretation

1) Factors influencinginvestors' investment behaviour pattern

Factors influencing investors' investment behaviour pattern in the study areahas been measured by variables. Based on the agreement given by the respondents, factor analysis with principal component method using vari-max rotation was applied to group the variables in to factors. The result of the KMO measures of samples adequacy and bartlett's test of sphericity indicates that application of factors analysis is appropriate for the data. The KMO measures of sampling adequacy was 2162.339 and it was significant ($p<.001$). eighteen variables are reduced into fewer factors by analyzing correlation between variable (investors behaviour). In this case, eighteen variables were reduced to four major factors.

Table-1

Factor Analysis

	Items-Total Statistics	
Factors-1	Regular Return	Cronbach's Alpha
	12.1. Capital Appreciation	.800
	12.2. Liquidity	.771
	12.3. Yield rate will be good	.737
	12.4. For additional income	.906
Factors-2	Safety of money invested	
	12.5. Securing for children's education	.831
	12.6. Securing for post-retirement	.856
	12.7. Securing for emergency Purpose	.874
	12.8. Saving money for my future safety	.856
	Tax Benefits	
	12.9. Diversification of Assets	.839

Factors-3	12.10. Compete against inflation	.873
	12.11. Escape from tax load	.937
Factors-4	Problems Faced while making Investment	
	13.1 Reliability on available information	.849
	13.2 The ability to choose the best Avenues	.843
	13.3 Understanding the tax rule	.794
	13.4 Anxiety of losing money	.835
	13.5 Lack of Investment plan	.695
	13.6 Lack of Investment Awareness	.766
	13.7 Income is not Sufficient for investment	.784
Overall Cronbach's Alpha		2162.339

The above all eighteen items reliability co-efficient are found to be satisfactory. Therefore, the final version of the questionnaire was prepared and it is used for the study.

2) Chi-Square Test: To test the relationship between Demographic factors andfrequency of investment

Null Hypothesis

$H0_1$: There is no significant relationship between frequencies of Investment with Demographic factor in Tiruchirappalliinvestors.

Alternate Hypothesis:

$H0_{1:}$ There is significant relationship between frequencies of Investment with Demographic factor in Tiruchirappalli investors.

Table-2Consolidated Results of Chi-Square Test

	Table Value	d.f	Calculated Value	Level of Sign.	Result
Age	32.00	16	34.925**	1	Significant
Gender	9.488	4	12.089	5	Significant
Marital Status	21.026	12	8.001	5	Not Significant
Education	21.026	12	21.076	5	Significant
Occupation	15.507	8	18.878	5	Significant
Annual Income	15.507	8	15.525	5	Significant

Inference

Frequencies of Investment is categories with five distributions vizMonthly once, Quarterly, Half-yearly, Annually and no specific time limit. Age of the customers were categorized with five distributions viz. Between 20-30 years, 31-40 years, 41-50 years, 50-60 years, and Above 60 years. There are two kind of genders Male and Female, Marital status three groups married, Unmarried and others (divorce,etc). Education divided into five modes Schooling, UG, PG, Professional, and others (more than one). Occupation salaried, business and others (more than one). And Annual income three categories upto 2,50,000, 2,50,001- 5,00,000 and Above 5,00,000.

The results of the relationship between "Frequencies of Investment with demographic factors like age, gender, Marital Status, education, occupation, and annual income"were presented in the table 1 which shows that alternate hypothesis is accepted, except for marital status.

Except the calculated value of marital status, the other five variables Age, gender, education, occupation and annual income is more than the table value at 1% and 5% level of significance. Hence, the null hypothesis is rejected and concluded that the investors investment behaviour is impacted with most of the demographic factors like age, gender, education, occupation, and annual income" investment behaviouris significantly related to the factors in Tiruchirappalli.

3) Friedman's test for k-related samples:

Awareness of investors are divided in to nine major parts Bank deposits, company deposits, Post Office Deposits, shares/Debentures, Gold, real estate,Insurance Premium, Recurring Deposits, and Mutual Funds are tested with Friedman's test for k-related samples the test result and discussions were presented below.

The respondentshave ranked, to test the significance of various factors that influence the preferences ofinvestors. Friedman's test for k-related samples was applied to study the relationship between various factors that influence the preference of investors towards availableInvestment Avenues.

Null Hypothesis H01:

All the factors have equal impact for Investment pattern of investor's behaviour impact by Tiruchirappalli investors.

Table-3

Ranks			
	Mean Rank	Chi-Square	Ranking
1. Bank Deposits	1.24	278.694 (P<.001)	9
2. Company Deposits	4.99		7
3. Post Office Deposits	5.31		5
4. Shares/Debentures	5.76		3
5. Gold	5.86		2
6. Real Estate	4.77		8
7. Insurance Premium	5.29		6
8. Recurring Deposits	5.63		4
9. Mutual Funds	6.16		1

The results of the Friedman's test showing that the null hypothesis is rejected at 1% level. Not all the factors have equal impact on investment behaviour pattern of investors in Tiruchirappalli.

4) **Multiple Regression Analysis for Overall Investment Behaviour Pattern of Investors and Problems Faced While Making Investment.**

By considering impact of investment behaviour pattern of investors the factor that motivates the investment decision are classified into:regular return, safety of money invested and tax benefits with Problems Faced while making Investment are categories, Reliability of available information, the ability to choose the best avenues, understanding the tax rule, anxiety of losing money, lack of investment plan, lack of investment awareness, and income not sufficient for investment.

Table-4

ANOVA[a]									
Model		Sum of Squares	Df	Mean Square	F Calculated value	F Tabulated	Sig.	R	R Square
1	Regression	1710.362	12	142.53	17.956	4.95	0		
	Residual	849.338	107	7.938					
	Total	2559.7	119					0.6	0.4
a. Dependent Variable: Overall investment behaviour DV									
b. Predictors: (Constant), regular return, safety of money invested and tax benefits with Problems Faced while making Investment are categories, the ability to choose the best avenues, understanding the tax rule, anxiety of losing money, lack of investment plan, lack of investment awareness, and income is not sufficient for investment.									

Investment behaviour pattern of investors influenced as measure variable. Multiple regression analysis was conducted to examine the relationship between the impact of investment behaviour pattern of investors towardsProblems Faced while making Investment.

Null Hypothesis

H01: Independent variables are not having significant influence on overall investment behaviour pattern of investors and problems faced while making investment.

Table 4 shows the result of the liner regression analysis summary for overall investment behaviour pattern of investors and problems faced while making investment in Tiruchirappalli. In the above Table the F calculated (17.956) is greater than F tabulated (4.95). Therefore: the null hypothesis is rejected, with significant value=.000<0.005. There is positive relationship between the independent variable's investment behaviour pattern of investors the factor that motives your investment decision are categories regular return, safety of money invested and tax benefits with Problems Faced while making Investment are categories, the ability to choose the best avenues, understanding the tax rule, anxiety of losing money, lack of investment plan, lack of investment awareness, and income is not sufficient for investment.

R value = (0.6), Which refers to coefficient of correlation of the independent variable and the dependent variable satisfaction is highly influenced by investment behaviour pattern of investors in Tiruchirappalli district.

Table-5

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.817[a]	.798	.761	1.81740
a. Predictors: (Constant), regular return, safety of money invested and tax benefits with Problems Faced while making Investment are categories, the ability to choose the best avenues, understanding the tax rule, anxiety of losing money, lack of investment plan, lack of investment awareness, and income is not sufficient for investment.				
b. Dependent Variable: Overall investment behaviour DV				

The above table shows the model synopsis of overall investment behaviour pattern of investors and problems faced while making investment is influenced (predictor) and it explains the 76.1 % of investors overall investment behaviour is impacted (R^2=0.761).

Finding

Demographics factors like age, gender, education, occupation, and annual income has impact on theinvestor's investment behaviour pattern whereas Marital status has no impact on the investment behaviour.

Investors have more awareness about Bank Deposits, Real estate, company deposits, post office deposits followed by insurance premium and it clearly shows that investors have less awareness regarding mutual fund.

The overall investment behaviour pattern of investors is impacted by the investor's motivation behind the investment cum the problem faced by them while making investment.

It was also found that the major factor that motivates the investors while making investment are regular income, safety of money invested, securing for children's education and securing for post- retirement.

Suggestion

Investorsintensely trust that saving is very essential for future but accurate awareness regarding the various investment avenues like mutual fund need to provided so that they diversify their investment and at the same time can earn more to beat the inflation.There are lots of financial awareness program conducted regarding the investment option available in the market and a lot of investment videos are available in the internet, but a decorumneeds to be maintained so that investors can attend them and gain proper knowledge.A proper knowledge regarding various investment avenues will help the investors to diversify their investment andcope up with their risk.

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AN EFFICIENT NETWORK SECURITY ON SDN WIRELESS ENVIRONMENT

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ABSTRACT

Programming Defined Networking (SDN) is another frameworks organization perspective that permits a controller and its applications an incomparable capacity to have exhaustive association detectable quality and versatile association programmability, therefore engaging new advancements in network shows and applications. One of the middle advantages of SDN is its reliably brought together control plane to give the entire association detectable quality, on which various SDN applications depend. Unprecedented for the composition, we propose new attack vectors exceptional to SDN that truly challenge this foundation. Our new attacks are genuinely practically identical in soul to parodying attacks in legacy associations (e.g., ARP hurting attack), at any rate with tremendous differentiations in abusing intriguing shortcomings how current SDN functions remarkably as opposed to legacy associations.

The productive attacks can effectively hurt the association geology information, a significant design block for focus SDN sections and topography careful SDN applications. With the hurt organization detectable quality, the upper-layer OpenFlow controller organizations/applications may be totally tricked, provoking certified seizing, refusal of organization or man-in-the-middle attacks. As shown by our examination, all current major SDN controllers we find keeping watch (e.g., Floodlight, OpenDaylight, Beacon, and POX) are affected, i.e., they are reliant upon the Network Topology Poisoning Attacks.

Introduction

Software defined networks

Programming Defined Networking (SDN) has arisen as another organization worldview to advance the hardened organization foundation by isolating the control plane from the information plane (e.g., switches), just as giving comprehensive organization perceivability and adaptable programmability. As the mind of the organization, a SDN regulator awards clients an extraordinary device to plan and control * The initial two creators contribute similarly to the venture. the organization utilizing their own applications on the regulator's center administrations. In scholastic conditions, yet in addition in certifiable creation organizations, SDN, especially its famous acknowledgment OpenFlow1 , has been progressively utilized.

Numerous application situations have been considered and sent from that point forward, going from grounds network advancement to cloud network virtualization and datacenter network improvement. Since the regulator is the center of the SDN engineering, if the OpenFlow regulator experiences any genuine weakness in its plan/execution, the whole organization would be tossed into mayhem, or even absolutely heavily influenced by aggressors. we study network geography administrations/applications of the standard Open Flow regulators and recognize a few new weaknesses that an assailant can endeavor to harm the organization geography data in OpenFlow organizations.

The entire organization wide perceivability is one of the key advancements given by SDN contrasted with heritage organizing innovations.

As a crucial structure block for network the executives, the geography data is embraced to most regulator center administrations and upper-layer applications, e.g., those identified with bundle directing, portability following, and organization virtualization and improvement.

Notwithstanding, if such basic organization geography data is harmed, all the needy organization administrations will turn out to be promptly influenced, causing cataclysmic issues. For instance, the directing administrations/applications inside the OpenFlow regulator can be controlled to cause a dark opening course or man-in-themiddle assault

Shortest Path on SDN Environment

Private broadband utilization is developing quickly, expanding the hole between Internet specialist co-op (ISP) expenses and incomes. In the interim, multiplication of Internet-empowered gadgets is blocking access organizations, corrupting end-client experience, and influencing content supplier adaptation. In this paper, we propose another model whereby the substance supplier unequivocally flags quick and moderate path prerequisites to the ISP on a for each stream premise, utilizing open APIs upheld through programming characterized organizing (SDN). Our first commitment is to build up a design that upholds this model, introducing contentions on why this advantages customers (better client experience), ISPs (two-sided income), and substance suppliers (fine-grained command over peering plan). Our subsequent commitment is to assess our proposition utilizing a genuine hint of more than 10 million streams to show that video stream quality debasement can be almost wiped out by the utilization of dynamic fast tracks, and site page load times can be massively improved by the utilization of moderate paths for mass exchanges. Our third commitment is to build up a completely practical model of our framework utilizing open-source SDN segments (Open stream switches and POX regulator modules) and instrumented video/document move workers to show the plausibility and execution advantages of our methodology. Our proposition is an initial move towards the drawn out objective of acknowledging open and lithe access network administration quality administration that is worthy to clients, ISPs, and substance suppliers the same.

FIXED-LINE Internet Service Providers (ISPs) are progressively facing a business issue private information utilization keeps on developing at 40% per annum, expanding the expense of the framework to ship the developing traffic volume. Be that as it may, incomes are developing at under 4% per annum, inferable essentially to "level rate" evaluating. To limit this extending hole among cost and income, ISPs have endeavored choking chosen administrations (like distributed), which started public objection (bringing about "internet fairness" enactment), and now regularly force use portions, which can smother conveyance of imaginative substance and administrations. It is progressively being perceived that guaranteeing practical development of the Internet biological system requires a reevaluate of the plan of action, that permits ISPs to abuse the assistance quality measurement (notwithstanding data transfer capacity and download quantity) to separate their contributions and tap into new income openings.

Objectives

Coming up next are the principle destinations of the tasks.

- We at that point examine the relief strategies against the Network Topology Poisoning Attacks and present
- TopoGuard, another security expansion to SDN regulators, which gives programmed and ongoing location of Network Topology Poisoning Attacks.
- Our assessment on a model execution of TopoGuard in the Floodlight regulator shows that the safeguard arrangement
- Can successfully secure organization geography while presenting just a minor effect on ordinary activities of OpenFlow regulators.

Related ork

In this administrative work [1] Yiannis Yiakoumis, has proposed Policy-producers, ISPs and substance suppliers are secured adebate about who can handle the Internet tra_c that ows into our homes. In this paper we contend that the client, not the ISP or the substance supplier, ought to choose how tra_c is focused on to and from the home. Home clients think most about their inclinations, and on the off chance that they can communicate them well to the ISP, both the ISP and client are in an ideal situation. To test the thought we assembled a model that allows clients to communicate significant level inclinations that are meant low-level semantics and used to control the organization.

Home organizations are a fundamental piece of the advanced house hold, and as the quantity of associated gadgets and applications develop, we develop more subject to the nature of our home Internet association. We anticipate that the network should be quick, consistently on, dependable and responsive. Just, we don't need the organization to hold up traffic of the applications we use at home. We place expanding requests on our home organization, with video real time, video talk, VoIP, gaming and cloud-based reinforcement currently being ordinary. In the previous a year the measure of traffic on home organizations has expanded by half (from 7:0 GB permonth to 10:3 GB). Our applications strive with one another for the last-mile association, regularly causing blockage and awful client experience.

Notwithstanding taking incredible steps in the transfer speed conveyed to the home, Internet specialist organizations (ISPs, offering link or DSL) actually battle with how to divide the accessible band width between clients' applications. As of late, numerous ISPs have presented questionable information cap designs and impeded traffic-serious applications, starting extraordinary discussion and energizing feelings of trepidation that ISPs will attempt to compel the applications we use.

In this administrative work [2] Yiannis Yiakoumis, has proposed Despite the fame of home organizations, they face various foundational issues: (I) Broadband organizations are costly to convey; and it isn't clear how the expense can be shared by a few specialist co-ops; (ii) Home organizations are getting more diligently to oversee as we associate more gadgets, utilize new applications, and depend on them for diversion, correspondence and work|it is regular for home organizations to be inadequately overseen, unreliable or downright broken; and (iii) It isn't clear how home organizations will consistently improve, after they have been sent, to offer consistently better assistance to home clients. In this paper we propose cutting home organizations as an approach to conquer these issues. As a component, cutting permits various specialist co-ops to share a typical framework; and supports numerous approaches and plans of action for cost sharing. We propose four prerequisites for cutting home organizations: transfer speed and tra_c disconnection between cuts, autonomous control of each cut, and the capacity to change and improve the conduct of a cut. We investigate how these necessities permit cost-sharing, out-sourced the board of home organizations, and the capacity to tweak a cut to offer better assistance. At last, we depict an initialprototype that we are sending in homes. Broadband availability, and an organization inside the house, are fundamental elements of a cutting edge family. A huge assortment of home gadgets associate with the Internet, and high transmission capacity Internet applications, for example, video and sound real time, top notch video conferencing, record sharing and reinforcement are currently ordinary. Be that as it may, regardless of enormous interests in broadband, and longer than a time of involvement in home WiFi, home organizations actually face various fundamental difficulties.

In this desk work [3] Jon Matias, has proposed A following stage in the development of Access Networks presents a situation wherein the reasonable rivalry among specialist organizations is empowered through the sharing of access framework. CAPEX reserve funds or administrative perspectives are right now advancing such a situation. By adding lack of bias, the positive input circle incorporates clients, specialist co-ops and organization administrators. The NANDO project carries out another layer 2 methodology for Neutral Access Networks. This NAN proposition incorporates an organization administrator choice component, a protected launch of administrations and a prefix-based sending approach (Ethernet-PF). The Open Flow innovation has been chosen for its arrangement. Open Flow is a convention by which an outside substance (regulator) can handle/change the stream table of a switch, which manages the sending cycle. This paper is centered around depicting the NANDO situation and the most significant execution subtleties identified with Open Flow. Furthermore, a point by point portrayal of the created regulator and its operational model are appeared, including some agent models. At last, the useful attainability of NANDO is approved in a situation where numerous administrators share a similar actual framework for administration conveyance.

In this administrative work [4] Alok Kumar, has proposed WAN transmission capacity stays an obliged asset that is financially infeasible to considerably overprovision. Thus, it is imperative to distribute limit as per administration need and dependent on the gradual estimation of extra designation. For instance, it could be the most elevated need for one support of get Ï«Gb/s of transfer speed however after arriving at such a distribution, gradual need may drop strongly preferring portion to different administrations. Spurred by the perception that individual streams with ûxed need may not be the ideal reason for data transfer capacity allotment, we present the plan and execution of Bandwidth Enforcer (BwE), a worldwide, various leveled data transmission portion foundation. BwE upholds: I) administration level transfer speed portion following focused on transmission capacity capacities where a help can address a discretionary assortment of streams, ii) autonomous distribution and assignment approaches as per client characterized chain of command, all representing a worldwide perspective on transmission capacity and disappointment conditions, iii)multi-way sending normal in rush hour gridlock designed organizations, and iv) a focal managerial highlight supersede (maybe flawed) arrangement during remarkable conditions. BwE has conveyed more help eõcient transmission capacity use and easier administration underway for a very long time.

In this desk work [5] Carlee Joe-Wong, has proposed charging various costs for Internet access at various occasions prompts clients to fan out their transmission capacity utilization across times. The inquiries are: is it attainable and what amount advantage would it be able to bring? We create anefficient approach to figure the expense limiting time-subordinate costs for an Internet specialist co-op (ISP), utilizing both a static meeting level model and a unique meeting model with stochastic appearances. A key advance is picking the portrayal of the improvement issue with the goal that the subsequent details remain computationally manageable for huge scope issues. We next show reproductions representing the utilization and restrictions of time-subordinate valuing. These outcomes exhibit that ideal costs, which "reward" clients for conceding their meetings, generally relate with request in every period, and that changing costs dependent on constant traffic appraisals may altogether lessen ISP cost. How much traffic is leveled out over times relies upon the time-affectability of meetings, cost construction of the ISP, and measure of traffic not expose to time-subordinate costs. At last, we present our framework incorporation and execution, called TUBE, and the verification of-idea experimentation.

Proposed Methodlogy

To relieve such assaults, we research TopoGuard(Topology Guard) conceivable protection methodologies. We note that it is hard to just utilize static setup to tackle the issue (like utilizing static ARP section for has or the port security highlight for changes to address ARP harming assaults), since it requires drawn-out and blunder inclined manual exertion and isn't reasonable for taking care of organization elements, which is a significant development of SDN. To more readily adjust the security and ease of use, in this task, we propose Topo Guard, another security expansion to the current Open Flow regulators to give programmed and ongoing location of organization geography abuse.

By using SDN-explicit highlights, Topo Guard checks precondition and post condition to confirm the authenticity of host movement and change port property to forestall the Host Location Hijacking Attack and the Link Fabrication Attack.

Allocation of Traffic across Multiple routing Paths

This module is accustomed to allotting traffic across different directing ways within the sight of position as a lossy organization stream enhancement issue. We map the improvement issue to that of resource allotment utilizing portfolio determination hypothesis which permits singular organization hubs to locally portray the position effect and total this data for the source hubs. We play out the main security investigation on the SDN/Open Flow Topology Management Service. Specifically, we have found new weaknesses in the Device Tracking Service and Link Discovery Service in eight current standard SDN/Open Flow regulators.

Characterizing the Impact of Poisioning

In this Module the organization hubs to appraise and portray the effect of position and for a source hub to consolidate these evaluations into its traffic designation. All together for a source hubs to join the position sway in the rush hour gridlock distribution issue, the impact of position on transmissions over each connection should be assessed. Notwithstanding, to catch the jam mer portability and the unique impacts of the position assault, the nearby gauges should be persistently refreshed. We propose Network Topology Poisoning Attacks to misuse the weaknesses we have found. We exhibit the attainability of those assaults both in the Net beans imitating climate and an equipment SDN testbed.

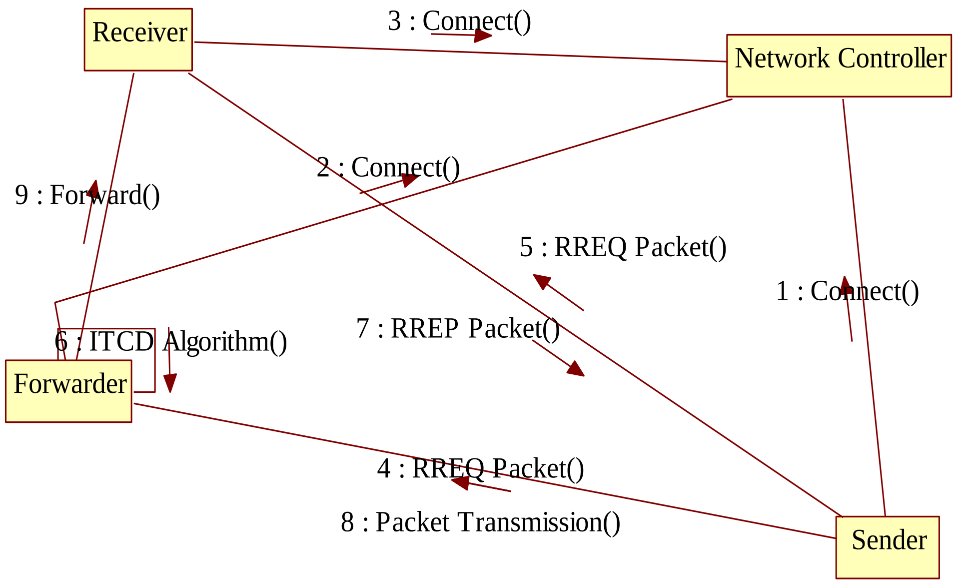
Effect of Jammer mobility on Network

In this module The limit demonstrating the connection greatest number of utilizing min max planning which can be shipped preposterous connection. At whatever point the source is producing information with high bundle convey rate be sent at an opportunity to happen. On the off chance that the source hub gets mindful of this impact the portion of traffic can be changed low conveyance proportion on every one of ways accordingly recuperates the way.

Estimating end-to-end Packet Success Rates

The bundle achievement rate gauges for the connections in a steering way, the source needs to assess the viable start to finish parcel achievement rate to decide the ideal traffic allotment. Expecting the all out time needed to ship bundles from each source s to the relating objective is irrelevant contrasted with the update hand-off period. We research the safeguard space and propose programmed moderation approaches against Network Topology Poisoning Attacks, alongside a model protection framework, Topo Guard, presently carried out in Floodlight, yet could be effortlessly reached out to different regulators. Our assessment shows that Topo Guard forces just an irrelevant execution overhead.Organizations clients are alloted scattering advantages by the confided in expert in a PKI for the organization proprietor. Notwithstanding, the organization proprietor may, for different reasons, imitate network clients to spread information things.

Fig 1:Overall Architectural Diagram



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Experimental Setup

Table shows the execution seasons of some significant activities in Topogaurd SDN. For instance, the execution times for the framework instatement stage and marking an arbitrary 20-byte message (i.e., the yield of Proposed calculation) are 1.608 and 0.6348 ms on a 1.8-GHz Laptop PC, individually.

Table : Running Time for each phase of the basic protocol of Topogaurd SDN (Except the Sensor node verification phase)

Table 1: Performance Calculation

Time	System Initialization	IP-Link FabricationAttacks	The certificate generation (i.e., signing a 20 byte message)
Time (CPU = 1.8 GHz) (µs)	1608.0	1576.31	634.8
Time (CPU = 2.6 GHz (µs)	1111.3	1092.12	435.4
Time (CPU = 3.1 GHz) (µs)	931.1	915.18	372.3

Consequently, whenever proposed Topogaurd SDN is utilized, producing a client endorsement or marking a message takes 0.6348 ms on a 1.8-GHz Laptop PC.

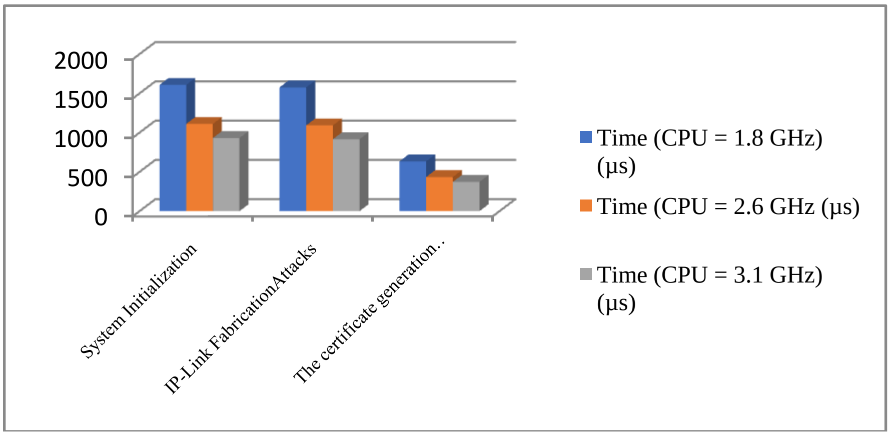

Fig 2:Graphical Representation Performance Calculation

Conclusion

The Poisioning Network steering has been created in a particularly organized way which is diminishing the traffic further turn of events. The coding is done in improved on way as they are more reasonable and flexible.The assess the impact of changing organization and convention boundaries to notice the presentation patterns utilizing the poision mindful traffic allotment plan. Specifically, we are keen on the impact of the update transfer period and the greatest number of directing ways on the presentation of the flow allotment.

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COVID-19: ANALYSIS AND STUDY TO IDENTIFY COVID SPREAD THROUGH GRAPH THEORY

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ABSTRACT

The graph theory design model is widely used in determining the best strategies for the improvement of theimpact of infectious diseases. Currently, the design model of a complex system such as the huge spread of Covid-19 is among the typical disease. The aim of this article is to provide an analysis using graph based design model of the Covid-19 spread in different countries. The article investigates the studies related to the design of graph theory models related to Covid-19 analysis. Based on the factors affecting the spread of disease and its characteristic, the process is developed starting from origin. We propose a intangible model ofCOVID-19 by taking into consideration of social distance, contact duration with an infected person and their characteristics. The graph theory models are analyzed based on the scenarios. The application for wide spread of Covid-19 disease analyze the experiments related to the most affected areas. The advantage of this graph based model analysis enables the undetected cases in particular area. The duration of contact, social distance helps to detect cases in various aspects. In future research will study and extend the analysis to check the impact on the number of infections and their models.

Introduction

The current epidemics, environmental pollution and an increase of transmittable diseases affect individual's life and the development of countries. The problem of spread of transmittable diseases is at the main focus of the world society and plays a vital role in public health. As of 22nd March 2020, the rapid spread of pandemic corona virus disease- Covid 19 has affected the most of the population and recitals for more than 1 million deaths (WHO). The Covid-19 virus causes a serious risk for the human health, development, production and social life. In this condition the prediction of spread of the disease is an important issue to forecast and to consider the preventive measures by based on the characteristics of Covid-19.

Designing is one of the roughly used tools for[3] predicting related to the pandemic situation in the world. At current situation it is a relevant problem to develop the reproduction designs of complex systems to predict the process of spread of disease. The past adequate mathematical theory plays a vital role for securing accurate level of spread of disease. The designing of pandemic processes can be view seriously as an integral part of medical demographics system of the government and in prediction of diseases. For the period of pandemic the planning and decision making is not an easy task. The decisions are prepared with limited experience for an indecisive situation and experience in swiftly changing ratio which is used to observe the novel corona virus.

The vaccines available in different countries and cities are encouraging the non spread of pandemic situation. Even though, it makes reassuring about the rapid transmission of disease[10]. The large number of individuals expends a long period of propagation and can able o transmit the disease to other people.

In order to avoid this situation the design models are important for decision making on Covid -19 spread areas. It is not possible to carry over the avoidable situation to the next occurrences of Covid-19. The strategies will be useful to take the survey and make some decision on spread of pandemic situation.

The main aim of this article is to create an impact on mathematical theory which allows the prediction of Covid -19 zone and reproductive design of specific characteristics of Coivd-19[1]. The purpose of this research work is useful for stopping the Covid-19 spread at word level. With the help of WHO websites the measures can be evaluated and gathered to understand about the current pandemic situation. The measures are helpful to know about the spread of Covid virus include environmental measures, detecting cases, social distancing and vaccines. The measures are used in concurrence with individual protective measures against COVID-19 such as regular hand washing and cough etiquette. All public health measures to stop disease spread can be balanced with different strategies to uplift social connection and secure the food contribution.

Graph Theory

The graph theory refers to a set of vertices and set of edges that connect the vertices. The two vertices can be joined by more than one edge is referred as multigraph. A graph can be without loops and with at most a single edge between to vertices is called as a simple graph. The complete graph is defined when each vertex is connected by an edge to every other vertex[4]. The directed graph will be having a direction assigned with each edge or in digraph manner. The practical problems related to many types of processes are the main inputs for the graphical theory. The problems can be represented by using these forms of graphs.In this article, the detection of Covid-19 Spread areas is taken into consideration in order to avoid the spread of diseases. The design model must be a solution to identify the causes of Covid-19 and reflects in the evolution of current century. The analysis of few countries data, it is noted that the infection reached to peak around 15 days after controlling measures.

The expansion rate of infected people was slowly decreasing during this period. Especially the growth rate in some countries remains exponential. The quarantine is insufficient and need strict rules to avoid the spread of disease. In order to detect and reduce created a mathematical design model for the pandemic spread by applying graph theory models. The dynamic growth rate depends on many situations by analyzing preferred data is very useful to predict the situation and affected areas.

The design model using the graph theory was, presented with different predictive algorithms[3] for the number infected cases in the near future. The survey on the graph theory design model implemented using dataset and its predictions.

COVID-19

The Corona Virus(Covid-19) designing of rearrangement of population expresses the dynamicnature of social network and infectious agent using the chain of relations.In this regard,the model must be able to reflect the evolution of an infection in real life accurately to ensure the reliability of spread. As several diseases such as viral infection have been studied for decades, the development of a design model based on data sets enables more flexible cases in this situation.The design models of virus infection[7]are used for decision making in vaccines formula and medications in every day. The researchers proposed some information about novel corona virus, the graph design models of spread of Covidzones[8]. The Covid-19 is a complex issue to take overall the world around atpresent,the graphic models are used to utilize the virus information in-terms of design models.

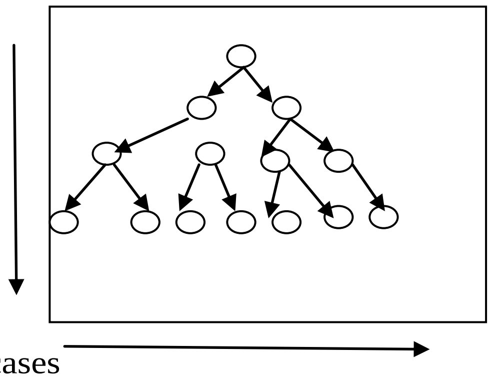


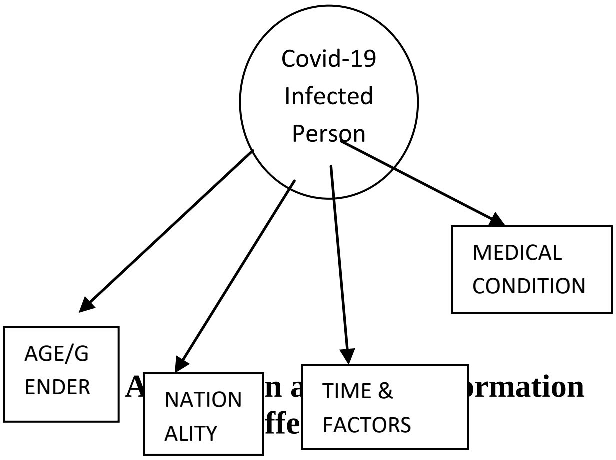
Fig1.Covid-19 Propagation area

Need for Identification of Covid-19 Pandemic-Graph theory Model

The Covid -19 infection will assist the coverage of majority India's health facilities. In order to facilitate presence of Covid infection prevention measures processing of information is important in all aspects. This design model will enable the collection andpre processing of information regarding the people's health[11]and probability of being infected by corona virus.The analysis of graph model implementation will be decreasing the cases raised in affected Covid spread areas. The pandemic process and locations were identifies using the different strategies in modelling.

The graph-basedvisualization

The study and analysis of infection measures used to prevent the spread of Covid-19. The infectious diseases spread via interaction between individuals as without social distancing. The social distance measures are described with graph and set of interactions.In this regard, graph design models can be utilized for visualizing the infectious processes. Graph design models play an important role in analyzing the disease spread and supporting various decision making[13]. Inparticular, the use of bar graphs enables the visualization of a study and analysis process Alongside the hypotheses proposed in existing approaches, uncertainty regarding epidemic characteristics is one of thedrawbacksofthesemodels.



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As seen from fig.2 the analysis of Covid-19 considering the characteristics of Covid-19. The time period will be calculated starting from the infected person and tracking of the process from human to human transmission of the Covid-19 virus.

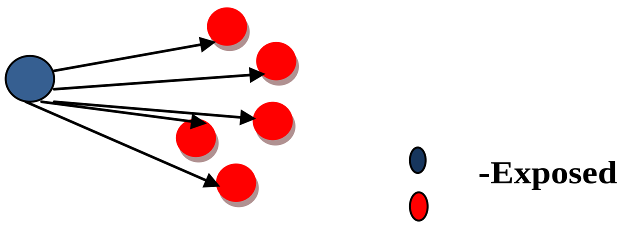

Fig:3 Covid-19 Spread Visualization through graph model

Conclusion

The experts and governments, non-governmental organization trying to utilize the graph design models to understand about the pandemic situation. The main challenges are the differences between mathematical design models and graph theory design models. The use of different datasets and methodologies are useful to study and analyze the majority issues caused at the Covid affected areas. There is a need to analyze the design model in order to identify the Covid spread at different areas. This article study will be a proof that large number of research can be done using the study of Covid-19. This article investigates the studies related to graph design model to avoid the transmission of Covid-19. Currently, technologies for maintaining the social distance and contact tracing adopted by governments and other organizations. It must be taken into account to reduce the spread of Covid-19.

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APPLICATION OF A QUINTIC SPLINE FUNCTION OF CONTINUITY CLASS C2 FOR SOLVING CAUCHY INITIAL VALUE PROBLEM

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ABSTRACT

Here we have considered a quintic spline function which is obtained for (0, 1, 4) lacunary interpolation problem. In the present paper we have shown that this quintic spline function can be used to solve Cauchy Initial Value problem. Here we have shown the application of this spline function.

MSC 2010: *65D07 (see: http://www.ams.org/msc/msc2010.html)*

Keywords: *Cauchy Initial Value Problem, Lacunary Interpolation, Spline function, Modulus of Continuity, nonlinear second order differential equation, Lipschitz condition.*

Introduction

This paper is an extension of our latest work (Singh Kulbhushan 2019) [12]. In that we found a special quintic spline function for (0, 1, 4) lacunary Interpolation problem, where firstly we have shown that this spline function exists uniquely later we found the error bounds to show the convergence of this function.

Actual idea of this type of problem was initiated by Micula [3] for finding the approximate solution of nonlinear second order differential equations through splines. There he used a spline function to obtain the approximate solution of Cauchy's problem.

(1.1) $$\begin{cases} y'' = f(x, y, y'), x \in [0,1] \\ y(0) = y_0, y'(0) = y_0' \end{cases}$$

We use the following results, which have been obtained in our latest work [12].

Theorem of Unique Existence

Given Δ and the real numbers y_k, y_k', $y_k^{(4)}$, k= 0,1, …,n ; y_0'', y_n'' ; there exists a unique spline function $s_\Delta(x) \in S_{n,5}^{*(2)}$ such that

(1.2) $s_\Delta^{(p)}(x_k) = y_k^{(p)}$, k = 0,1, …, n; p = 0, 1,4,

(1.3) $s_\Delta''(x_0) = y_0''$, $s_\Delta''(x_n) = y_n''$

Theorem of Convergence

Let f(x)□C^5(I).Then for the unique spline function s□(x) mentioned in above theorem, with y_k,y_k' etc. being associated with the function f(x), that is $y_k = f(x_k)$, $y_k' = f'(x_k)$ etc.; we have for x □ [x_k, x_{k+1}], k = 0, 1, … , n –1,

(1.4) $\left|s_\Delta^{(p)}(x) - f^{(p)}\right| \le C_{\Delta,p}\, h^{5-p}$ □$_5$(h), p = 0, 1, …, 5.

Here h_k = h for all k = 0, 1… n –1 and denote the modulus of continuity of f(x)□ C^5(I) by □$_5$(h). The coefficients C□ □p are different constants.

Now we use the above mentioned spline function to obtain an approximate solution of Cauchy's initial value problem given by (1.1)

Let y(x) be the true solution of the Cauchy's problem (1.1) and let $\bar{s}(x)$ be the spline function approximating the solution y(x). Then we study how smooth $\bar{s}(x)$ produces an approximation to y(x). For similar study kindly refer (Singh et. al 2014) [10].

Preliminaries.

This section contains some assumptions regarding the function f(x, y, y') in the differential equation (1.1) and definition of the approximate value given by T. Fawzy [5] and also the error estimates of these approximate values to the exact values. We assume that f[x, y(x),y'(x)]□C^r[0,1] and that it satisfies the Lipschitz condition

(2.1) $| f^{(q)}(x, y_1, y_1') - f^{(q)}(x, y_2, y_2') |$ □□k{ $|y_1 - y_2| + |y_1' - y_2'|$}

for all x□ [0,1] and all real numbers y_1, y_2, Here k is some Lipschitz constant and q =

0,1,…, r. These conditions ensure the existence of unique solution of the problem (1.1)

Let y (x) be the true solution of (1.1) with given initial value $\bar{y}^q = y^{(q)}(x_k)$, q = 0,1,…, r. Then T. Fawzy [5] has defined the approximate values $\acute{y}_k^{(q)}$ to the true values $y_k^{(q)}$ as follows:

$\bar{y}_0 = y_0, \quad \bar{y}'_0 = y'_0$,
$\bar{y}_0^{(q+2)} = f^{(q)}(x_0, y_0, y'_0)$,

$\bar{y}_{k+1} = \bar{y}_k + h\bar{y}'_k + \int_{x_k}^{x+1}\int_{x_k}^{t} f[u, y_k^*(u), y_k^{**}(u)]\,du\,dt$,

$\bar{y}_{k+1}' = \bar{y}_k' + \int_{x_k}^{x_{k+1}} f[t, y_k^*(t), y_k^{**}(t)]dt$;

$\bar{y}_{k+1^{(q+2)}} = f^{(q)}(x_{k+1}, \bar{y}_{k+1} + \bar{y}_{k+1}')$, q = 0 (1) r , k = 0 (1) m –1,

where

$x_k = k/m$, $x_m = 1$, $h = 1/m$

and

$y_k^*(x) = \sum_{j=0}^{r+2}\{(\bar{y}_{k^{(j)}}/j!)(x - x_k)^j\}$, x_k □ x □ x_{k+1},

$y_k^{*\prime}(x) = \sum_{j=0}^{r+2}\{(\bar{y}_{k^{(j+1)}}/j!)(x - x_k)^j\}$,

$y_k^{**\prime}(x) = \bar{y}_k' + \int_{x_k}^{x} f[t, y_k*(t), y_k*'(t)]dt$

As to the speed of convergence of these approximate value, T. Fawzy [6] has obtained the estimates

(2.2) | $y_{k+1}^{(j)} - \bar{y}_{k+1}^{(j)}$|□ $c_j h^{r+2}$ □$_{r+2}$(h), j = 0 (1) n – 2, k = 0 (1) n – 1.

For the value $\bar{y}_1$ and $\bar{y}_1'$ even sharper estimates

| $y_1 - \bar{y}_1$| □□$c_0 h^{r+4}$□$_{r+2}$(h), | $y_1' - \bar{y}_1'$| □ $c_1 h^{r+3}$ □$_{r+2}$(h)

are valid. In (2.2) c_j's denote different constants and

□$_{r+2}$(h) = $\sup_{|x - x_i| \le h}$ | $y^{(r+2)}(x) - y^{(r+2)}(x_1)$ |

is the modulus of continuity.

Spline Function Interpolants

In this section we give the definition and construction of lacunary spline interpolants which approximate the solution of the differential equation (1.1).

We have

Theorem 3.1

Given □ and the real numbers $\bar{y}_k, \bar{y}'_k, \acute{y}_{k+1}^{(4)}$, k = 0 (1) n; $\bar{y}''_k, \bar{y}''_n$; there exists unique $\bar{s}_\Delta(x) \in S_{n,5}^{(2)}$ such that

(3.1) $\bar{s}_\Delta^{(p)}(x_k) = \bar{y}_{k^{(p)}}$, k = 0 (1) n; p = 0, 1, 4;

(3.2) $\bar{s}''_\Delta(x_0) = \bar{y}''_0$, $\bar{s}''_\Delta(x_n) = \bar{y}''_n$

Proof

For the explicit form we have

$$\bar{s}_\Delta(x) = \begin{cases} \bar{s}_0(x) \text{ when } x \in [x_0, x_1] \\ \bar{s}_k(x) \text{ when } x \in [x_k, x_{k+1}], k = \\ \bar{s}_{n-1}(x) \text{when } x \in [x_{n-1}, x_n]; \end{cases}$$

$1(1)n - 2$

where

$\bar{s}_0(x) =$
$\bar{y}_0 + (x - x_0)\bar{y}'_0 + (x - x_0)^2/2!\,\bar{y}''_0 + (x - x_0)^3/3!\,\bar{a}_{0.3} +$
$+(x - x_0)^4/4!\bar{y}_0^{(4)} + (x - x_0)^5/5!\bar{a}_{0.5} + (x - x_0)^6/6!\,\bar{a}_{0.6}$

$\bar{s}_k(x) =$
$\bar{y}_k + (x - x_k)\bar{y}'_k + (x - x_k)^2/2!\,\bar{a}_{k.2} + (x - x_k)^3/3!\,\bar{a}_{k.3} +$
$+ (x - x_k)^4/4!\bar{y}_k^{(4)} + (x - x_k)^5/5!\bar{a}_{k.5}$

$\bar{s}_{n-1}(x) = \bar{y}_{n-1} + (x - x_{n-1})y'_{n-1} + (x - x_{n-1})^2/2!\,a_{n-1} + (x - x_{n-1})^3/3!\,a_{n-1}$
$+ (x - x_{n-1})^4/4!\,\acute{y}_{n-1}^{(4)}$
$+ (x - x_{n-1})^5/5!\,a_{n-1} + (x - x_{n-1})^6/6!\,a_{n-1}$

Using these equations we can obtain the values of the coefficients $\bar{a}_{0,3}$, $\bar{a}_{0,5}$, $\bar{a}_{0,6}$, $\bar{a}_{k,2}$, $\bar{a}_{k,3}$, $\bar{a}_{k,5}$, $\bar{a}_{n-1,2}$, $\bar{a}_{n-1,3}$, $\bar{a}_{n-1,5}$, $\bar{a}_{n-1,6}$

Theorems of Convergence for $\bar{s}_\Delta(x)$

Let $s_\Delta(x)$ be the spline function of Section 1 corresponding to the approximate values y_k and let $\bar{s}_\Delta(x)$ be the spline function of Section 2 corresponding to the exact solution of $\bar{y}_k$ of (1.1). Then we have

Theorem 4.1

(4.1) $\left|s_0^{(q)}(x) - \bar{s}_0^{(q)}(x)\right|$ □ □c h^{7-q}□$_5$(h), q = 0 (1) 6,

(4.2) $|s_k^{(q)}(x) - \bar{s}_{k^{(q)}}(x)|$ □ c h^{5-q}□$_5$(h),q = 0 (1) 5,

(4.3) $|s_{n-1}^{(q)}(x) - \bar{s}_{n-1^{(q)}}(x)|$□ c h^{5-q}□$_5$(h), q = 0 (1) 6.

Here and onward c will denote different constant independent of h.

Proof

We have

$s_0(x) - \bar{s}_0(x) = (x-x_0)^3/3!\ \left(a_{0,3} - \bar{a}_{0,3}\right) + (x-x_0)^4/4!\ \left(y_0^{(4)} - \bar{y}_0^{(4)}\right) +$

$+ (x-x_0)^5/5!\ (a_{0,5} - \bar{a}_{0,5}) + (x-x_0)^6/6!\ (a_{0,6} - \bar{a}_{0,6})$.

Now

$a_{0k,3} - \bar{a}_{0,3} = 18\ h^{-3}\ (y_1 - \bar{y}_1) - 4\ h^{-2}\ (y_1' - y_1') + h/60\ \left(y_1^{(4)} - \bar{y}_1^{(4)}\right)$.

Using (1.3) we get

$|\ a_{0,3} - \bar{a}_{0,3}\ |$ □ $c\ h^7$□$_5(h) + c\ h^4$□$_5(h) + c\ h^6$□$_5(h)$ □ □$c\ h^4$□$_5(h)$.

On the same lines

$|\ a_{0,5} - \bar{a}_{0,5}\ |$ □ $c\ h^2$□$_5(h)$

and

$|\ a_{0,6} - \bar{a}_{0,6}\ |$ □ $c\ h$ □$_5(h)$.

Hence

$|\ s_0(x) - \bar{s}_0(x)\ |$ □ $c\ h^7$□$_5(h)$.

By successive differentiation, we have (4.1).

To prove (4.2) we consider

$s_k(x) - \bar{s}_k(x) = (y_k - \bar{y}_k) + (x - x_k)\ (y_k' - \bar{y}_k') + (x - x_k)^2/2!\ \ (a_{k,2} - \bar{a}_{k,2}) +$

$+ (x - x_k)^3/3!\ (a_{k,3} - \bar{a}_{k,3}) + (x - x_k)^4/4!\ \left(y_k^{(4)} - \bar{y}_k^{(4)}\right) +$

$+ (x - x_k)^5/5!\ (a_{k,5} - \bar{a}_{k,5})$.

Here

$|\ a_{k,2} - \bar{a}_{k,2}\ |$ □ □ch^3□$_5(h)$,

$|\ a_{k,3} - \bar{a}_{k,3}\ |$ □ □ch^2□$_5(h)$,

$|\ a_{k,5} - \bar{a}_{k,5}\ |$ □ □ch^4□$_5(h)$

So $|\ s_k(x) - \bar{s}_k(x)\ |$ □ □ch^5□$_5(h)$.

Again, the method of successive differentiation yields (4.2). Equation (4.3) can be obtained in the same way.

Theorem 4.2

Let y(x) be the exact solution of Cauchy's problem (1.1) and $\bar{s}_\Delta(x)$ be the spline function of section 2. Then

(4.4) $|\ y^{(q)}(x) - \acute{s}_\Delta^{(q)}(x)\ |$ □ □$c\ h^{5-q}$□$_5(h)$, $q = 0(1)5$.

Proof

$|\ y^{(q)}(x) - \acute{s}_\Delta^{(q)}\ (x)\ | = |\ y^{(q)}(x) - \bar{s}_{\Delta^{(q)}}(x) + \bar{s}_{\Delta^{(q)}}(x) - \bar{s}_{\Delta^{(q)}}(x)|$

□ $|\ y^{(q)}(x) - \bar{s}_{\Delta^{(q)}}(x)\ | + |\bar{s}_{\Delta^{(q)}}(x) - \bar{s}_{\Delta^{(q)}}(x)\ |$

□ □$c\ h^{5-q}$□$_5(h)$, $q = 0(1)5$,

using equation 1.4 and Theorem 4.1.

Theorem 4.3

Let $\bar{s}_\Delta(x)$ be the spline function given in Theorem 2.1. Then

(4.5) $|\ \bar{s}_\Delta''(x) -$ f(x), $\bar{s}_\Delta(x)$, $\bar{s}_\Delta'(x))$ |

□ □ch^3□$_5(h)$.

Proof

$\bar{s}_\Delta''(x) -$ f(x), $\bar{s}_\Delta(x), \bar{s}_\Delta'(x) = \bar{s}_\Delta''(x) - y''(x) + y''(x) - f(x, \bar{s}_\Delta(x), \bar{s}_\Delta'(x))$

$= [\bar{s}_\Delta''(x) - y''(x)] + [f(x, y(x), y'(x)) - f(x, \bar{s}_\Delta''(x), (x), \bar{s}_\Delta'(x)))]$.

Therefore

$|\bar{s}_\Delta''(x) - f((x), \bar{s}_\Delta(x), \bar{s}_\Delta'(x)\ |$□$|\bar{s}_\Delta''(x) - y''(x)| + |f(x, y(x), y'(x)) - f(x, \bar{s}_\Delta(x), \bar{s}_\Delta'(x))\ |$

□ $|\ \bar{s}_\Delta''(x) - y''(x)\ | + K\ [\ |y(x) - s$□$(x)\ | + |\ y'(x) - \bar{s}_\Delta'(x)\ |]$.

by using Lipschitz condition (2.1).

Now, applying Theorem 4.2 for q = 0,1,2 Theorem 4.3 is proved.

Results and Discussion

We have shown that the spline function exists uniquely

Given □ and the real numbers $\bar{y}_k, \bar{y}_k', \acute{y}_{k+1}^{(4)}$, k = 0 (1) n; $\bar{y}_k'', \bar{y}_n''$; there exists

unique $\bar{s}_\Delta(x) \in S_{n,5}^{(2)}$ such that

$\bar{s}_\Delta^{(p)}(x_k) = \bar{y}_{k^{(p)}}$, k = 0 (1) n; p = 0, 1, 4;

$\bar{s}_\Delta''(x_0) = \bar{y}_0''$, $\bar{s}_\Delta''(x_n) = \bar{y}_n''$

Later it has also been shown that this spline function is convergent.

Let y(x) be the exact solution of Cauchy's problem (1.1) and $\bar{s}_\Delta(x)$ be the above spline function then

$|\ y^{(q)}(x) - \acute{s}_\Delta^{(q)}(x)\ |$ □ □$c\ h^{5-q}$□$_5(h)$, $q = 0(1)5$.

Scope and Applications

The numerical approach applied here is very much useful in various other fields by Kekana et. al [13] and [15]. Wherever differential equations are involved for modeling real life situations these functions can give easy and fast solutions as in Kumar et. al. [12] and Agrawal et. al [16].

Conclusion

A (0, 1, 4) lacunary interpolation problem is considered here for which a five degree spline function satisfying the given interpolatory conditions exists uniquely. The function thus obtained is then shown convergent. In the present paper, we have shown that this spline function can be used to solve the Cauchy initial value problem. This paper shows the application of spline function for solving Cauchy's Initial Value Problem. On the basis of this present paper and other research materials available [11],[12] and[14] our next communications will be on further applications of spline functions.

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NON-PERFORMING ASSETS IN COMMERCIAL BANKS AND STUDY OF ITS EFFECT ON INDIAN ECONOMIC SITUATION

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ABSTRACT

Economic progress of any nation is dependent on the capital movement, moreover the channel by which this flow occurs in India is mainly the banking channel. Non-Performing Assets (NPA) volumes in India is increasing in the past few years. NPA adds up to 10.35 trillion rupees in India that will be nearly 5% of Gross Domestic Product (GDP) of India based on provisional reports. High amounts of NPAs causes decrease in investment, less job creation and less tax revenue for the governing administration. To figure out the effect of NPA, this paper tries to formulate a relationship between NPA and various important factors like GDP and inflation rate etc. making use of statistical analysis. For the intended purpose of this research, secondary data was gathered for NPA, net profit of different Scheduled Commercial Banks (SCB) and GDP etc. The significance of the latest technology like data analytics, artificial intelligence and big data as tools to tackle NPA is additionally looked into as banks can make utilization of the same in developing an effective plan of action.

Keywords—*Non-performing asset, gross domestic product, banking, analysis, loans*

INTRODUCTION

Money given by banks to any person or organization as loans or advances are its asset. If the principal amount or interest on loan is not repaid to bank for three months or more then the loan is declared as non-performing asset (NPA). Banks can consider a moratorium on case to case basis. NPA can be categorized as sub-standard assets if NPA duration is up to one year, doubtful assets if NPA duration is from one to three years and loss assets if NPA duration exceeds three years. Loss assets are generally announced non-retrievable by auditors.

In India Scheduled commercial banks constitute major volume of NPA. These scheduled banks work in accordance with the guidelines stated in Reserve Bank of India (RBI) act of 1934. These banks have minimum paid up capital of five lakhs rupees. It is further classified as public and private sector, foreign and regional rural banks.

A. Consequences of NPA

NPA have a detrimental impact on banking institutions, common people, business organizations and the whole economy of our nation. Now discussed are few of the effects of NPA.

Banks are claiming high rates of interest for the loans provided to debtors. New business, commercial and infrastructure developments ventures are getting postponed or cancelled as business owners and industrialists are less likely to borrow money at such interest rate thus resulting in economic slowdown, meagre Gross Domestic Product (GDP) progression, rising prices, very few job opportunities, reduced tax earning for administration and much less government spending for the growth of the country.

Provisions for NPA made by banks in addition crumble their capital. Later government has to inject more capital in these banks thus causing fiscal drag.

Reduced interest to depositors, will limit movement of further money to banking institutions as depositors will be unwilling to lend money to banks.

Elevated NPA quiver the morale of investors impacting badly on the bank's stock prices. Funds deficit occurs in financial market. Banking institutions are reluctant to grant loan according to applicant's necessity since they are not confident about recuperation of the debts.

Depositors begin drawing their savings from the bank experiencing bank's weak functionality and gloomy forthcoming future therefore increasing further pressure on bank.

Also there is extra stress on judiciary to take care of NPA instances as currently lakhs of court cases are awaiting to be settled by court first.

B. Major NPA instances in India in recent times

Apart from Vijay Mallya and NiravModi lending non-payment matter which we hear a lot, there are various other business loan which were written off by different banking institutions.

According to Supreme Court directives, RBI has published details of existing intentional defaulters in India in 2019. This add up to 1.61 Lakh crore rupees in which leading 40 defaulters comprises up to 65000 crore rupees.

Few of them are Gitanjjali Gems Limited, ReeiAgro Limited, Windsome Diamonds and Jewellery Limited, RuhchiSohya Industries Limited, Rotomack Global Private Limited, Kingfishher Airlines Limited and KuddosChhemie limited with NPA in range of 2000-5000 crore rupees.

C. Government efforts to tackle NPA

All banking institutions in India to have standard accounting system first suggested by Narasimham Committee in the year 1991 taking example of international banks in relation to income realization, classification of assets & NPA and provisioning for bad loans. Soon Debt Recovery Tribunals (DRT) was established in 1993 for effectual and fast discernment on loans recuperation in financial institutions, address insolvency and bankruptcy. Later in the year 2000, Credit Information Bureau India Limited (CIBIL) started provided the banking institutions sufficient details about the debtor thus curtailing default of loans. In order to stay away from legal interference, LokAdalats additionally assists financial institutions to retrieve loans by agreement settlement of their NPA with the other party. In 2002, SARFESI act was introduced under which banking institutions can take over and dispose the secured assets of NPA customers having due of more than one lakh rupees with no need of including trial.

In order to reducing the trouble of the stressed banks, Asset Restructuring Companies (ARC) were formed who purchase NPA or bad debts from banking institutions at some consented price. In addition in the year 2005, Corporate Debt restructuring was formed to reframe the loans of any stressed organization either by decreasing the interest rate or increasing payback time. Any organization if defaulting loan then banks could convert the loan amount pending into equity shares of that organization and further acquiring the organization's control as per Strategic Debt restructuring formed in 2015. From time to time, RBI randomly inspect the asset quality of specific commercial banking institutions thus curtailing them from under revealing of bad debts and making correct provision as per Asset Quality Review system formed in 2015. In the year 2016, Insolvency and Bankruptcy code Act was introduced which allows for insolvency remedy in a specified time frame. A model of bad banks was introduced in 2017 which can purchase entire NPA of a banking institution at market value therefore improving such banking institutions balance sheet.

LITERATURE REVIEW

NPA have been an exciting subject matter of research in the past. In this paper, few of the significant literatures are discussed and are classified under four broad topics.

D. Factors or reason behind occurence of NPA

India is few of those nations which has very high NPA and the reason associated with it are not enough proper supervision, not enough co-ordination amongst financial institutions, bad auditing techniques, fraud, market uncertainty etc. Bank's liquidity, financial wellness and credit arrangement was impacted due to non-retrieval of these loans. [30]

Piling up of the bad debts are due to wilful non-payments and fraudulence. Furthermore the main reason for such piling can be attributed to wrong prediction of future economic growth, where lenders gave easy loans to debtors during flourishing business period but later these debtors were incapable to payback owing to dwindling economy. Service segment is next to industrial sector in high defaults. [18]

Dishonesty and political favoritism has resulted in high loans accumulation in priority sector. Few of the famous financial predicaments world has seen are American debt crises in eighties’ and sub-prime emergencies, Nordic monetary crunch in nineties’, etc. Upgrading to modern technological practices and credit information sharing can help to avoid NPA. [40]

With the economic downturn in India, measured in terms of macroeconomic factors like GDP, there was surge in non-performing assets. Furthermore appreciation in currency, fluctuation in credit deployment has led in NPA accumulation. However NPA was in limit, regardless of boost in Chicago Board Alternatives Exchange movement index. [32]

Reserve bank of India along with the Indian government came out with various policies to enhance loan recuperation and credit supervision by banks. But lack of proper execution and application of RBI guidelines resulted in aggregation of NPA in coming years. MSME sector also comprise a major part of NPA in India. Also regardless of operating processes, for financial year 2008-2013 a study revealed same NPA for SBI affiliated banks and public segment banks. [11]

E. General consequences of NPA

NPA not only adversely hits liquidity and earnings but also lead to credit reduction and loss of energy and time of leadership. Two general elements for increase in NPA are, first external variables like inefficient retrieval, intentional non-payments, not enough demand, and changing government guidelines. Second are internal variables like bad credit regulations, obsolete technological solutions, outdated credit assessment techniques and administration challenges. [15]

NPA can result in shortage of liquidity, high bank interest rates and lower rate of return to savers. Gross domestic product, price rise, rate of interest, bank's new branch opening in a particular area and acquiring new customers are some of the macro and micro economic facets which might also contribute to NPA. [7]

Just after the advent of worldwide recession in 2008-2009 NPA surged manifold and even though banks several attempt to recuperate bad loans, priority sector was holding it back. Also financial institutions were ready to agree claims for reduced value subsequently going against RBI policy. In order to effectively track NPA on regular basis, some of the banks were using core banking solutions. [28]

In 2012-13 net non-performing assets rose by approx. 180% compared to 2000-2001. With NPA showing increasing trend, banks are playing safe and are staying away from risk. Economic growth is affected as banks are moving towards risk free investment decisions. [36]

Accumulation of NPA due to modest credit retrieval rate, sub-standard administration methods, significant business expenses, trade unions tension, multiple branches reporting negative profit and political obstructions were still prevailing in scheduled commercial banks. NPA doubtful asset was major contributor when compared to other two types in the period starting from year 2000 till 2007. Priority sector as usual leads to highest NPA. In spite all of these, 96% of all public sector banks has NPA as % of net advances less than 2%. [27]

Even after considerably a long history of NPA in our nation, financial institutions are not trying to learn from these past disasters. A revolutionary modification in functioning of bank is required to prevent such incident to occur year after year. With an increment of approx. 6-7% in NPA in past ten years, banking institutions return on asset % is decreasing every year. [23]

Along with public sector banks, now private sector banks are also witnessing the upsurge in NPA since a decade with bad grade loans increasing four times in past five years. This led management to under report NPA. Due to mismanagement of assets, SBI affiliated banks had very high NPA of around 50% when compared to State bank of India approx. 30% which further leads to their merger. [1]

As a result of ever-increasing NPA, loan interest rates are increasing and savings interest rate are decreasing, indirectly affecting banking institutions business and nation financial development. Private sector banks are performing better w.r.t. public sector banks in controlling NPA for a study period of five years since 2010. Private sector banks have more effective earning capability, resource arrangement, asset standards and capital holdings but public sector banks have more appropriate administration effectiveness and liquidity. [26]

F. Reports on NPA data

NPA in priority sector was more and in non-priority sector it was less before global recession i.e. from 2001 to 2008 when compared to post recession period from 2008-

2015. Though overall NPA up surged substantially after recession. [19]

Loss assets provision made by public sector banks is higher when compared with private sector banks for the period 2012-2015. Also private segment banking institutions takes the help of lawful procedures as well as collection representatives to retrieve pending instalment. Public segment banks stressed assets to loan ratio is triple times that of private segment banks. [35]

From start of the 21st century till 2011, priority sector NPA was highest with approximately 50-60% of the total priority sector loan declared as bad debt. Small Scale Industries advances raised by around 8 times, followed by agricultural segment which increased by almost 6.5 times and remaining segments of priority sector jumped by around 5%. [33]

Financial institutions regularly reutilize the money retrieved from their debtors along with fresh new savings to have more business. This might get hindered due to NPA. Net NPA differs considerably for different category of SCB's from period 2000 to 2011 and gross non-performing assets is on higher side for private and foreign segment banking institutions active in infrastructure loan business. [14]

The overall performance level of public sector banks of our nation are badly impacted by NPA. This impact can be measured in terms of rising spending on personnel, modern advancement, technological setups, institution promotion and analyzing current non-performing assets collections and deciding to sell them off. Healthy competition among financial institutions can make them a lot more thriving and effective. [25]

One of the compulsory guidelines from Reserve bank of India to all the SCBs is to create provisions for non-performing assets. Using statistical analysis it was found that the ratio of NPA w.r.t. total advances and assets showed downward trend since 2005-2006 thereby confirming banking institution sincere attempt in minimizing these ratios. [31]

Analyzing the pooled data of all Indian listed banks for the study period of 2000-2014, it was found that net non-performing assets have damaging effect while provision made for such NPA's in banks have positive effect on the entire stock market capitalization. [13]

From the study conducted for the period 2004-2017, it was statistically confirmed that non-performing assets and gross domestic product is negatively correlated. A mixture of weakened debt assets for financial institutions, NPA causes financial unstableness of nation and affects bank's profitability. [2]

Banking institutions profit is impacted by non-performing assets. For the period 2005-2013, an analytical study was conducted and it was found that the profit of State bank of India and Punjab national bank was positively correlated with NPA whereas profit of Central bank of India and Indian overseas bank was negatively correlated with NPA. [21]

From 2007 to 2011, a study reveals that public sector banks sub-standard assets were much more w.r.t. to their counterparts in private sector whereas it was opposite in case of doubtful assets. It was also statistically proved that loss assets has substantial effect on gross non-performing assets. [16]

Inefficient and unstable credit risk management stimulates the growth of NPA in financial institutions. As per analytical study performed for time period 2010-14, it was observed that non-performing assets to total advance percentage is growing every year while net profit is shrinking. [8]

In spite of RBI allotting new license and framing fresh guidelines in accordance with the banking law bill, still there is surge in NPA. As per a study conducted for the period 2008-2012, it was statistically proven that mean of non-performing assets of State bank of India affiliated banks and further public sector banks are differing substantially. [10]

A study revealed upward trend in gross and net non-performing assets from 2014 to 2018. Also using statistical analysis it was proved that return on asset is negatively affected by gross NPA whereas it is positively affected by net NPA. In addition to that it was found that the banks segment i.e. either private sector or public sector has substantial effect on NPA. [3]

With the help of an analytical tool, non-performing assets were estimated for the forthcoming future. Comparing to base year of 2018, as per prediction Punjab national bank showed growth of 42% followed by 29% commercial banks and 16% State bank of India for 2019. Thus NPA can lead to severe consequences if not managed effectively. [12]

Government along with various financial institutions need to work together to control NPA, as new projects like make in India and Jan Dhan can only be effective if NPA is taken care of. With the help of various analytical tools and using predictor variables such as GDP, repo rate etc., it was predicted that out of total advances of state bank of India, around 6-8% will convert to NPA. [39]

In 2017, India rated 5th in having greatest NPA with Greece on top and Australia at base. It had been found that standard quantity and risk of loan is positively correlated. High haircut (difference between loan given and collateral security value of the borrower) often affects banks profit directly and thereby overall economy. With India being on fifth position in NPA accumulation worldwide in 2017, foreign banks NPA is only 0.5% of their total advance from 2006 to 2017 which reflects their efficient credit management system. [29]

Due to such huge collection of NPA in various banks, businesses and people are not getting loan easily as banks are getting more strict and vigilant in processing loans thus taking lot of time. This further apply brakes on growing economy and also individuals are not getting jobs. Thus to counter and mitigate such unhealthy situations, financial institutions need to modify its perspective about legal approach, update expertise, enhance effectiveness of supervisors, upgrade risk administration processes and improve evaluating technique of the debtor repayment ability. [9]

Despite several efforts made by Reserve Bank of India to promote high liquidity by lowering the repo rate, financial institutions are not able to take its advantage as they are worried about NPA. These non-performing assets also impacts depositor's savings having account in that stressed bank. But banks can combat and counter non-performing assets if they abide by with Basel III regulations with significant capital adequacy ratio, advanced proportionality of common equity and modern information technological solutions. [5]

A research was done to recognize the factors impacting non-performing assets in which capital adequacy, earnings, business development capability and liquidity were utilized. Also it was proved that non-payment probability is reduced w.r.t. to cost ratio intermediation. [6]

G. Initiatives taken to manage NPA

As a result of non-performing assets most of the money is depleted thereby impacting flow of credit in the nation and further growth of economy is halted or slowed. One of the effective measure framed by Indian government is to clean the balance sheets before next published. Though many private banks have been able to manage NPA by adopting advance technological solutions, effective risk management, distinct endeavors and tactical collaboration. [22]

Now a days, financial institutions job is not just limited to lending and borrowing. In addition they need to keep up profitability, enlarge portfolio of credit and efficiently management to avoid non-performing assets. Use of analytical solutions like artificial intelligence and machine learning techniques can benefit these financial institutions in long run. A study revealed that with the help of such technologies banks were able to identify the false overvalued collateral property which borrowers kept as security therefore preventing loss of banks in case of NPA. [37]

Presence of any type of human being, political and emotional involvement in bank business might generate biasness and could be a contributing part in NPA. It can be eliminated to a certain extent with effective utilization of machine learning and artificial intelligence technology. Also past credit records of a prospective debtor can be extracted from credit information bureau database thus minimizing expense, turn around time and enabling speedy judgment. [24]

It is now well known facts that financial institutions operating in other parts of the world are benefitting by correct and efficient use of huge amount of data they collect and deriving insights. Using advanced analytical solution like trade log and sentiment analysis to examine historical transactions and consumer behavior they have been able to foresee and combat financial frauds, threats and mishaps. Such techniques are need of the hour in Indian financial institutions also. [38]

Apart from hectic core banking tasks, financial institution administration also have to handle extra burden of managing non-performing assets. Few of them have started leveraging the big data solutions and neural network approach to anticipate potential non-payer or intentional defaulters. Though organized data like borrower's income, credit score and debt value are easy to work on but unstructured data like auditor report, annual reports and board meetings minutes contain additional hidden information much beneficial for the banks. [4]

Low level of non-performing assets in financial institutions portrays its soundness and stable future. Now few banks have started using AI enabled services either by themselves or tying up with third party finance technology providers. These services can be chat-bots, debt consultant and robots taking care of client real-time inquiries. [34]

Aggregating individual bank data, like those required for credit risk evaluation such as customer credit score, age, earnings and loans and possessions of bank, at common location can lead to data infringement exposures. As per a research, this issue can be taken care of if individual financial institutions can develop their own model using an algorithm and unify them to finally come up with a common unique model thus avoiding safety and confidentiality concerns. [20]

Potential loan defaulters can be accurately forecasted with the use of an excellent and reliable credit rating algorithm which not only help in preventing worst debt damage but also saves time, effort, cost and additional human resources. Among few of the algorithms studied for such purpose, neural network resulted in better accuracy with least errors. [17]

RESEARCH METHODOLOGY

H. Problem Statement

Increasing non-performing assets YOY is severely impacting our country's economy. Thus to statistically identify whether NPA has any effect on India's economy, then it's association with several macro-economic features like gross domestic product, inflation rate etc. need to be studied. analyzed.

I. Research Objectives

After understanding the literature review, following are the objectives which need to be achieved from this paper. To know and examine current status of non-performing assets/ bad debts in various scheduled commercial banks of India is our first objective. Then the next objective is to study NPA's influence on many economic variables by analytically and logically verifying the presence and form of connection between gross bad debts and nominal or real GDP of our country, between gross bad debts and bank's net profit, between gross bad debts and gross fiscal deficit, between gross bad debts to gross advances and youth unemployment rate and between gross bad debts to gross loans and inflation rate. Finally to also suggest few technological approach like using AI-ML and Big-data to manage NPA and reduce its impact.

J. Data Collection

As shown in Table I and Table II, secondary data is collected from several verified websites such as Reserve Bank of India database, statistic times etc. Data is collected for the year 2004 till 2019. It includes gross non-performing assets (current year opening value) of SCB, net profit of SCB, gross loans of SCB, gross fiscal deficit, inflation rate, youth unemployment rate and nominal [at present price] and real (at fixed value with base yr. 2011-2012) gross domestic product.

TABLE I. YOY NPA, NET PROFIT AND GDP (NOMINAL AND REAL)

TABLE II. YOY GROSS ADVANCES, FISCAL DEFICIT, INFLATION RATE AND YOUTH UNEMPLOYMENT RATE

Yr.	Gross Advances in croreRs.	Gross Fiscal Deficits in croreRs.	Inflation rate %	Youth unemployment rate %
2018-19	10287085	634398	4.85%	22.85%
2017-18	9266210	591062.08	2.49%	22.72%
2016-17	8476705	535618	4.97%	22.58%
2015-16	8171114	532791	5.88%	22.34%
2014-15	7560666	510725	6.37%	22.07%
2013-14	6875748	502858	10.92%	21.85%
2012-13	5971820	490190	9.30%	21.39%
2011-12	4648808	515990	8.87%	20.84%
2010-11	3995982	373591	12.11%	20.30%
2009-10	3262079	418482	10.83%	19.67%
2008-09	3024652	336992	8.32%	18.50%
2007-08	2503431	126912	6.39%	18.11%
2006-07	2007413	142573	5.79%	18.07%
2005-06	1545730	146435	4.25%	18.10%
2004-05	1152682	125794	3.77%	18.16%

Yr.	Gross NPA in croreRs.	Nominal GDP in croreRs.	Real GDP in croreRs.	Net profit in croreRs.
2018-19	936473.78	18971237	13981426	-23397.39
2017-18	1038683.81	17098304	13175160	-32437.68
2016-17	726460.59	15391669	12308193	43899.50
2015-16	612012.54	13771874	11369493	34148.17
2014-15	322589.93	12467959	10527674	89077.79
2013-14	263361.88	11233522	9801370	80912.68
2012-13	194041.10	9944013	9213017	91164.66
2011-12	142903.33	8736330	8736331	81658.28
2010-11	98233.46	7634472	8301235	70331.27
2009-10	83908.86	6366407	7651078	57109.25
2008-09	68284.32	5514152	7093403	52749.86
2007-08	54836.85	4898662	6881007	42725.87
2006-07	50191.44	4254629	6391375	31202.61
2005-06	50519.83	3632125	5914614	24581.77
2004-05	58363.16	3186332	5480380	20958.18

K. Analytical tools used and the reason for choosing it

MS Excel is used for analysis purpose which has various tools for performing tests such as T-test and correlation test.

MS Excel is used because all the data required for the study is collected in table format and is stored in excel file. Moreover all the required analytical tools are available and easy to use in this single platform. Also MS excel might be easily accessible to all the relevant users of this paper.

Independent two sample T-test (assuming equal variances) is used to conduct Hypothesis testing. It is done to reveal the connection of NPA with macroeconomic variables. This is also supported by Pearson correlation test. Here equal variance means there are equal number of samples/data in each feature.

Hypothesis testing also sometimes referred to as significance testing is used in this research because it is a statistical concept which will help to decide if something really happened and also if there is any significant effect of one event on the other. For this research one on one factorsare analyzed at a time in one hypothesis considering other mediating variables constant since as per the research objective mainly NPA impact on various economic parameters need to be analyzed.

T-test is used for hypothesis testing here since the data size is small and it determines the significant difference between mean of two features which might be related. The p-value obtained in t test is a statistical parameter which proves this significant difference. It is apt for the research since we need to compare two variables only at a time.

Also Pearson correlation test is used in this research to quantify the degree of association or relation between two variables which are involved in hypothesis testing for understanding the impact of one variable (positive or negative) on the other.

L. HypothesisTest 1

H_0 (Null Hypothesis):Gross NPA does not have any significant impact on India's GDP (nominal and real).

H_1 (Alternative Hypothesis): Gross NPA does have significant impact on India's GDP (nominal and real).

M. HypothesisTest 2

H_0 (Null Hypothesis):Gross NPA does not have any significant impact on net profit of SCB's.

H_1 (Alternative Hypothesis): Gross NPA does have significant impact on net profit of SCB's.

N. HypothesisTest 3

H_0 (Null Hypothesis):Gross NPA does not have any significant impact on India's gross fiscal deficit.

H_1 (Alternative Hypothesis): Gross NPA does have significant impact on India's gross fiscal deficit.

O. HypothesisTest 4

H_0 (Null Hypothesis):Gross NPA as % of Gross Advances Gross NPA does not have any significant impact on India's youth unemployment rate.

H_1 (Alternative Hypothesis): Gross NPA as % of Gross Advances Gross NPA does have significant impact on India's youth unemployment rate.

P. HypothesisTest 5

H_0 (Null Hypothesis):Gross NPA as % of Gross Advances Gross NPA does not have any significant impact on India's inflation rate.

H_1 (Alternative Hypothesis): Gross NPA as % of Gross Advances Gross NPA does have significant impact on India's inflation rate.

RESULTS AND DISCUSSIONS

In Fig. 1 it can be clearly distinguished that gross advances or credit % growth is showing downward trend over last fifteen years with few ups and downs and also non-performing assets % growth is having uptrend in the same period and post global recession in 2008 NPA growth line surpasses credit growth line.

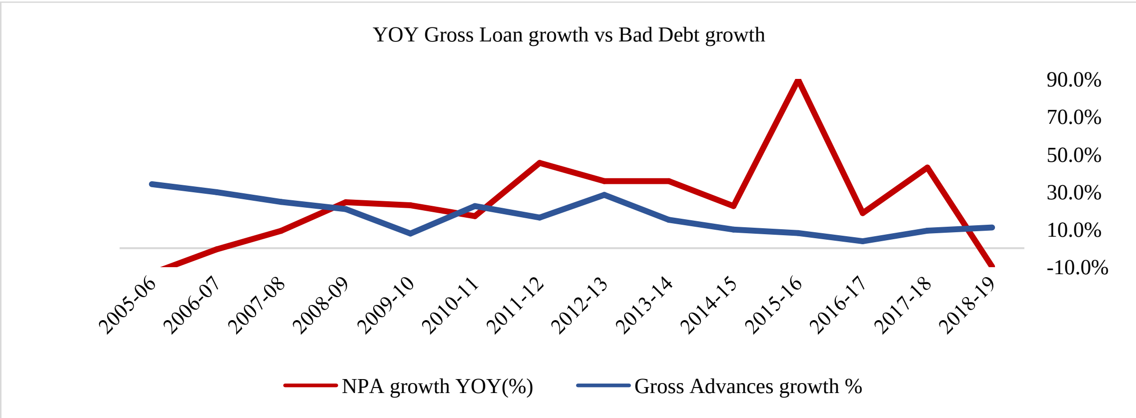


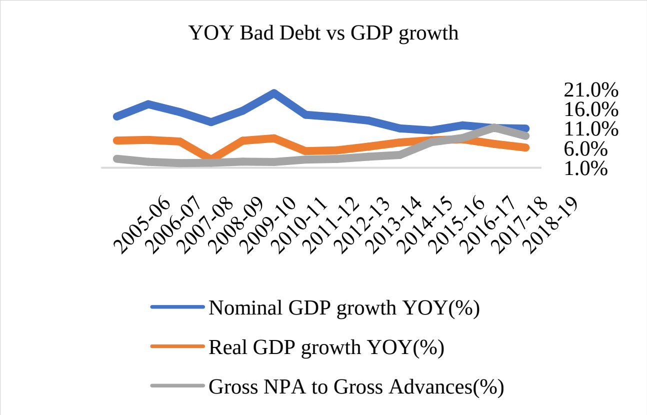
Fig. 1. Year on Year Gross Advances vs NPA growth comparison

First hypothesis test was done to check if NPA has significant effect on GDP. Using t-test we got p-value as shown in Table IIImuch lower than the level of significance i.e. 0.05 for both nominal and real GDP. So it allows to reject null hypothesis and go for alternative hypothesis. Adding to this, the correlation value as shown in Table IV between Gross NPA and nominal GDP is -0.68. Thus it can be interpreted that gross non-performing asset has significantly adverse impression on gross domestic product.years.

TABLE III. T-TEST P-VALUES BETWEEN VARIOUS ECONOMIC FACTORS

T-test p-values		
Factor 1	**Factor 2**	**p-value**
Gross NPA	Real GDP	**4.5 e-13**
Gross NPA	Net profit	**5.4 e-3**
Gross NPA	Gross Fiscal Deficits	**4.0 e-1**
Gross NPA to Gross Advances %	Youth unemployment rate %	**1.3 e-16**
Gross NPA to Gross Advances %	Inflation rate (annual avg. %)	**4.1 e-2**

Fig. 2. Year on Year NPA vs GDP growth comparison



In Fig. 2 it can be clearly distinguished that gross non-performing assets as % of gross loan is showing upward trend slowly every year but GDP % growth is declining in the same time period.

Second hypothesis test was done to check if NPA has significant effect on scheduled commercial bank's net profit. Using t-test we got p-value as shown in Table III to be lower than the level of significance i.e. 0.05 for net profit. So it allows to reject null hypothesis and go for alternative hypothesis. Adding to this, the correlation value as shown in Table IV between Gross NPA and net profit is -0.67. Thus it can be interpreted that gross non-performing asset has significantly adverse impression on net profit of SCB.

Third hypothesis test was done to check if NPA has significant effect on gross fiscal deficit of India. Using t-test we got p-value as shown in Table III to be greater than the level of significance i.e. 0.05 for fiscal deficit. So it does not allows to discard null hypothesis. Adding to this, the correlation value as shown in Table IV between Gross NPA and gross fiscal deficit is 0.72. However the link cannot be completely statistically established but gross non-performing asset has some undesirable effect on gross fiscal deficit. YOY.

TABLE IV. PEARSON CORRELATION TEST VALUES BETWEEN VARIOUS ECONOMIC FACTORS

Pearson Correlation Test values		
Factor 1	**Factor 2**	**correlation value**
Nominal GDP growth YOY (%)	Gross NPA	**-0.7**
Net profit	Gross NPA	**-0.67**
Gross Fiscal Deficits	Gross NPA	**0.72**
Youth unemployment rate %	Gross NPA	**0.8**
Inflation rate (annual avg. %)	NPA growth YOY (%)	**0.15**

In Fig. 3 it can be clearly distinguished that gross non-performing assets is showing upward trend every year and fiscal deficit is more or less following the similar trend in the same time period.

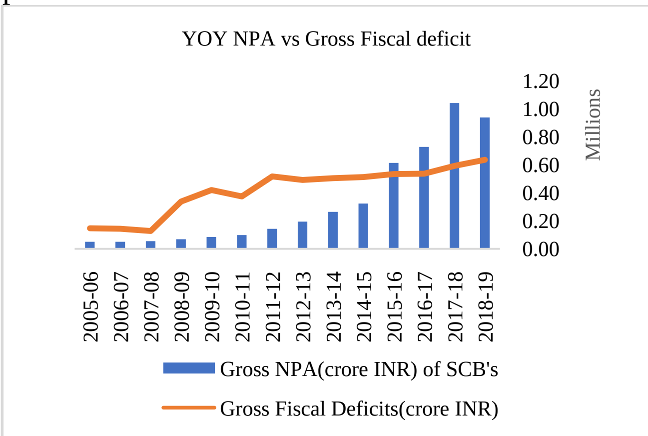


Fig. 3. Year on Year NPA vs gross fiscal deficit comparison

Fourth hypothesis test was done to check if NPA as % of gross advances has significant effect on unemployment rate of youth of India. Using t-test we got p-value as shown in Table III to be much lower than the level of significance i.e. 0.05 for unemployment rate of youth. So it allows to reject null hypothesis and go for alternative hypothesis. Adding to this, the correlation value as shown in Table IV between Gross non-performing asset and youth unemployment rate is 0.8. Thus it can be interpreted that gross non-performing asset has significantly adverse impression on unemployment rate of youth of India.YOY.

In Fig. 4 it can be clearly distinguished that gross non-performing assets as % of gross loan is showing steady upward trend every year and India's youth unemployment rate is more or less following the similar trend in the same time period.

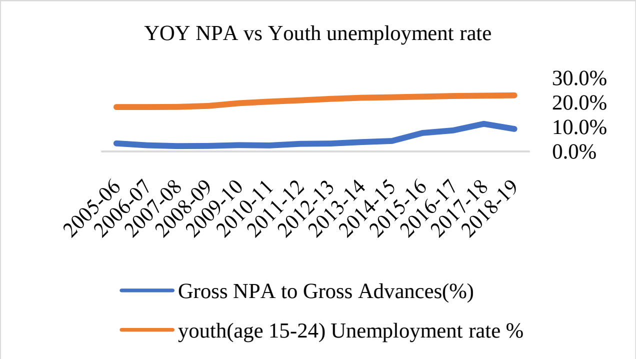


Fig. 4. Year on Year NPA vs Unemployment rate comparison

Fifth hypothesis test was done to check if NPA as % of gross advances has significant effect on inflation rate of India. Using t-test we got p-value as shown in Table III to be lower than the level of significance i.e. 0.05 for inflation rate of India. So it allows to reject null hypothesis and go for alternative hypothesis. Adding to this, the correlation value as shown in Table IV between non-performing asset % growth YOY and youth unemployment rate is 0.15. Thus it can be interpreted that gross non-performing asset has slight adverse impression on inflation rate.

CONCLUSION AND RECOMMENDATIONS

After going through many literatures already published in the past, it was found that the detailed analysis of the impact of NPA on few major economic indicators is yet to be done which is now achieved through this paper. Though there might be other independent variables which along with NPA might affect these economic parameters to an extent but as per the research objective the main aim is to analyze if NPA a major parameter that impacts various economic indicators.

Analysis results in this research shows that as per t-test, NPA has significantly impact on GDP, bank's net profit, inflation rate and youth unemployment rate but the direct impact of NPA on gross fiscal deficit is not statistically implied. In addition, correlation test is highlighting the negative impact of NPA on these economic indicators. Thus it can be concluded that NPA is impacting Indian economy and there is urgent need to manage these NPA in order to minimize its negative impact and thus help economy to prosper.

Many researchers have only touched upon the use cases of analytics in there research paper as discussed in the literature review of this research. Going ahead with the last objective of this research paper, recommended below are some of the advanced application of analytics which can be implemented nationwide to manage NPA.

Any firm having massive volume of data and has the capability to take advantage of it efficiently will eventually show up as forerunner in this saturated world. Big data, ML and AI strategic use in banking sector is enabling to maximize client experience, increase earnings and manage NPA effectively.

A debtor's credit score could be determined using different ML classification algorithms like logistic regression, decision tree and random forest before loan approval. These models can predict the loan payment capacity of the debtor by studying his past transactions, demographics, geographical classification, purchasing, investing and a whole lot more facets as might thought to be fit by the banking institutions. Additionally data can be aggregated and collected from social media platforms and other sources for debtors to form a common big data system using big data framework such as Hadoop so that a credit worthiness profile can be designed.

Banks tie up with call centers to regularly call people to pay due credit card bills and Equated monthly installment (EMI) which might annoy the debtor. Loan retrieval process is not highly effective for most financial institutions. Granular profiling of consumers can be done thus rendering customize follow ups and recovery process. It can be from delivering tailored message, appointing particular recovery specialist, using regional language as communication mode, calling at a particular time and selecting a specific interaction channel. Recorded calls of customers and call center can be examined using AI technology to know the individual tone and then instructing the callers precisely to confirm non-invasive and non-threatening interaction for debt installment certain to each customers.

Many financial technology services can be handy to deal with NPA by utilizing the revolution of digitization. It could be from assisting banks to link with their customers making use of electronic media and also to follow new contact address of bad debtor. A substitute remedy to bank spam calls can be Chat-bot enhanced with real human sense using AI and neural network technology which can also be automated to send reminders and updates related to repayment thus assisting debtors in a better way. These financial technology services can also provide a platform to stressed debtors to pay loan by rework out their EMI and payoff time by expressing their dilemmas.

To recognize a high-risk debtor at emergent phase, early warning signals (EWS) could be used. It examines debtor financial condition, payback capability and willingness to repay. Further it can flag and keep dicey debtors under observation.

Besides financial records, some of the textual contents like director's report, chairperson statement and management discussion are mentioned in the annual report of any organization which can be analyzed with the help of text mining, text analytics, NLP and sentimental analysis thus revealing a great piece of information about the financial health of the company. It can further help to assess the repayment capacity of that organization.

Geo-tagging a one of its kind technology can be of great use as it can track the presence, utilization and quality of the secured assets kept as collateral to the lending banks and further prevent it from being used again as security deposit with other banks for further taking loan. Further such information can be shared with all banking institutions is advantageous to identify a defaulter beforehand.

Utmost attempt is being taken by financial institutions to tackle NPA, in addition to that worthwhile and sensible usage of above suggested technological advances can ease and multiply their efforts manifold.

LIMITATIONS

Even so this paper has appropriately addressed about NPA and its impact on Indian economic situation, further exploration and suggestion can be made for recuperating the currently existing NPA using practical means. In this paper NPA is the only independent element, though there can be group of several features which affect different economic factors like the GDP, inflation price etc. Consequently packaged input of NPA along with other intermediate features can be researched in depth to be able to have more clarity of their effect on Indian economy.

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