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Publishing Co-ordinator Dr. Ganesh Bhagure Principal
Satish Pradhan Dnyanasadhana College, Thane
Off Eastern Express Highway Dnyanasadhana Marg
Thane - 400604, Maharashtra, India
Mobile: 84518 45615
Email: principal@dnyanasadhanacollege.org

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Principal
Satish Pradhan Dnyanasadhana College, Thane
Email: principal@dnyanasadhanacollege.org
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10. 66, 513.

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Content

CORPORATE SOCIAL RESPONSIBILITY INITIATIVES: A CASE STUDY OF SBI BANK

Bhavin Chandrakant Mahala and Antarjyami Mahala
Academician
Email : chauhan.bhavin-edu@msubaroda.ac.in

ABSTRACT

Corporate social responsibility makes a positive contribution to society's development. In the context of national and international banking industry activities, corporate social responsibility (CSR) has arisen as a benchmark for assessing corporate excellence. CSR is described as a company's ongoing commitment to the socio-economic growth of the communities in which it operates. It's a strong strategy for generating a long-term competitive profit and creating positive value for stakeholders. The analysis aimed to classify the various CSR activities undertaken by the SBI Bank for society growth and the amount spent on them over five years from 2014-15 to 2018-19. The study is purely focused on secondary data gathered from SBI Bank's annual report. According to the report, SBI Bank has invested sufficient funds on educational programs, healthcare, skill training, and environmental sustainability.

Keywords

Corporate Social Responsibility, SBI Bank, Environment Protection, Healthcare

Introduction

The words "company" are derived from the Latin words "cum" and "pains," which mean "to share food together." Companies should be committed to the economic, social, and environmental sustainability of the communities in which they work on a long-term basis. Companies are becoming more aware of their social responsibilities. CSR plans are now developed through independent divisions and teams within corporations. The concept of corporate social responsibility was first mentioned in William J. Bowen's book "Social Responsibility of Businessmen" in 1953. The term "corporate social responsibility" did not become common until the 1990s. Many overlapping concepts, such as stakeholder management, business ethics, corporate citizenship, and sustainability, have emerged as a result of the term "CSR" being used so frequently.

Meaning of CSR

Corporate social responsibility (CSR) refers to initiatives that companies adopt as part of their corporate governance to ensure that their operations are socially accountable and beneficial.

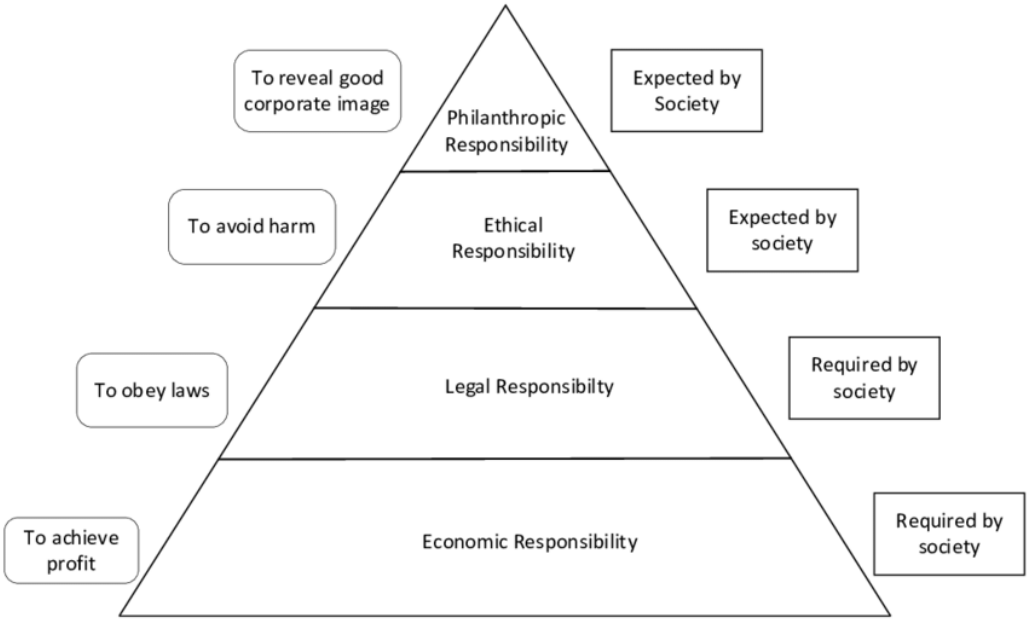
CSR is a strategic theory in which companies integrate social and environmental problems into their practices and interactions with stakeholders.

Corporate social responsibility (CSR) is described by the World Business Council for Sustainable Development as the "continuing commitment by business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families as well as of the local community and society at large".

- **Corporate:** means to do business in the pursuit of profit.
- **Social:** means to take care of society or community.
- **Responsibility**: means taking responsibility for the economy's well-being or growth.

Caroll's CSR Pyramid

As per Caroll (1979), "Corporate Social Responsibility encompasses the economic, legal, ethical and discretionary (philanthropic) expectations that society has of organizations at a given point in time". In the pyramid, there are four types of responsibilities:



Source: https://www.researchgate.net/figure/Carroll-Pyramid-for-CSR-4_fig1_336449852

Literature Review

Jayashree and Neeta (2011) have discussed the Indian banking industry's CSR activities and ratings. CSR is a paradigm in which financial institutions recognize not just their competitiveness and development, but also the well-being of society and the community by accepting responsibility for their activity's effects on consumers, workers, shareholders, and

civil society, as represented by non-governmental organizations. This paper aims to explore the CSR practices of the selected banks in India, as well as their ratings.

Kaur, S. (2016) in the article titled "A Study on Corporate Social Responsibility (CSR) in Indian Banking Sector" tried to analyse the different CSR activities by banks. It was found that the banks are engaged in the area of Rural Development, Education, Community Welfare, Women and Children.

Hooda R&Chhikara, K.S.(2019) analysed the total CSR expenditure and percentage amount spent on CSR activities of Maharatna Companies of India. They also analysed the percentage of CSR expenditure on different activities along with the relationship of CSR on Financial performance. The study revealed that the companies belonging to energy, oil and gas industry showed highest growth in CSR expenditure during the four-year period while the electrical equipment industry showed negative growth. The major spending of the companies was education/ livelihood generation and health activities.

Narwal, M. (2007) in the research paper titled CSR Initiatives of Indian Banking Industry tried to analyse the CSR initiatives taken by banking industry which enhance their overall performance. For this purpose, survey questionnaire has been analysed with the help of descriptive statistics and factor analysis. It was found that the banks were mainly concentrated on education, balanced growth, health, environmental marketing and customer satisfaction as their core CSR activities.

Moharna (2013) examined the CSR activities of Andhra Bank, Allahabad Bank, UCO Bank, State Bank of India, and Bank of Baroda, all of which are public sector banks. The majority of banks contribute to CSR activities in the areas of community welfare, children's welfare, women's empowerment, rural development, and education, according to the survey. The author concluded that these banks' CSR strategies were ineffective.

Dutt, R., & Grewal, H.(2018) examined the State Bank of India conducted a study on CSR in the banking sector in India. The author tried to evaluate the bank's CSR activities over five years, from 2014 to 2018. Data was gathered using a questionnaire and secondary sources such as annual accounts. The aim of the survey was to find out how employees felt about CSR. According to the research, SBI Bank's main emphasis is on capability growth and job formation. In addition, the bank was involved in initiatives such as education, childcare, and sanitation.

Objectives of the Study

I. To determine the total CSR expenditure and the actual amount spent by the SBI Bank over the last five years.

II. To determine the amount invested on various CSR operations during a given time span.

III. To examine the bank's year-wise data to classify the key spending areas for CSR.

Research Methodology

Research Design: The present study is descriptive cum exploratory in nature.

Data Collection: The information was collected from secondary sources, including the SBI Bank Annual Report, Web pages, newsletters, and data from numerous journals. The period of the study is five years from 2014-15 to 2018-19.

Data Analysis Method: The case study methodology was used in this paper. Yin (1989) defines a case study as an observational investigation into a recent event in real-time. A content analysis revealed the bank's CSR activities. The data were analyzed using statistical instruments such as percentages and growth. Microsoft Excel was used to make the tables and charts.

Analysis and Interpretation

The data collected for the study has been converted into tables and graphs. Table 1 and Figure 1 show the SBI Bank's CSR spending over five years, from 2014-15 to 2018-19.

TABLE 1: EXPENDITURE OF SBI BANK IN CSR

Year	Amount Prescribed (In Crore)	Amount Actual Spent (In Crore)	Percentage Spent of Prescribed Amount	Growth Rate (In Percentage)
2014-15	109.00	115.80	106.23	-
2015-16	131.00	143.92	109.86	24.28
2016-17	0.00	109.82	Infinity	-23.69
2017-18	104.84	112.96	107.74	2.85
2018-19	0.00	6.24	Infinity	-94.68
AVERAGE	68.96	97.74	141.73	

Source: Compiled from annual reports of the SBI Bank

In 2014-15, the total amount prescribed for CSR investment was 109 crore, but the bank spent 115.80 crores constituting 106.23 percent of the total amount prescribed. The bank spent 109.86 percent of the prescribed sum in the year 2015-16. In this financial year, the bank has

spent143.92 crore (the prescribed amount was 131 crore). During the year 2016-17, the bank has spent 109.82 crore (the prescribed amount was Zero). In this year the percentage spent on the prescribed amount was not defined. During the year 2017-18, the bank has spent 112.96 crore (the prescribed amount being 104.84 crore). The bank has spent 107.74 percent of the prescribed amount in this year. During the year 2018-19, the bank has spent 6.24 crore (the prescribed amount was zero). In this year the percentage spent of the prescribed amount was not defined. The average amount spent by the bank in the five years after mandatory spending was 97.74 crore per year comprising 64.77 percent of the prescribed amount. The table demonstrates that the bank is directly involved in CSR initiatives. Figure 1 depicts Table 1 as a graphical representation.

Figure -1

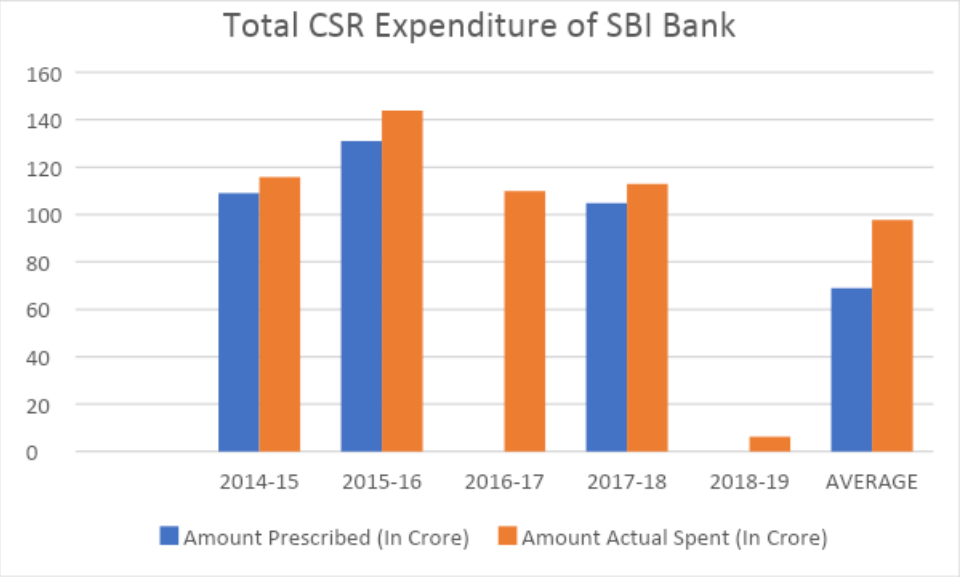
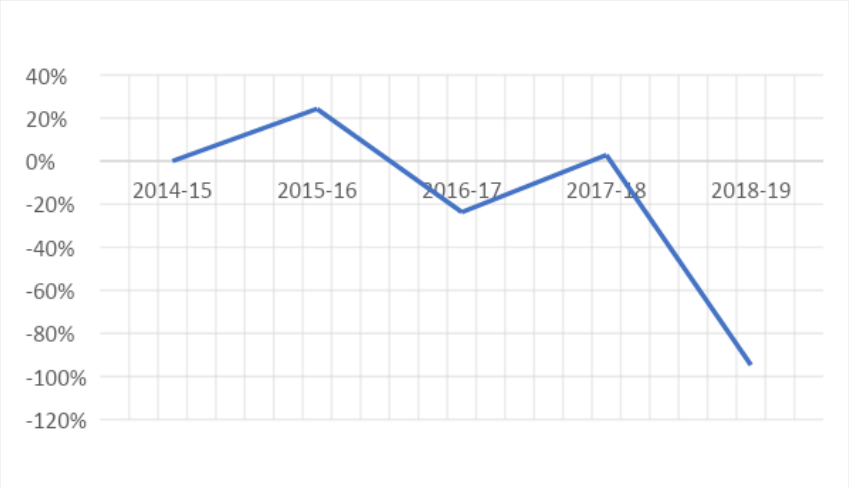


Figure- 2



The trend analysis in Figure- 2 represents the growth rate of CSR activities of SBI Bank which was showing a fluctuating trend. The growth rate in 2015-16 was 24.28% in comparison to 2014-15. This shows that in the year 2015-16, the investment in CSR activities was more than the investment in 2014-15. In the year 2106-17, the growth rate was declining by 23.69%. During the year 2107-18, the growth rate was slightly increased by 2.85%. The growth rate was declining by 94.68 in the year 2018-19.

Sector Wise CSR Spending by SBI Bank

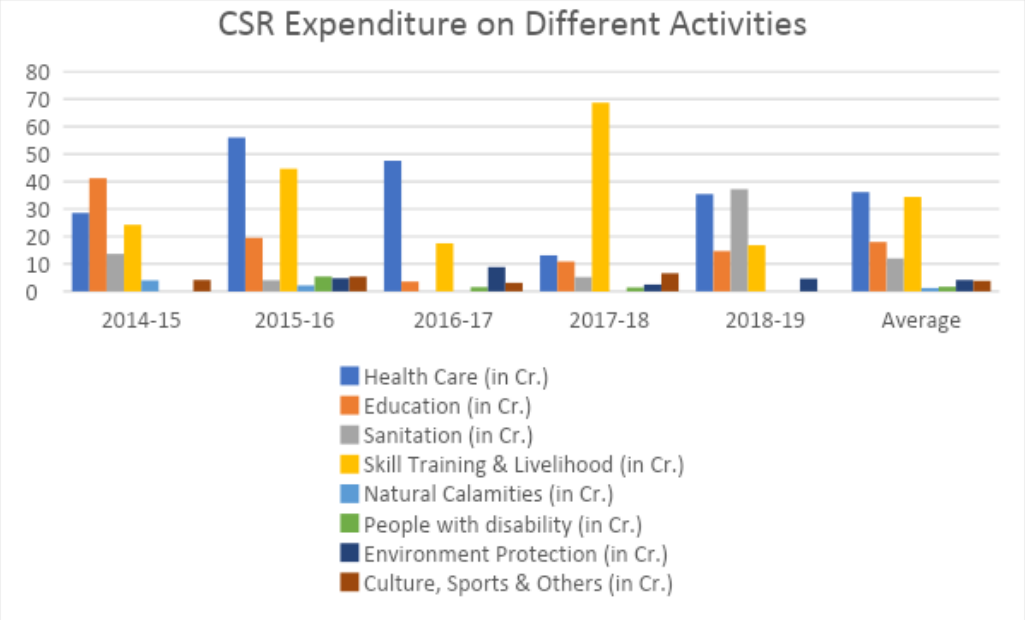
Table - 2 and Figure 3 shown below depict the spending of SBI bank on different activities.

TABLE 2: AMOUNT SPENT ON DIFFERENT ACTIVITIES

Source: Annual Report of SBI Bank

Year/Activity	Health Care (in Cr.)	Education (in Cr.)	Sanitation (in Cr.)	Skill Training & Livelihood (in Cr.)	Natural Calamities (in Cr.)	People with disability (in Cr.)	Environment Protection (in Cr.)	Culture, Sports & Others (in Cr.)
2014-15	28.56	41.20	13.64	24.24	4.00	0	0	4.16
2015-16	56	19.50	4.04	44.66	2.16	5.41	4.78	5.39
2016-17	47.57	3.57	0	17.52	0	1.57	8.86	3.12
2017-18	13.13	10.87	5.19	68.71	0	1.44	2.49	6.59
2018-19	35.42	14.68	37.21	16.81	0	0	4.62	0
Average	36.13	17.96	12.01	34.38	1.23	1.68	4.15	3.85

Figure- 3



The key area for the focus of the bank was categorized as follows:

1. Health Care
2. Education
3. Sanitation
4. Skill Training & Livelihood
5. Natural Calamities
6. People with disability
7. Environment Protection
8. Culture, Sports & Others

Table 2 represents that the average spending of a bank on healthcare was 36.13 crore in five years. The bank spent 28.56 crore on education in 2014-15 followed by 56 crore in the next year. In the year 2016-17, the bank spent 47.57 crore on this activity. The bank contributed 35.42 and 36.13 crore in 2017-18 and 2018-19 respectively. The average spending on the promotion of education was 17.96 crore in the five years. The bank spent 41.20 crore on education in 2014-15 followed by 19.5 crore in the next year. In the year 2016-17, the bank spent 3.57 crore on this activity. The bank contributed 10.87 and 14.68 crore in 2017-18 and 2018-19 respectively. The average spending in sanitation was 12.01 crore in the five years

ranging from 4.04 crore to 37.21 crore. The bank has spent around 34.38 crore every year on skill training and livelihood. The average amount spending of a bank on natural calamities was 1.23 crore in five years because the bank has spent the amount on this activity in the year 2014-15 and 2015-16 only. The amount spent on people with disabilities ranged from 1.44 crore to 5.41 crore . The average spending was 1.68 crore on people with disabilities. In environmental protection, the average spending of bank was 4.15 crore. The average amount of spending on culture, sports and others was 3.85 crore. In the year, 2018-19 nothing amount was spent on culture, sports and others.

Figure 3 represents the total spending by bank in different years in different activities. The figure indicates that the bank has focused on healthcare, education, sanitation, skill training and livelihood, natural calamities, people with disabilities, environment protection and culture, sports, and others. The table shows that the bank has spent very little amount on natural calamities.

YEARWISE ANALYSIS OF DIFFERENT ACTIVITIES OF CSR

Figure 4: Percentage Expenditure Spent on Different Activities In 2014-15

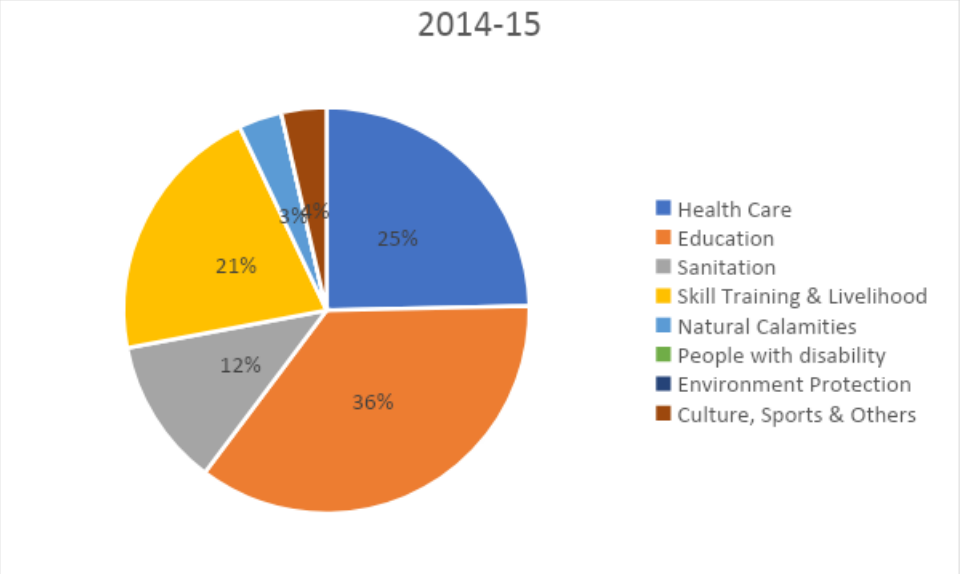


Figure 4 represents that during the year 2014-15, the major spending of the bank was on education comprising 35%. The bank has spent 25% on healthcare, 21% on skill training and livelihood, 12% on sanitation, 4% on culture, sports, and others, 3% on natural calamities, and 0% on people with disabilities as well as environmental protection.

Figure 5: Percentage Expenditure Spent on Different Activities In 2015-16

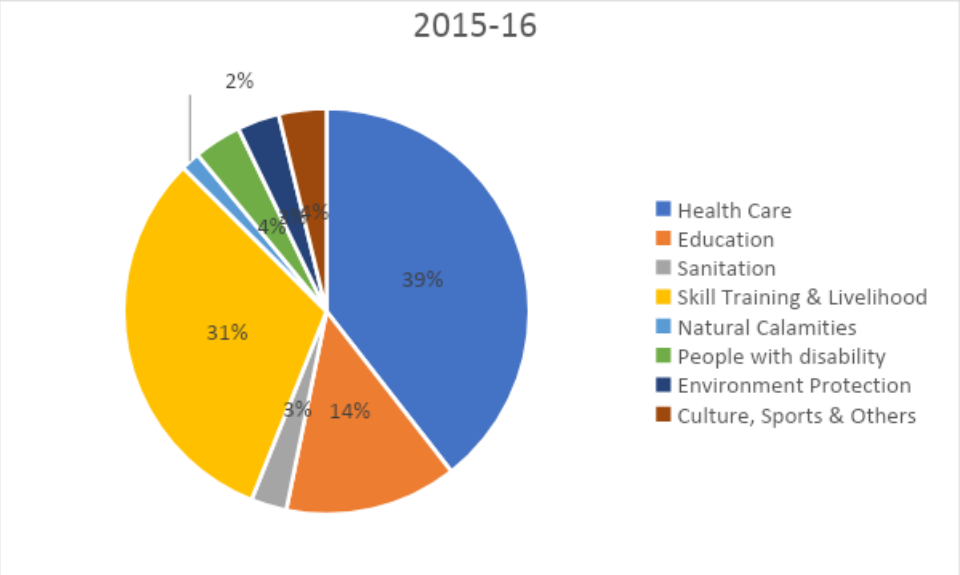


Figure 5 depicts that during the year 2015-16, the spending of the bank was 39% on healthcare, 31% on skill training and livelihood, 14% on education, 4% on sports, culture, and others as well as people with disabilities, 3% on environment protection as well as sanitation and 2% on natural calamities.

Figure 6: Percentage Expenditure Spent on Different Activities In 2016-17

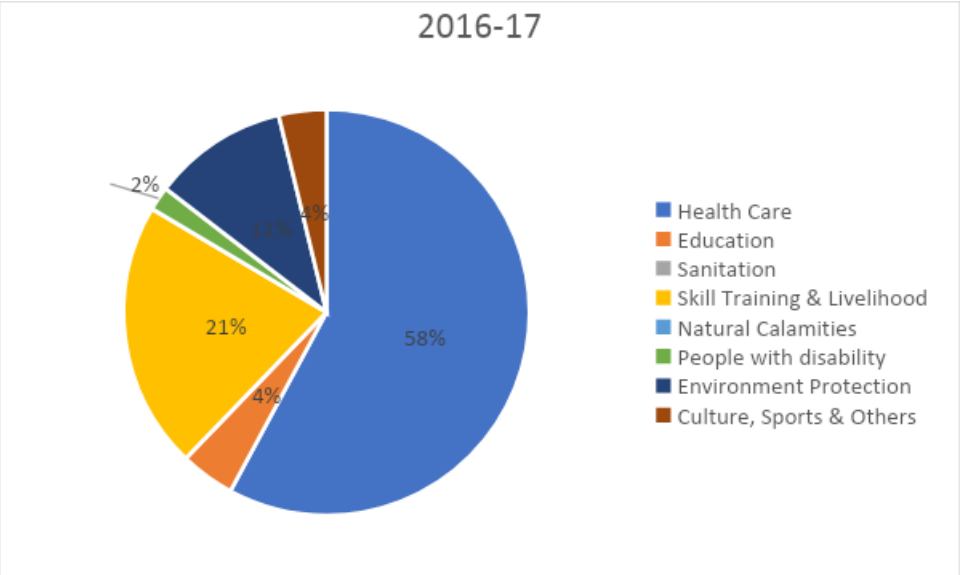


Figure 6 shows that during the year 2016-17, the major spending of the bank was on healthcare comprising 58%. The bank spent 21% on skill training and livelihood, 11% on environment protection, 4% on education as well as culture, sports, and others, 2% on people with disabilities. The bank has nothing spent on sanitation and natural calamities.

Figure 7: Percentage Expenditure Spent on Different Activities In 2017-18

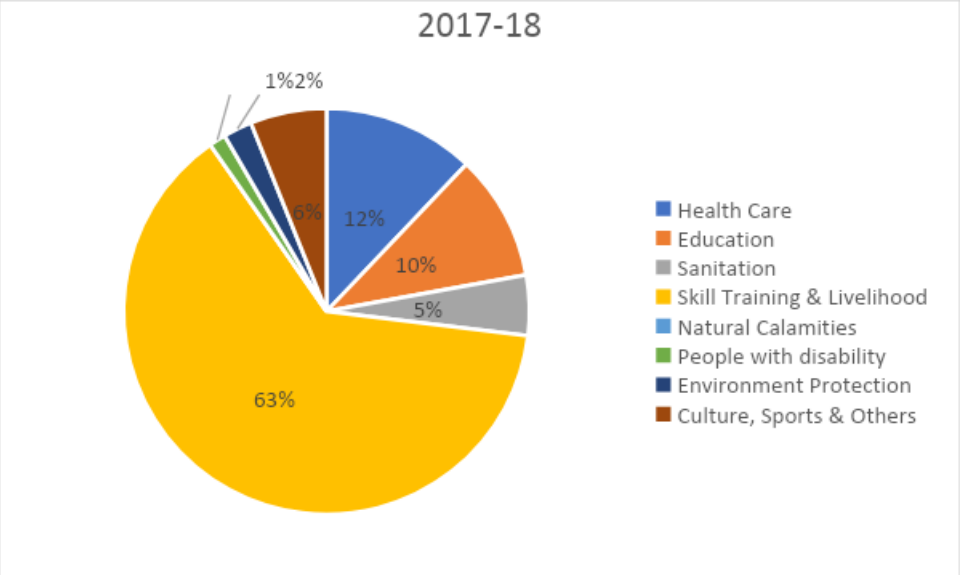


Figure 7 represents the expenditure spent on different activities in the year, 2017-18 in which the bank has major spending on skill training & livelihood comprising 64%. The bank spent 12% on healthcare, 10% on education, 6% on culture, sports, and others, 5% on sanitation. The bank spent only 2% on environmental protection and 1% on people with disabilities. The bank has 0% spent on natural calamities.

Figure 8: Percentage Expenditure Spent on Different Activities In 2018-19

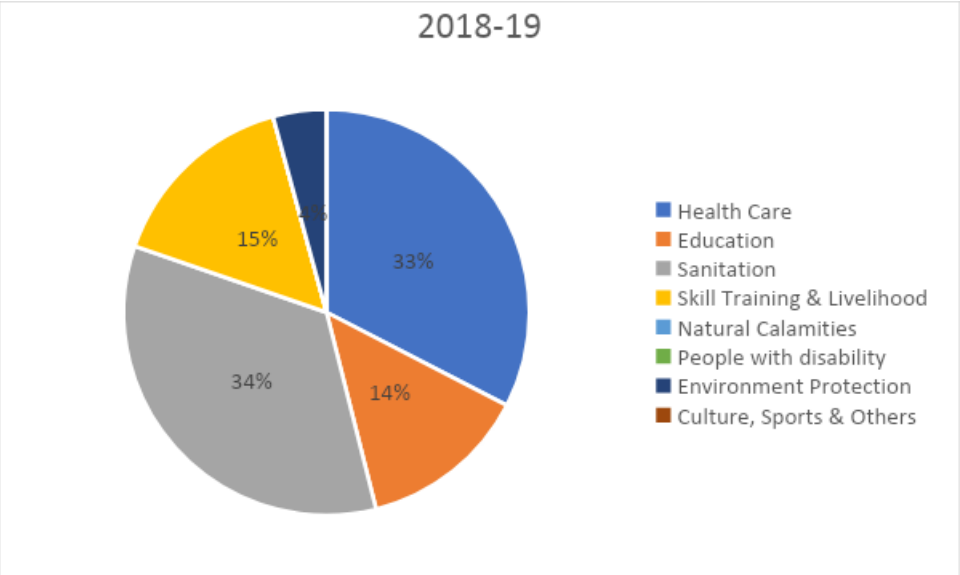


Figure 8 shows that during the year 2018-19, the bank has spent 34% on sanitation, 33% on healthcare, 15% on skill training and livelihood, 14% on education, and 4% on environment protection. The bank has spent 0% on natural calamities, people with disabilities, and culture, sports, and others.

Conclusion

SBI Bank plays a major role in the economic development of the country. The researchers in their efforts tried to find out the general practices adopted by SBI bank to give back to society. After analyzing the above data, it can be concluded that on average, the bank spent 141.73 percent of the prescribed amount of CSR on different activities every year, however, the growth rate of the spending in each year is fluctuating. The year-wise analysis also showed that around 34% spending of a bank is on healthcare activities followed by around 30% in skill training and livelihood, 16% in education activities, and around 10% in sanitation. but less than 1% amount has spent on environmental activities. The crux of the findings of the study is that the bank spent the maximum amount on healthcare activities followed by educational activities and skill development activities and the least attention on environmental activities.

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EDUCATION 4.0: BREAKTHROUGH INNOVATIONS

Antarjyami Mahala[1]

Dr. Bhavin Chauhan[2]

Email : chauhan.bhavin-edu@msubaroda.ac.in

1. (Corresponding Author) Research Scholar, Department of Education, Faculty of Education and Psychology, The Maharaja Sayajirao University of Baroda, Vadodara, Gujarat, 390002, E-mail Id- mahalaantarjyami@gmail.com

2. Assistant Professor, Department of Education, Faculty of Education and Psychology, The Maharaja Sayajirao University of Baroda, Vadodara, Gujarat, 390002, E-mail Id- chauhan.bhavin-edu@msubaroda.ac.in

ABSTRACT

Education is the backbone of human civilisation. It decides what will be the future of our societies. It changes from time to time. Education 4.0 is the most recent era in which innovations and technologies have been revolutionizing the whole sector. These inventions altered the landscape of the previous educational system and started an unprecedented phase with digitalisation and cyber-physical innovations. Artificial intelligence, virtual reality, augmented reality, cloud computing, 5G networks, the internet of things, robots, 3D, and game-based learning are all part of Education 4.0. These innovations have the potential to meet the needs of 21st century skills such as critical thinking, creativity, scientific temper, multilingualism, problem-solving, ethics, social responsibility, and digital literacy. This paper highlights education 4.0 and different disruptive innovations due to the fourth industrial revolution and their educational implications.

Keywords: Education 4.0, Industrialization, Artificial Intelligence, Virtual Intelligence, Augmented Reality, 3D, 5G, Cloud Computing, Internet of Things

Introduction

It is the age of science and technology, where everything is advancing, and the role of education is becoming increasingly crucial. Several technological advancements like cloud computing, artificial intelligence, extensive information and research, smart robots and machines,

distributed and portable computing systems, 5G networks, the internet of things, virtual reality, smart spaces, 3D printing technologies, quantum computing, and augmented reality are now being incorporated into education. These technological advancements and integrations with education have been significantly changing the paradigm of our education system from the first industrial revolution, which was started in the 18th century. We are now in education 4.0, which started parallel with the fourth industrial revolution. It diversifies education and addresses the needs of the 21st century, such as critical thinking, divergent thinking, communication, collaboration, creativity, innovation, information literacy, media literacy, ICT (Information, Communications, and Technology) literacy, flexibility and adaptability, initiative and self-direction, social and cross-cultural skills, productivity and accountability, leadership and responsibility, and problem-solving among the stakeholder of education (CBSE, 2020; AACTE, 2010).

A Pathway towards Education 4.0

Technology-driven Education 4.0 is a tough period in education. Technological I ntegration is strengthening education, although it took a long time. The early industrialization employed stem and water to mechanise the produce (Miranda et al., 2021; Mudgil, 2021; Keser & Semerci, 2019; Sharma, 2019; Peters, 2017). During these centuries, essentialist and behaviourist education was founded on the three Rs: receiving by listening to teachers, responding by taking notes, studying books, and performing worksheets, and regurgitating by taking the same examinations as the cohort (Gerstein, 2014; Keats & Schmidt). The teacher presented class notes, handouts, textbooks, and films in a stand-up performance in Teacher-centered, rote-memorization education. Education 1.0 refers to these centuries (Miranda et al., 2021; Sharma, 2019; Gerstein, 2014).

The second industrial revolution used electric power to mass produce after the first (Mudgil, 2021; Keser & Semerci, 2019; Sharma, 2019; Peters, 2017). Education 2.0 emphasises communicating, contributing, and collaborating. Education 2.0 is humanistic and progressive, emphasising the human element in learning (Gerstein, 2014). Project-based learning, inquiry learning, cooperative learning, global learning projects, podcasts, social bookmarking, Skype, wikis, blogs, and other social networking in the classroom were included. Teaching is more andragogical and constructivist, with active, immersive, real, relevant, and socially networked learning experiences embedded into the class or course structure (Sharma, 2019; Gerstein, 2014; Keats & Schmidt, 2007; Hiemstra & Sisco, 1990 as cited in Gerstein, 2014). Education 2.0 is more flexible, promotes lifelong learning, eliminates geographical obstacles, and merges education and work (Yamamoto & Karaman, 2011). After the second industrial revolution,

electronics and computer technology were employed to automate production, launching the third industrial revolution, or electronic age (Miranda et al., 2021; Mudgil, 2021; Keser & Semerci, 2019; Sharma, 2019; Peters, 2017). This notion underpins education 3.0, a personalised, self-determined education. A different group of three Cs—connectors, creators, and constructivists—is in the focus (Gerstein, 2014). Here, learners create shared knowledge assets and profit from social networking. Education 3.0 is connectivist and heutagogical (Gerstein, 2014). Teachers, learners, networks, linkages, media, resources, and tools constitute a unique organism that may suit the requirements of learners, educators, and society. Education 3.0 recognises that each instructor and student's journey is unique, personalised, and self-determined (Sharma, 2019; Gerstein, 2014). Finally, t he fourth industrialization that led to Education 4.0.

Education 4.0

Education 4.0 combines human energy, intelligence, and innovations (Fisk,2017). It took shape during the fourth industrial revolution, which was seen in the twenty-first century. Today we are in the twenty-first century, which means we are in education 4.0. Where critical thinking, creative thinking, divergent thinking, analytical thinking, reasoning, collaboration, communication, innovation, research, information literacy, technology literacy, information and communication literacy, soft skills, social skills, flexibility, leadership, scientific literacy, financial literacy, civic literacy, entrepreneurialism, global awareness, management, judgement, environmental understanding, scientific reasoning and health and wellness literacy, emotional intelligence, coordination and cooperation are the principal needs of education (The World Economic Forum, 2022; CBSE, 2020; NEP,2020; World Economic Forum, 2016; AACTE, 2010). To accomplish this, we are combining twenty-first-century innovations with education, such as cloud computing, artificial intelligence, extensive information and research, smart robots and machines, distributed and portable computing systems, 5G networks, the internet of things, virtual reality, smart spaces, 3D printing technologies, quantum computing, and augmented reality (Mudgil, 2021; Himmetoglu et al., 2020; Moid, 2020; NEP 2020; 2022, Halili, 2019). This integration makes education more comprehensive, ever-ready, self-paced, and inclusive and introduces blended learning, flipped classrooms, project-based learning, remote learning, open educational resources, Massive Open Online Courses (MOOCs), learning how to learn, sustainability, cloud computing, blockchain, artificial intelligence, augmented reality, virtual reality, multidisciplinary education, practical methods of learning, and adaptive learning content (Himmetoglu et al., 2020). Education 4.0 enables education to

create change (Sharma, 2019), bringing a rebellious shift in each sphere of education. It redesigned the curriculum, redefined the role and functions of all the education stakeholders, and changed our education system's infrastructure pedagogy and evaluation pattern through its disruptive innovations (Kumar et al., 2020).

Disruptive Innovations in Education

Education 4.0 yields some breakthrough innovations that significantly change the topography of education in the global education landscape. It is preparing a one-of-a-kind educational foundation using a cyber-physical system, a combination of hardware, software, and biology, as well as advanced communication and connectivity. The followings are the breakthrough innovations that have revolutionized the education world:

Artificial Intelligence

Artificial intelligence is an emerging innovative, and derivative field of education. All areas—academic, institutional, administrative, assessment, evaluation, and tutoring—are affected. Analysis, decision-making, deep learning, and machine learning become more efficient (Cope et al., 2020; Verma, 2018). AI in schooling revolutionised the system. It transformed education's goals, instructional methods, discipline, teachers' and students' roles, curriculum, teaching-learning materials, school management, and administration (Kengam, 2020; Verma, 2018; Nye,2014). It makes education accessible to all social groups, specially-abled children, linguistic groups, age groups, and ethnicities (Kengam, 2020; Pedró et al., 2019). In the future, artificial intelligence will make admittance to assessment easier, more effective, faster, and cheaper. Using synchronous and asynchronous computers, it promotes collaborative learning and personalization (Gocen & Aydemir, 2020; Kengam, 2020; Pedró et al., 2019; JandaNikos et al., 2001).

Students' smartphone addiction is the largest challenge for the teaching-learning community. Artificial intelligence capitalizes on this. It helps us teach and learn by reading mood and understanding levels using facial and gesture recognition technologies (Kengam, 2020; Pedró et al., 2019). The chatbot is an example of artificial intelligence, that offers an interactive and convenient way to access information, support, and improve students' learning experiences.

Cloud computing

Cloud computing is another boon of the twenty-first century that enables anywhere, anytime education and enhances the effectiveness of education (Kumar et al., 2017; Waga et al., 2014). It is a ubiquitous, convenient, on-demand network where students, teachers, and other stakeholders can create their own "Cloud-Based Personalised Learning Environment" or use m-learning to access Open educational resources from the cloud. It centralises resources and

allows multiple people to access them through multiple devices. It offers students simple and creative learning experiences with personalization. It provides numerous advantages, including personalised learning, reduced course fees, increased accessibility, improved management and administration efficiency, improved educational quality, reduction of required infrastructure, standardised content, increased collaboration, and scalable learning (Kumar et al., 2017; Saini et al., 2017; Bouyer & Arasteh, 2014; Waga et al., 2014; Rao & Challa, 2013). Different virtual universities, distance universities, and educational technology companies are emerging in the current global scenario and expanding the scope of education with the help of cloud computing (Bouyer & Arasteh, 2014). IBM Cloud, Microsoft cloud, Google cloud, and Dropbox are some of the clouds. Learning Management System and Google classroom are two examples of cloud computing being used in education to improve educational outcomes.

Robotics

The robotics is one more marvellous creation of human intelligence. It is a three-dimensional physical object that moves in space and time. Also, it can emulate human/animal behaviour. It assists students in promoting twenty-first-century skills such as problem-solving, critical thinking, teamwork, higher-order learning, and computational thinking skills, as well as reflecting on their learning. It also assists students in developing skills that are difficult to learn in traditional classes but are critical in scientific and engineering practices (Gura, 2012; Chambers et al., 2007). It can potentially improve academic skills such as scientific process comprehension, scientific concept development, and improvement of achievement scores (Barker & Ansorge, 2007; Williams et al.,2007; Highfield, 2010). Robotics is supplementing and supporting teaching-learning activities in 21st-century classrooms, challenging students' creativity while improving cognitive skills and motivating them to be active learners. Robots are playing an increasingly important role in education, and it simplifies the role of the teacher. The apt example of it: a Nao model as part of a European research project called L2TOR, with the goal of teaching young children a second language. The robot acted as a tutor, giving students the individual attention they needed to learn a new language at their own pace.

The internet of things

The internet of things is another twenty-first-century innovation with artificial intelligence, connectivity, sensor, and smart devices. It increased the assortment of activities, increased student participation and collaboration, and raised the level of academic processes. It has broad implications for online education, computer science education, research and industry, scalable manufacturing, low cost, and the long term. It facilitates the teacher in teaching and managing

the class, as well as improving students' academic achievement. Gamification and a smart classroom are pivotal needs of this era. The advent of the internet of things has made it more effective and productive. Wearable technology is another aspect of modern life that will be made more convenient by the internet of things. Attendance monitoring systems in education will be simpler and more accurate, allowing teachers to manage better and administer classes. It personalises education through feedback, which is the other side of Education 4.0. It improves educational facilities by utilising the internet of things (Ali & Nihad, 2021; Remya, 2021). Another internet of things facilitation is the smartbook. It lowers the cost and labour of education by automating processes outside of the traditional educational process. It personalises education, fosters global networking, improves smart QR code usage, simplifies data collection and analysis, fosters group work collaboration, improves campus safety, improves learning experiences and outcomes, and facilitates efficient institutional management (Thiyagu, 2017). Smart boards, smart ebooks, and educational apps like ClassDojo that allows parents to see student schoolwork via photos and videos. Class Dojo is used in 95% of all K-8 schools in the U.S. and 180 countries and messages can be translated into 35 languages automatically.

3D Printing

Another human innovation that improves the teaching-learning process is 3D printing. It is an effective teaching tool for teachers and a useful learning tool for students. It enables the learner to grasp any concept or idea quickly. It is a tool that allows us to give our digital data a physical appearance (Pai et al., 2018). It can potentially create an immersive and dynamic learning environment for everyone in the teaching-learning process. Also, it facilitates personalised learning for the visual learner. It develops curiosity among students and is used to teach design, and creativity skills, produce artefacts that aid learning and create assistive technologies. 3D printing offers a way for students to truly connect to the subject matter by physically manipulating ready-printed teaching aids or by designing tools themselves. One of the appropriate examples is THE MAKERBOT REPLICATOR+ that helps students for concept forming and designing their own concept.

Augmented Reality

Augmented reality is another innovation in education 4.0 that combines ubiquitous computing, tangible computing, and social computing. It provides unique affordances by combining physical and virtual worlds and continuous and implicit user control of the point of view and interactivity. It has three characteristics: it combines the real and virtual worlds, interacts with the user in real-time, and is registered in a 3D space. It allows students and teachers to see the

real world while supplementing reality without completely immersing them in a synthetic environment (Kesim & Ozarslan, 2012). Augmented reality is a cutting-edge innovation that facilitates learning, increases student motivation and curiosity, increases student achievement, increases student participation and cooperation in learning, develops positive attitudes, reduces cognitive load among students, and ensures learning is enjoyable (Sirakaya & Sirakaya, 2018). For instance, 'Elements 4D' and 'Anatomy 4D' apps cover topics in chemistry and anatomy. 'Arloon Plants', 'Arloon Mental Math', and 'Arloon Geometry' focus on botany, arithmetic, and geometry.

Virtual Reality

Virtual reality is an immersive, hands-on innovation in education 4.0 that is changing the landscape of education. It creates opportunities for learning in a real-world setting. It promotes immersion, interaction, and participation (Pinho, 2004). It facilitates students' metaphysical comprehension and assimilation. It provides three-dimensional computer environments with advanced forms of interaction that can motivate students to learn. Using the objective and the real environment makes learning more interesting and fun, increases motivation and attention, and reduces costs (Piovesan et al., 2012). The use of virtual reality in education simplifies teaching and learning for both teachers and students. It increases student engagement, allows constructive learning through meaningful experiences, provides authentic experiences, allows for new perspectives and empathy, allows creativity, and allows the visualisation of difficult models (Hu Au & Lee, 2017). Visual simulations to train the soldiers for battle field, games to create smart and quick moves-VR boxing and exploring plants/universe are some key functions of VR technologies.

5G Network

Communication is the foundation of our teaching-learning process. It may not be carried out without communication, so communication speed is a major factor in the frequency of teaching and learning. The evolution of the five-generation network increased the efficiency and proficiency of education 4.0. It enables other disruptive innovations such as segmented reality, virtual reality, the internet of things, cloud computing, and the robot of education 4.0. The five-generation network contributes to inclusive education. It boosts the effectiveness of distance, remote, blended, digital, and intelligent immersive learning. It makes learning more flexible and assists students with special needs.

Digital Games

Gamification is a 21st-century teaching method reflected in Education 4.0. in this digital age, digital games are the medium of entrainment. It improves the effectiveness and student-centeredness of the teaching-learning process, motivates students, provides practical experiences, improves decision-making and problem-solving skills, as well as critical thinking, cognitive, spital, and motor capacities among students, promotes positive competitiveness, develops knowledge acquisition capacities, improves student self-efficiency, prepares cooperative and collaborative learning environments, improves ICT skills, fosters student self-reliance, autonomy, and development (Zainon et al., 2013; Felicia, 2009). One of the best examples applied in teaching and training is the use of Kahoot for gamification of any educational content.

Conclusion

Education 4.0 is a disruptive era of innovation and technology. It is an era of automation and cyber-physical systems. It changed the landscape of global education and convinced the teaching fraternity to rethink our aims, objectives, method of teaching, curriculum, the role of teachers, the role of students, discipline, and the medium of instruction. There are many breakthrough innovations invented in education 4.0 and they will keep on adding. It makes the teaching-learning process effective, innovative, and productive, as well as fulfilling the need and expectations of the 21st century. In nutshell, teaching and learning through these innovations are boons for both teachers and students in terms of efficient pursuit of education.

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Special Emphasis on Aerospora involved in Bioremediation and its effects on Human health.

Dr. Amita Charandas Chandanshive

ABSTRACT- A number of air- borne particles including pollen and fungal spores are responsible for respiratory disease. The atmosphere contains an array of bio- particulate materials like insect scales and other airborne micro- organisms which are passively transported by air. These days more challenging problems to human beings in relation to the environment. It can cause health problems and can cause irreversible damage to the environment. However, the impact of biological pollutants .Wide range of biological pollution is mainly due to the organic constituents like pollen, fungal spores, algae, mites, protozoan cysts, hyphal fragments, body fragments of insects, feathers etc.Dombivli is a suburban city of Mumbai located in Thane district. It has multiple number of residential areas and also industrial areas around city. The atmosphere consist of biological particulates such as pollen grains, fungal spores, algal spores, plant parts, hyphal fragments etc. Quite a large number of respiratory allergens, plant and animal pathogens are daily carried over by wind and distributed over distant areas. The air- born inoculum is the most dangerous causing plant diseases and allergic reactions in human and domestic animals. The present investigation is aimed at studying the aerobiological survey of residential and industrial area of Dombivli, Dist.- Thane was conducted from January 2022 to January 2023.

Key words- Aerospora, Bioremediation, health hazards.

INTRODUCTION

According to Chanda (1981), air pollution is the major contaminants in the atmosphere.. Aerosols are gases that contain floating dust particles; these pollutants can be either biotic or abiotic.As a completely distinct and applied branch of aerobiology in which organisms, substrate, and environment interact, bioremediation is also known as aero-ecology.The library's materials and paper are susceptible to harm from a variety of variables, which can be precisely categorised as physical, chemical, and biological, depending on the environmental

circumstances.The physical elements are heat, sunshine, moisture, dust, and rainfall.The gases and acids in the air are the chemical factors. The feel of

MATERIALS & METHODS:

The methodological details of the experiment, detail of sites , Tables, graphs of different locations are presented in this chapter. It has also been supplemented with meteorological details.

Two techniques have been used for the said survey.

(I) Gravity slide technique:

Slides (75 x 25) smeared with a thin film of safranin stained glycerin jelly were exposed daily, in the Dombivli at all locations from January, 2022 to January 2023, for a period of one year . The trapped pollen were identified with the help of reference slides, standard text books, and monograph pertaining to different genera.

(II) Culture Plate technique:

For different fungi having morphological similarities, Petri plates containing 20ml. of RBS Agar were exposed once in every fortnight for 03 minutes at every location, and incubated in an inverted position at room temperate till the number of colonies occurring and sporulating. The colonies developed were identified with the help of reference slides, standard textbooks and monographs etc. Damaged books were identified with the help of reference slides, standard textbooks and monographs etc.

RESULT AND DISCUSSION

Using the gravity slide and culture plate techniques, an aerobiological examination was conducted over the course of a year, from January 2022 to January 2023, at four distinct sites in Dombivli.

Regularly, the exposed slides were examined under a research microscope with a high power. For airspora trapped, a 3.24 cm2 constant quadrant region was exhaustively searched. To calculate the amount per cm2, the number of pollens, fungal spores, and other bioparticles were counted.

The goal of the project is to track the amounts of different biocomponents in the air in Dombivli City and its libraries. There are both forested and industrial areas all around the city. The study attempts to establish a relationship between the biocomponents found in the atmosphere, particularly pollen grains and fungus spores,

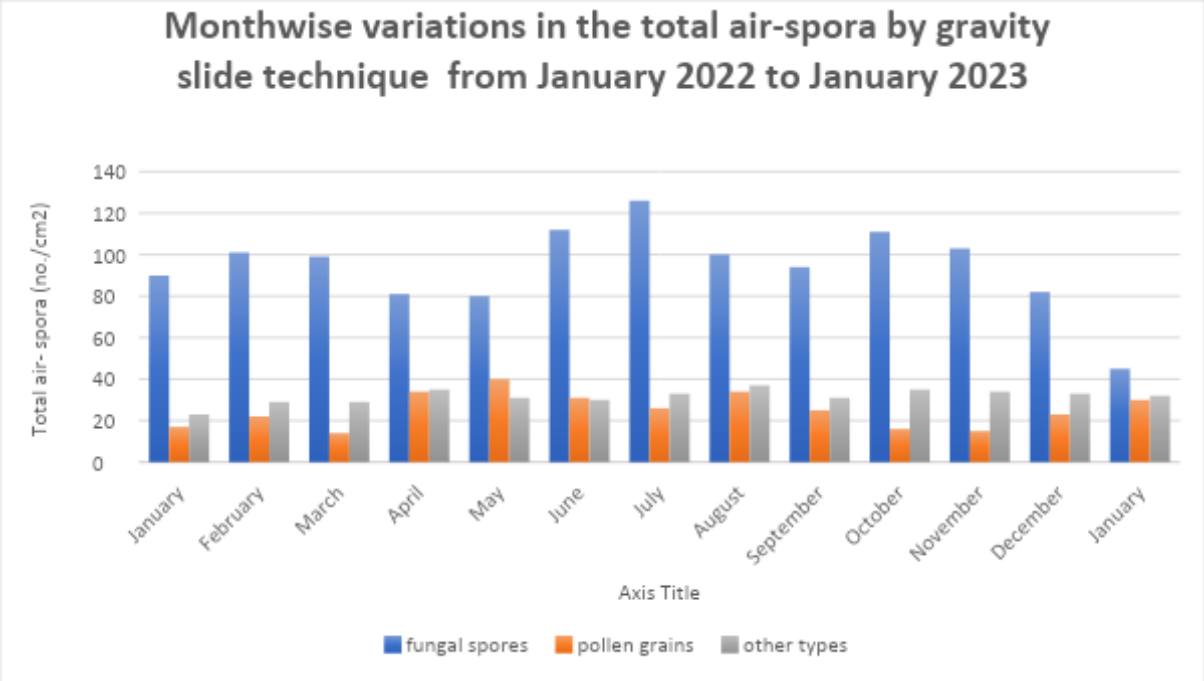
and that **Table (I.B) Monthly frequency of various aerial pollen_atmosphere trapped on gravity slides from January 2022 to January 2023**

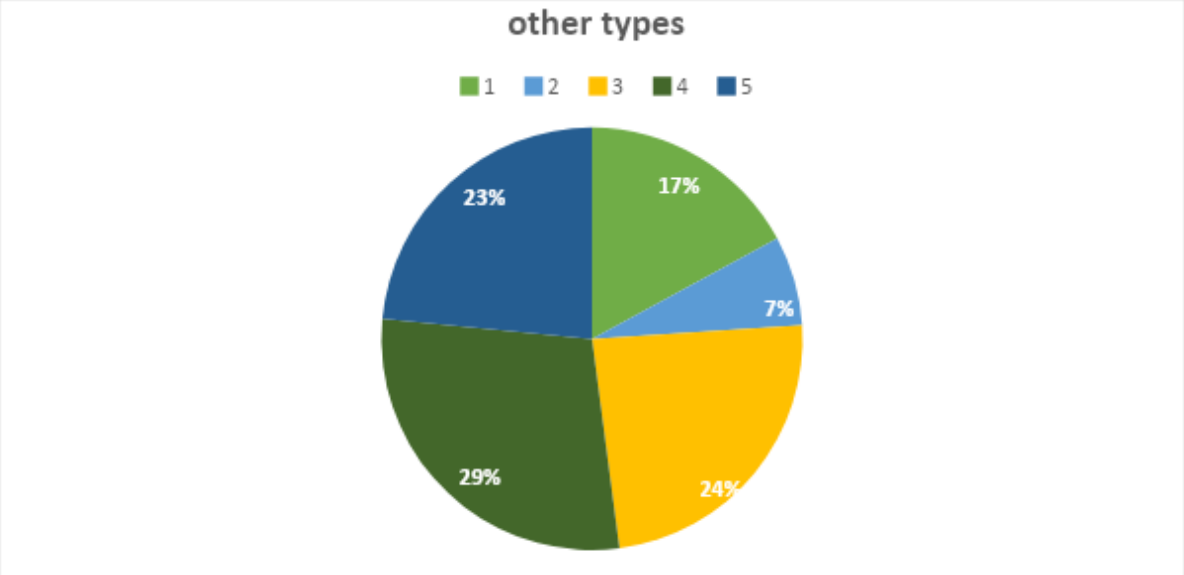
	Pollen Type	January-2022	February-2022	March 2022	April 2022	May-2022	June 2022	July 2022	August-2022	September-2022	October 2022	November-2022	December 2022	January-2023	Total	% of Polynospora	% total air spora
1	***Acacia auriculiformis***	--	--	1	1	1	1	--	--	--	--	--	--	--	4	1.22	0.303
2	***Annona***	--	--	--	--	--	1	1	--	--	--	--	--	--	2	0.61	0.210
3	***Azadirachta indica***	--	--	--	1	--	1	--	--	--	--	--	--	--	2	0.61	0.201
4	***Bougainvillea spectabilis***	1	1	--	--	--	--	--	1	1	1	--	--	--	5	1.52	0.354
5	***Celosia***	1	1	--	--	--	--	1	1	--	--	1	1	--	6	1.84	0.405

	argentea																
6	***Caesalpinia pulcherima***	--	--	--	--	--	--	1	1	--	--	--	--	--	2	0.61	0.201
7	***Clerodendron inerme***	--	--	1	1	1	--	--	--	--	--	--	--	--	3	0.91	0.232
8	***Cocus nucifera***	1	1	--	--	1	1	--	--	1	1	--	--	1	7	2.14	0.436
9	***Delonix regia***	--	--	--	2	1	2	1	2	--	--	--	--	--	8	2.44	0.517
10	***Eucalyptus globulus***	--	--	--	--	--	--	--	--	--	--	--	1	1	2	0.61	0.211
11	***Grass***	10	15	8	25	30	20	15	22	20	10	12	20	25	232	70.94	13.66
12	***Hibiscus rosa***	--	--	--	--	--	--	1	2	1	--	--	--	--	4	1.22	0.323

	sinensis																
13	***Lantana camara***	1	--	--	--	--	--	--	--	--	--	--	1	1	3	0.91	0.242
14	***Leucaena gluca***	--	--	--	--	1	1	--	--	--	--	--	--	--	2	0.61	0.211
15	***Mangifera indica***	--	--	--	1	2	1	--	--	--	--	--	--	--	4	1.22	0.313
16	***Peltophorum petrocarpum***	--	--	--	--	1	1	2	2	--	--	--	--	--	6	1.84	0.415
17	***Moringa oleifera***	2	2	1	1	--	2	4	2		3	2	--	2	21	6.42	1.17
18	***Polyalthia longifolia***	--	--	2	1	1	--	--	--	--	--	--	--	--	4	1.22	0.313
19	***Ricinus***	1	1	--	--	1	--	--	1	1	--	--	--	--	5	1.52	0.364

	commun is																
20	***Unidentified pollen***	--	2	1	1	1	--	--	--	1	1	--	--	--	7	2.14	0.466
	TOTAL	17	23	14	34	41	31	26	34	25	16	15	23	30	329	100.	15.748





Monthly frequency of various aerial Fungal spore type of atmosphere trapped 0n gravity slide from Jan 2022 to Jan 2023.																	
Sr. No	**Fungal spores**	**Janu22**	**Febr-22**	**Marc22**	**April22**	**May-2022**	**June22**	**July22**	**Augu22**	**Septe-22**	**Octo22**	**Nove22**	**Dece22**	**Janua-2023**	**Total**	**% of Mycospora**	**% total airspora**
1	*Altenaria*	8	10	6	5	8	9	11	4	7	11	9	10	8	106	8.64	5.4
2	Beltrania	2	1	3	1	2	5	0	0	0	0	8	5	7	134	2.77	6.82
3	*Biospora*	4	4	0	0	8	5	4	4	6	2	2	4	1	44	3.58	2.24
4	*Cercospora*	2	0	0	0	0	0	0	4	0	0	0	6	3	15	1.22	0.76
5		2	0	0	0	0	0	0	2	1	4	0	2	1		0.97	

	Chaetomium														12		0.61
6	*Cladosporium*	5	20	12	17	12	8	15	8	16	8	4	4	6	135	11.01	6.88
7	*Coryneospora*	2	1	0	0	0	0	0	0	2	3	0	0	1	9	0.73	0.45
8	*Curvularia*	5	8	10	11	7	5	15	3	2	1	0	2	1	70	5.7	3.56
9	Didymosphaeria	2	0	0	0	4	10	0	0	2	4	4	0	0	28	2.28	1.42
10	*Drechstera*	2	0	8	0	4	4	0	0	2	0	0	0	0	20	1.63	1.01
11	*Epicoccum*	0	0	0	0	4	8	8	6	4	0	0	0	0	30	2.44	1.52
12	Exosporium	2	0	0	6	4	0	0	0	0	0	6	4	2	24	1.95	1.22
13	*Fusarium*	2	0	8	6	0	8	0	0	2	0	0	0	0	26	2.12	1.32
14	*Haplosporella*	0	0	0	6	0	0	6	6	4	0	0	0	0	22	1.79	1.12
15	*Helminthosporium*	4	10	0	4	0	4	14	8	6	12	10	14	0	86	7.01	4.38
16	*Heterosporium*	4	6	0	0	0	4	8	6	0	0	0	0	0	28	2.28	1.42
17	*Humicola*	4	4	6	0	10	4	10	8	4	10	16	0	0	76	6.19	3.87
		0	0	0	0	0	6	4	5	4	4	2	0	2		2.2	

18	*Memnoniella*														27		1.37
19	*Nigrospora*	6	6	5	0	0	4	4	5	3	7	4	0	0	44	3.58	2.24
20	*Periconia*	6	4	6	6	5	5	3	0	0	6	6	2	1	50	4.07	2.54
21	*Pithomyces*	4	4	0	0	0	4	5	5	0	0	0	0	0	22	1.79	1.12
22	*Pleospora*	0	0	2	4	0	0	0	3	2	0	4	4	0	19	1.54	0.96
23	Rust spores	3	4	5	6	4	3	2	4	5	5	3	4	2	50	4.07	2.54
24	Sporomia	1	3	1	0	0	6	0	3	4	0	0	0	0	18	1.46	0.91
25	Smut spores	2	3	2	1	1	1	3	4	7	8	4	4	2	42	3.42	2.14
26	*Tetraploa*	2	0	0	0	0	0	0	4	0	0	6	4	0	16	1.3	0.81
27	*Torula*	4	4	10	0	0	0	0	2	6	10	0	0	4	40	3.26	2.03
28	*Trichotheciu m*	4	4	6	0	0	0	2	0	0	8	6	4	0	34	2.77	1.73
29	Unidentified	8	5	9	8	7	9	12	6	5	8	9	9	4	99	8.07	5.04
	Total Fungal spore	90	101	99	81	80	112	126	100	94	111	103	82	45	**1326**		**67.43**

CONCLUSION

Following an investigation of a number of residential and industrial locations, it was discovered that fungi cause a wide range of respiratory illnesses in people, plants, and animals. Fungal contamination is somewhat related to the fact that air quality inside residential areas has become a critical element. Additionally, it was noted that the fungal species that thrive in residential environments show seasonal variations and are dependent on high humidity and moderate temperatures. To discover health risks and physiological abnormalities in living things, the impact of airborne fungal spores—including their release, diffusion, deposition, and effect—is crucial. The gravity slide analysis identified 20 pollen kinds and 29 different types of fungus spores. It also disclosed five other varieties. For example, pieces of plants, hyphal structures, algae, insects, and insect parts

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SOCIO-ECONOMIC AND HEALTH STATUS OF SALT LABOURERS IN THANE AND PALGHAR DISTRICTS OF MAHARASHTRA

Mr. Mrunal Khobragade[1], Dr. Pramod Lakhe[2]

[1] Assistant Professor, Department of Economics, GES' Shri Bhausaheb Vartak College Borivali(w), Mumbai (MH), India. Email ID- mrunalkho21@gmail.com. Mb:9021318775

[2] Associate Professor, Department of Economics, Vasantrao Naik Govt. Institute of Arts and Social Sciences, Nagpur (MH), India.

ABSTRACT

Background: In Maharashtra salt is produced on the outskirts of coastal area and providing seasonal job to socio-economically backward rural people for 7-8 months every year. Even after having the opportunity to work in other industries, socio-economic and educational backwardness restrict them to work in other industries. Salt labourers are prone to many diseases which arises out of working in salt pan, due to saline water and scorching heat. **Objectives:** To study the socio-economic status of salt labourers and to understand the health related issues of salt labourers.

Methodology: Primary as well as secondary data is used for present study. Sample size of 360 salt labourers selected by lottery method of simple random sampling from the Thane and Palghar districts of Maharashtra. By using the BG Prasad scale, socio-economic status of the workers is measured. **Result and Conclusion:** Present study make us understand the social, educational, occupational, and economical backwardness of the salt labours. Almost 64 percent labourers belong to lower middle class. There is significant relationship between duration of work in salt pan and occurrence of salt work borne diseases.

Keywords: Salt labourers, Socio-economic and health status.

Introduction

India is third largest salt manufacturing country in the world after China and USA. Salt industry achieved the tremendous growth after independence. An average annual production of salt in India is 215.80 lakh tones. The country which was importing a salt from other countries, now is in the position to export surplus salt after meeting its domestic need. In the Union List of 7th Schedule of Constitution of India, salt appears as an item No. 58 and is a central subject, where

Central Government is responsible for controlling all aspects of salt industry. Salt is manufactured in seven states of India namely Gujrat, Rajasthan, West Bengal, Maharashtra, Tamil Nadu, Odisha, and Andhra Pradesh, where Gujarat, Tamil Nadu and Rajasthan account for about 96 per cent of the country's salt production. Salt industry is labor intensive industry. Throughout the India on an average 1.11 lakh laborers are employed daily in the salt industry of India.[1]

Production of salt and laborers employed in Maharashtra

As far as Maharashtra is concerned, in the State total salt is produced from the seawater on the outskirts of coastal districts i.e. Mumbai, Mumbai suburban, Thane, Raigad, Sindhudurg and Palghar. Out of these maximum salt is produced in Thane and Palghar district. From the year 2008-09 to 2020-21 an average production of salt in Maharashtra was 148. 24 thousand tonnes.[2] For the year 2020-21 production of salt is severely affected due to COVID-19 pandemic during this time the industry face the shortage of the labourers. The production of salt during 2020-21 was 69.6 thousand tonnes and for previous year it was 123.3 thousand tonnes.[3]

As far as labourers are concerned from the year 2008-09 to 2020-21 an average 3170 labourers per year are employed in salt industry of Maharashtra.[2] During the year 2020-21 total 1792 labours were employed in Maharashtra.[3] Harsh and difficult working condition, COVID-19 pandemic, more job opportunities in other industries and industrial developments in the vicinity of salt fields may have caused migration of salt labourers to other industrial activity, depriving salt industry with its work force.

Rational of the study

Salt industry is labor intensive industry where all kind of major works are done by laborers like preparation of beds, extraction of salt, storing on platforms, stacking of heaps, loading into Railway wagons/ Motor trucks etc.[3] Even if it is a seasonal work but it provides the employment and livelihood to the workers for 7 to 8 months during the year, earning from working in salt pan constitute a major portion of their income. Migrated as well as local labourers are engaged in salt manufacturing in Maharashtra. The socio-economic background of these labourers is backword[4]. Even studies show that they face the health problem arising out of working in salt pan. The diseases related to skin, muscular and joint pain, eyes, breathing are generally found in labourers[5]. Salt industry is one of the major sources of livelihood and income of certain communities or rural people in Maharashtra. Working in salt pan is harsh and difficult, for many salt workers it is migratory in nature. Since study area that is Thane and Palghar districts are closed to Mumbai and industrially developed also, therefore these

labourers having opportunities to work in other industries also, still labourers working in salt pan. The question is what makes these labours to work in saltpan even after having the risk of health hazard? Do they face any heath issue? What is their socio-economic status? The present paper tries to seek the answer of these questions and try to study on it.

Objectives

1. To study the socio-economic status of salt labourers
2. To understand the health related issues of salt labourers

Hypothesis

H_0 : There is no relationship between duration of work of labourers working in salt industry and saltwork borne diseases.

H_1 : There is relationship between duration of work of labourers working in salt industry and saltwork borne diseases.

Methodology

Primary as well as secondary data has been used for the preparation of this paper. That is reference books, journals, periodicals, research papers of this concept, government reports, websites etc. these secondary data sources are used for the present study. For the primary data collection Thane and Palghar districts of Maharashtra are selected

Sample size and sampling method

Sample size of salt workers is calculated by using the formula of Taro Yamen[6] at 95% confidence level and 5% margin of error. Total population of salt labours in Maharashtra during the year 2020-21 is 1792 number of labours and it is considered for the study[3].

$$n = N / 1+ N (e)2$$

N = 1792. It is total population of salt labours in Maharashtra during the year 2020-21 is 1792 number of labours

e = 5 % (0.05) margin of error

n = Sample size

Thus, n = 1792 / 1+ 1792 (0.05)2 =327

For removing the sample error total 360 salt labours are taken as a sample size for study.

In order to get given sample unit of 360 labourers, eighteen labourers from each list of 20 salt producers of Thane and Palghar districts are selected by using the Lottery method of Simple random sampling.

Socio-Economic status of salt labourers

Socio-economic status can be defined as "the position or standing of a person or group in a society as determined by a combination of social and economic factors that affect access to education and other resources crucial to an individual's upward mobility"[7]. It is one of the important factors that influence the education, health and livelihood of individuals and family. The important determinants which determine the socio- economic status of the individuals are income, education, caste, and occupation. As far as salt labourers are concerned the percentage of illiterate labourers is 25.28 in which more percentage is from Scheduled Tribes community are found, followed by OBC community. The number of labour with primary education is not less, it is 21.95 percentage, in it the percentage of Scheduled Tribes community is higher than other community. Maximum labourers holding middle class education with 28.88 percent here the percentage of OBC community workers is higher than other community workers and followed by ST community workers. Even the number of labourers holding secondary education is not less i.e. 22.5 percent with the highest number of ST workers with 17.22 percent. And only 1.39 percent of workers are holding senior secondary education. From the above table it can be observed that it is the low level of education that compels the labours to work in salt manufacturing. Not even a single labour is found with Undergraduate or Postgraduate or Professional education. Except the 5 labours out of 360 labours have studies 10th standard.

In a study area salt industry dominated by the people of ST community as a labourers, it constitutes almost 64.1 percent of total labour force followed by labourers of OBC community. Apart from the working in salt pan the other main occupation of these labourers is working in land as a farmers or land less labour.

Apart from caste, education and occupation, income is also used to measure the socio-economic status of salt labourers, for this purpose BG Prasad scale is used. This scale was introduced first time in 1961, by considering the Consumer Price Index (CPI) for 1960 as 100. then it was modified in 1982 and 2001 by introducing linking factors 4.63 and 4.93 respectively. This scale is calculated on the basis of per capita monthly income (per capita monthly income = total monthly family income/ total family members)[8]. Since recently amendment is made in base year by the Ministry of Labour and Employment, Labour Bureau. And the base year is changed to 2016 and for the linking factor is 2.88[9].

To revised the scale for 2022, Consumer Price Index for Industrial Workers is taken which is available on the website of Labour Bureau and it is 132.5 for November, 2022[10].

In a following way BG Prasad scale is modified

Multiplication factor = Current CPI (132.5)/ Base index value in 2016 (100) =1.325

The new income values of the scale can be calculated by using the following formula;

New income value = Multiplication factor * Old income value * 4.63 * 4.93 * 2.88

Where 4.63, 4.93 and 2.88 are the linking factors given by the Labour Bureau. By using this formula, the following values are calculated of the scale for November, 2022.

Table 1: Revised BG Prasad Socioeconomic Status Classification for November, 2022 (base year 2016=100)

Socio-Economic classes	**Original classification (1961) of the per capita income**	**Revised classification for November, 2022 (Rs.)**
I (Upper class)	100 and above	8710 and above
II (Upper middle class)	50-99	4355-8709
III (Middle class)	30-49	2610-4354
IV (Lower middle class)	15-29	1305-2609
V (Lower class)	< 15	< 1305

Values in Rs. are rounded off to nearest Rs. 5**.** Self-complied from available source**.**

Table 2: Distribution of salt labourers as per Socio-Economic status

Socio-Economic status as per revised BG Prasad classification, November 2022 (per capita monthly income in Rs.)	**Frequency**	**Percentage**
I (Rs. 8710 and above)	00	00
II (Rs. 4355-8709)	08	2.22
III (Rs. 2610-4354)	69	19.17
IV (Rs. 1305-2609)	231	64.17
V (Below Rs. <1305)	52	14.44
Total	**360**	**100**

Source: self-complied on the basis of collected data.

Table 2 makes us understand the socio-economic status of salt labourers on the basis of the BG Prasad scale. This scale is modified for November 2022 and it is based on the per capita monthly income which is a ratio of total monthly family income to total family member. There is not a single labour belonging to the upper class. Then only 2.22 percent of labourers belong to the upper middle class whose per capita monthly income ranges between Rs. 4355-8709. 19.17 percent of labourers come under the middle class, the per capita monthly income of this group ranges between Rs. 2610-4354. The maximum labourers are accumulated in the lower middle class which is 64.17 percent whose monthly per capita income ranges between Rs. 1305-2609 and even there are the 14.44 percent labourers who come under lower class whose monthly per capita income is below Rs. 1305. It means maximum labourers are from lower middle class.

Health related issues of salt labourers

Due to working conditions and saline environment, salt labourers are vulnerable to many kind of diseases particularly related to skin, eyes, muscular etc. Even many studies also reveal the vulnerabilities of the salt labours towards the above said health issues. In study area almost 50 percent labourers are facing health problems.

Table 3: Type of diseases

Diseases	Blood pressure	Eye diseases	Skin diseases	T.B & chronic cough	Muscular & joint pain	Respiratory diseases	Nil
Blood pressure	24(6.67)	-	5(1.39)	-	8(2.22)	-	336 (93.33)
Eye diseases	-	45(12.5)	11(3.6)	2 (0.56)	16 (4.44)	-	315 (87.5)
Skin diseases	5 (1.39)	11 (3.6)	69(19.17)	2 (0.56)	45 (12.5)	-	291(80.83)

T.B & chronic cough	-	2 (0.56)	2 (0.56)	5 (1.39)	3(0.83)	2 (0.56)	355 (98.61)
Muscular & joint pain	8 (2.22)	16(4.44)	45 (12.5)	3(0.83)	131(36.39)	2 (0.56)	229 (63.61)
Respiratory diseases	-	-	-	2 (0.56)	2 (0.56)	6 (1.67)	354 (98.33)
Nil	336 (93.33)	315 (87.5)	291 (80.83)	355 (98.61)	229 (63.61)	354 (98.33)	179 (49.72)

Source: self-complied on the basis of collected data

Table 3 shows health status of labourers with frequency and percentage. Table shows the interrelationship between diseases. It can be seen from the table that 6.67 percent labourers are patient of blood pressure, out of these 1.39 percent and 2.22 percent labourers are having the problems of skin diseases and muscular pain respectively. There are 12.5 percent labourers facing the eye related diseases, out of these, 3.6 percent labourers having problem of skin disease, 0.56 percent labourers are patient of T.B & chronic cough and 4.44 percent labourers having the muscular and joint pain problem. There are total 19.17 labourers facing the problem of skin diseases, out of these 1.39 percent are patient of Blood pressure, 3.6 percent having eye disease problem, 0.56 percent T.B & chronic cough and 12.5 percent muscular and joint pain problem. There are 1.39 percent labourers facing the health issue of T.B & chronic cough, out of this 0.56 percent patient of Eye diseases and Skin diseases, 0.83 percent having the problem of muscular pain and 0.56 percent Respiratory diseases. There are 36.39 percent labourers having the problem of Muscular & joint pain. Out of these 36.39 percent 2.22 percent are patient of blood pressure, 4.44 percent labourers facing the problem of eye diseases, 12.5 percent having problem related to skin, 0.83 percent T.B & chronic cough and 0.56 percent labourers having Respiratory diseases. There are 1.67 percent labourers having Respiratory diseases, out of these 0.56 percent labourers are patients of T.B & chronic cough and same 0.56 percent labourers patient of muscular pain. There are 49.72 percent labourers not having any kind of diseases to them.

Table 4: Association between duration of work in salt industry and disease status

Years of work	of workers with disease (%)	% age of workers without disease (%)
1-2	35.6 (26)	64.4 (47)
3-5	35.8 (31)	64.2 (55)
6-10	52.6 (32)	47.4 (29)
11-15	64.1 (40)	35.9 (23)
Above 15	66.7 (52)	33.3 (25)

Notes: figures in brackets are frequency. The relationship between duration of work and disease status are significant ($X^2 = 16.538$, $p = 0.002$). Source: self-complied on the basis of collected data.

Association between duration of work in salt industry and disease status: Table 4 shows the relationship between duration of work in salt industry and disease status. The duration of work is divided into five groups. From table it is clear that as the duration of work in industry increases, workers are more infected with salt borne diseases. Workers, who were worked two years and less in the salt industry, were less prone to diseases. Of the total labourers who have worked less than two years, 35.6 percent were infected by the disease. As duration of exposure in the salt industry increases, the percentage of workers infected with disease increases. About 53 percent labourers who worked 6 to 10 years in the salt industry were infected by diseases. And those who have worked more than 15 years, 67 percent were having diseases. The chi-square test of association between duration of working and disease status are also found to be significant. ($X^2 = 16.538$, $p = 0.002$)

Conclusion

Salt industry in Maharashtra is labour intensive, and provide work to socio-economically backward people particularly those are from ST community and rural area. They are educationally, economically, socially backward. This backwardness compels them to work in salt pan even if it is difficult and harsh. There is a need to make them available the welfare schemes of government or social security for their socio-economic upliftment. Salt labourers are prone to salt work borne diseases, mostly muscular diseases, skin diseases and eye disease. As a duration of work in salt pan increases their vulnerability towards the health hazard also increases. There is a need to protect them against these health hazard. There is need to conduct health check-up camp on regular basis.

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BREAK THROUGH INNOVATIONS "QUEST, CHALLENGES, JOURNEY": A CASE STUDY ON USE OF VIRTUAL REALITY IN EDUCATION

Prof. Angelina Cruz
Lecturer at BScIT Department of
Shri. P .L. Shroff College of Arts
and Commerce, Chinchani
Mumbai
cruzan04@gmail.com

Prof. Rachana Bari
Lecture at BScIT Department
Shri.P.L.Shroff College of Arts
and Commerce, Chinchani
Mumbai
rachana9209@gmail.com

Introduction: Breakthrough innovation is when something new is introduced to the world. It is considered to be something that fundamentally changes the dynamics of a market or industry or service or product. Breakthrough innovations matter because they have the ability to reshape an entire industry. The focus of this research paper is to look into the breakthrough innovations in the field of Education, its challenges and its future.

Education is the base for any thriving society and its top priority is knowledge sharing and understanding of concepts and facts. In this era of digital evolution we have immense opportunities to improve the traditional learning methods. Digital Technology has caused massive changes in several sectors including the Education sector.Some of the breakthrough innovations in the Education sector are

- Virtual Reality in education
- Artificial intelligence and Machine Learning
- Cloud computing for Education
- 3D printing
- Social Media in Education
- Biometrics in Schools

As we can see Virtual Reality in Education tops the list in breakthrough innovations in the field of Education.

What is Virtual Reality (VR)?

Virtual Reality is a computer generated environment with images and objects that appear to be real. It gives the user a sense of being immersed in their surroundings. Virtual Reality uses computer technology to create a simulated environment which can be explored in 360 degrees.

Virtual Reality is a set of technology that uses VR headsets to provide realistic sounds, images and other sensations replicating the real environment.

VR as a breakthrough innovation in Education:

Virtual Reality in education is the hottest innovation now, with big companies like Google, Sony, Facebook, Samsung etc focusing on building VR applications for the education sector. We have heard of virtual reality (VR) but most people don't know what it is or how it is used in learning and education.

VR refers to interactive images or videos which enables the viewer/students to explore the entire 360 degrees of a scenario.

Virtual reality enhances student learning and engagement. VR education can transform the way knowledge sharing is done. It works on the premise of creating a virtual world and allows users not only see it but also interact with it. Being a part of what you're learning helps you to fully understand it.

How is VR used in Education?

360VR is the most commonly used type of virtual reality in education. With this type of VR, real-world locations are captured with specialist cameras and equipment. This footage is then produced into VR content. The VR content can then be viewed on VR headsets or projected onto walls in what are known as immersive classrooms.

360VR can be used in education to teach students about the different concepts/environment world around them. Virtual reality has a unique ability to inspire and engage students. It allows students to experience locations that would not be possible or too expensive to visit in person. In this way, VR can open a whole new world of possibilities to teachers and students.

In this way Virtual reality can improve education by providing students with memorable and immersive experiences that would otherwise not be possible. And all of this can take place within the classroom.

Benefits of Virtual Learning in Education:

- Students can learn through experience

  VR provides students an opportunity to visualize and experience what they learn, in contrast to the traditional methods of reading and understanding concepts from books.
- VR keeps students inspired

  As students are able to see and experience extraordinary locations/facts/diagrams, it inspires the students to explore and improve their knowledge on the topic.

- VR introduces creative thinking

  The visual experience that VR provides the students allows their imagination to flourish.
- VR in education promotes peer interaction

  VR experience encourages students to interact with each other and share their thoughts with each other. It builds an interactive environment among the students.
- VR engages students

  Many students get bored with traditional teaching method and loose their focus on the concepts taught in the classrooms. The modern technology of VR keeps the students engaged and improves their attention span. VR keeps them wanting to learn more.

Devices used in Virtual Reality:

VR devices can be classified into three distinct groups:

- Mobile based VR
- PC based VR and
- Standalone VR Devices

Mobile based VR: Mobile VR is a virtual reality for smart phones or portable devices. The devices are compatible with most Android smart phones and iPhones, as long as they fit inside the VR headset. The average screen size range indicated by manufacturers is 4 to 6 inches. Mobile based VR is divided into two types cardboard and plastic. Cardboard VR is the cheapest option and is easily branded and spread out to customers. The other plastic VR devices are a bit more expensive then the cardboard option and have a range of producers.

PC based VR: Personal Computer VR is that the headset is physically connected to a computer by cables, such as HDMI and/or USB. A professional PC VR requires a PC and specially equipped premises where the act of immersion in virtual reality will take place.

Standalone VR Devices: A standalone VR is a headset, with a built-in screen processor and battery, as well as several viewfinders on its body that provide stable spatial orientation and position recognition relative to the world coordinates of additional peripheral devices.

India's 1st Virtual Reality Classroom

As a case study we tried to understand the implementation and use of Virtual reality in schools/colleges in India. The School that has set up **India's first interactive virtual reality** based education **classrooms** is Shrimati M.G. Patel Sainik School for Girls situated in Kherva.This Virtual Reality Classroom was unveiled by Education Minister Shri Bhupendrasinh Chudasama, Director of Technical Education Smt. Avantika Singh and

President of Ganpat University Mr. Ganpatbhai Patel. This is the first school to use virtual reality in education.

The aim of using this technology is to fulfill the Government's principle of "Learn with Fun". Mr. Ganpatbhai Patel said that it's important to learn and understand the concepts of subjects like science. VR technology will increase the interest and deep understanding of science among students. This technology has been established by Gujarat's award-winning education startup Kachhua Education Services LLP. Kachhua aims to provide this service to the various schools across India with its brand name FotonVR.

On the first day of the VR classroom, students experienced the diagram of the animal cell by moving inside the cell. This helped them understand different organelles and their functions of the animal cell. Education Minister Shri Bhupendrasinh Chudasama and Director of Technical Education Smt. Avantika Singh also tried their hand on VR and entered into the leaf and saw the process of photosynthesis. After this experience, they said that this technology is a unique concept for the education world. He said that he knew that leaf is Kitchen of any plant but did not know what happens inside. He mentioned he has full faith that VR will play an important role in the development of the education system in the future.

A question and answer session conducted by Mr.Vijaykumar Thakkar (Foton VR) with the Principal of Shrimati M.G. Patel Sainik School revealed the following. By using VR technology in their school, the method of teaching improved incredibly and the level of imagination and understanding of students also increased. The Principal observed that the imagination, creativity, memory power, and level of understanding of complex topics vastly increased. It also improved the interest toward hard subjects like science.

Using VR technology, average students were able to grasp subject topics easily and it also encouraged weak students to improve their academics. He also mentioned that All the teachers in the school were positive about this new technology. With the help of VR, teachers could explain briefly about the topic as the visualization helps the students to understand the topic better. The teachers could save time as they don't have to draw difficult diagrams on the whiteboard.

Challenges of Virtual Reality in Education

- Content Development

One of the biggest challenges faced by virtual reality in education is the lack of content. The fact is developing more content is expensive, and not every educational institute has the means to hire some software development company to help them develop VR content.

- Cyber-Sickness

  Cyber-sickness is a real thing and is similar to motion sickness and can prevent students from learning. However, to ensure that students acclimate to the sensation, Educators have to work together with companies to create the perfect VR classroom.

- Lack of awareness

  Many educational institutions are not aware of the advantages and benefits of VR. They continue to stick to their conservative methods of chalk and board teaching.

- VR is expensive

  Implementing VR in schools/colleges is expensive. To successfully implement VR in schools/colleges, we need to invest in VR equipments like VR headsets and VR classrooms. Schools need to collaborate with software companies to develop VR content.

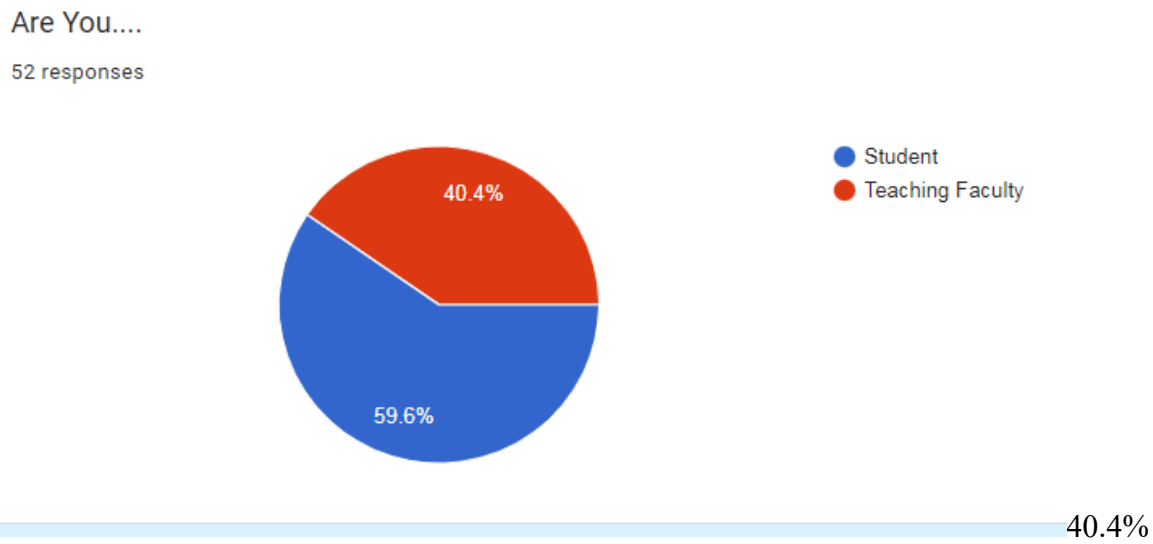
- Trained teaching faculty

  To implement VR, the teaching faculty first needs to be trained on using VR. The teachers need to understand the benefits of VR and not think of it as a replacement factor.

Findings:

Based on the survey conducted through Google forms below is the result of the analysis.

Fig.1



Techers and 59.6% students took part in this survey

Fig.2

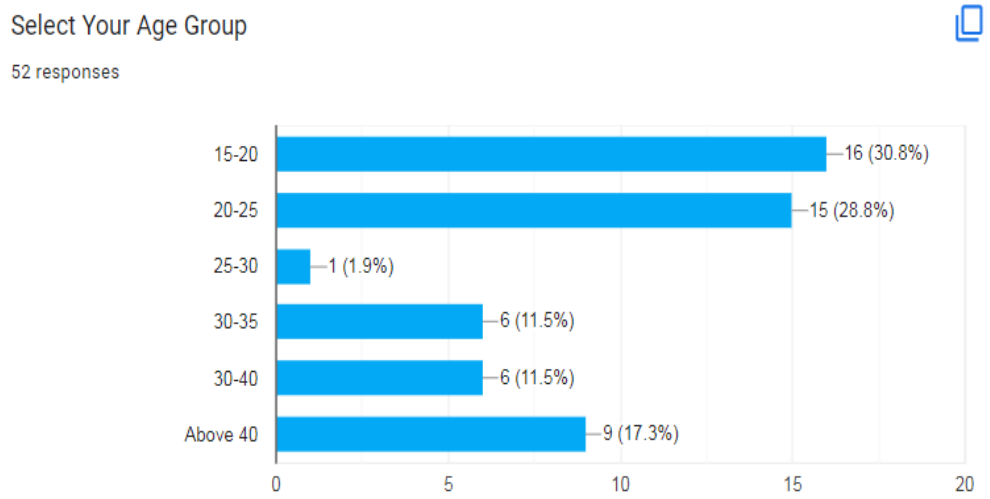
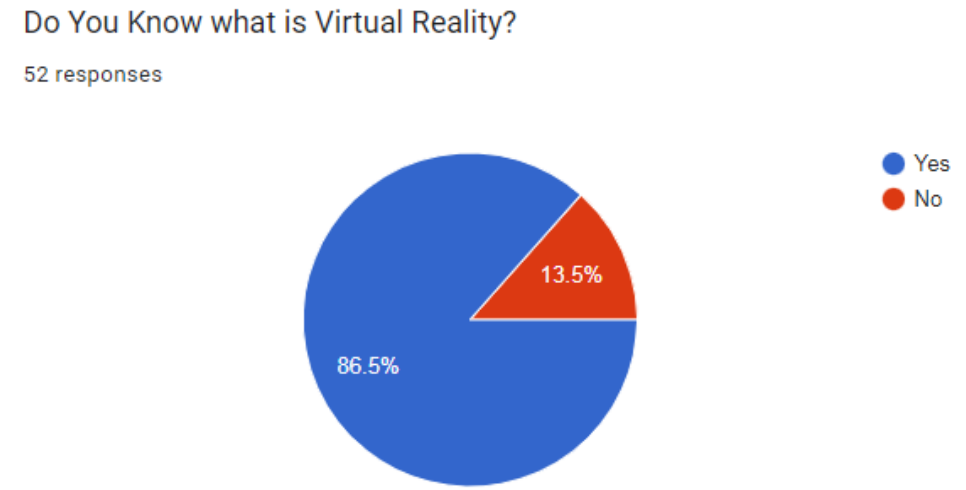
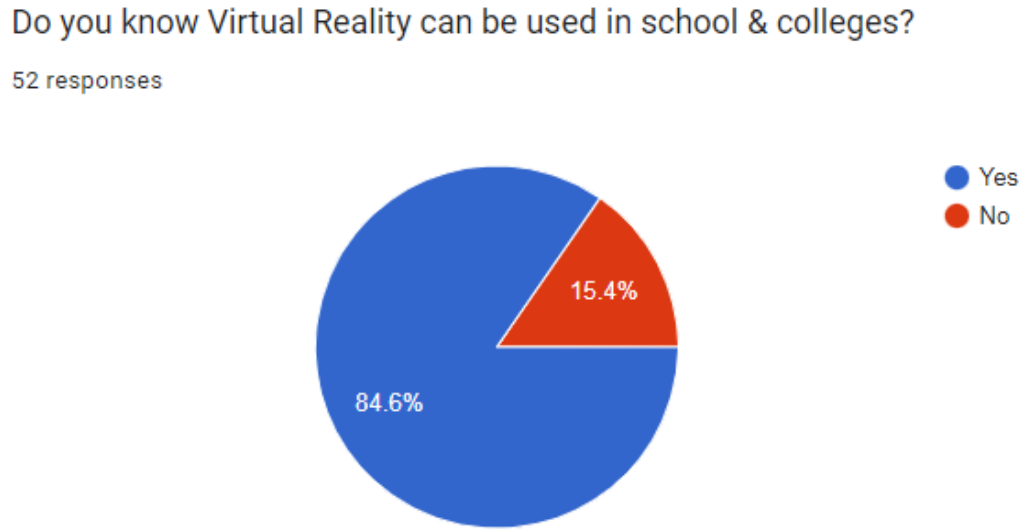


Fig.3



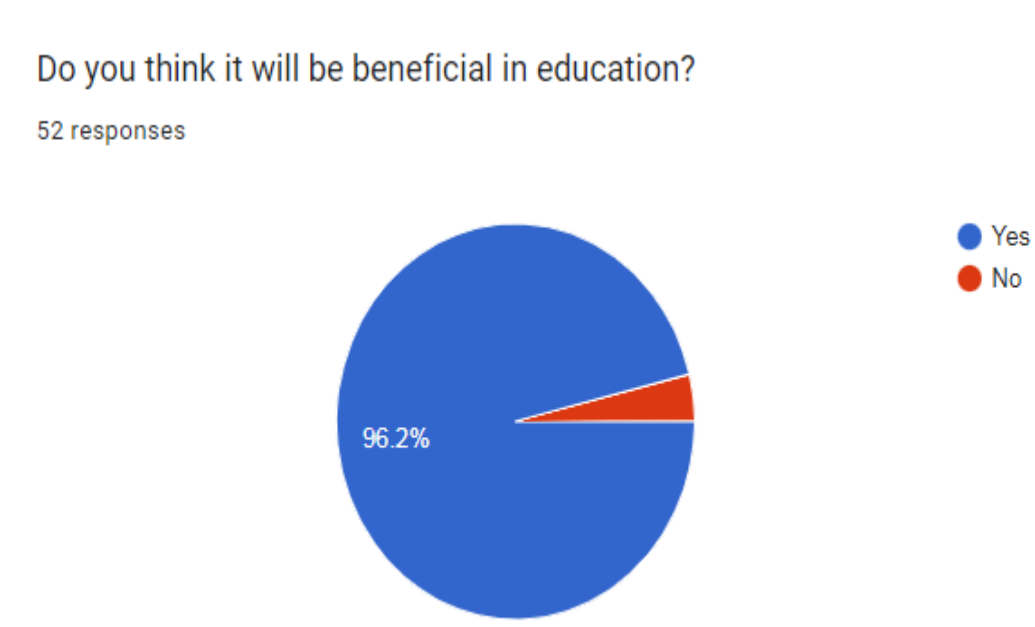
According to this survey 86.5% of respondents know about Virtual Reality. Only 13.5% respondents don't know about Virtual Reality.

Fig.4



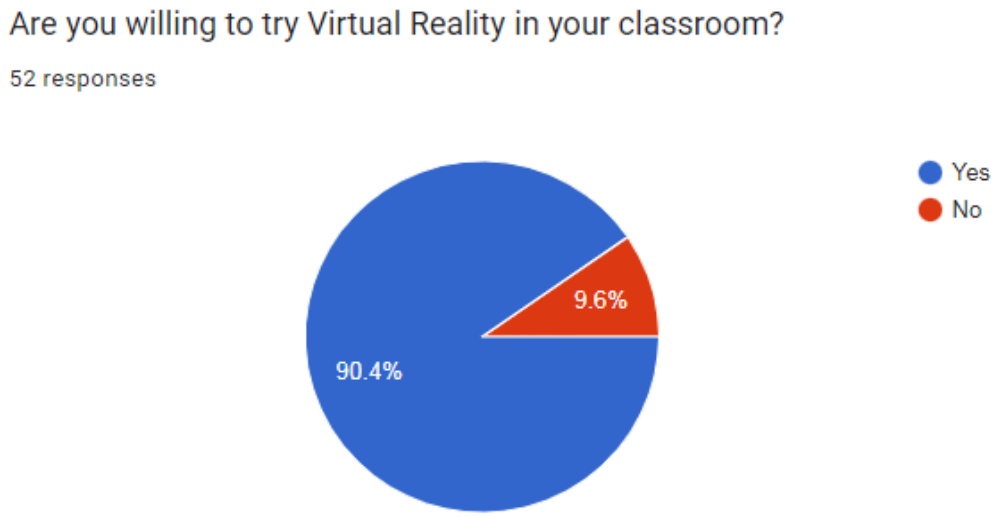
According to 84.6% respondents Virtual Reality can be used in school & colleges for teaching learning methodology.

Fig.5



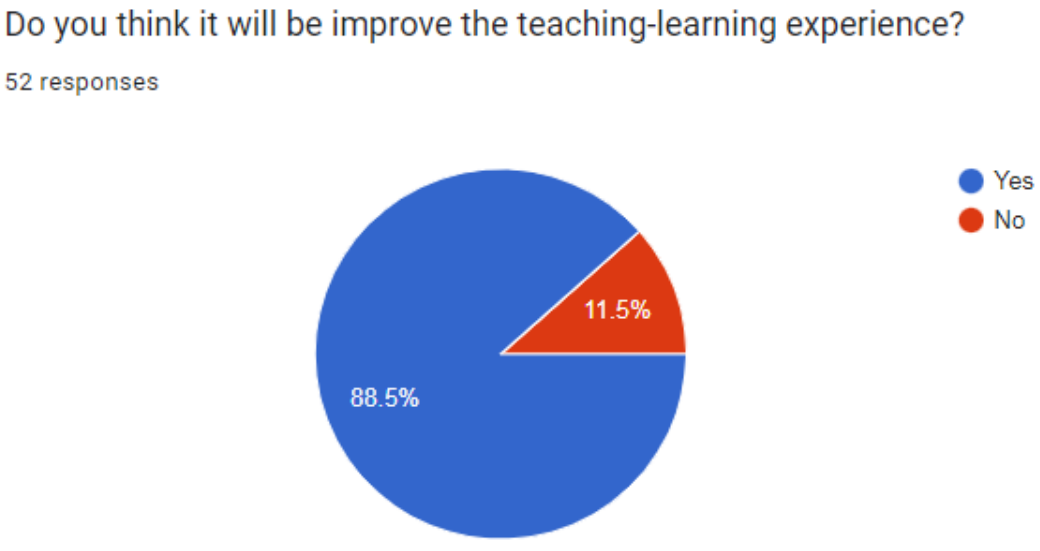
According to 96.2% respondents , Virtual Reality will be beneficial in education.

Fig.6



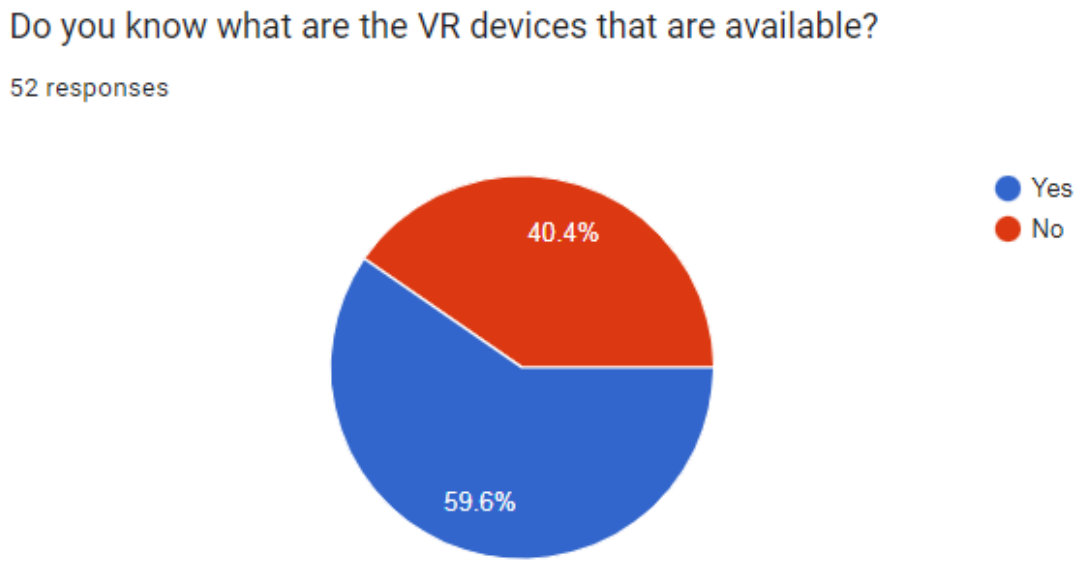
90.4% respondents said they are willing to try Virtual Reality in their classroom.

Fig.7



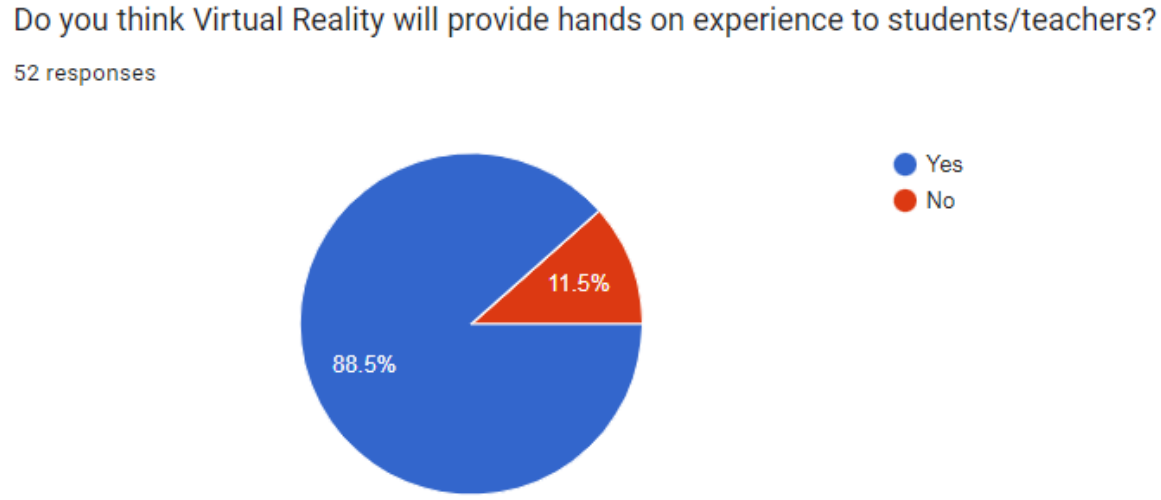
According to 88.5% respondents the Virtual Reality will improve the teaching learning experience.

Fig.8



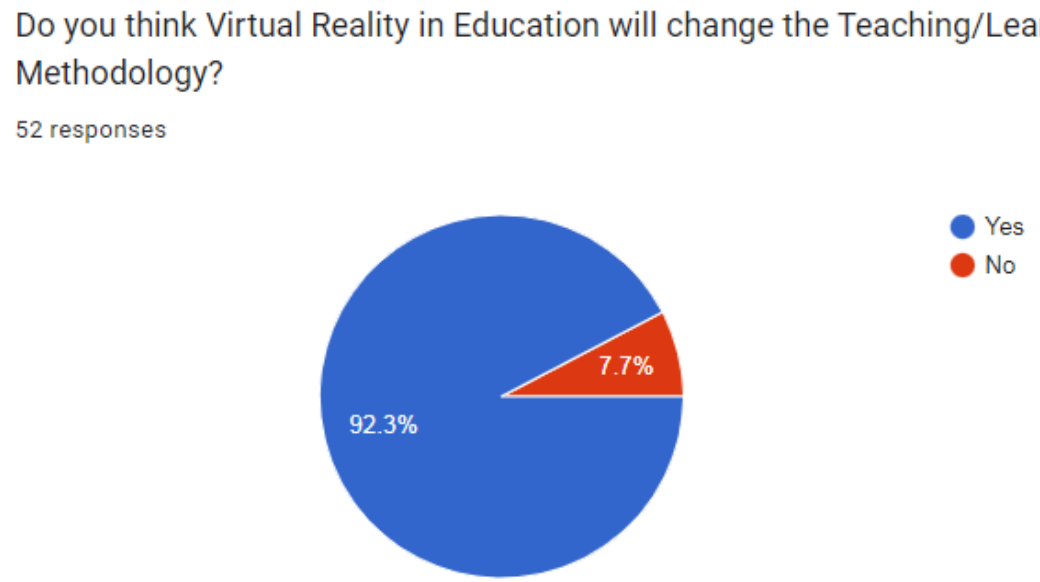
59.6% respondents know about VR devices

Fig.9



According to 88.5% respondents, Virtual Reality will provide hands on experience to students/teachers.

Fig 10



92.3% respondents feel that Virtual Reality in Education will change the Teaching/Learning Methodology.

Suggestions:

From the above study it is very clear that most of the respondents are aware of Virtual reality technology. 92% of respondents feel that VR can improve the learning and education field. Almost half of the respondents know about VR devices and 90% said they are willing to try Virtual reality as a teaching method. This gives a clear picture that people are really willing to try out new technologies that are available based on the current trends. By creating awareness about the benefits of VR, the implementation of Virtual reality in Education can be realized. Educating the school administration and the teaching community about the benefits of VR will lead to its use in schools and colleges in future. Also we need many players in the manufacturing field to introduce low cost VR equipments. These would significantly increase the availability and use of VR in schools.

Scope of the study:

Even though we took only 1 school as an example for our case study, the use of VR in education is flourishing in the developed nations like the US,UK and Europe. VR in education is a global phenomenon and will soon be applicable across the globe.

Limitations of the study:

As a case study we tried to understand the implementation and benefits of VR in the 1st school in India. We were not able to get in touch with the school administration but we were only able to study their VR implementation journey through various news articles and interviews given by the school management to the press.

Conclusion:

It is undeniable that virtual reality is the next big thing in the field of Education. With its vast and rich benefits like virtual field trips, hands on experiments,3 dimensional views, engaged and inspired student community ,it is definitely a breakthrough technology in the field of Education. As every technology, VR too comes with its share of shortcomings. Expensive VR gear, Software requirements, cyber sickness, special training programs for teachers are some of the challenges faced in the VR industry. Even though VR implementation may cost the institutions the advantages and benefits that come out of VR technology sure outweigh the limits. With several companies like Oculus,Microsoft,Samsung etc being the major players in the field of Virtual reality, other companies are also gearing up to spread their wings in this new field. Having more and more companies develop VR based hardware and software would make Virtual reality more affordable. The future for VR is very promising and with schools across Europe and America investing in VR based education, soon other countries are to follow suite. There is no doubt that virtual reality will play a big role in the future of education. From offering virtual-reality picnics to real world experiences in science, it offers great potential to improve the current learning/teaching methods.If not now, definitely in the near future VR in schools and colleges will be the norm.

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IMPACT OF CSR ON BRAND LOYALTY: A STUDY ON CONSUMER APPLIANCES

Sub-theme – Management and Commerce

MAYUR KRISHNA BORAH
BIDISHA BARUAH
CORPORATE PROFESSIONAL, INFOSYS, BANGLORE,
Email : mayurkrishnabora@gmail.com
Research Scholar
Email : bidisha.baruah22@gmail.com

Abstract

CSR has gradually evolved as a strategic marketing tool in recent years, owing to consumer expectations for high-quality, socially acclaimed brands. When comparing similar products, consumers like socially conscious brands and have higher expectations than just a high-quality item at a low price. Despite the strategic importance of CSR, past work has raised numerous intriguing but unanswered problems. There is currently a dearth of sufficient research to clarify the nuanced relationship between CSR and brand loyalty. The current study communicates the gap between CSR and brand loyalty by quantitative approach.

Key Words: Corporate Social Responsibility, socially conscious Brand, Highly regarded by society brands, consumer appliances, and brand loyalty

Introduction:

The World Council for Sustainable Development defines corporate social responsibility as the continuous dedication of businesses to act ethically and contribute to economic development, while also enhancing the quality of life for their employees, their families, the local community, and society as a whole (Crane, Matten & Spence, 2008:6). (Crane, Matten & Spence, 2008:6).

CSR is important across the board, but it seems especially relevant in the consumer appliances sector given how crucial client trust is to be fostering long-term brand loyalty. In order to establish and maintain a relationship with customers as well as assess the success of a company's marketing efforts, brands are crucial (Schau et al., 2009; Sprott et al., 2009). Brands are more likely to create enduring relationships with consumers in a market when they reflect the regional culture of that market.

There is a dearth of literature that has looked at the individual impact of various CSR elements on consumer brand loyalty. Despite the fact that studies on customer brand loyalty have been

conducted from a wider viewpoint, including service quality, service qualities, and service value, but the relationship between brand loyalty and CSR are still unstudied in developing markets all around the world. (Chabowski et al., 2011; Abratt and Kleyn, 2012; Cornelissen et al., 2012; Scharf et al., 2012; Gunesh and Geraldine, 2015).

The study's justification is that the consumer's actions have an integrated impact increasing movement towards the social aspect of the product and away from the utilitarian demands of the name in the 115th category of consumer appliances. The study is set up like this: First, inside the literature review part, we provide a theoretical foundation for corporate social responsibility. Additionally, the investigation generates theories and provides the conceptual the starting point for the research. Third, we go over the methodology used for this investigation. Fourthly-conclusion, the ramifications are covered. The limitations of the present study, as well as provide 60 g recommendations for more research.

Literature Review:

"The Modern Corporation and Private Property," written by two Harvard authors, was released in 1932. Researchers Gardiner Means and Adolf Berle coined the phrase "corporate social accountability."

Even though the ideas of corporate social responsibility were first put forth, Howard Bowen coined the phrase in his 1953 book "Social: The Businessman's Responsibilities." Since then, the concept of corporate social The corporate sector has been governed by responsibility, which is advantageous to everybody involved and has led to developments in the economy, society, and environment.

Some of the most significant CSR issues are those pertaining to human rights, business management, security, health, and working conditions, as well as how each of these affects economic development.

The following are the four dimensions of CSR: the financial component,Objectives:

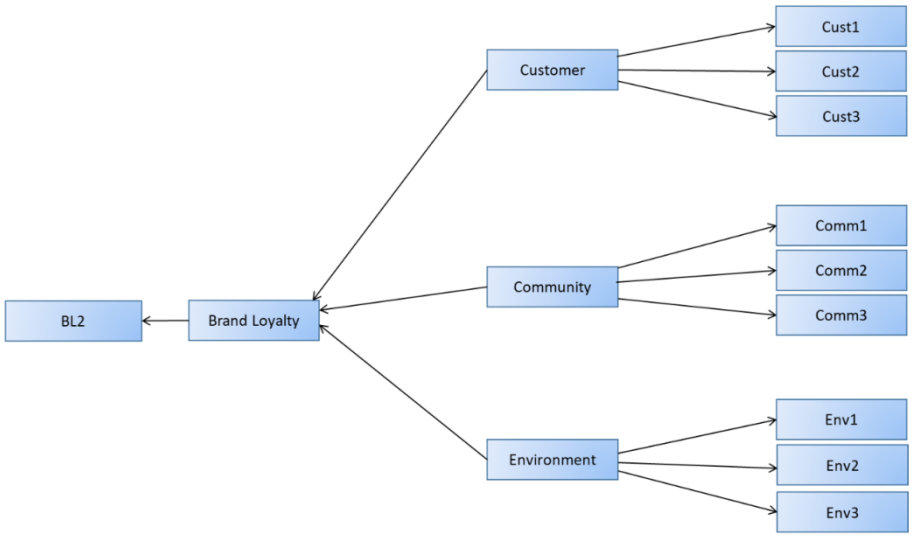
1. To identify the Corporate Social Responsibility factors influencing the brand loyalty in Consumer Appliances sector.
2. To study the impact of CSR on brand loyalty in Consumer Appliances sector.
3. To find out which factor performed under Corporate Social Responsibility amongst all, impacts brand loyalty the most in Consumer Appliances sector.

Methodology:

Dependent variable - Brand Loyalty

Independent variables - Customer, Community and Environment

Figure 1: Research Model



Hypothesis Proposed:

H1 = CSR activities performed for customer, positively influences Brand Loyalty in Consumer appliances sector.

H2 = CSR activities performed for community, positively influences Brand Loyalty in Consumer appliances sector.

H3 = CSR activities performed for environment, positively influences Brand Loyalty in Consumer appliances sector.

Research Design:

The research was exploratory cum descriptive in nature.

Sample design:

- **Population:** Consumer appliances user located in PAN India.
- **Sample size**: 187
- **Sampling technique**: Simple Random Probability Sampling technique

Data Collection:

The data collected is by primary means by structuring an interactive Questionnaire (Google form) which was shared over social media platforms with the Consumer appliances users. The data was also collected by direct one to one interviews. The data thereof collected is primary data which can be used for further research and analysis purpose and for future endeavors by the organizations.

Analysis & Findings:

For testing the hypothesis of this study, Hierarchical regression technique was employed with the use of SPSS Software.

1. Participants

87 respondents were collected. 64% are between 18-25 years old, 26% are between 26-35 years old, 7% are between 36-50 years old and 3% are above 50 years old.

Table 1: Respondents' demographic

Demographic		**Percentage**
Gender	Male	60
	Female	40
Age	18 – 25	64
	26 – 35	26
	36 – 50	7
	50+	3
Education	Secondary	13
	University	46
	MSc/PhD	11
	Other	30
Occupation	Public Employee	14
	Private Employee	17
	Freelancer	22
	Student	38
	Other	9

2. Multicollinearity Test

Multicollinearity refers to when our predictor variables are highly correlated with each other.

Findings:

Based on the SPSS output, the obtained VIF values have values ranging from 1.755 to 3.494

A rule of thumb is that test statistic values in the range of 1.5 to 2.5 are relatively normal. Values outside of this range could be cause for concern.

Findings:

Table 2: SPSS Output: Model Summary (Durbin-Watson)

Model Summary[d]

	Change Statistics		
Model	df2	Sig. F Change	Durbin-Watson
1	77	.000	
2	74	.002	
3	71	.000	1.938

The Durbin-Watson d = 1.938, which is between the two critical values of $1.5 < d < 2.5$. Therefore, we can assume that there is no first order linear auto-correlation in our multiple linear regression data. It means that our predictors are significant.

3. Internal Consistency (Cronbach's alpha) Test/Reliability Test

A rule of thumb for interpreting alpha for Likert scale questions is:

Table 3: Interpretation of Cronbach's alpha value

Cronbach's alpha	Internal consistency
$\alpha \geq 0.9$	Excellent
$0.9 > \alpha \geq 0.8$	Good
$0.8 > \alpha \geq 0.7$	Acceptable
$0.7 > \alpha \geq 0.6$	Questionable
$0.6 > \alpha \geq 0.5$	Poor
$0.5 > \alpha$	Unacceptable

Findings:

Table 4: SPSS Output: Reliability Statistics (Cronbach's Alpha)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.837	.837	3

We can see that Cronbach's alpha is 0.837, which indicates a high level of internal consistency.

Table 5: SPSS Output: Model Summary

Regression

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Env3, Env1, Env2[b]	.	Enter
2	Comm1, Comm2, Comm3[b]	.	Enter
3	Cust1, Cust2, Cust3[b]	.	Enter

a. Dependent Variable: BL2

b. All requested variables entered.

Model Summary[d]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
					R Square Change	F Change	df1
1	.596[a]	.355	.330	.744	.355	14.113	3
2	.684[b]	.468	.425	.689	.114	5.271	3
3	.803[c]	.646	.601	.574	.177	11.826	3

Model Summary[d]

Model	Change Statistics		
	df2	Sig. F Change	Durbin-Watson
1	77	.000	
2	74	.002	
3	71	.000	1.938

The first table of output windows confirms that variables entered in each step. The independent variables entered are Environment (Env1, Env2, Env3), Community (Comm1, Comm2, Comm3) and Customer (Cust1, Cust2, Cust3). The dependent variable is Brand Loyalty (BL2).

The summary table shows the percentage. Firstly, by checking the R Square in the Model summary box we get that the variables entered in Block 1 explains 36% of the variance. After Block 2 and 3 variables have been included, the model as a whole explains 65% of variance in DV.

This is significant contribution as indicated by Sig. F Change value for this line.

Table 6: SPSS Output: ANOVA Table

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	23.451	3	7.817	14.113	.000[b]
	Residual	42.648	77	.554		
	Total	66.099	80			
2	Regression	30.960	6	5.160	10.866	.000[c]
	Residual	35.139	74	.475		
	Total	66.099	80			
3	Regression	42.667	9	4.741	14.365	.000[d]
	Residual	23.431	71	.330		
	Total	66.099	80			

a. Dependent Variable: BL2

b. Predictors: (Constant), Env3, Env1, Env2

c. Predictors: (Constant), Env3, Env1, Env2, Comm1, Comm2, Comm3

d. Predictors: (Constant), Env3, Env1, Env2, Comm1, Comm2, Comm3, Cust1, Cust2, Cust3

The overall significance of the model can be checked from this ANOVA table. In this case, the model as a whole is statistically significant ($p<0.005$).

Table 7: Hierarchical regression coefficients

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant) (BL2)	0.763	0.437		1.745	0.085
Environment (Env1, Env2, Env3)	0.316	0.097	0.314	3.254	0.002
Community (Comm1, Comm2, Comm3)	0.403	0.134	0.374	3.001	0.004
Customers (Cust1, Cust2, Cust3)	0.341	0.095	0.408	3.578	0.001

The coefficient table is used to check the individual significance of predictors. We can find that in the model all the predictor variables were statistically significant.

Table 7 shows that loyalty to brand is significantly impacted by CSR activities performed for customers, community and environment. However, the most important being performed towards their customers (Beta = 0.408; $p<0.005$), followed by community (Beta = 0.374; $p<0.005$) and environment (Beta = 0.314; $p<0.005$).

Results and Discussions:

It is clear that all the 3 hypothesized paths are significant (p value <0.005) and we can accept all 3 hypothesis which is CSR activities performed for customer, environment and community positively influences Brand Loyalty in the Consumer Appliances sector and the Customer factor performed under CSR amongst all the other factors (Customer, Community and Environment) impacts Brand Loyalty the most. This explains that customers will continue to be loyal to Consumer Appliances companies who engage in CSR activities.

The managerial implications of these findings are relevant both from a CSR adoption and implementation perspective, and from a marketing communication standpoint.

CSR policies and actions regarding customers, community and environment should also be actively disclosed

Conclusions:

Limitations of Study:

- The survey should be spread more to get more respondents.
- Accuracy of data depends upon the ability & willingness of the respondents.
- Cognitive biases of the respondents affect the opinion formation of the interviewee.
- Time constraint.
- The conservative attitude of the respondents was a limiting factor in gaining information.

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LINKAGE BETWEEN BRAND PERSONALITY AND BRAND LOYALTY: A STUDY ON HOME APPLIANCES

BIDISHA BARUAH
DR. KASTURI SAIKIA
DR. SHIMTI KHARMAWPHLANG

- **RESEARCH SCHOLAR, DEPARTMENT OF COMMERCE, NORTH EASTERN HILL UNIVERSITY, SHILLONG, bidisha.baruah22@gmail.com**
- **ASSISTANT PROFESSOR, DEPARTMENT OF COMMERCE, DHSK COMMERCE COLLEGE, DIBRUGARH, kas2risaikia07@gmail.com**
- **ASSISTANT PROFESSOR, DEPARTMENT OF COMMERCE, NORTH EASTERN HILL UNIVERSITY, SHILLONG, s_kharmawphlang@yahoo.com**

Abstract

Over the past few decades, the usage of home appliances has significantly impacted society, the environment, and the economy around the world and has shown incredible growth. Brand personality is a tactical instrument that directs the brand's consumer communications. Many marketers have discussed the concept of brand personality, which is how consumers perceive a brand, act in relation to their interactions with it, and develop brand loyalty. The present study addresses the gap by investigating the relationship between brand personality and brand loyalty in the home appliance context. For the purpose of the study, data has been collected from 480 individuals in the Indian market, through an online survey. The sample consists of consumers who were individually chosen to match the socio-demographics of the Indian population. The findings of the study revealed that brand personality has an impact on brand loyalty.

Keywords: Brand, brand equity, brand personality, brand loyalty, home appliances.

Introduction:

In today's market, consumers have a wide range of options available to them, whether it's for products, services, or both, which offers them the ability to choose the option that best fits their needs, preferences, and budget. As a result of which, companies are under tremendous pressure to build an identity for their product that separates them from their competitors. In this highly competitive business world, building and maintaining brand identity is a key concern for many

companies. Creating a brand identity through symbolic and visual elements helps a brand to be unique which gives them a personality of its own. When a brand has a strong and consistent personality, it can create a positive image in the minds of consumers and foster brand loyalty.

Meanwhile, several empirical research has used the concepts of brand personality and brand loyalty to investigate the relationship between brand-related marketing stimuli and consumer behavioural responses to them. A distinctive brand personality is crucial to a brand's success. Customers are able to recognize the brand personality and form a close bond with it as a result (Doyle, 1990). Studies have suggested brand personality does play an important role in building trust and commitment for its consumers (Tong et al, 2018), which in turn contributes to brand loyalty.

Customer impressions of a brand influence customer behaviour and have grown increasingly essential for businesses in recent years. Many businesses strive to create and maintain a strong brand image within their target market (Aaker, 1992). As a result, establishing brand equity generally necessitates using a marketing strategy. Consumer attitudes and perceptions regarding marketing efforts vary significantly across the globe. Quality factors, merchandise pricing, and the level of risk involved all influence consumers' views of the product’s value. These antecedents are used to describe perceived value, which influences consumers' willingness to buy the brand directly. Even though the Indian market for home appliances is becoming increasingly important, the question of how a home appliance company creates brand personality in relation to brand loyalty appears to be understudied.

Literature review:

Brand equity

Brand equity is a type of added esteem. This is the thing that a brand has acquired because of extraordinary brand endeavours. Several marketing scholars are becoming interested in the subject of brand equity, as they have stated that strong brands are one of the most essential assets that successful firms have. The distinction in market impacts acknowledged because of the cash and work put into a brand is known as brand equity. Aaker (1991) proposes that brand equity produces value for both the corporation and the customer in his conceptualization. Aaker has defined brand equity as " a set of brand assets and liabilities linked to a brand, its name, and symbol, that add to or detract from the value provided by a product or service to a firm

and/or to that firm's customers". Keller (1993) formulates a basic sketch and argues about brand equity from both interpretation and representation.

Brand personality

In contemporary customer social orders, individuals buy items not just for what they can do (physical properties and utilitarian advantages) yet additionally for what they represent, and the emblematic characteristics of items are regularly the essential purposes behind shoppers' buy. The changing economic situations and buyer inclinations, the focal point of advertisers and brand managers moves progressively to representative advantages of brands. This leads to a growing interest in the idea of brand identity, which provides a systematic approach to generating symbolic benefits. Brand personality, according to Aaker(1997), is a set of human traits that customers attribute to brands. She suggested a five-dimensional model for brand personality, including 24 characteristics and five dimensions including sincerity, excitement, competence, sophistication and ruggedness. Aaker 's scale has recently been criticized for variety of reasons. Unfortunately, Aaker 's attempts to develop the generalizability of its brand personality scale have been thwarted by a lack of consistency in the distinction between differentiation and generalization. She deliberately chose brands to speak to differing item classes, and in this manner expanded inconstancy emerging from this feature. Azoulay and Kapferer (2003) criticized Aaker's (1997) brand personality concept as being too broad and loose. The authors argue that it incorporates unrelated facets of brand identity, tests in part classical dimensions of product success, and many things do not seem to be exclusively rooted in contemporary meanings of the word 'personality'. Alternatively, Azoulay and Kapferer (2003) propose a confined and more detailed definition: Brand personality is the set of human personality traits that are both applicable to and relevant for brands. Several additional scholars came up with slightly different versions on the theme (Kim, Han and Park (2001), Sung and Tinkham (2005),Geuens , Weijters, Wulf (2009), Florence, Guizani, Merunka (2011), Klink and Athaide (2012) and Vahdati and Nejad (2016) but most of them have utilized the scale developed by Aaker(1997).

Brand loyalty

The definition of brand loyalty has a long history. For a long time, the idea of brand loyalty has been interpreted as the act of customers consistently purchasing the same brand. Day (1969) suggested that consumers' attitudes towards the brand and their repeated buying behavior should be taken into consideration at the same time as developing a composite index of loyalty. Brand loyalty is a consumer's preference for a particular brand over other brands, which can be

attributed to different factors such as quality, price, and benefits. According to Jacoby and Kyner (1973), ‘the notion of commitment provides the essential basis for distinguishing between brand loyalty and other forms of repeat purchasing behaviour’. They have completed this statement by explaining that ‘the concept of commitment holds promise for assessing the relative degrees of brand loyalty’. Since it is related to previous purchases and experiences, brand loyalty is qualitatively distinct from the other major dimensions of brand equity (Aaker, 1991). Since it offers a collection of loyal customers for a long time, brand loyalty adds significant value to a brand and/or its business. As brand loyalty grows, so does brand equity. According to Jacoby and Kyner (1973), Krishnamurthi and Raj (1991), Srinivasan et al.(2002), and several researchers discovered a positive relationship between brand loyalty and purchase intent or repeat purchase intent. Oliver (1997) defined brand loyalty as "a deeply held commitment to rebuy or repatronize a preferred product or service consistently in the future, despite situational influences and marketing efforts having the potential to cause switching behaviour". Washburn and Plank (2002) stated that as a result of the strong link between perceived quality and brand loyalty, purchasing intent would be positively influenced. Brand loyalty is the ultimate goal of brand management, and if a business wants to see how strong or poor its customers' loyalty is, it can easily check whether customers really prefer its product over rivals.

Objectives of the study:

The study is carried out to identify the relationship between brand personality and brand loyalty in the case of home appliances, i.e. how a consumer perceives a product and how loyal they tend to be towards that product.

Methodology:

The study is based on primary data and it was conducted using a survey questionnaire. The questionnaire was distributed among consumers of home appliances based on convenience sampling, a non-random method, by visiting shopping malls and local retail outlets in Guwahati and Dibrugarh in Assam. A total of 480 questionnaires were distributed. The research questionnaire consisted of two parts: the first part included questions about the respondents' demographic characteristics, such as gender, age, marital status, education, and income, and the second part measured brand personality and brand loyalty through standardized scales. Brand Personality consists of various dimensions (Aaker, 1997), but for the purpose of the study, brand personality was measured by using 5 items i.e. Sincerity (I believe this brand is honest), Excitement (I believe this brand is up-to-date), Competence (I believe this brand is

reliable), Sophistication (I believe this brand is charming), and Ruggedness (I believe this brand is tough). While brand loyalty is measured using Aaker's (1996) questionnaire.

Analysis:

Sample description

As shown by the valid samples, most of the respondents were female (67.5 percent). The respondents' education background Graduate degree (32.5 percent), postgraduate degree (59 percent), and professional qualification (8.5 percent). In terms of age group, 20-30 years (35.5 percent), 31-40 years (15.5 percent), 41-50 years (16.5 percent), 51-60 years (18.5 percent) and 61-70 years (14 percent). These respondents worked either as Salaried/retired were (41 percent), professional (37 percent), business (11.5 percent), and home maker (10.5 percent). The annual income can be classified as 1 - 5 lakhs (56.5 percent), 5 - 10 lakhs (34.5 percent) and above 10 lakhs (9 percent). Among the respondent 78.5 percent were from nuclear family and rest 21.5 percent belonged to joint family. The area of residence were divided into two categories of Urban and rural with a percentage of 56.5 and 43.5 respectively.

Reliability analysis:

Reliability is a measuring tool with a variable error level. Cronbach's alpha values are frequently used to assess the degree of consistency of different facets within the same dimension. The questionnaire has several dimensions, and a higher reliability coefficient indicates a higher correlation of respective dimensions, indicating greater internal consistency. Cronbach's alpha values greater than 0.7 are considered high reliability; values between 0.7 and 0.35 are considered fair reliability; and values less than 0.35 are considered low reliability. The results of the questionnaire reliability analysis show that the Cronbach's alpha is 0.95.

Findings:

This study uses Pearson's correlation analysis to confirm the correlation of two dimensions i.e. brand personality and brand loyalty; and the correlation coefficients of respective variables.

First we have find that there is a significant negative relation between Ruggedness and willingness to buy the product in comparison to other products. Secondly, there is a positive relationship between Ruggedness and preference. It is very surprising to find that there is no such other significant relationship among the other dimensions of brand personality and brand loyalty. One possible reason for the non-significant influence of brand personality on brand loyalty is that customers may not identify the brand as their personality in front of friends, relatives, families, and other people. The customers believed that those brands could not reflect

their social status and high quality in terms of technology and performance, as a result of which it did not seem to be luxury and suitable for them.

Conclusions:

Brand personality does not positively affect and is not significant for Brand Loyalty. The results showed that brand personality had no effect and were insignificant on brand loyalty variables in home appliances brand in the city of Guwahati and Dibrugarh. This implies the introduction of a new management model for marketing and communication professionals. marketers need to know that trust is a fundamental driver in achieving loyalty and therefore repeat purchases.

Limitations:

The concept of brand personality and brand loyalty are connected theoretically according to this study. However, it has several drawbacks. First off, while many other product categories may have been studied for the same purpose, this study primarily focuses on home appliances. Therefore, further research is necessary if the study's findings are to be applied to other product categories.

Secondly, the sampling coverage constraint. The questionnaire survey was limited to Guwahati and Dibrugarh and targeted adult consumers who shop for and buy home appliances in that area. However, the perspectives of consumers in other parts of Assam were not taken into account.

In order to create a more holistic model, future studies may want to take into account additional elements like price, brand quality, brand value, brand prestige, brand heritage, and advertising as direct antecedents of brand loyalty.

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EFFECTIVENESS OF NURSE LED INTERVENTION ON ANXIETY AMONG ADOLESCENTS

Author 1: Dr. Suvitha, Assistant professor, College of nursing, Mother Theresa post graduate and research institute of health sciences, Puducherry.
Email : mabalabisha3012@gmail.com

Author 2: Mr. Vinoth Selvan Vincent, Assistant Professor, College of Nursing, Pondicherry Institute of Medical Sciences, Puducherry.

Author 3: Mrs. Mabal Abisha, M.Sc. Nursing,

INTRODUCTION

Teenage years are special and formative. We may call this the season of blossoming. Adolescents who experience physical, emotional, or social changes—such as being exposed to violence, abuse, or poverty—may be more susceptible to mental health issues. Numerous variables can have an impact on mental health. among this age group, anxiety disorders are most common among older adolescents compared to younger adolescents. According to WHO estimates, 1 in 7 (14%) of 10 to 19-year-olds worldwide suffer from mental health disorders, although these problems are still mainly undiagnosed and untreated. 3.6% of children aged 10 to 14 and 4.6% of those aged 15 to 19 suffer from an anxiety disorder. According to estimates, 2.8% of teenagers aged 15 to 19 and 1.1% of those aged 10 to 14 experience depression. This study concluded that in the rural area of Puducherry, one out of five adolescents (20.9%) had psychological distress and ten percent of adolescents had moderate levels of hopelessness (10%) requiring mental health and counseling services. Substance abuse was found in 125 (39%) of the family members of adolescents and 55 (44%) had problems at home related to the substance abuse. The need for mental health services was higher in females compared to males (55.6% vs. 44.3%). (2,3)

Anxiety and depressive disorders can profoundly affect school attendance and schoolwork. Social withdrawal can exacerbate isolation and loneliness. Depression can lead to suicide. Anxiety (anxiety) can be overcome in several ways, including pharmacological therapy and non-pharmacological therapy. Non-pharmacological therapy such as Self Hypnosis is a form of guided imaginary therapy, namely relaxation which aims to reduce

stress and increase feelings of calm and peace and is a sedative method for difficult situations in life, one form of self hypnosis is five finger hypnosis. Five-finger hypnosis is giving treatment in a relaxed state, then focusing the mind on the images or memories. (4)

A study conducted by Safitri et.al., They found that five Finger Hypnosis Therapy can affect the level of public anxiety during the Covid-19 pandemic. And there were various other studies enlisted the effectiveness of five finger hypnosis therapy on anxiety. This present pilot study aimed to evaluate the effectiveness of five finger hypnosis therapy on anxiety among adolescents.

METHODOLOGY

This current study adopted quasi experimental design - pretest posttest control group with time series design. This study setting was conducted by prior permission from the department of higher technical education, Govt. of. Pondicherry. one hundred and fifty five samples were selected by convenience sampling technique. The samples were late adolescents (18-19yrs) who were fulfilling the inclusion criteria which were, Students in the age of 18 and 19yrs. Students who were already exposed to short term courses and treatment for alcoholism, Students who were too ill to answer screening questions, students who were scored normal at DASS-42 and Colleges functioning with medical and paramedical courses have been excluded from the study.

The data collection tool consists of two parts which were, questionnaire to assess the demographic characteristics and DASS – 42 (Depression Anxiety and Stress Scale with 42 items). The data were collected by interview schedule, after pretest the samples were advised to attend the one hour nurse led intervention session for about one week daily. The session includes relaxation exercises, teaching adaptive coping skills and building self esteem among samples. The post test data was collected after one week of completion of intervention.

RESULTS

The results show that, regarding demographic data, the majority, 90% of the samples were 18 years old, and the remaining 10 % of the samples were 19 years old. All the samples (100%) of the samples were male. In account of religion, the majority 70% of the samples were Hindus, 20% of the samples were Christians and 10% of the samples were Muslims. Each 40% of the samples were from urban and rural areas and 20 % of the samples were from semi urban. Regarding place of stay, half of the students (50%) were from their home and another half of the students were staying at a hostel. Half of the students are from nuclear families and another half from joint families. Majority 90% of the students belonged to middle class families and 10% of them belonged to lower economic status. In account of father’s educational status, the

majority 80% of them were educated till primary education, on the other hand regarding mother's educational status, half of them were not formally educated. In the view of the sample's past year academic performance, the majority 60% of them were scored below 50%. Among the sample majority 60% of the samples said they consume alcohol due to stress other than other reasons and maximum of the samples started drinking alcohol at the age of 15 to 17 years of age.

The table 1 and Figure 1 explains that, out of 150 samples in each control group and experimental group, in pre test majority 50% of samples had moderate level of anxiety in control group and in experimental group each 40% of them had mild and moderate level of anxiety in experimental group.

Table-1: Frequency and percentage wise distribution to evaluate the Nurse led intervention in the level of anxiety among late adolescents in selected colleges at Puducherry

Level of anxiety	**Control group**		**Experimental group**	
	Pre test	**Post test**	**Pre test**	**Post test**
Normal	-	-	-	50
Mild	20	20	40	30
Moderate	50	40	40	20
Severe	30	40	20	-
Extremely severe	-	-	-	-
Total	100	100	100	100

Figure 1. Percentage wise distribution to evaluate the Nurse led intervention in the level of anxiety among late adolescents in selected colleges at Puducherry

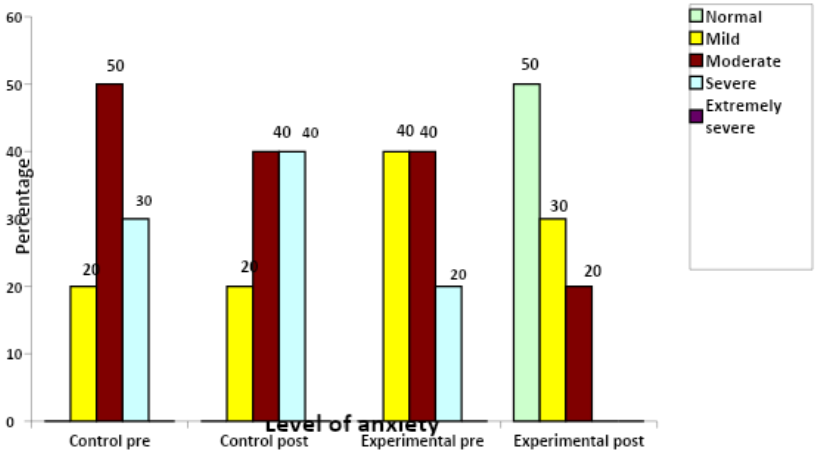

Table-2: Paired "t"-test was found to evaluate the Nurse-led intervention in the level of anxiety among late adolescents in the experimental group.

Anxiety	Experimental pre test		Experimental post test		Mean difference	't'-value	P-value
	Mean	SD	Mean	SD			
Overall	5.9	1.45	3.8	1.48	2.1	6.03	P<0.001***

*-P<0.05, significant and **-P<0.01 &***-P<0.001, Highly significant

Table 2, shows that the experimental group mean and standard deviation of pretest was 5.9±1.45 and posttest was 3.8±1.48. The mean difference was 2.1. The paired 't' value is 6.03 which is statistically significant at the p level 0.001.

Table-3: Paired "t"-test was found to evaluate the Nurse-led intervention in the level of anxiety among late adolescents in the control group.

Anxiety	Control pre test		Control post test		Mean difference	't'-value	P-value
	Mean	SD	Mean	SD			
Overall	6.6	1.35	6.7	1.42	0.1	1	0.343

*-P<0.05, significant and **-P<0.01 &***-P<0.001, Highly significant

The table 3, shows that the control group mean and standard deviation of pretest was 6.6±1.35 and posttest was 6.7±1.42. The mean difference was 0.1. The paired 't' value is 1 which is statistically not significant at the p level 0.343.

Table-4: Unpaired "t"-test was found to evaluate the Nurse-led intervention in the level of anxiety among late adolescents in the experimental group and control group.

Anxiety	Control post test		Experimental post test		Mean difference	't'-value	P-value
	Mean	SD	Mean	SD			
Overall	6.7	1.42	3.8	1.48	2.9	4.48	P<0.001***

*-P<0.05, significant and **-P<0.01 &***-P<0.001, Highly significant

Table 4 denotes that, the post test anxiety level of control group and experimental group. The unpaired 't' test value was 4.48, which was highly significant at the p level 0.001.

Table-5: wilcoxon signed rank test was found to evaluate the Nurse led intervention in the level of anxiety among late adolescents in the experimental group.

Anxiety	Experimental pre test		Experimental post test	Median difference	'z'-value		P-value
	Median	IOR	Median	IQR			
Overall	6	7-5	3.5	5-3	2.5	2.794	0.005**

*-P<0.05 ,significant and **-P<0.01 &***-P<0.001 , Highly significant

Table 5 shows that, the mean difference of the pre and post test of the experimental group was 2.5. the calculated wilcoxon signed rank test 'z' value was 2.794 which was statically significant at the p level 0.005.

Table-6: Wilcoxon signed rank test was found to evaluate the Nurse-led intervention in the level of anxiety among late adolescents in the control group.

Anxiety	Control pre test		Control post test		Median difference	'z'-value	P-value
	Median	IOR	Median	IQR			
Overall	7	8-6	7	8-6	0	1	0.317

*-P<0.05 ,significant and **-P<0.01 &***-P<0.001 , Highly significant

Table 6 shows that the mean difference of the pre and post test of the control group was 0. The calculated Wilcoxon signed rank test 'z' value was 1 which was at the p level 0.317.

The chi square value shows that the demographic variables were not significant at the p level with pre test level of anxiety.

DISCUSSION

During pretest, Majority of samples (80%) in the experimental group have mild and moderate levels of anxiety equally. Majority of samples (50%) in the control group have moderate levels of anxiety. During the Post test, Majority of samples 50%) in the experimental group have normal levels of mind state while the control group (40%) have moderate and severe levels of anxiety equally. Paired "t"-test to evaluate the Nurse led intervention in the experimental group shows that mean difference of 2.1 with t value 6.03 with p value less than 0.001 is highly significant which clearly exhibits that the nurse led intervention (five finger hypnosis therapy) was effective in reducing anxiety level among adolescents.

Unpaired "t"-test to evaluate the Nurse-led intervention in the experimental group and control group shows that mean difference of 2.9 with t value 4.48 with p value less than 0.001 is highly

significant. Wilcoxon signed rank test to evaluate the Nurse-led intervention in the level of anxiety in the experimental group mean difference of 2.5 with t value 2.794 with p value 0.005. These results strengthen the effectiveness of nurse led intervention on anxiety. Association between Pre test level of anxiety has a significant relationship with the variable of reason for consumption of alcohol among the samples in the control group.

CONCLUSION

Anxiety is a normal, but highly subjective, human emotion. While normal anxiety serves a beneficial and adaptive purpose, anxiety can also become the cause of tremendous suffering for millions of people. Added to this is the nurse's readiness for caring for adolescents, as well as the existence of trained nurses to evaluate adolescents and to implement non-pharmacological interventions in reducing anxiety is essential. This study shows that Nurse-led interventions like five finger hypnosis which includes relaxation exercise, teaching adaptive coping skills and building self esteem, are statistically significant in reducing the level of anxiety among the adolescents age group. This kind of intervention should begin in the school settings preferably after the decision on the need for the intervention.

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TO STUDY THE IMPACT OF E-COMMERCE ON ONLINE GROCERY SHOPPING AMONG GENERATION "X"

Research Scholar: Paramjit Vedprakash Rajput
paramjeetnandrajog9@gmail.com

Abstract:

This research paper examines the impact of e-commerce on the online grocery shopping habits of Generation X. The study aims to evaluate the awareness and use of e-commerce for online grocery shopping among Generation X, identify the factors influencing their shopping behavior, and compare their preferences and behaviors with other generations. The findings show that Generation X has significantly adopted e-commerce for grocery shopping, driven by factors like convenience, time-saving, and access to a broader range of products. Additionally, Generation X places a high value on quality and affordability, often spending more time researching products and comparing prices before purchasing. These insights can help retailers and digital platforms better understand and cater to Generation X's needs.

Keywords: E-commerce, online grocery shopping behaviour, Generation X, digital platforms.

1.1 Introduction:

The rise of e-commerce has transformed the way consumers purchase goods and services, including groceries. With growing reliance on technology and the convenience of online shopping, online grocery shopping has gained particular popularity among Generation X. Born between 1965 and 1980, this demographic has been key in embracing technological advancements and represents a significant part in the realm of digital grocery retailing. This work seeks to explore how e-commerce impacts the grocery purchasing behaviours of Generation X habits and to understand their preferences and attitudes towards this shopping method. It seeks to identify factors that facilitate or hinder the adoption of e-commerce for grocery shopping and to assess the overall effect of e-commerce on this market segment. The findings will provide valuable insights for e-commerce businesses and retailers to develop effective strategies to attract and retain online grocery shoppers.

1.2 Objectives of the Study:

- To observe the difference in the behaviour of consumer towards using digital platforms for grocery shopping among Generation X.
- To understand the preferences and attitudes of Generation X regarding online grocery shopping and the influence of e-commerce on their purchasing decisions.
- To identify the factors that facilitate or obstruct the adoption of e-commerce for grocery shopping among Generation X.
- To evaluate the overall effect of e-commerce on online grocery shopping within Generation X.
- To provide insights for e-commerce businesses and retailers to develop effective strategies for attracting and retaining online grocery shoppers.

1.3 Scope of Study:

- Consumer Behaviour: The study aims to understand the shift in consumer behaviour towards online grocery shopping among Generation X and the factors influencing their purchasing decisions.
- Adoption of E-commerce: The research will explore the adoption of e-commerce for grocery shopping among Generation X, including the factors that facilitate or hinder its adoption.
- Market Segment: The study will examine the impact of e-commerce on online grocery shopping among Generation X, a significant market segment for this mode of shopping.
- E-commerce Businesses and Retailers: The research will offer insights for e-commerce businesses and retailers to develop effective strategies for attracting and retaining online grocery shopping customers.

1.4 Methodology:

The survey’s aim was to understand the consumer's act towards shopping for grocery online in Navi Mumbai. An online questionnaire was distributed. It included all of the grocery shoppers, whether they had prior experience or not.

1.4.1 Sample Size

A total of 150 people residing in Navi Mumbai

1.4.2 Sampling Design:

The method used to select was random sampling, so that everyone had an equal chance in selection.

1.4.3 Tools:

The tools used were Chi-square test and percentage analysis.

1.5 Limitations of the Study:

- Sampling Bias: It is limited to a certain geographic location, age group, or demographic, which could affect the generalizability of the findings to the entire Generation X population.
- Data Availability:The data available and trial determines the accuracy of the values.
- Self-reported Data: The data collected is based on self, so there might be some bias
- Time Frame:The study may only examine a specific time frame, limiting the ability to identify long-term trends or data patterns.
- Cultural Differences: The results probably do not apply to other regions or cultures where the adoption of e-commerce and online grocery shopping may differ.

Literature Review:

Huang, Y., Chen, Y., & Li, X. (2021): This paper conducted a comparative study on the impact of the value and trust on grocery shopping done online behavior between Generation X and millennial consumers. It found that both perceived. The research work found Perceived value had a stronger effect among Generation X, while trust had a stronger impact on millennial consumers.

Javalgi, R. G., & White, D. S. (2021): Researchers conducted a analysis on grocery retail industry in the US and China. The grocery sales increased a lot is what was observed.

Kim, H. J., & Lee, J. (2021): This research carried out of Generation X in the US. Factors such as convenience, cost savings, and product availability significantly among gen X.

Lee, Y., & Lee, H. (2022): This study analyzed the impact of e-commerce on the grocery retail industry in the US. It showed that traditional brick-and-mortar grocery retailers are facing increasing competition from e-commerce grocery platforms, and they need to adopt a multi-channel strategy to stay relevant in the market. The findings provide valuable insights for grocery retailers and policymakers.

Ma, X., & Gao, S. (2020): Researchers conducted an empirical study to understand the intention of Generation X consumers to shop online for groceries. Young people of Generation X were more likely to adopt online grocery shopping compared to older members of the same generation.

3. **Online Grocery Shopping:**

Everyone can buy groceries online through apps in mobile or websites.

3.1 **Profile of the Company:**

Amazon Fresh:Amazon Fresh is a grocery delivery service offered by Amazon that allows customers to shop for groceries and household items online and have them delivered to their doorstep. Launched in 2007, it is available in select cities worldwide. With Amazon Fresh, customers can choose from a wide selection of groceries and household items and enjoy free delivery as part of their Amazon Prime membership. Overall, Amazon Fresh provides a convenient and hassle-free shopping experience for customers.

Big Basket: Big Basket is an Indian online grocery store based in Bangalore. Found in Dec'2011, supplies fresh fruits and vegetables. The company offers convenient home delivery services and operates in multiple cities across India. Big Basket has become one of the largest online grocery stores in India and is known for its user-friendly interface, competitive pricing, and high-quality products.

Grofers: Grofers is an Indian online grocery delivery service based in Gurugram, Haryana. Founded in 2013, it provides a platform for users to purchase groceries and other household essentials from local stores and have them delivered to their doorstep. The company operates in multiple cities across India and offers a wide range of products including fresh fruits and vegetables, grocery and staples, household essentials, dairy and bakery products, meat, and personal care products. In recent years, the company has expanded its operations and become one of the leading players in the online grocery delivery space in India.

Zepto: Zepto, a startup based in Mumbai, offers a 10-minute grocery delivery service. Founded by Aadit Palicha and Kaivalya Vohra, Zepto is known for delivering groceries in 10 minutes. It has partnered with over 86 dark store owners in thirteen different areas in 2021, generating over one million deliveries. Startups like Zepto in India and Fridge No More in New York City are among the fastest-growing companies in the fast-delivery business.

4. Data Analysis:

The two key stages of the research process are analysis and interpretation.

4.1 Percentile Analysis:

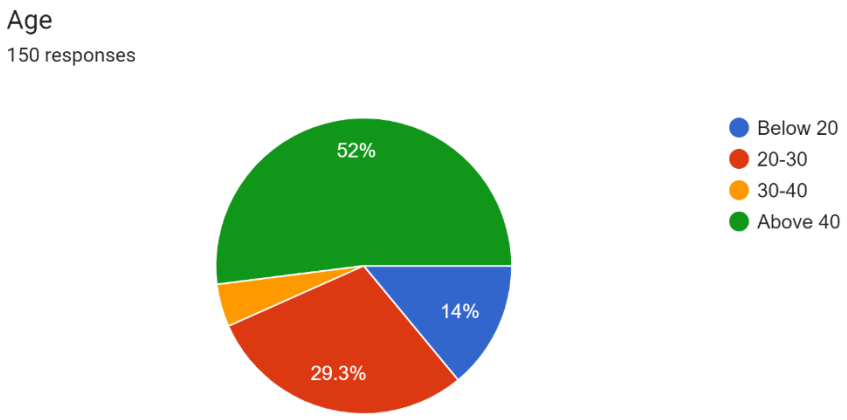
Required to compare 2 or more data series.

Percentage = No of RespondentsTotal No. of Respondents **x 100**

TABLE 4.1.1

TABLE SHOWING THE AGE OF RESPONDENTS

AGE		**RESPONDENTS**	**PERCENTAGE**
Below 20 years		**21**	**14**
20-30		**44**	**29.3**
30-40		**7**	**4.7**
Above 40		**78**	**52**
Total		**150**	**100**



INTERPRETATIONS

Less than 20 years- 14%

20-30 years- 29.3%

30-40 yrs – 4.7%

>40 yrs- 52%

TABLE 4.1.2

TABLE SHOWING THE GENDER OF THE RESPONDENTS

GENDER	RESPONDENTS	PERCENTAGE
Male	45	30
Female	105	70
Total	150	100

INTERPRETATIONS

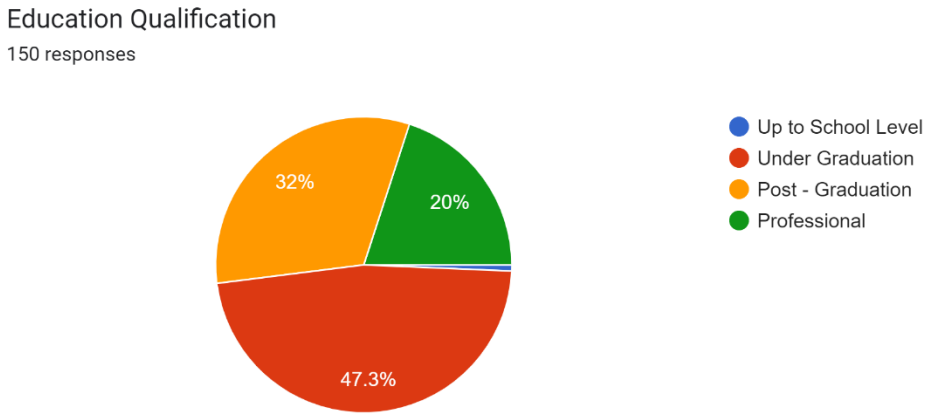
Male – 30%

Female- 70%

TABLE 4.1.3

TABLE SHOWING THE EDUCATION QUALIFICATION OF THE RESPONDENTS

EDUCATIONAL QUALIFICATION	RESPONDENTS	PERCENTAGE
Up to school level	1	0.7
Under Graduation	71	47.3
Post-Graduation	48	32
Professional	30	20
Total	150	100



INTERPRETATIONS

0.7% - school level

47.3% - UG

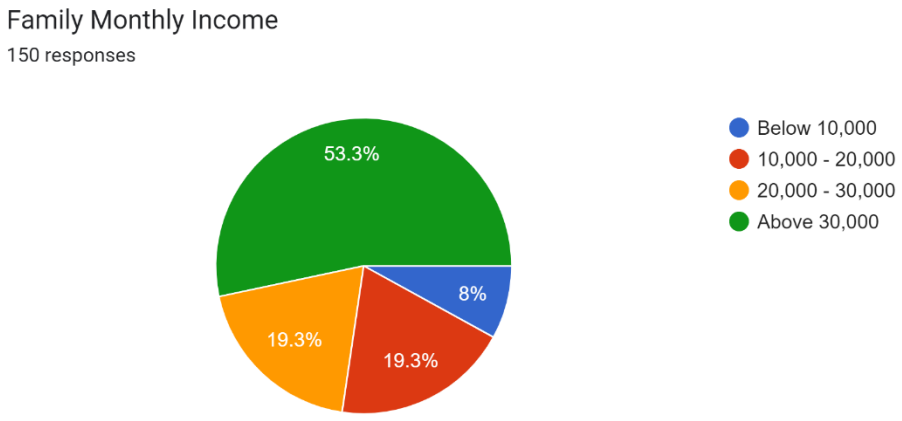
32%- PG

20%- Professional

TABLE 4.1.4

TABLE SHOWING THE FAMILY MONTHLY INCOME OF THE RESPONDENTS

FAMILY MONTHLY INCOME	RESPONDENTS	PERCENTAGE
Below 10,000	**12**	**8**
10,000-20,000	**29**	**19.3**
20,000-30,000	**29**	**19.3**
Above 30,000	**80**	**53.3**
Total	**150**	**100**



INTERPRETATIONS

Below 10000 – 8%

10000-20000 – 19.3%

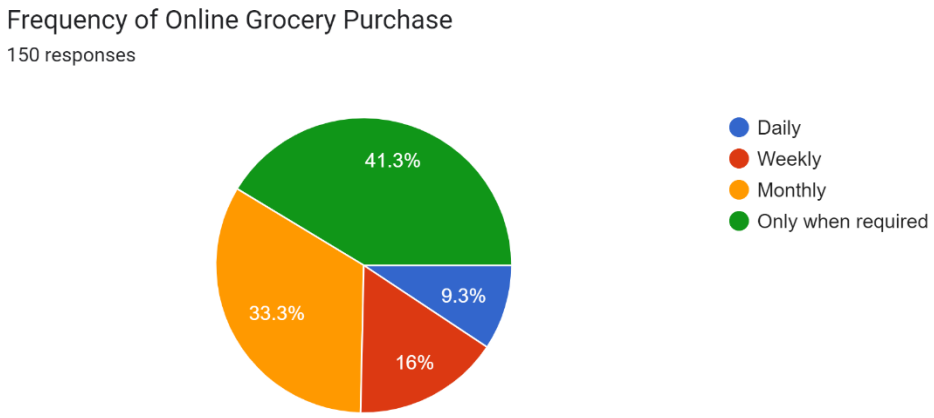
20000-30000 – 19.3%

>30000 – 53.3%

TABLE 4.1.4

TABLE SHOWING THE FREQUENCY OF PURCHASE OF GROCERIES

FREQUENCY	RESPONDENTS	PERCENTAGE
Daily	**14**	**9.3**
Weekly	**24**	**16**
Monthly	**50**	**33.3**
Only when required	**62**	**41.3**
Total	**150**	**100**



INTERPRETATIONS

Daily – 9.3%

Weekly – 16%

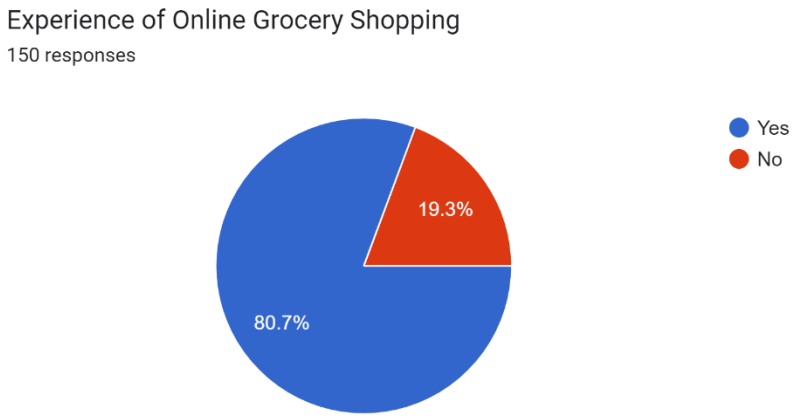
Monthly – 33.3%

when required – 41.3%

TABLE 4.1.5

TABLE SHOWING EXPERIENCE OF ONLINE GROCERY SHOPPING

EXPERIENCE IN ONLINE GROCERY SHOPPING	RESPONDENTS	PERCENTAGE
Yes	121	80.7
No	29	19.3
Total	150	100



INTERPRETATIONS

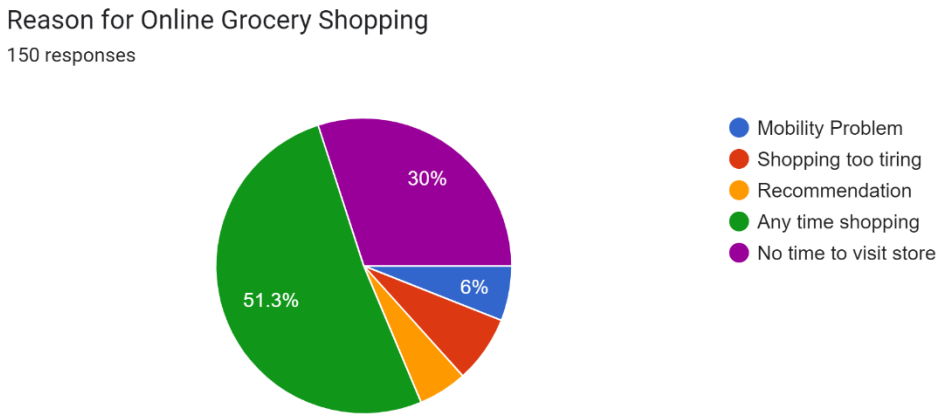
Prior experience – 80.7%

No prior experience – 19.3%

TABLE 4.1.6

TABLE SHOWING REASON FOR ONLINE GROCERY SHOPPING

REASONS	RESPONDENTS	PERCENTAGE
Mobility Problem	9	6
Shopping too tiring	11	7.3
Recommendation	8	5.3
Any time shopping	77	51.3
No time to visit the store	45	30
Total	150	100



INTERPRETATIONS

6%- mobility

7.3% - instore shopping tiring

5.3%- recommendation

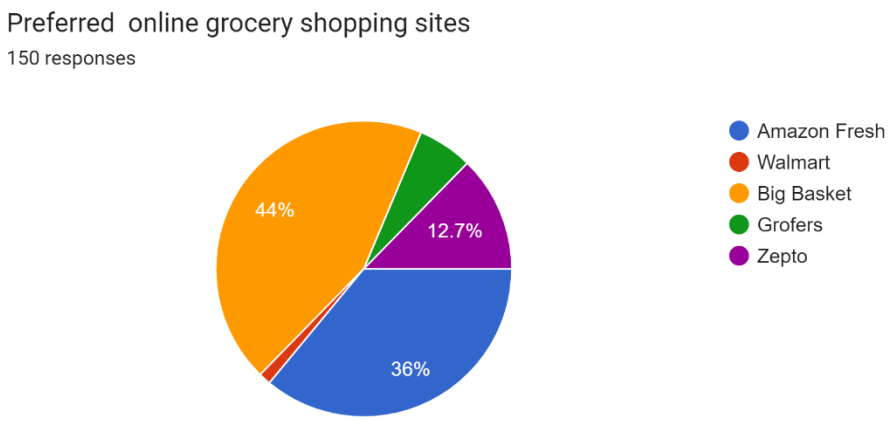
51.3% - visit all time

30% - no time to visit

TABLE 4.1.7

TABLE SHOWING RESPONDENTS PREFERRED GROCERY SHOPPING SITES

SHOPPING SITES	RESPONDENTS	PERCENTAGE
Amazon Fresh	**54**	**36**
Walmart	**2**	**1.3**
Big Basket	**66**	**44**
Grofers	**9**	**6**
Zepto	**19**	**12.7**
Total	**150**	**100**



INTERPRETATIONS

36 % amazon fresh

1.3 % Walmart

44% big basket

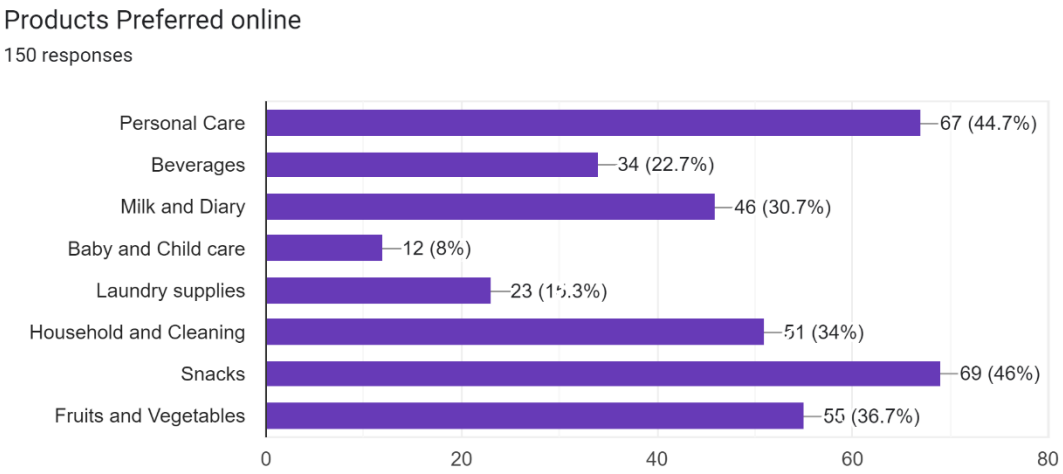
6% grofers

12.7% zepto

TABLE 4.1.8

TABLE SHOWING THE PRODUCTS PREFFERED IN ONLINE SHOPPING

PRODUCTS	RESPONDENTS	PERCENTAGE
Personal Care	**67**	**44.7**
Beverages	**34**	**22.7**
Milk and Dairy	**46**	**30.7**
Baby and child cares	**12**	**8**
Laundry supplies	**23**	**15.3**
Household and cleaning	**51**	**34**
Snacks	**69**	**46**
Fruits and Vegetables	**55**	**36.7**
Total	**150**	**100**



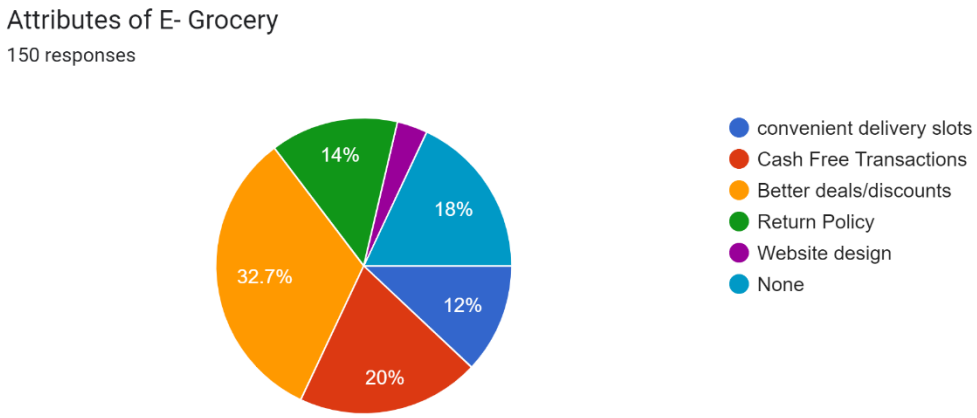
INTERPRETATIONS

Personal care – 67/69 responses
vegetables – 55 responses
household and cleaning -51 responses
Least were for baby care

TABLE 4.1.9

TABLE SHOWING THE ATTRIBUTES OF E-GROCERY

ATTRIBUTES	RESPONDENTS	PERCENTAGE
Convenient delivery slots	**18**	**12**
Cash free transactions	**30**	**20**
Better deals/discounts	**49**	**32.7**
Return policy	**21**	**14**
Website design	**5**	**3.3**
None	**27**	**18**
Total	**150**	**100**



INTERPRETATIONS

12 % delivery slots

20% cash free

32.7% deals and discounts

14% return policy

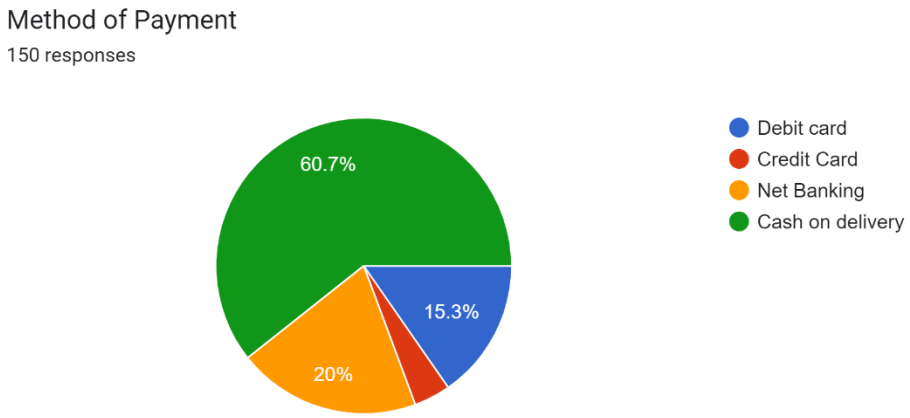
3.3% website design

18% none

TABLE 4.1.10

TABLE SHOWING THE METHOD OF PAYMENT BY THE RESPONDENTS

PAYMENT METHOD	RESPONDENTS	PERCENTAGE
Debit card	**23**	**15.3**
Credit Card	**6**	**4**
Net Banking	**30**	**20**
Cash on Delivery	**91**	**60.7**
Total	**150**	**100**



INTERPRETATIONS

15.3%	debit	card
4%	credit	card
20%	net	banking
60.7%		COD

TABLE 4.2.1

TABLE SHOWING THE AGE FACTOR RELATIVE TO SAVING OF TIME THROUGH SHOPPING ONLINE

Chi-Square Tests

Count of Age	**Column Labels**					
Row Labels	**Any time shopping**	**Mobility Problem**	**No time to visit store**	**Recommendation**	**Shopping too tiring**	**Grand Total**
20-30	20	3	12	5	4	44
30-40	4		3			7
Above 40	41	6	24	2	5	78
Below 20	12		6	1	2	21
Grand Total	**77**	**9**	**45**	**8**	**11**	**150**

Data Analysis

H0: The age of the respondents and the time saved by doing food shopping online do not significantly correlate.

H1: The age of the respondents and the time saved by doing food shopping online significantly correlate.

95% of level of significance for chi square test

Reject H0 When P value < 0.05

Cross Tabulation of Reasons for online shopping and age of the respondents (Observed frequency)

Expected frequency

Row Labels	Any time shopping	Mobility Problem	No time to visit store	Recommendation	Shopping too tiring	Grand Total
20-30	22.58666667	2.64	13.2	2.346666667	3.226666667	44
30-40	3.593333333	0.42	2.1	0.373333333	0.513333333	7
Above 40	40.04	4.68	23.4	4.16	5.72	78
Below 20	10.78	1.26	6.3	1.12	1.54	21
Grand Total	**77**	**9**	**45**	**8**	**11**	**150**

P value is	0.916230057

Result	**There is no significant association of Online grocery shopping saving time and the age of the respondents.**

5.1 Findings:

The survey found that most people over 40 and mainly women responded. Many of them are homemakers or working women with incomes over 30,000 per month. They tend to buy groceries when they need them and often shop online for convenience. Big Basket is their top

choice, especially for personal care items, and they like deals and discounts. Cash on delivery is their preferred payment method for its safety and trust.

5.2 Conclusion:

E-commerce has a significant impact on online grocery shopping, particularly among the generation X demographic (born between 1965 and 1980). This group tends to value convenience and efficiency, and online grocery shopping offers both of these things. Studies have found that the convenience factor is a major reason why generation X consumers are drawn to online grocery shopping.This demographic values the convenience and efficiency of online grocery shopping, and retailers are responding by offering more options and making the process even more user-friendly.

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ROLE OF LOCAL PEOPLE (COMMUNITY) IN COASTAL TOURISM MANAGEMENT OF KONKAN REGION OF MAHARASHTRA

Mrs. Sunayana Jotiram Jadhav,
S.P.K. Mahavidyalaya Sawantwadi,
Dist- Sindhudurg
Contact- Mo. No. 9922771024
Email id: sunayanajotiramjadhav@gmail.com

ABSTRACT:- *Tourism is a backbone of service industry. India has long coastal line of 7,525kms. . The Konkan region of Maharashtra state is famous for its natural beauty, beaches, backwater, waterfalls, forts, temples and other tourist attractions. Konkan beaches are safe, virgin and beautiful, capable of attracting inbound and outbound tourists for the sun, sand and surfing. Local people is known as local residence, they lived from last many years .Konkani people is a brilliant and lovely. Kokan and kokani people is known for their hospitality. Local people who lives in coastal area is beneficiary of coastal tourism. .Government must focus on development of Blue Economy.*

Keywords :- *Tourism, Coastal tourism, Local residency, Development. Konkan.*

1. INTRODUCTION

India has coastal line of **7**,525kms, India has immense potential in the coastal tourism segment. Maharashtra is the third largest State both in terms of area and population located on the west coast of India with a 720kms long coastal line in the Konkan region. The region between the Arabian Sea and the Sahyadri Range is known as Konkan. The Konkan region of Maharashtra state is famous for its natural beauty, beaches, backwater, waterfalls, forts, temples and other tourist attractions. Konkan beaches are safe, virgin and beautiful, capable of attracting inbound and outbound tourists for the sun, sand and surfing. Konkan area of Maharashtra having picturesque stretch of land on the west coast of India, endowed with the beautiful seashores, forts and mountains is known for tropical fruits like world famous Alphonso Mangoes, Jackfruits, Cashews and Jamuns. It is also famous for production of Coconut and Betelnut. Its Seafood is a fist to the tourists. Local people is known as local residence ,they are lived from last many years .Konkani people is a brilliant and lovely .Tourism

boosts the revenue of local people and develop local economy. It creates demand for local resources. It also creates thousands of direct and indirect employment. Tourism also creates huge infrastructure, cultural exchange between tourists and local community Local people work in tourism and hospitality industry.

Coastal tourism

"Coastal tourism is a process involving tourists and the people and places they visit, particularly the coastal environment and its natural and cultural resources". In simple words, we can say water and water related activities is a coastal tourism.

2. OBJECTIVES OF THE STUDY

1. To study the role of local (community) people in coastal tourism management.
2. To provide suggestions for coastal tourism development in Konkan region.

3. **RESEARCH METHODOLOGY**

The researcher has been used both the primary as well as secondary data for the study.

3.1 PRIMARY DATA

The primary data have been collected from the selected sample respondents through structured interview schedule. The primary data have been collected from resident's i.e., local community. The researcher has covered five districts of Maharashtra state in which Sindhudurg, Ratnagiri, Raigad and Thane-Palghar district have been selected for research exercise.

3.2 SECONDARY DATA

The secondary data have been collected through books, research articles published in various journals, seminars and conferences, magazines, newspapers, Ministry of Tourism, GOI, Maharashtra Tourism Department, various committee reports of Growth and Development of Tourism, Annual Reports of MTDC and websites.

****Sample Size for Community:**

There are more than 5,00,000 local citizens (community people) living nearby 5 km radius of these 78 beaches(WEST, 2011). Hence, the researcher had chosen a finite sample size formula for calculating the sample size of the community people.

Given that the population is 5,00,000 At 5 % error /margin then the sample size would be

$n = N/ (1+Ne^2)$

n = the sample size

N = the population (total community 5,00,000)

e = the accepted confidence interval assumed to be 5%. (e = 0.05) at confidence level 95% confidence

$n = 5,00,000/(1+(5,00,000)(0.05)^2) = 384$

Hence there was 439 comminity people sample (more than calulted sample size 384) selected for this research study. .

Table 1

Sampling method and Procedure of selection of sample

Sample	**Samling Design**	**Selection Procedure**	**Remark**
Beaches	Probability Sampling: Simple Radom sampling	Lottery method with the help of Randomization software. https://www.randomizer.org/	Available list/catalog of beaches in Maharashtra hence researcher choose probability sampling
Residents /Community	Probability Sampling Systematic random sampling	10^{th} name of every i^{th} page of available list of citizens with local government bodies.	Available list/catalog of Residents /Community hence researcher choose probability sampling

(Source: Developed for this study)

4 REVIEW OF LITERATURE:-Thenmozhi (2013) has studied the impact of infrastructural development unsustainable tourism. Madurai is one of the cities, which are having a great adoptability to changing circumstances of politics. The main objectives of the studies analyse the infrastructural facilities available to the tourist visit at Madhuri and role played by various peoples for the sustainable development of tourism. To analyse the importance of infrastructural development for sustainable development. Researcher has selected the sample for the purpose of random sampling method in Madurai district for the purpose of primary data

collection. Paul, S. (2015) has proposed strategies for sustainable tourism development. Tourism has many potential benefits for rural areas. Tourism can be an important source of jobs for non-metro communities, especially for those that are economically underdeveloped. Because jobs in the tourist industry often do not require advanced training, local residents with few skills can readily work as food servers, retail clerks, and hospitality workers. Ganguly, 2015 has observed the growth of tourism in coastal areas related to increased personal income, development in transportation system, greater public awareness etc. The aim of this study was to study the existing status of tourism; feasibility and effectiveness of environmental contingencies' study the community attitude towards tourism development.

** **Descriptive statistic of Residence**. Total 439 local residence selected for present research study. A descriptive summary of the sample is presented in briefly. The respondents were predominantly male (73.6%). The respondents were relatively well educated (more than two-thirds had at 12th Std). Nearly two-thirds of respondents belonged to the age group 21-29 yrs. 40% of the sample had lived in the Konkan region for more than 15 years. 37% respondents were business which indicates that sustainable coastal tourism promotes local business. 34% of respondents were doing private jobs, which indicates that sustainable coastal tourism can provide employment to local residents.

Scale Adoption :-Choi & Sirkaya 2014 developed scale for "Measuring Residents' Attitude toward Sustainable Tourism: Development of Sustainable Tourism Attitude Scale." Researcher adopted this instrument to measure role of local people (community) in coastal tourism development. Total five factors considered in this study and descriptive analysis was made.

5: Descriptive Analysis : Local Residensts

The descriptive statistic in terms such as minimum, maximum, mean, standard deviation for each computational variable in the sustainable consumption behaviour of residents. Only five factor is considered for analysis purpose.

Table No: 2

Local Residents: Factor 1

Perceived Social Cost (PSC)

Items (i.e., statements)	Items code	N	Min	Max	Mean	S.D.
Irritation	PSC1	439	1.00	5.00	2.968	1.424
Disrupts my quality life	PSC2	439	1.00	5.00	2.934	1.384
Overcrowded	PSC3	439	1.00	5.00	3.401	1.384
Community resources are overused	PSC4	439	1.00	5.00	3.034	1.302

Quality of environment: deteriorated	PSC5	439	1.00	5.00	3.144	1.388
Quality of my life: deteriorated	PSC7	439	1.00	5.00	3.018	1.366
Uncomfortable	PSC8	439	1.00	5.00		
Total			1.00	5.00	3.075	1.208

(Source: Analysis of Residents' Survey Data)

Above factor is utilized for analysing residents' attitude towards perceived social cost (PSC) of sustainable coastal tourism development (SCTD). 08 items are used to measure perceived social cost (PSC) of sustainable coastal tourism development (SCTD). Item PSC-6 was deleted because factor loading was less than 0.7. If factor loading is less than 0.7 then items explain less than 50% of variance. Validity and reliability of the remaining 07 items has been tested with convergent validity, discriminant validity, Cronbach alpha and model fit. Mean of above items varies from 2.93 to 3.40 and std. deviation 1.30 to1.42. Total mean 3.07 and std. deviation 1.20. There is significant variation of mean and std. deviation between 07 items. The above table disclosed that residents feel that moderate social cost (mean slightly more than 3) toward sustainable coastal tourism development (SCTD). Residents are not too irritated because of coastal tourism (mean 2.96) item PSC-1. However, residents feel overcrowded due to coastal tourism (mean 3.40) item PSC-3.

Table No: 3

Residents: Factor 2

Environmental Sustainability (ES)

Items (i.e., statements)	**Items code**	**N**	**Min**	**Max**	**Mean**	**S.D.**
Protected: sea life	ES3	439	1.00	5.00	4.087	0.927
Protected: present and future	ES4	439	1.00	5.00	4.055	0.982
Promote positive environment ethics	ES5	439	1.00	5.00	3.975	1.021
Develop harmony with nature and culture	ES6	439	1.00	5.00	4.068	0.991
Strength efforts for environmental conservation	ES7	439	1.00	5.00	3.957	1.009
Improve environment for future generations	ES8	439	1.00	5.00	4.068	0.972
Total			1.00	5.00	4.035	0.778

(Source: Analysis of Residents' Survey Data)

Above factor is utilized for analysing residents' attitude towards environmental sustainability (ES) of sustainable coastal tourism development (SCTD). 09 items are used to measure environmental sustainability (ES) of sustainable coastal tourism development (SCTD). Items ES-1, 2, 9 were deleted because factor loading less than 0.7. If factor loading is less than 0.7 then items explain less than 50% of variance. Validity and reliability of the remaining 06 items has been tested with convergent validity, discriminant validity, Cronbach alpha and model fit. Mean of above items varies from 3.97 to 4.08 and std. deviation 0.92 to1.02. Total mean 4.03 and std. deviation 0.77. There is very small variation of mean and std. deviation between 06 items. The above table disclosed that residents feel, positive attitude towards environmental sustainability (ES) of sustainable coastal tourism development (SCTD).

Table No: 4

Local Residents: Factor3

Long Term Planning (LTP)

Items (i.e., statements)	Items code	N	Min	Max	Mean	S.D.
Needs well-coordinated planning	LTP1	439	1.00	5.00	4.091	0.982
Required advance planning	LTP3	439	1.00	5.00	4.052	0.955
Need to take long-tern view	LTP4	439	1.00	5.00	4.039	1.012
Plans should improve continuously	LTP5	439	1.00	5.00	4.021	1.003
Strategically plan for future	LTP6	439	1.00	5.00	4.096	0.956
Residents' role as leader	LTP7	439	1.00	5.00	4.077	1.004
Total			1.00	5.00	4.063	0.794

(Source: Analysis of Residents' Survey Data)

Above factor is utilized for analysing residents' attitude towards long term planning (LTP) of sustainable coastal tourism development (SCTD). 07 items are used to measure long term planning (LTP) of sustainable coastal tourism development (SCTD). Item LTP- 2 was deleted because factor loading was less than 0.7. If factor loading is less than 0.7 then items explain less than 50% of variance. Validity and reliability of the remaining 06 items has been tested with convergent validity, discriminant validity, Cronbach alpha and model fit. Mean of above items varies from 4.02 to 4.09 and std. deviation 0.95 to 1.01. Total mean 4.06 and std. deviation 0.79. There is very negligible variation of mean and std. deviation between 06 items. The above table disclosed that residents have a positive attitude towards long term planning (LTP) of sustainable coastal tourism development (SCTD).

Table No: 5

Local Residents: Factor 4

Perceived Economic Benefits (PEB)

Items (i.e., statements)	Items code	N	Min	Max	Mean	S.D.
Strong contribution to local community	PEB1	439	1.00	5.00	4.066	1.026
Benefits to the industries in local area	PEB2	439	1.00	5.00	4.036	0.981
Good for local communities' economy	PEB3	439	1.00	5.00	4.071	0.961
Diversify the local economy	PEB4	439	1.00	5.00	3.998	0.999
Create new market for local products	PEB5	439	1.00	5.00	4.105	0.981
It brings various new income to local	PEB6	439	1.00	5.00	4.066	0.971
Generate sustainable tax revenue	PEB7	439	1.00	5.00	3.982	1.058
Total			1.00	5.00	4.046	0.781

(Source: Analysis of Residents' Survey Data)

Above factor is utilized for analysing residents' attitude towards perceived economic benefits (PEB) of sustainable coastal tourism development (SCTD). 07 items are used to perceive economic benefits (PEB) of sustainable coastal tourism development (SCTD). Factor loading of all seven items are above 0.7. If factor loading is less than 0.7 then the item explains less than 50% of variance. Validity and reliability of all 07 items has been tested with convergent validity, discriminant validity, Cronbach alpha and model fit. Mean of above items varies from 3.98 to 4.07 and std. deviation 0.96 to1.06. Total mean 4.04 and std. deviation 0.78. There is very negligible variation of mean and std. deviation between 07 items. The above table disclosed that residents have a positive attitude towards perceived economic benefits (PEB) of sustainable coastal tourism development (SCTD). All seven items are nearly equally rated by residents.

Table No: 6

Local Residents: Factor 5

Community Cantered Economy (CCE)

Items (i.e., statements)	Items code	N	Min	Max	Mean	S.D.
Hire at least 50% employee from local community	CCE1	439	1.00	5.00	3.916	1.174
Receive a fair share to local community	CCE2	439	1.00	5.00	3.934	1.122
Obtain at least 50% goods from local community	CCE3	439	1.00	5.00	3.993	1.044
Contribute good portion of profit to local community	CCE4	439	1.00	5.00	3.957	1.108
Priority of investment give to local community	CCE5	439	1.00	5.00	3.998	1.054
Total			1.00	5.00	3.959	0.915

(Source: Analysis of Residents' Survey Data)

Above factor is utilized for analysing residents' attitude towards community centred economy (CCE) of sustainable coastal tourism development (SCTD). 05 items are used for the community centred economy (CCE) of sustainable coastal tourism development (SCTD). Factor loading of all five items are above 0.7. If factor loading is less than 0.7 then items, explain less than 50% of variance. Validity and reliability of all 05 items has been tested with convergent validity, discriminant validity, Cronbach alpha and model fit. Mean of above items varies from 3.91 to 3.99 and std. deviation 1.04 to1.17. Total mean 3.95 and std. deviation 0.91. There is very negligible variation of mean and std. deviation between 05 items. The above table disclosed that residents have a positive attitude towards community-cantered economy (CCE) of sustainable coastal tourism development (SCTD).

6. Results:-

1. Perceived Social Cost to local community: Residents feel that moderate social cost (mean slightly more than 3) due to coastal tourism development (SCTD). Residents are not too irritated because of coastal tourism (mean 2.96). However, residents feel overcrowded due to coastal tourism (mean 3.40). (Refer table no. 2)

2. Environmental Sustainability: Residents feel, positive attitude towards environmental sustainability of sustainable coastal tourism development (SCTD). Mean is 4.03. (Refer table no. 3)
3. Long Term Planning: Residents have a positive attitude towards long term planning (LTP) of sustainable coastal tourism development (SCTD). Total mean 4.06. Hence, we can say that residents are satisfied on long-term planning for sustainable coastal tourism development (Refer table no. 4)
4. Perceived Economic Benefits to local community: Residents have a positive attitude towards perceived economic benefits (PEB) of sustainable coastal tourism development (SCTD). There are seven items are used. All seven items nearly equally rated by residents. Total mean 4.06. At the core of the resident attitude is the general understanding that the more residents economically benefit from tourism, the more they support tourism. (Refer table no. 5)
5. Community Centred Economy: Residents have a positive attitude towards community centred economy of sustainable coastal tourism development (SCTD). Mean is 3.95. Mean is slightly below 4.0, which indicates little bit less satisfaction as compared to other variables. (Refer table no. 6)

7. Suggestions:-

1. Government should design such policy which decrese perecived social cost of residensts and increse the economical and community centred benfit of sustainable coastal tourism development in Konkan region.

2. Because hospitality would be the core element of product level. Hence, it is not expected, it must have.

3. Policy makers must keenly implement sustainable coastal tourism development plans in such a way that the perceived economic benefits to the residents should be high and during designing and implementing such plan.

4. Policy makers should focus on maximum residents' participation in the decision-making process.

5. Government of Maharashtra should make policy that tourism industry must use maximum extent of resources i.e. Material and human resources. Government must focus on development of Blue Economy.

6. In development of tourism local people is a most important factor. If local people support and participate in tourism activity then coastal tourism in Konkan region will develop rapidly.

8. Conclusion:-

Local people plays important role in coastal tourism management of Konkan region of Maharashtra. If local people involve in tourism activity Konkan tourism will grow up, increase the direct and indirect employment. Local residence in tourism area give assurance to the tourist about safety .Konkan area of Maharashtra will develop in sustainably manner as economic, environmentally, socially and culturally. If tourism is well planned, it help to raise revenue and employment of local residence. Government should draft such policies, which gives maximum benefit to the local residence. Local people will became a main beneficiary of tourism.

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A Study on Socio-Economic Condition of Tribal Community in Nashik District.

Dr. Manisha Dilip Bhingardive
Associate Professor
Satish Pradhan Dnyanasadhana College, Thane (W)
Mobile No. 9833955526
Email ID: manishabhingardive@rediffmail.com

Mr. Manoj Balkrushna Chavan
Assistant Professor
Shri Bhausaheb Vartak Arts, Commerce and Science College Borivali (W).
Mobile No. 8390300415
Email ID : chavanmanoj1991@gmail.com

Abstract:

Tribal community is an important component of the Indian population. In order to bring the tribal society into the mainstream, the Government of India has implemented many schemes for this tribal society since the independence of India till date. Traditions, language, and dress of tribal communities are different from other communities. Adivasi society is a society living in forests and valleys. Tribal community is a community living in forests and valleys. Collecting fruits from the forest and selling them, selling wood chips, hunting etc. are the traditional occupations of the tribal community. The income from these businesses is minimal. This paper tries to analyse the socio-economic status of the tribal communities of Nashik district.

Keywords- Tribal community, Nashik, Socio-economic status.

Introduction:

Tribal community is an ancient Indian society. This society, which once owned Indian forests, became economically weak due to the economic exploitation of the British. Tribals are a group that has been living since time immemorial. Tribal community is a nature worshiper. Their daily lives have nothing to do with other communities. Their gods, languages and customs are different from those of other rural and urban people. Some forest dwellers bring their produce to the cities and sell it. The Indian Constitution includes such tribals in the

Scheduled Tribes. In order to bring them into the mainstream of the society, special seats have been reserved for them as candidates in jobs and elections.

In India the concept of tribe is complex. Every tribe upholds its distinct culture, dialect and economic pursuits in their own ecological setting. In India, tribal people are known by many names, such as Adivasi, Scheduled Tribes, Tribes, Janajati, Vanyjati, Girijan , Adimjati, Hill tribe and Indigenous people. In India Tribal people are called 'Scheduled Tribes' in the Indian Constitution.

The Scheduled Tribes are notified in 30 States/UTs. The tribal population of the country, as per 2011 census, is 10.43 crore, constituting 8.6% of the total population. 89.97% of them live in rural areas and 10.03% in urban areas. The decadal population growth of the tribal's from Census 2001 to 2011 has been 23.66% against the 17.69% of the entire population. The sex ratio for the overall population is 940 females per 1000 males and that of Scheduled Tribes 990 females per thousand males.

As per the Census 2011, the tribal population constitutes about 8.9% of the total population in India. Mizoram state in India has a tribal community population density of 94.44%, which is the highest compared to other states. While the population density of tribal community in the state of Uttar Pradesh is 0.57% which is the lowest compared to other states. But the state of Maharashtra has the highest tribal population compared to other states which is more than 1 crore. They are spread across the country and reside in the forest and hilly regions of the country. They usually struggle to meet their economic needs with a bare minimum income (cash). This is due to a substantial number of tribals being cut off from the civilized world, who are unable to adapt to modernization. The tribal economies lack organized markets as well as financial institutions to promote the tribal products. There is a huge demand for tribal artifacts, textiles, ornaments, paintings, potteries, cane and bamboo products and organic and natural food products, but the supply side of this economy is way below the demand side and thus the community fails to profit from its produce. Thus, efficient production and effective promotion become imperative for the economic development of this community.

According to the 2011 census, the literacy rate of the tribal community in India was 59%, much lower than the general literacy rate of 73%. Lack of literacy is also one of the reasons why tribal communities are commercially backward. At the same time, there are other problems such as lack of sufficient capital, lack of business knowledge, lack of research, loss of control over natural resources, exploitation by mainstream people etc.

Research Methodology-

Research Methodology refers to a method of collecting relevant information for research work. For this work the following research methodology has been adopted.

A) Primary Data :-

In order to carry out this research and to collect the raw data, an online survey or questionnaire has been used and necessary information was collected from the respondents.

B) Secondary Data :-

Secondary data is collected through the magazines, newspapers and reports of different organizations. References of websites are also taken into consideration for necessary information.

Secondary Data will be collected with the help of following sources:-

1. Internet.
2. Annual Report.
3. Newspaper/Pamphlets.
4. Dictionary/Other Books.
5. Magazines, Books, Journals etc.

Limitations of Research-

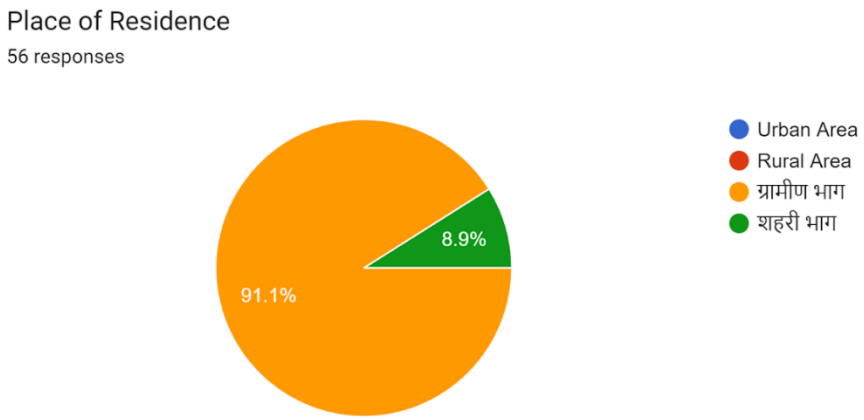
1. The present study is based on the collected responses through questionnaires from the Nasik areas people, so the opinion from other districts people is not included in this study.
2. The data is collected from online surveys, so personal interaction with respondents is not possible.

Objectives-

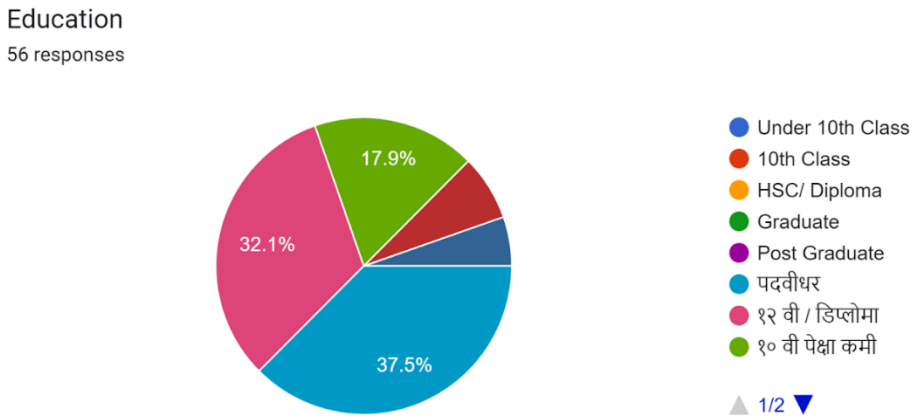
1. To analyse the socio-economic status of Nashik District's Tribal People.

Data Analysis and Interpretation:

The researcher used the questionnaire method to collect the data. 56 respondents helped to fill the questionnaire and also gave their opinions. In this questionnaire, there are different age group respondents, 41.1% are between the 20-30 age group, which are the maximum number of respondents who participated in the survey and 23.2% respondents are between 30 to 45 of age group and 17.9% are below the age of 20. 14.3% respondents are between 45 to 60 of age group and the least number of respondents are from more than 60 which are 3.4%.

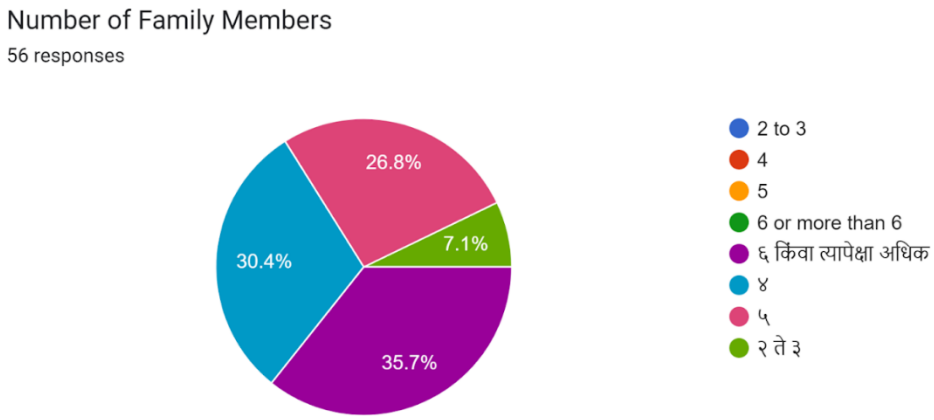


According to the above mentioned chart 91.1% respondents are living in rural areas and only 8.9% respondents are living in urban areas.

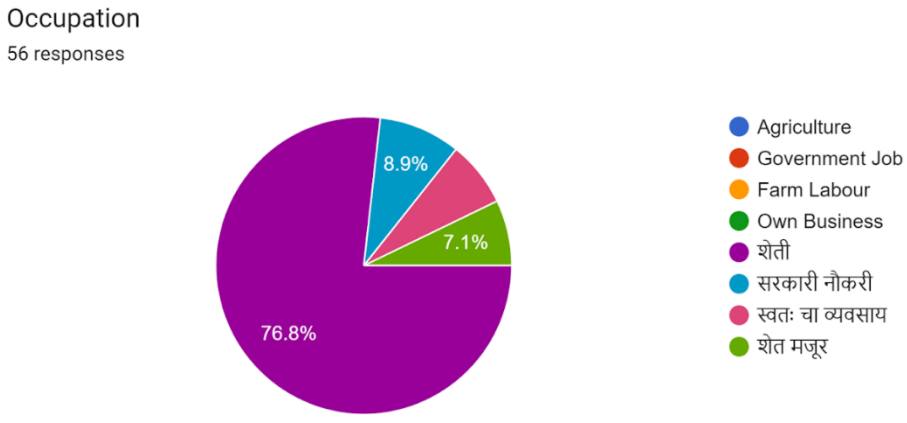


Above chart indicates the education level of tribal people of Nashik district. As per the chart, 17.9% of respondents' education is under 10th class. This is the big number which indicates

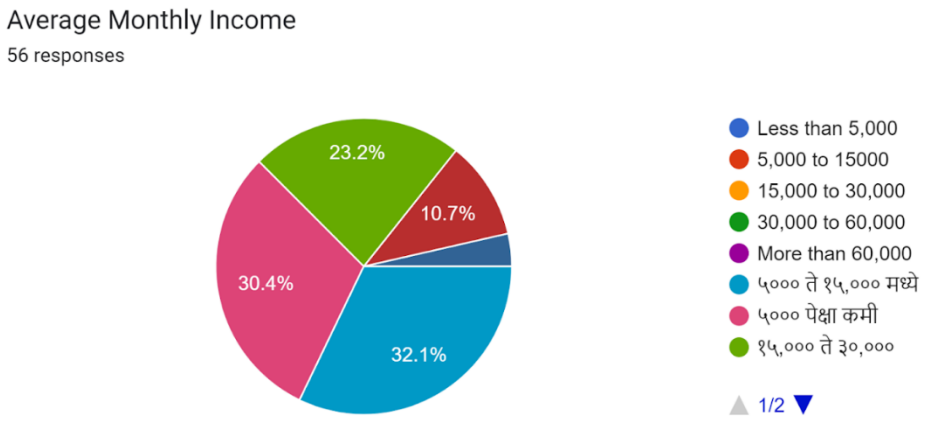
backwardness in education. 37.5% of respondents completed their graduation. 32.1% Respondents educated upto 12th Class or diploma. 7.1% respondents completed their 10th class education and only 5.4% respondents completed their post graduation.



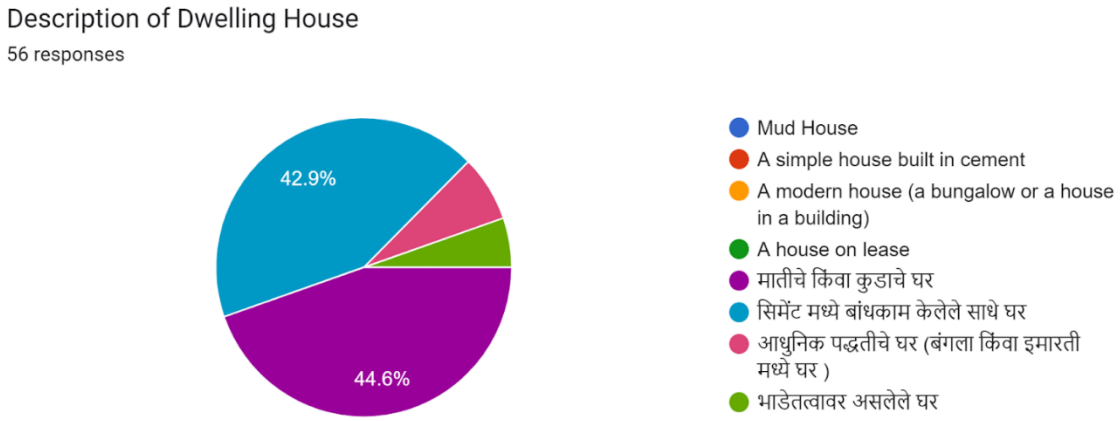
Above chart shows the size of tribal people's families. 35.7% respondents have 6 or more than 6 members in their family. 30.4% respondents have 4 members in their family. 26.8% respondents have 5 members in their family and only 7.1% respondents have 2 to 3 members in their family.



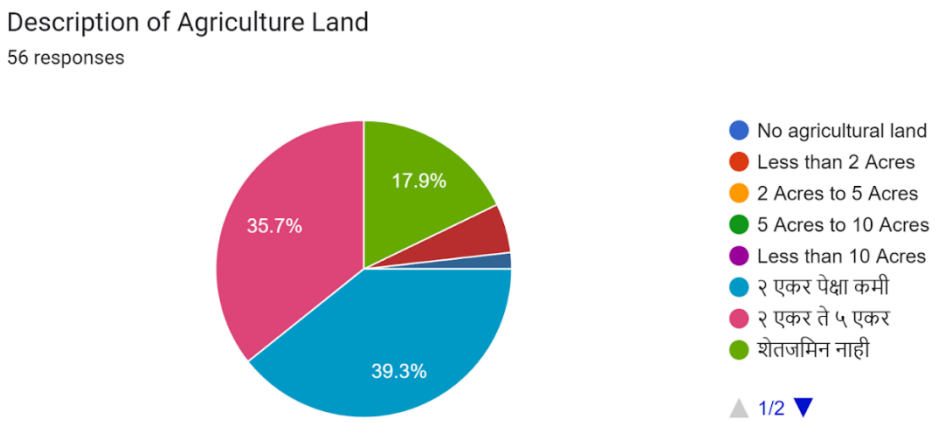
In the above question more than 75% of people's occupation is agriculture. 8.9% of respondents have a government job and 7.1% respondents are farm labour. 7.1% respondents are engaged in their own business.



The above chart shows that the monthly income of most of the tribal people is very low. According to the survey, 30% of the tribal people have an income of less than 5000. 32% tribal people have income between 5000 to 15000 while 23.2% tribal people have income between 15,000 to 30,000. 10.7% of tribal people have income between 30,000 to 60,000 while only 3.6% have income more than 60,000. This means that still more than 90% of the tribals fall under the category of non-tax payers.



From the above chart it can be understood that still most of the tribal communities in Nashik district live in mud houses or simple cement houses. There are very few tribals who live in bungalows or flats. According to the survey, only 7.1% tribals live in bungalows or flats. 44.6 % tribals still live in mud houses while 42.9 % tribals live in simple cement houses. The fact that there are very few renters means that most of them cannot afford the rent.



In the above chart, we can see 17.9% of tribal people are those who do not have their own agricultural land. In the tribal community of Nashik district, there are very few people who own more than 10 acres of agricultural land. According to the survey only 1.8% people have more than 10 acres of agricultural land. People who own 5 to 10 acres of agricultural land are very few in tribal society. According to Survey they are only 5.4%.According to the survey, 39.4% of tribal communities own less than 2 acres of agricultural land and 35.7% own 2 to 5 acres of agricultural land. As per government rule, farmers who have less than 5 acres of agricultural land are called '*Alpbhudharak*'(small landholders) . According to the survey, more than 75% tribals fall under the category of small landholders.

Conclusion:

From the study it is understood that the economic and social background of the tribal community is different from other communities. In tribal society there is still an emphasis on having more family members. It is also understood from the survey that when compared to other communities in Nashik district, the level of education of the tribal community is low. The income of most of the tribal community is very low. Also most still live in mud houses or simple cement houses. It is also clear from the study that agriculture is the main occupation of the tribal community but the proportion of agricultural land owned by the tribal community is very less as compared to other communities.

Mainstreaming the tribal society through various educational as well as welfare schemes is an important challenge before the government. It is also important for the government to study how many people are enjoying it at the ground level while implementing various schemes

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A study of marketing techniques adopted by apparel businessmen

Prof. Ashwini Madhukar Thorat

Pillai college of Arts, Commerce Science

Email: ashwinithorat892@gmail.com

Abstract

The focus of the research is the apparel markets and how retailers utilize their marketing techniques within these markets. The study involves a comparison of the southern and northern apparel markets, examining their respective marketing techniques. This research of apparel markets is also useful to the customers and consumers as they will get aware of how to purchase the apparels from the market and they will understand which market is real which is the fake market.

The study will explain about the marketing techniques and how it will be beneficial to the customers, retailers and the sellers. Apparel Markets of south and north is the part to the study.

Introduction

Apparel is the attire or clothing which covers our body and make us look presentable in front of society .Apparel is also called as clothing which is made up of fabrics and textiles .in traditional days people use to wear animal skin or any other thing which was available in nature .but now its compulsory to wear proper apparels as we live in human society as its nature we need to cover our body in front of others .Amount and type of clothing depends on the gender and in which region they live in social condition and geographic consideration .As its human tendency to wear caps ,gloves, shoes to complete our look but it's not the part of apparels or clothing but they are combined together so that human can look much more presentable

Apparels or clothing is not just worn to look presentable but it will protect humans from hard surfaces,stones,rash causing plants from insects etc. Apparel provides barriers between skin and the environment. Apparels can also protect you from hot and cold climatic conditions and even from the radioactive rays.

The study wants to highlight the present apparel market situation where the customers and consumers are cheated by selling low quality apparels at higher price. And the area of study is south and north Mumbai apparel markets and the market techniques adopted by apparel businessmen both in north and south Mumbai apparel markets .

History

Some Indian traditional Attires are as follows

During ancient times, people used specific materials for their clothing, which were worn for different occasions. People used to wear similar styles of clothing. Some traditional Indian attire for men includes dhotis, kurta, angarkha, and paggar or safa (a type of turban headgear). Men also frequently wore traditional Chudidar pajamas (puckered trousers). In the north and east, women traditionally wore saris with choli tops, a long skirt called a lehenga with a choli and a dupatta scarf, creating an ensemble called a ghagra choli. Alternatively, women wore salwar kameez suits. In south India, women traditionally wore saris, and children wore pattu lungi.

Limitation of study

A study on marketing techniques adopted by apparel businessmen with special reference to south Mumbai .The study is basically conducted majorly in south apparel markets and north apparel markets will be used for the comparison purpose. Here the sellers' marketing techniques will be observed the most .surveys, questionnaires will be shared to get more information. But the study of sellers will be limited to south and north apparel markets.

Methodology

A survey was conducted in two south Mumbai markets

1. Mandalas Market
2. Fashion Street

Where I found people are using Led bulbs in order to show the apparel as a luxury item .So that people get attracted to it and they might purchase the apparel at higher price.

Each market Sellers has some different style of selling the apparels but they have the same price of selling the apparels

North Mumbai consists of the suburbs of Manori, Borivali, Gorai, Goregaon, Malad, Kandivali and Mira Bhayandar

South Central Mumbai consists of Mahalaxmi, Tardeo, Byculla, Parel, Worli, Prabhadevi and Sewri

South Apparel Markets	North Apparel Markets
Mandalas	Cross road khar
Fashion street	Borivali market
Crawford market	Goregoan east market
Manish market	Natraj market
Linking road	
Hind Mata Market	

Marketing Techniques Adopted by Apparel businessmen

print advertising, online marketing, and outfitting and event marketing

Objective

The objective of the research is to understand the marketing techniques adopted by the sellers in the apparel market which is located in south Mumbai.

Marketing in Apparel industry

Fashion marketing is **a branch of marketing that deals with the advertising of clothing and accessories to a specific target market**. This type of marketing includes ads in newspapers, magazines and social media platforms, along with commercials on television.

The main types of advertising in the fashion industry are **print advertising, online marketing, and outfitting and event marketing**. These are some of the best tips for creating a successful fashion marketing campaign

Advertising Techniques

1. Colour Psychology
2. Composition
3. Rule of Thirds and the Golden Mean
4. Focal Point
5. Visual Path
6. Typographic Composition
7. Repetition
8. Body Language

Various Formats of Retail Stores and Their Value Propositions

Type of Format	Description	Value Proposition
Branded Stores	Exclusive showrooms owned or franchised by the manufacturer.	Complete range for a specific brand, certified product quality
Specialty Stores	Focus on specific consumer needs and carry most available brands.	Greater choice and brand comparisons for customers
Department Stores	Large stores with a variety of products organized into departments like clothing and toys.	One-stop shop for varied customer needs
Supermarkets	Extremely large self-service retail outlets.	One-stop shop for varied customer needs

South Mumbai Apparel markets consists of

1. Shopping Malls
2. Street Markets
3. Local stores
4. Branded stores
5. Departmental stores
6. Supermarkets
7. Speciality Stores
8. Discount Stores etc.

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Challenges and opportunities

Trend #1: Sustainability is going to shape the future

Consumers are growing more aware of the environmental effects of the clothing they buy. As a result, sustainable fashion, also known as eco-fashion or ethical fashion, is becoming an increasingly important trend in the industry.

Brands are increasingly using organic cotton, bamboo, and linen, which are grown without synthetic pesticides and fertilizers. Recycled materials, such as recycled polyester and nylon, are also becoming more popular as they help to reduce waste and pollution.

Another key aspect of sustainable fashion is the use of sustainable production methods. This includes reducing water and energy consumption, using low-impact dyes, and implementing fair labor practices. As consumers become more conscious about their purchasing power and environmental impact, it is expected that sustainable fashion production will become increasingly important.

Trend #2: Revolutionizing Fashion With Athleisure

Athleisure, a trend that combines athletic and leisure wear, has been revolutionizing the fashion industry in recent years. This trend has been driven by the increasing popularity of comfortable, functional clothing worn both in and out of the gym.

As per Statista:*The sports and athleisure retail market in India was valued at 158 billion Indian rupees in the financial year 2021, and estimated to grow to 402 billion rupees by financial year 2025. Footwear made up the largest chunk of the market during the measured time period, amounting to about 90 billion rupees in 2021, and projected to grow by 21 percent by 2025.*

Brands are now offering a wider range of options, from performance-focused gear to more casual and street-style pieces. This has led to the creation of new styles, such as the fusion of athletic wear with formal wear, and has opened up new possibilities for fashion designers.

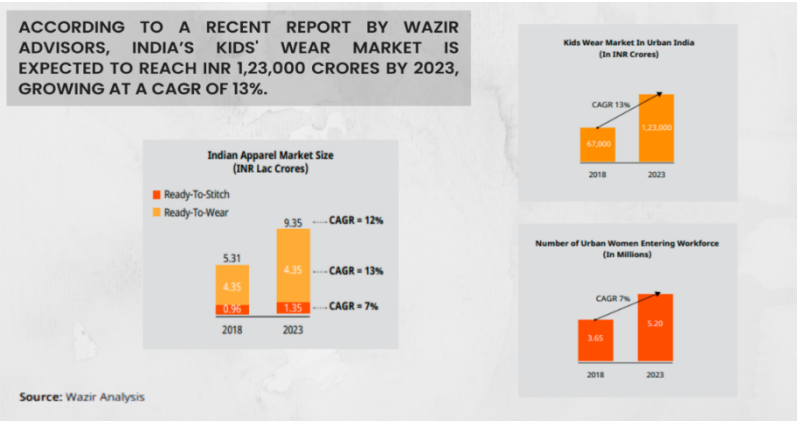
Another aspect of athleisure is the use of technology, such as moisture-wicking fabric and UV protection, to enhance the functionality of athletic wear. Apparel businesses are investing in research and development to create new fabrics and technologies that can improve the performance of athletic wear.

Overall, athleisure has been a game-changer in the fashion industry, with its versatility and functionality driving the demand for athletic wear. As the trend continues to evolve, it's likely that we'll see more innovations in the design, materials, and technology of athletic wear, making it even more appealing to consumers.

Trend #3: Market Growth Headed by Women and Kids Wear

The shift in lifestyle and priorities of modern women is leading to a greater focus on self-awareness and appearance, driving growth in the women's apparel market. As they are becoming more conscious of their fashion choices, the demand for trendy and fashionable clothing is increasing.

The market for kids' wear is driven by factors such as the increasing number of working mothers and the growing trend of parents investing in high-quality clothing for their children. A report by Wazir Advisors predicts that India's market for children's clothing will reach INR 1,23,000 Crores by 2023, growing at a CAGR of 13%.



In terms of product segments, the market for women's wear is segmented into ethnic wear, western wear, and lingerie. Western wear is anticipated to be the most profitable segment in the women's wear market, fueled by the growing demand for casual and formal wear. With the growth of e-commerce, the market is expected to continue growing, providing opportunities for fashion retailers and manufacturers.

Trend #4: Style and Functionality are Key to Modern Consumers' Wardrobe

When it comes to fashion, modern consumers are looking for clothing that not only looks good but also serves a purpose. The combination of style and functionality is becoming increasingly important in today's wardrobe. Consumers are looking for comfortable, durable, and versatile clothing that can be worn for different occasions and meet different needs.

Functionality is especially important for activewear and athleisure, as consumers seek clothing that can keep up with their busy lifestyles and support their physical activities. Fashion, on the other hand, fashion is essential in creating a unique and personal style. Consumers are looking for clothing that reflects their personal tastes and preferences and makes them stand out.

Brands are responding to this by offering a wide range of options, from classic and timeless styles to trendy and fashion-forward pieces. As lifestyles and fashion preferences evolve, brands and retailers that understand and respond to these needs will be well-positioned to succeed in the market.

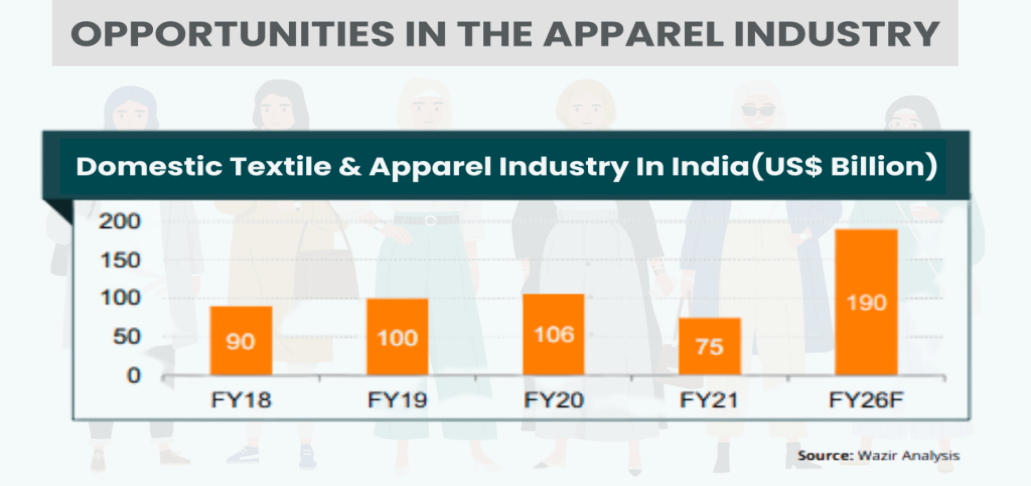
Trend #5: The Growing Era of Digital First Brands

The apparel industry is currently experiencing a shift towards digital-first brands. These brands prioritize online sales and digital marketing over traditional brick-and-mortar retail and are utilizing technology to create a seamless and personalized shopping experience for consumers. One of the biggest advantages of digital-first brands is their ability to reach a global audience through e-commerce. These brands can sell directly to consumers, bypassing traditional retail channels and cutting down on costs. This allows them to offer a wide range of products at competitive prices.

With the advancement in technology and more people turning to the internet for fashion inspiration and shopping, digital-first brands will have a significant opportunity to thrive in the industry.

2. Opportunities in the Garment Industry

The Indian textile and apparel market has substantial growth potential, with projections indicating it will reach $190 billion by 2025-26. To achieve this target and build a sustainable textile industry, Indian businesses must leverage government support schemes, meet the sustainability requirements of global buyers, and emphasize supply chain traceability.



Government policies and regulations have directed their focus on this industry. Mr. Piyush Goyal, the Minister of Textiles, announced that the Indian government plans to create 75 textile hubs across the country. Not to mention the government has also lowered the import duty on caprolactam, nylon chips, and nylon fibre and yarn to 5%. These rules have produced many opportunities for the Textile and Apparel Industry in the e-commerce sector.

With lined-up opportunities, there come several challenges for simplified apparel e-commerce.

3. Current & Future Challenges and Problems in the Apparel Industry

The new trends, changing consumer habits, and market shifts have shed light on the new challenges the e-commerce apparel industry is facing in 2023.

- Difficulty in managing customized order allocation and inventory sync
- Unable to align warehouse operations manually
- The impact of COVID-19 and the need to adapt to the changing retail landscape and consumer behavior
- Inability to manage deliveries, resulting in an increased percentage of CIR
- Complementing different physical shops and marketing avenues at the same time can be challenging.
- E-commerce platforms find it extremely difficult to manage multiple vendors
- Untimely and inefficient delivery of products
- No stock rotation leading to outdated stock
- The increased cost of Reverse Logistics
- The need to navigate the complex and ever-changing regulations and compliance requirements
- Poor management of returns and cancellations
- Difficulty in predicting and managing demand, inventory, and logistics

4. Evolving Practices as a Solution to Challenges in the Apparel Industry

Starting up your own fashion e-commerce business has never been easier, especially post the pandemic. Right from managing the inventory and warehouse operations to timely updating the digital attire of an e-commerce store, the aspects are many. But with the advancement of technology, it has become important to adopt some upcoming practices, aligning the sales with your operations.

Following are some of the upcoming e-commerce practices that act as a solution to the challenges you are witnessing during these tough times.

- **Delivering know-how of Omnichannel**

  Ensuring customers have a smooth experience at every interaction point has become crucial. Bringing together offline and online channels in harmony benefits both businesses and customers in building stronger connections.Omnichannel retail provides seamless shopping experiences and maintains consistent inventory and stock levels. Unicommerce's advanced Omnichannel solution has facilitated smooth business operations and significant growth for Iconic Fashion India.

- **D2C Business Model**

  D2C is a modern strategy in which brands interact directly with customers, cutting out intermediaries. While numerous new brands are embracing this approach, some established ones are transitioning from conventional business models to D2C models. According to **Unciommerce's e-commerce Q3 2022 trends report**, the e-commerce industry witnessed robust order volume growth of 48.3% through the brand websites, while marketplaces recorded a 21.5% order volume growth.

But the question is, what makes it so different that almost all the new brands are swearing by this approach? The main benefit for a D2C brand is the ability to reduce the time to market their products, offering customers a more competitive price and higher profit margins. Direct to Consumer (D2C) e-commerce enables the authentic brand identity to take center stage, leading to improved interaction with customers. Moreover, the new-age solutions of Unicommerce are made specifically for D2C brands like **Enamor**, **Chumbak**, etc., to scale on higher revenues.

Conclusion

The result of the study is to protect the consumers interest in the apparel market along with it to protect them from various malpractices happening in the apparel market done by the businessmen through its exaggerated marketing techniques. Selling the low quality apparels at high price cheating the customers of higher, intermediate, and bottom level. Thus sellers need to tag price but as per the quality of apparels .and to look after more different marketing techniques businessmen should adopt to increase the sales.

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Author-1
Dr. Manisha D. Bhingardive
Associate Professor
Satish Pradhan Dnyanasadhana College of Arts, Commerce and Science Thane (W), Mumbai
Email Id:manishabhingardive@rediffmail.com

Author-2
Ms. Bhagyashri kamble
Assistant Professor
Prahladrai Dalmia Lions College of Commerce and Economics
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ABSTRACT

This research seeks to examine how social media marketing affects the buying habits of female college students in Malad-Goregaon city, particularly in relation to beauty products. Previous research (Gordon et al., 1993; McEnally and de Chernatony, 1999 as cited in Kuhn et al., 2008) suggests that a positive product image and reputation contribute to differentiation and positively affect purchasing behaviour.

The study involved 12 female college students who are customers of beauty products in Malad-Goregaon city, examining the moderating role of purchasing behaviour. Data collection was conducted via social media platforms using a questionnaire distributed through Google Forms. There is a lot of research out now that focuses on social media and how the self-image of college females is negatively impacted but very few on the beauty product industry and how it affects the self-image of consumers.

Keywords: Social Media Marketing, beautifying Products, College girl Students, buying behaviour. Price, Promotion.

Introduction

This research focused on the purchasing patterns of college female students regarding beauty products, which are heavily influenced by social media. Due to the extensive online social networks maintained by college students, information disseminates quickly among them. This information significantly influences their purchasing decisions. Students worldwide share their experiences on multiple social media platforms like Twitter, Linkedin, Facebook, and Insta. As consumers, they offer reviews, service information, dietary and fitness recommendations,

product usage tips, and more. Among these approaches, celebrity endorsements are the most successful way to promote beauty products.

Social Media Marketing

Social media serves as an online communication strategy enabling interaction, content sharing, and information acquisition. Various types of social media encompass social networking, forums, and social bookmarking. G+, Instagram,Twitter, Wikipedia, and Linkedin have undoubtedly become very important in our lives.In the last 10 years, the WWW has seen a large use directed towards social networks, blogs and places where media is shared. Historically, the beauty products industry primarily used traditional advertising methods like television and magazines. However, they have recently shifted towards engaging customers via social media (Kumar et al., 2006). Marketers can leverage social media to engage with communities, solicit feedback, and promote their products and services.

Social Media Influences the Buying Behavior of Female College Students

The first generation to have lived exclusively in the digital age is made up of college students who are female. Social media has significantly impacted their lives and careers (Bolton et al., 2013; Bennet et al., 2008; Wesner and Miller, 2008). Social media marketing operates as a trust-based communication system, shaping the purchasing behavior of female college students through the active and voluntary involvement of other consumers. When students use social media, they usually have more tolerance for advertising, also enhancing the spread of marketing results. In today's information age, various social media not only play a social function, but also spread information. The influence of social media on college girl students is more pronounced. In their purchasing process, these students tend to trust the information provided on social media more within the information mechanism. College girl students are characterized by curiosity and conformity, and consumer opinion leaders will have a greater impact on their buying behaviour.

A large part of college students' buying behaviour is the recommendation between students, the recommendation of their favourite bloggers on social media, and so on. But it also has some increasingly shown disadvantage on the individual level, many people point out the negative correlation between enhanced social media use and subjective well-being and mental health. As per one estimate more than 33 percent of the users of social media are the college students

Objectives :-

1. To Investigate the purchasing patterns of female college students in relation to beauty products.

2. To assess the influence of social media on the shopping habits of college students

3.To figure out the factors that impact consumer decisions in the context of social media.

4. Examining the link between college students' social media habits and the beauty products market.

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c) Presentation: how social media marketing affects the buying habits of college girls in the Malad-Goregaon area is analyzed and depicted using diagrams.

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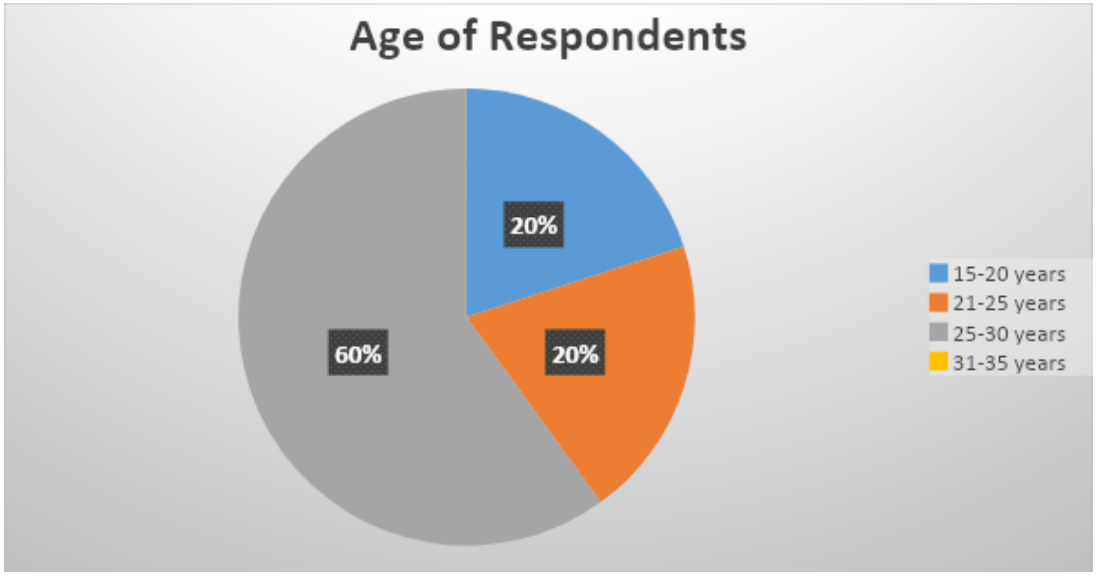

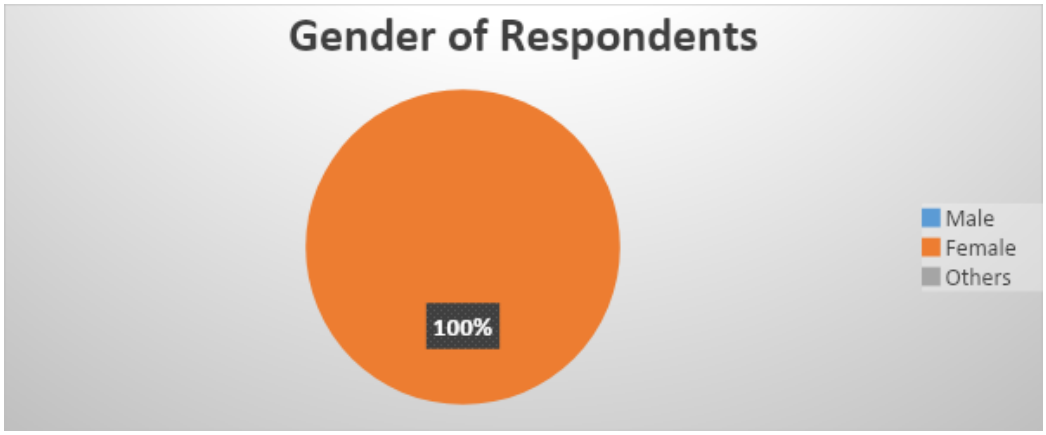

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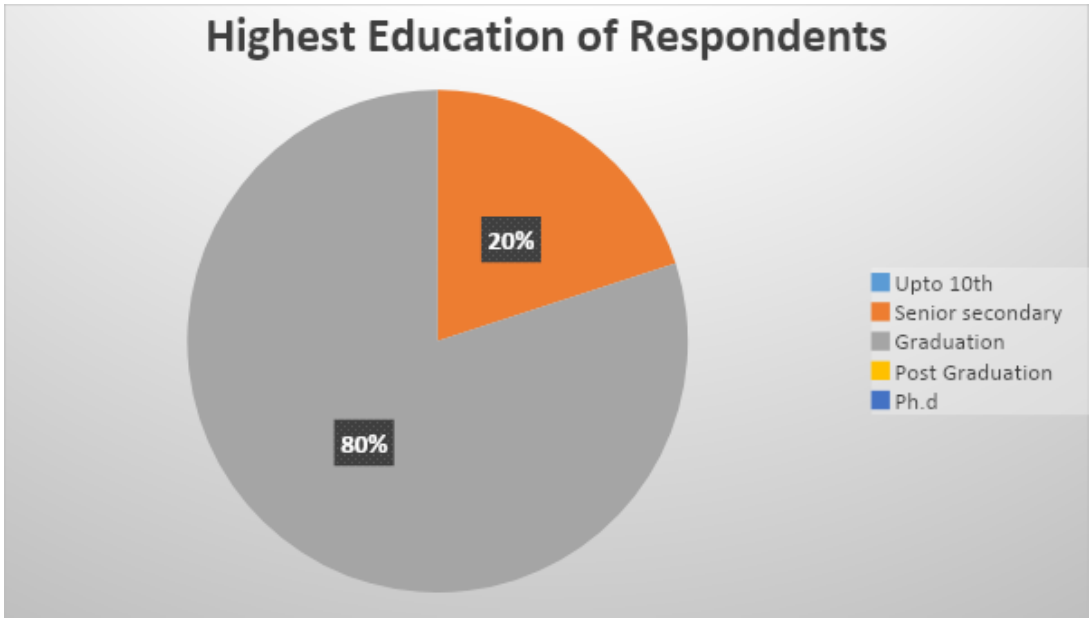

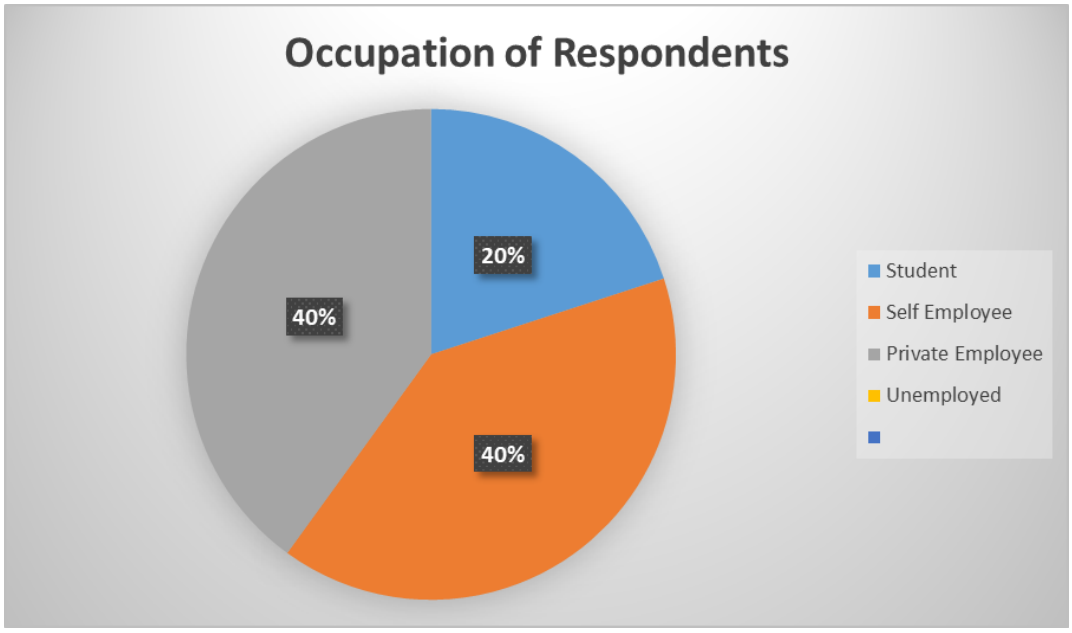

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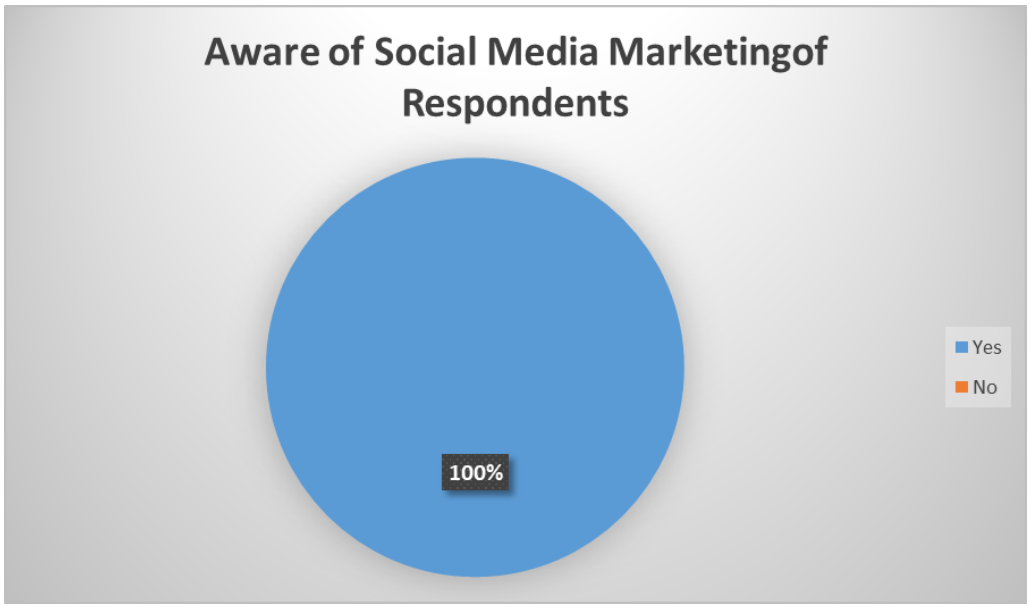

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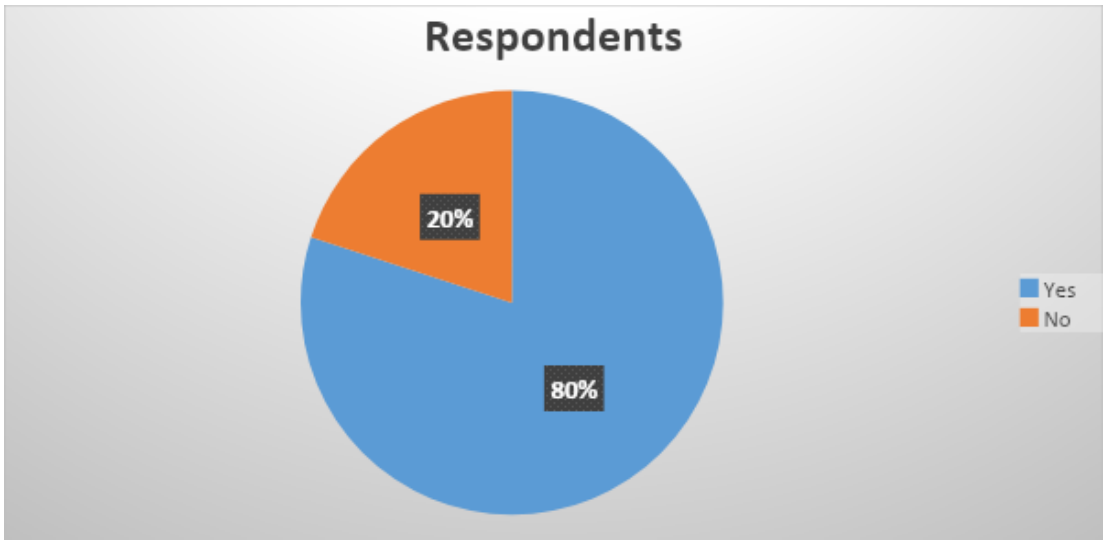
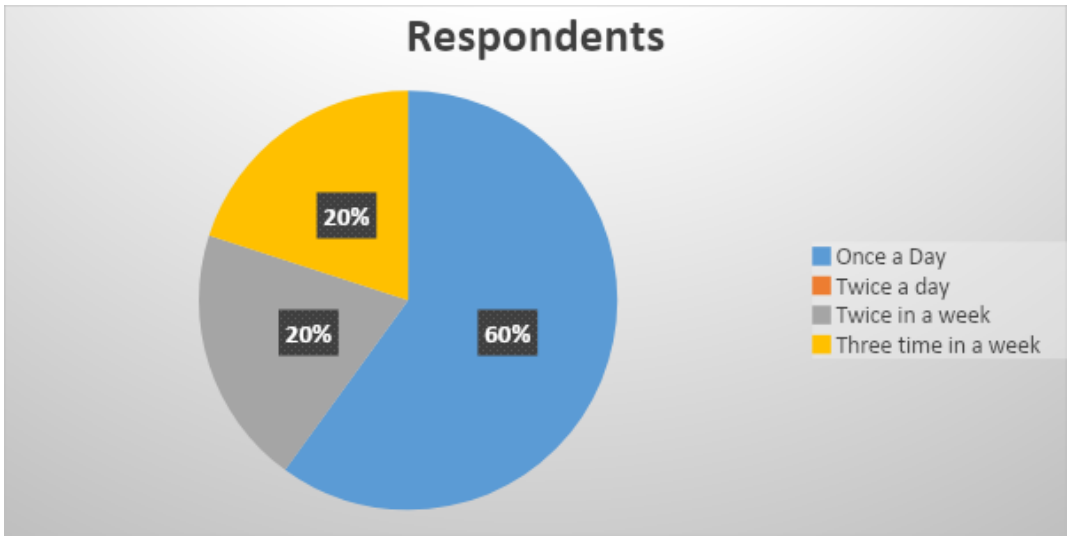
4. According to you does Social Media affect your Buying Behaviour of beautifying products?



It states that social media marketing affects the buying behaviour of college girl students. Out of the total 80% percent respondents were girl students who positively answered the question.

How often do you use Beautifying products?

Graph No 5.



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Why do you buy beautifying products?

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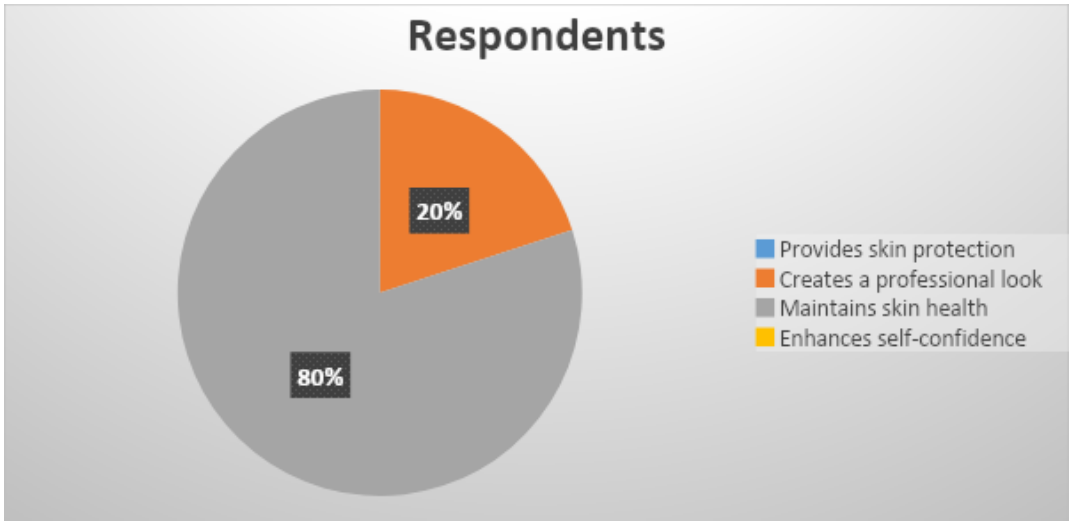

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Does Celebrity endorsement influence you to buy any Beautifying products?

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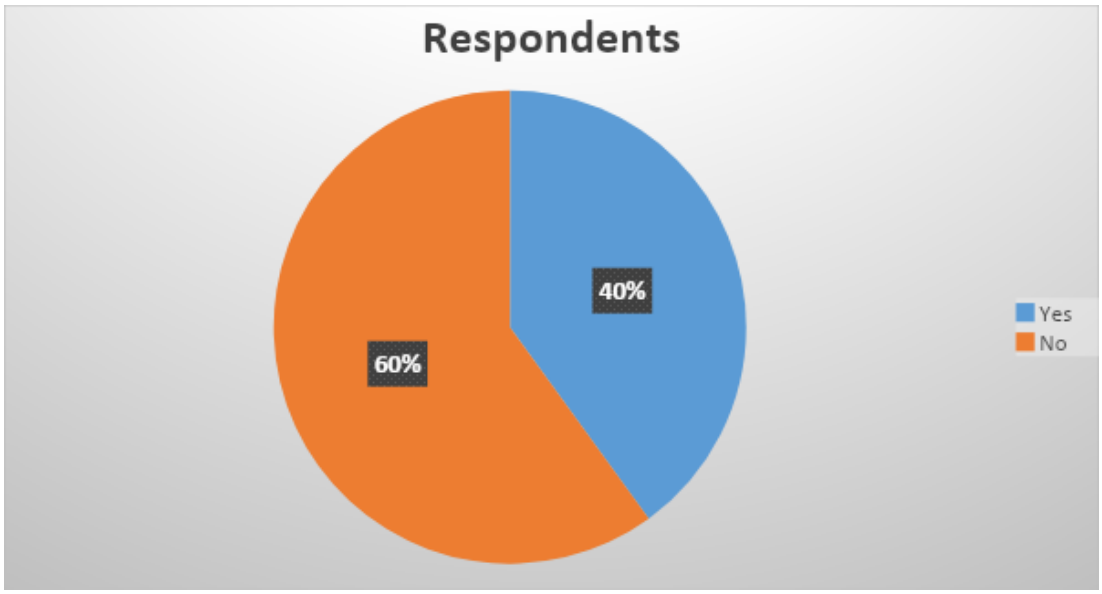

It states that the college girls students are positively respondent to Celebrity endorsement influence to buy any beautifying products. Out of that, the total 80% percent respondents said yes to the question, Does Celebrity endorsement influence to buy any beautifying products and total 20% percent respondents were said no to the question does Celebrity endorsement influence to buy any beautifying products.

Hypothesis evaluation:

Here percentage analysis and correlation analysis were used to evaluate the hypothesis regarding how social media marketing affects the purchasing conduct of college female students regarding beauty products in the city of Malad-Goregaon. Graphs No. 3, 4, 5, and 6 are analyzed to draw conclusions. The analysis suggests that various social media platforms positively influence consumer buying behavior and raise awareness about beauty products among college girl students. On the other hand, adverse correlations exist between the utilization of beauty products and attributes such as extroversion, social assurance, emotional resilience, self-worth, physical appeal, and cognitive intricacy (Robertson, Fieldman, & Hussey, 2008, p. 41).

Previous studies have not thoroughly investigated the factors contributing to this adverse association between beauty products and college female students. The findings align with the notion that individuals comfortable with themselves tend to have less inclination towards using beauty products compared to those with lower self-esteem. Thomas Cash proposes that when

a girl starts her trial with products of beauty, it embodies her advancement towards building a feminine identity (as referenced in Scott, n.d.).

Findings

1. The majority of respondents fall within the 20-25 age group, which corresponds to the demographic spending the most time on social media.
2. Survey data indicates every responder knows of marketing by social media
3. A substantial majority of respondents (80%) recognize the favorable influence of social media marketing on the purchasing habits of college female students.
4. Regarding the frequency of using beauty products, 60% of respondents use them daily, 20% use them twice a week, and another 20% use them thrice a week.
5. The primary reason for purchasing beauty products, as reported by 80% of respondents, is to maintain skin health, while 20% purchase them for achieving a professional look.
6. 80% of respondents agree that celebrity endorsements influence their purchase decisions regarding beauty products, while 20% disagree.

Discussion

In the last ten years, there has been a notable transition in the promotion of beauty products, with social media marketing emerging as the primary method of promotion, largely due to the widespread adoption of the internet. This study aimed to investigate the usage of social media marketing, social networking websites, and instant messengers among college students in the Malad-Goregaon city. The findings indicate that individuals predominantly utilize social networking websites and instant messengers to gather information about beauty products and marketing.

Suggestions

1. According to the study's results, beauty product companies should give precedence to social media marketing and employ innovative, interactive platforms to cultivate robust connections with their college female student clientele.
2. These companies should offer attractive campaigns, discounts, and coupons tailored to their college girl student customers. Moreover, their social media channels should offer pertinent and up-to-date details on new beauty items and the latest fashion trends.

3. Utilizing a combination of online platforms and apps related to social media, including mobile apps, can enhance communication with college student customers. Popular social media platforms among college students can have a significant influence on others.

4. There is potential for influencing girl students to use turmeric as a face cream by highlighting its medical benefits.

Conclusion

The study unveiled a favourable impact of marketing through social media on beauty products among female students of college. Effective campaigns, relevant content, timely updates, popular material, and diverse applications and platforms all demonstrated strong, positive associations with beauty products among college girls. The study highlights that college students actively use social media to validate their buying behavior, viewing it as digital word-of-mouth. Social media content influences the buying behavior of potential customers, simplifying decision-making and enhancing satisfaction. In summary, the study highlights how social media affects the purchasing habits of college girls.

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Author-1
Dr. Manisha D. Bhingardive
Associate Professor
Satish Pradhan Dnyanasadhana College of Arts, Commerce and Science Thane (W), Mumbai
Email Id:manishabhingardive@rediffmail.com

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Ms. Bhagyashri kamble
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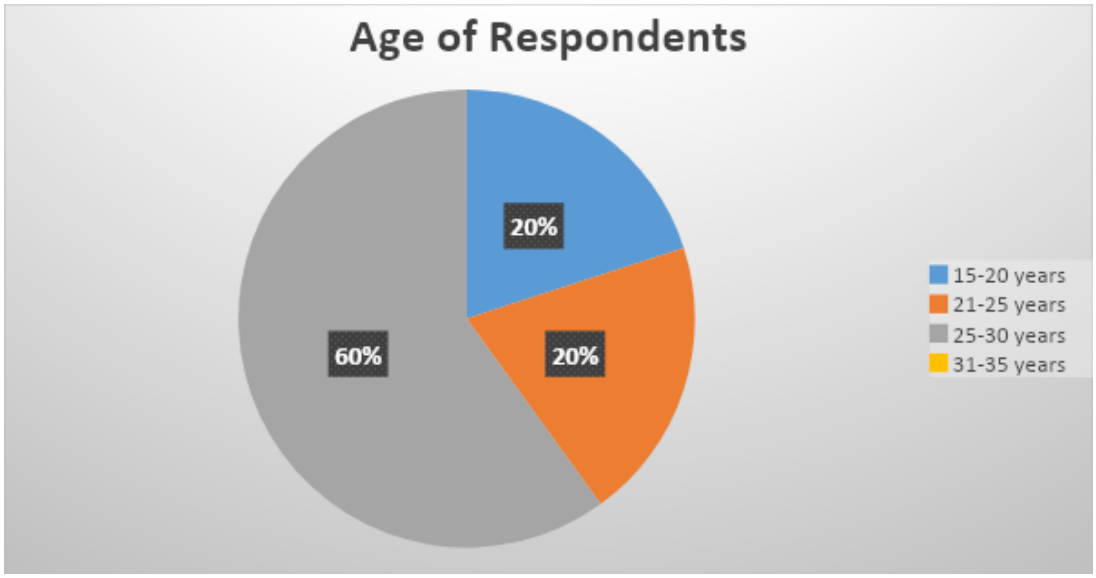

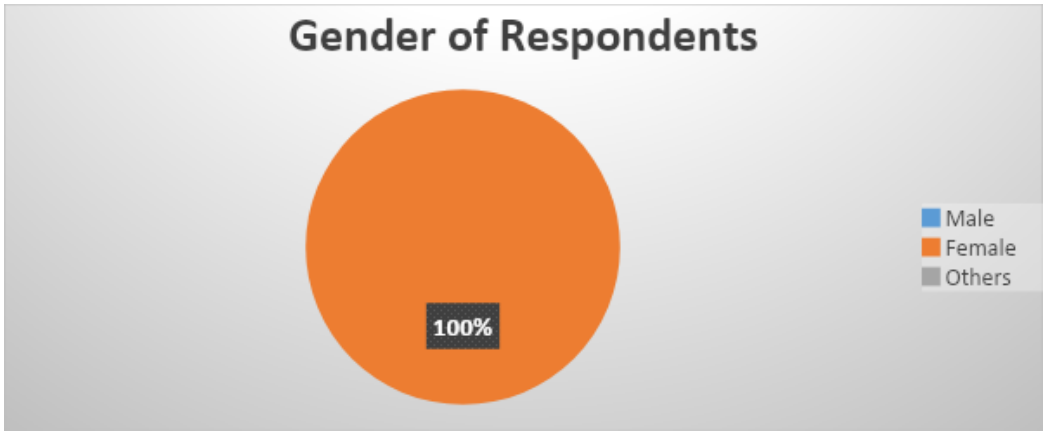

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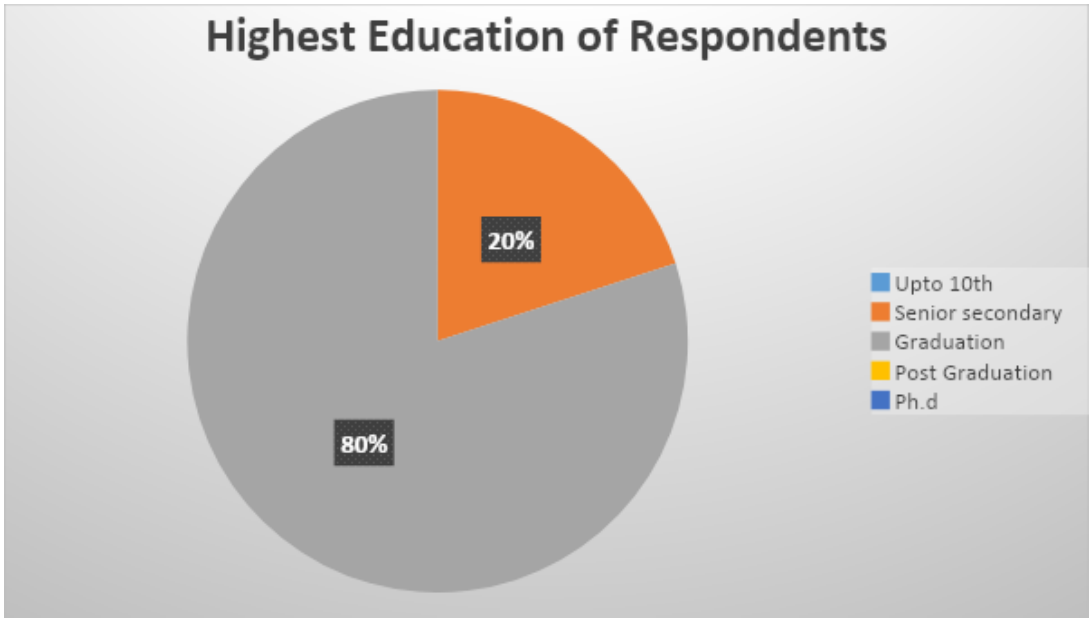

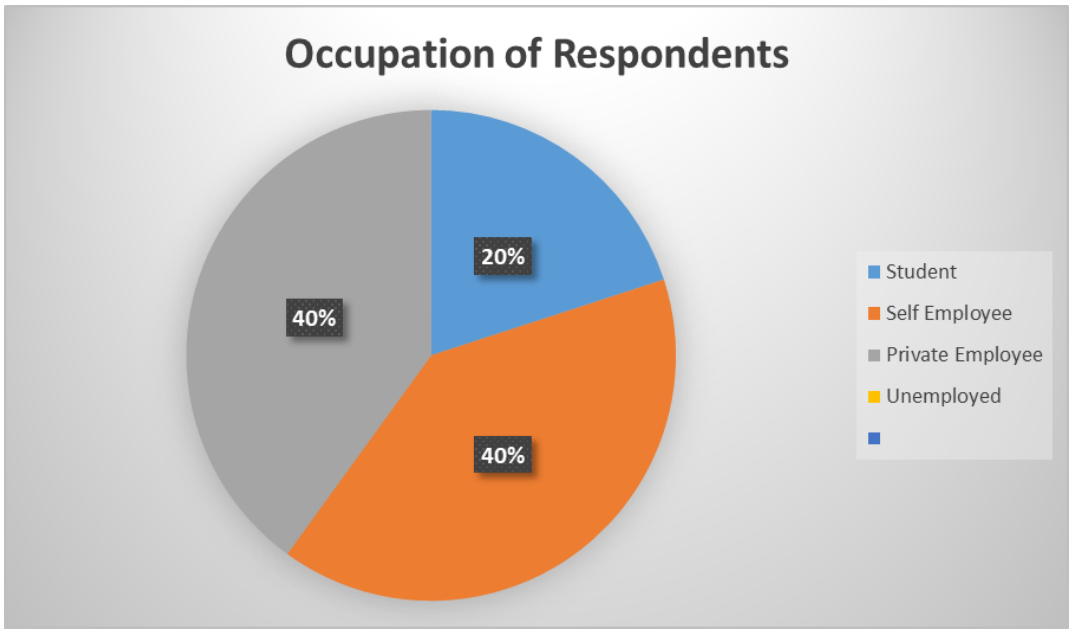

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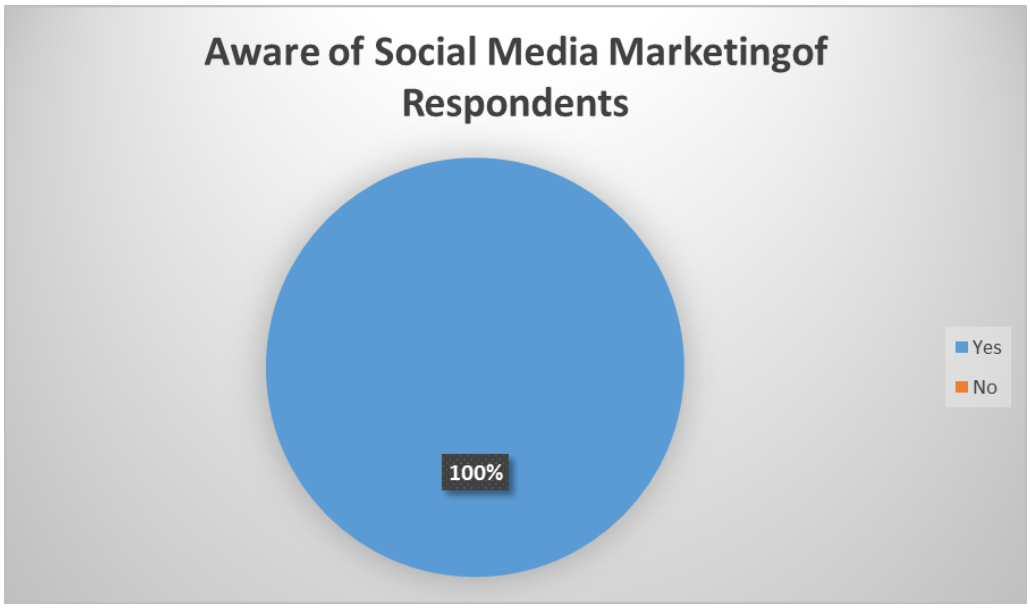

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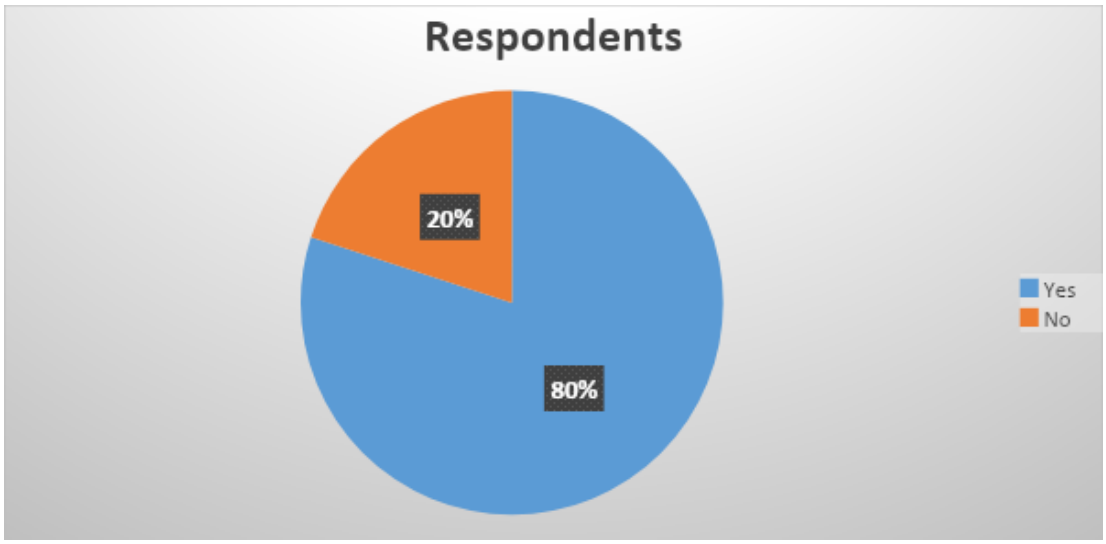

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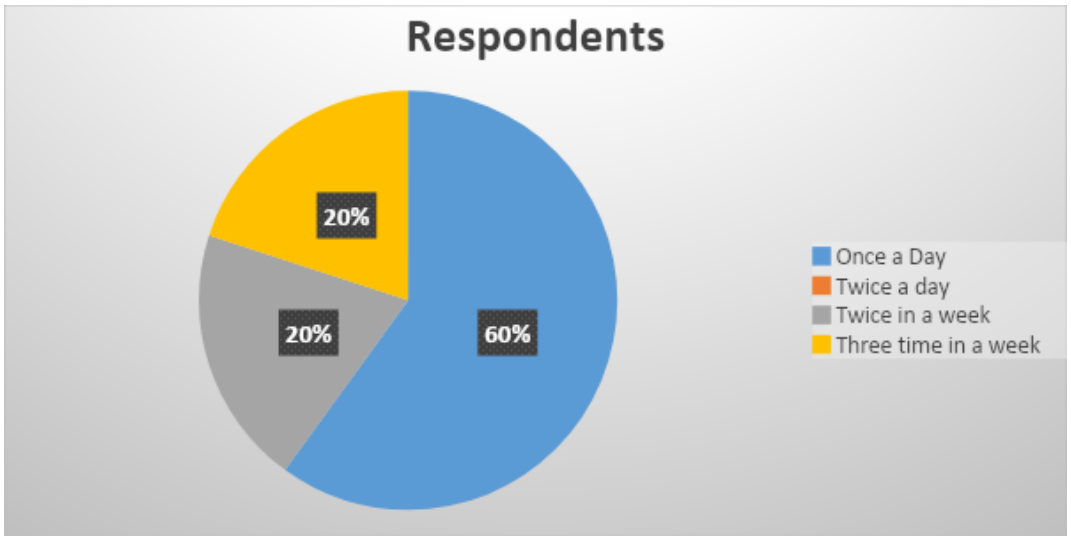

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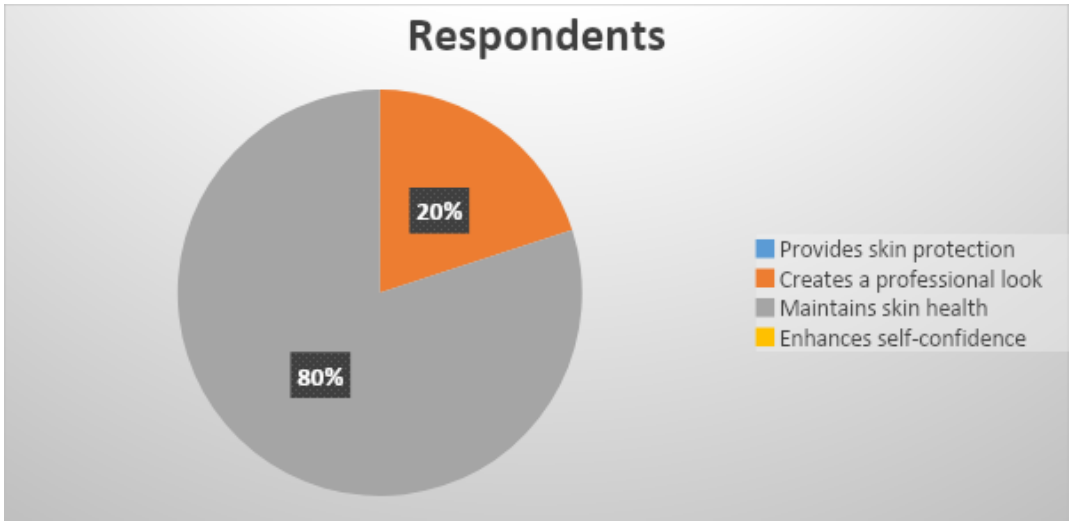

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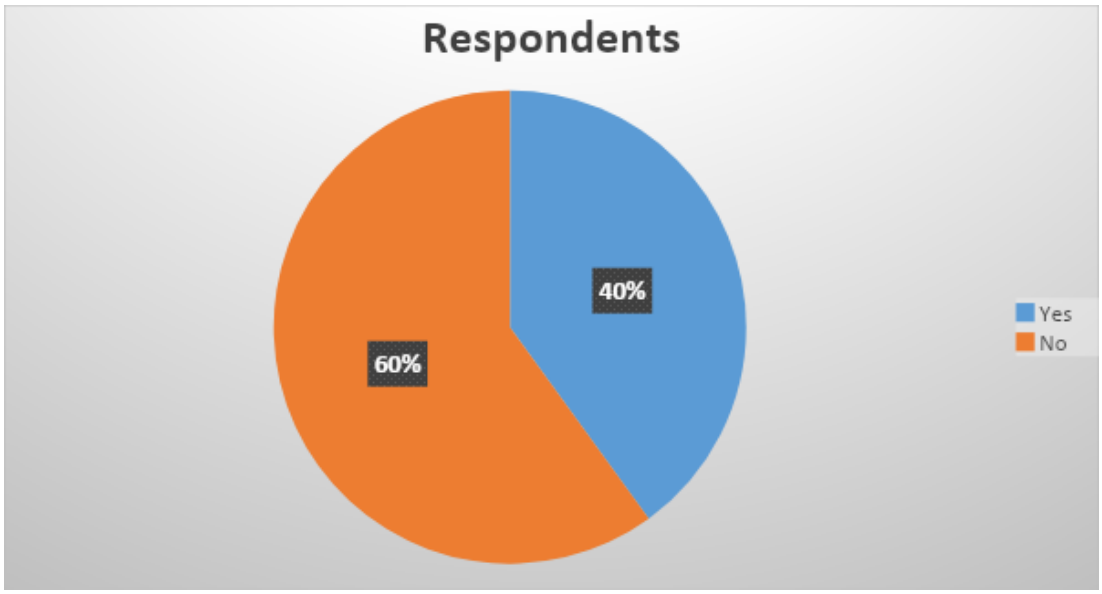

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Hypothesis evaluation:

Here percentage analysis and correlation analysis were used to evaluate the hypothesis regarding how social media marketing affects the purchasing conduct of college female students regarding beauty products in the city of Malad-Goregaon. Graphs No. 3, 4, 5, and 6 are analyzed to draw conclusions. The analysis suggests that various social media platforms positively influence consumer buying behavior and raise awareness about beauty products among college girl students. On the other hand, adverse correlations exist between the utilization of beauty products and attributes such as extroversion, social assurance, emotional resilience, self-worth, physical appeal, and cognitive intricacy (Robertson, Fieldman, & Hussey, 2008, p. 41).

Previous studies have not thoroughly investigated the factors contributing to this adverse association between beauty products and college female students. The findings align with the notion that individuals comfortable with themselves tend to have less inclination towards using beauty products compared to those with lower self-esteem. Thomas Cash proposes that when

a girl starts her trial with products of beauty, it embodies her advancement towards building a feminine identity (as referenced in Scott, n.d.).

Findings

1. The majority of respondents fall within the 20-25 age group, which corresponds to the demographic spending the most time on social media.
2. Survey data indicates every responder knows of marketing by social media
3. A substantial majority of respondents (80%) recognize the favorable influence of social media marketing on the purchasing habits of college female students.
4. Regarding the frequency of using beauty products, 60% of respondents use them daily, 20% use them twice a week, and another 20% use them thrice a week.
5. The primary reason for purchasing beauty products, as reported by 80% of respondents, is to maintain skin health, while 20% purchase them for achieving a professional look.
6. 80% of respondents agree that celebrity endorsements influence their purchase decisions regarding beauty products, while 20% disagree.

Discussion

In the last ten years, there has been a notable transition in the promotion of beauty products, with social media marketing emerging as the primary method of promotion, largely due to the widespread adoption of the internet. This study aimed to investigate the usage of social media marketing, social networking websites, and instant messengers among college students in the Malad-Goregaon city. The findings indicate that individuals predominantly utilize social networking websites and instant messengers to gather information about beauty products and marketing.

Suggestions

1. According to the study's results, beauty product companies should give precedence to social media marketing and employ innovative, interactive platforms to cultivate robust connections with their college female student clientele.
2. These companies should offer attractive campaigns, discounts, and coupons tailored to their college girl student customers. Moreover, their social media channels should offer pertinent and up-to-date details on new beauty items and the latest fashion trends.

3. Utilizing a combination of online platforms and apps related to social media, including mobile apps, can enhance communication with college student customers. Popular social media platforms among college students can have a significant influence on others.

4. There is potential for influencing girl students to use turmeric as a face cream by highlighting its medical benefits.

Conclusion

The study unveiled a favourable impact of marketing through social media on beauty products among female students of college. Effective campaigns, relevant content, timely updates, popular material, and diverse applications and platforms all demonstrated strong, positive associations with beauty products among college girls. The study highlights that college students actively use social media to validate their buying behavior, viewing it as digital word-of-mouth. Social media content influences the buying behavior of potential customers, simplifying decision-making and enhancing satisfaction. In summary, the study highlights how social media affects the purchasing habits of college girls.

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A STUDY ON AWARENESS AND USE OF BIG DATA AND ARTIFICIAL INTELLIGENCE IN HUMAN RESOURCE

Sangeeta Sahoo

Designation – Assistant Professor, BMS

Ghanshyamdas Saraf College of Arts and Commerce

Mumbai - 400063

Email Id – sangeeta.sahoo@sarafcollege.org

Alt. Email Id – sangeeta.hr11@gmail.com

Contact No – 9960688569

Abstract

In today's dynamic environment, the use of Big Data and Artificial Intelligence (AI) to enhance business operations is inevitable. The introduction of advanced technologies has significantly boosted productivity, and technology users are well aware of the challenges ahead. This chapter aims to assess the awareness and utilization of Big Data and AI technologies in organizations. Specifically, it explores the integration of these technologies into four key HRM functions: talent acquisition, training and development, performance management, and employee engagement.

Keywords: Big Data, Artificial Intelligence, Digital Literacy, Human Resources

Introduction to the Topic

The term "digital transformation" describes how corporate operations, procedures, and organisational structures are changed to take use of new technologies. **Many employees now have more flexibility regarding where, when, and how much they work. As a result, managerial responsibilities and the number of direct reports have increased, complicating their roles.**

As they get smarter, machines can now do activities that were previously thought to be beyond their capabilities. **Integrating resources to solve complex problems**

(Nishant A, International Journal of Information Management, 2020)

Limitations of Big Data and AI

Data quality is critical for AI; poor data can lead to vague or distorted results. Implementing AI technologies can be expensive, with significant costs for developing chatbots and updating company websites. HR managers often worry about budget constraints and return on investment. Despite these challenges, Big Data is essential for evidence-based HR practices, helping leaders make informed decisions. However, many companies still have room for improvement in leveraging Big Data analytics.

Literature Review

1. Due to high labour costs, intense international rivalry, and quick technical improvements, the IT sector and IT-enabled services in India are vulnerable to job loss and replacement concerns (Gironde & Carbonnier, 2019).

2. Inaccurate, inconsistent, or unavailable data can make it difficult to employ metrics and analytics, making data management a significant barrier for HRM (Harvard Business Review Analytic Services, 2014).

3.Work practices and job availability are impacted by innovations such as the Internet of Things, Big Data, cloud computing, robotics, 3D printing, and machine learning (Peetz, "The Realities and Futures of Work").

4. AI is developed based on cognitive science, with advancements in machine learning, natural language processing, robotics, and image processing (Lee et al., 2018).

5. AI aims to enable machines to perform tasks more wisely than humans, leveraging available data, computational power, and algorithms (Rich, 1983; Jia et al., 2018).

Objectives

1. To research the respondents' demographic data.

2. To gauge knowledge of AI and big data applications.

3. To assess how AI and big data are affecting routine tasks at work

Limitations of the Study

1. The study is restricted to HR professionals who the researcher knows in the suburbs of Mumbai, certain US states, and the UK.

2. Time limitations have a limit on the sample size.

3.The difficulties and mental adjustments needed to embrace these technologies were not covered in the poll.

4. The poll solely addresses the advantages of AI and big data.

Sample: Suburbs of Mumbai and some areas of USA,UK

Method: Random Sampling Method

Sample size:66

Data Collection: Primary and Secondary

Data collection Method: Google form

Data Collection and Interpretation

1. Gender

Female - 63.6%

Male-34.8%

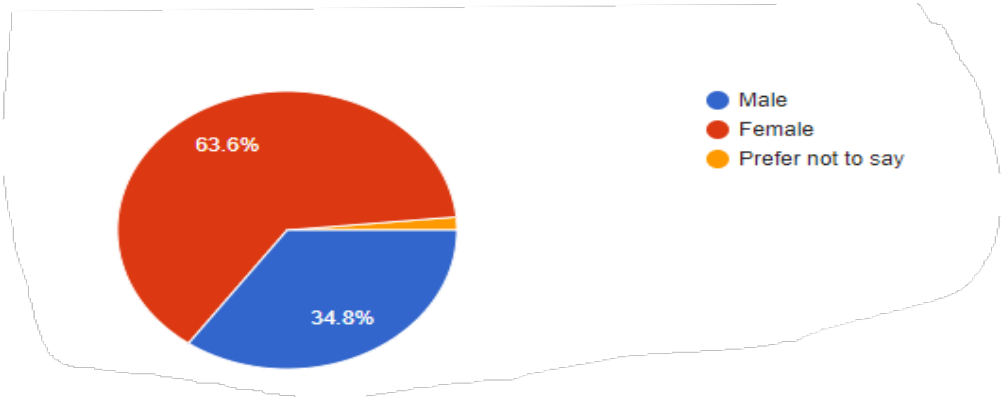

Fig 1

2. Age

68.2% respondents fall in the category of 31 to 40 years

24.2% respondents fall in the category of 41 to 50 years

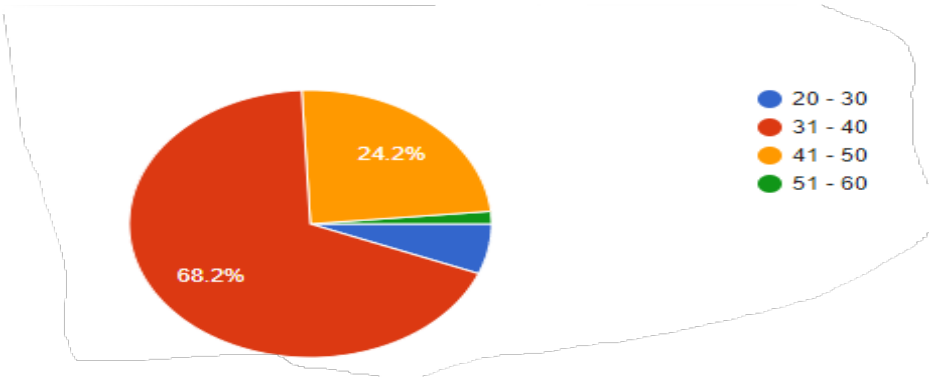

Fig 2

3. Sector

36.4% respondents are from Service Sector

27.3% respondents are from Information Technology Sector

22.7% respondents are from Education Sector

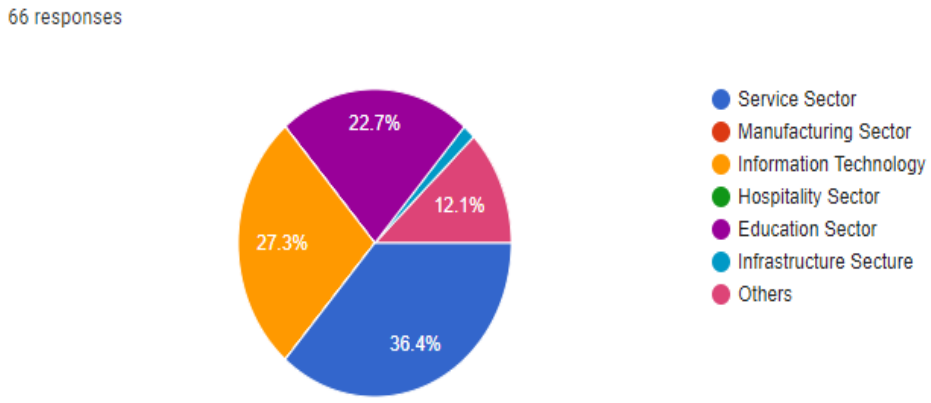

Fig 3

1. **Are you aware of the term BIG Data"**

60.6% people are aware of BIG Data.

39.4% are not aware of BIG Data.

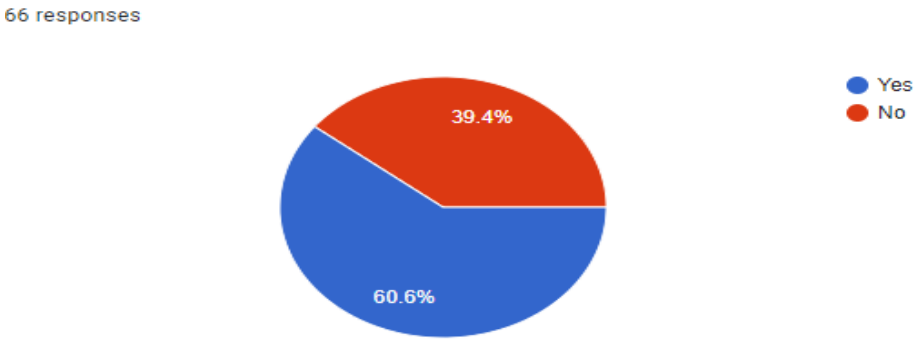

Fig 4

2. How has BIG Data helped you in your organization?

43.9% respondents believe that it has improved performance management

33.3% respondents believe it has helped in critical business decisions.

31.8% respondents believe that it has helped in recruitment function.

40.9% respondents are still not aware of the usage of bog data in their organization.

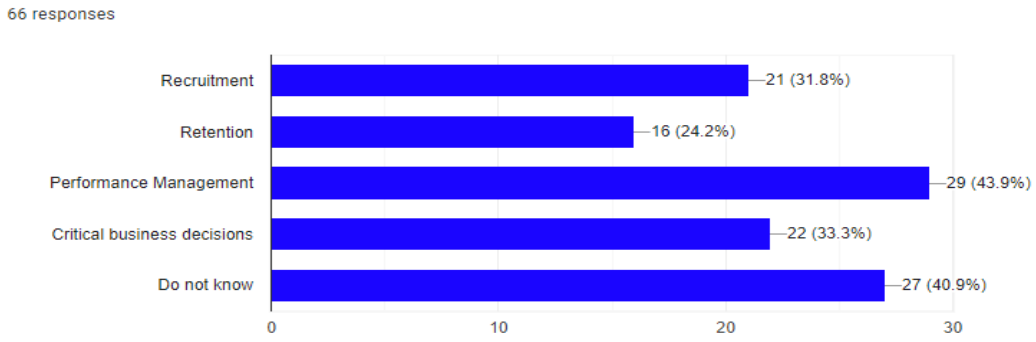

Fig 5

3. How has AI been helpful to your organization?

62.1% respondents said it has improved their company productivity and performance

25.8% respondents said they have seen increased employee engagement and wellbeing.

10.6% respondents said it has improved relationship with their client.

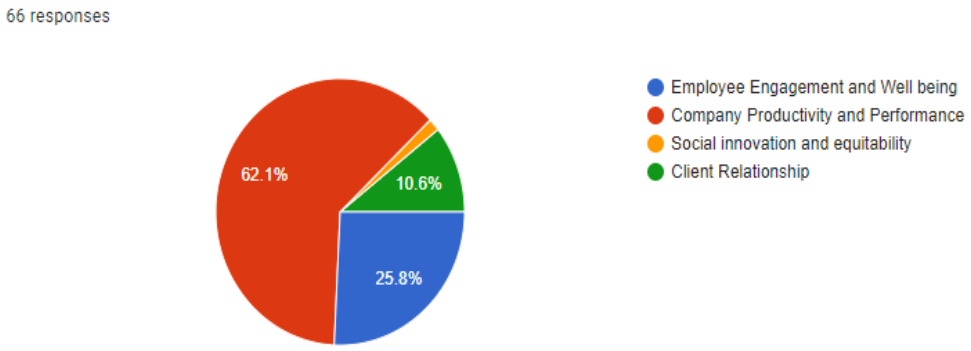

Fig 6

4. How has AI been helpful to you and your way working?

48.5% respondents said it has improved their operational efficiency.

45.5% respondents said it has improved their productivity.

33.3% respondents said it has improved employee engagement.

27.3% respondents said they are not aware of its benefits.

10.6% respondents said it has improved their incentives.

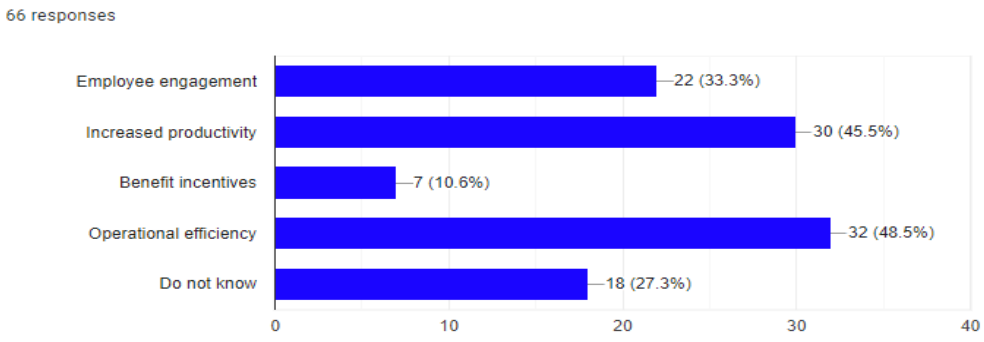

Fig 7

5. What is the major reason behind not using BIG Data and AI in your work?

65.2% respondents said due to digital illiteracy they are unable to use BIG Data and AI.
33.3% % respondents said due to digital literacy and income levels they are unable to use BIG Data and AI.
27.3% % respondents said due to lack of motivation they are unable to use BIG Data and AI.
25.8% % respondents said due to lack of physical access to technology they are unable to use BIG Data and AI.

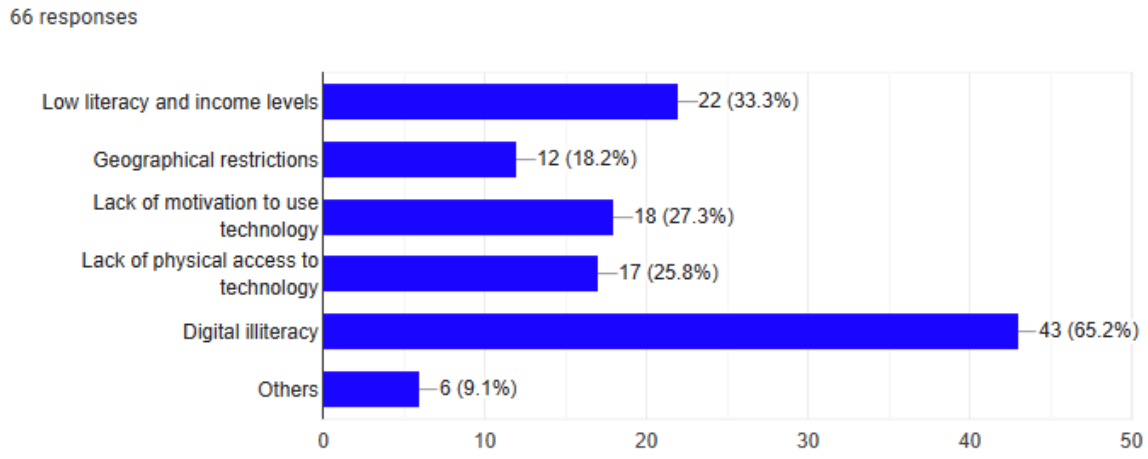

Fig 8

Major Findings

- The researcher found a higher proportion of females working in the Human Resource departments within the IT sector.

- Big Data and AI are predominantly utilized in the service and IT sectors.

- Most respondents are between 31 to 50 years old, indicating substantial experience in their respective fields.

- Big Data has enhanced performance management systems and facilitated critical business decisions.

- AI has helped organizations reduce costs, increase efficiency, and boost employee engagement.

- Despite awareness of Big Data and AI, many individuals remain unfamiliar with their applications due to digital illiteracy.

Conclusion

- Gathering high-quality data is crucial for effectively using AI tools. HRM professionals need additional training in data collection, management, and analytics to harness Big Data's potential and enhance their performance and effectiveness within an organization.

- While Big Data's ability to capture the multidimensionality and dynamics of organizations, teams, and employees can be both advantageous and challenging, the expertise of HRM scholars is likely to maximize its benefits. Although the future of Big Data in organizations promises exciting possibilities, its precise trajectory remains unpredictable.

- The application of Artificial Intelligence is hampered by limited internet access. Thorough research is necessary to determine how AI solutions can be integrated with human emotions, cognitions, social norms, and behavioral responses to ensure that the creators do not encounter challenges or difficulties.

Scope for Further Research

- Further investigation is required to determine the optimal techniques for measuring the advantages that an organisation can reap, like decreased expenses, enhanced productivity, and better working conditions.
- - More research should examine the mentalities that need to shift in order for staff members to accept digital transformation.

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A STUDY OF THE IMPACT OF BALANCED SCORE CARD PRACTICES ON PERFORMANCE OF PRIVATE SECTOR BANKS

Dr. Bhawna Sharma

Assistant Professor

DAV Institute of Management, Faridabad

Email: Bhawnasharma23_1979@rediffmail,com

Abstract

The present study studied, identified and explored the customer perspective of balance scorecard practices in private sector banks. The undertaken quantitative research was exploratory cum descriptive cum diagnostic in its nature. The survey sample consisted of 200 bank executives from middle and top management of 10 private sector banks having retail operations in India. Secondary as well as primary sources were used for the data collection and standard statistical tools were used for the analysis. The findings revealed that all the practices of customer perspective of balanced scorecard are significantly implemented to the private sector banks in specific and the whole banking sector in general.

Keywords: Balance Scorecard, Management tool, Customer perspective, Retail Banking

Introduction

The balance Score card is a both strategic management tool and performance measurement tool. The BSC helps the organizations in bridging the gap between strategies and action and that's why BSC is defined as strategic tool. In a single framework BSC includes financial and non-financial indicators from every perspective that is used systematically in business to align their activities to the vision and strategy of the organization. For any business the biggest challenge is to satisfy the needs of customers by innovation so the business can retain them. Balance scorecard helps in achieving customers' satisfaction through innovation can improve the revenue of the organization and also it helps organizations to focus on strategic areas .Therefore organizations should build up and scrutinize sound strategies relevant to organization's success. (Kaplan and Norton, 1996).

Review of Literature

Velnampy and Nimalathasan (2007) **evaluates** the relationship between balance score card and Organizational performance of the state and private sector banking organizations in North and Eastern Provinces of Sri Lanka. The data through questionnaire was collected from 32 state banks and 8 private banks. The author has studies that financial perspective, Customer perspective; internal process and Learning and growth perspective have positive impact on organizational performance and built a conceptualization model. The results show that in private sector banks organizational performance and total perspectives are not positively correlated but it's correlated with Learning and growth perspective.

Annapurna (2017) used the balance Scorecard model for evaluating the performance of top three public sector banks in India namely, State Bank of India, Bank of Baroda, and Punjab National Bank using. The profitability of these banks during the period from 2006 - 2015 was measured in terms of return on assets (RoA) and return on equity (RoE) and also studies the impact of Balance Scorecard perspectives(Financial, Customer, Internal Process and Learning and growth) on profitability and variables using correlation and multiple regressions. The results show difference in the performance of the three banks in balanced scorecard perspectives and the variables like - capital adequacy ratio, net non-performing assets ratio, number of ATMs, and number of skilled employees have impact on RoA. The variables - capital adequacy ratio, net non-performing assets ratio, and number of ATMs, number of skilled employees, and ratio of wage bills to total income also have impact on RoE.

.Rostami et al. (2015) states that performance evaluation system determines the effectiveness of the organization's activity. Therefore it's important for any organization to select best performance Evaluation system. The best model is developed by Kaplan and Norton i.e. Balance Score Card. The customer perspective of Balance scorecard identifies the customer needs so that the most important objective can be achieved - customer satisfaction. The author analysed the measures of customer perspective on the Likert five point scales collected from Iranian Bank. These measures are customer satisfaction, Loyalty, Market rate, customer attract rate, growth rate of customer complaints, Availability, Long term deposit, Validity and reliability and update services. The results give the highest priority to Customer perspective. Out of the measures the Market rate is given first priority, Growth rate of customer complaints is given second priority and attract customer rate is given third priority. All the data was analysed on FAHP method.

Research Methodology

The universe of the presented study was the set of major private sector banks originating from Indian or foreign nations, but have retail operations in India. The survey population included the respondents from top and middle management (executive level) of these operating private sector banks that have their regional or head office in NCR and it comprise of Shinhan, HDFC, Yes Bank, Citibank, IndusInd, ICICI, Axis, RBL, HSBC and Kotak Mahindra bank to analyze the importance of balanced scorecard practices and also to study the extent of their implementation in these organizations.

Objectives of the Study

To study the impact of Balance Scorecard Practices on performance of private sector Banks.

Hypotheses Formulation

H0 - There is no significant relationship between Balance Scorecard practices and performance of private sector Banks.

Impact of Balanced Score Card Practices on Performance of Private Sector Banks

This final section of the analysis presents the results related to the impact of the balanced scorecard practices on the performance of the private banks. For the purpose, as also stated in the chapter on research methodology, a bank wise composite score on implantation of balanced scorecard practices for each bank was derived and the impact of same was studies on various performance indicators of the banks.The summary of the bank wise composite score of implementation of balanced scorecard practices and their scores on respective performance indicators have been recorded in 'Table 5.26'. For the purpose of analysis regression analysis was conducted and the results of the same have been compiled in 'Table 5.27' and 'Table 5.28'. On the basis of the composite scores on implementation of balanced scorecard practices (Table 5.26), it may be noted that 'ICICI Bank' (composite score of 4.30) have ranked first, followed by 'Axis bank' (composite score of 4.27), 'Kotak Mahindra bank' (composite score of 4.27), 'HDFC bank' (composite score of 4.24) and 'IndusInd bank' (composite score of 4.24). Whereas 'RBL bank' (composite score of 4.05) have the least score on implementation of balanced scorecard practices followed by 'Citibank' (composite score of 4.14) and 'Yes bank' (composite score of 4.14). 'HSBC' (composite score of 4.20) and 'Shinhan bank' (composite score of 4.15) have been ranked at position 6 and 7 respectively.

As far as the scores of these respective banks on the performance indicators are concerned, it may be noted that all the banks have an above average performance score on almost all the parameters except on few indicators for each bank, as compared to the average performance

scores of all the private sector banks based on the RBI's statistics.

Table 5.26: Summary Table of Mean Score of Implementation of Balanced Scorecard Practices and Performance Indicators of the Sampled Banks

Sl. No.	Name of the Bank	Mean Score for Balanced Scorecard Implementation	Rank (Based on Mean Scores)	Investment Deposit Ratio	Ratio of Demand and Savings to Total Deposits	Capital Adequacy Ratio	Return on Assets	Return on Equity	Net NPA to Net Advances	Ratios of Wage Bills to Total Income
1	**Shinhan Bank**	**4.15**	**7**	28.33	14.84	15.7	1.23	9.20	1.68	8.76
2	**HDFC Bank**	**4.24**	**4**	29.99	43.25	16.6	2.70	20.70	0.28	8.03
3	**YES Bank**	**4.14**	**8**	43.72	28.05	16.5	1.78	21.50	0.29	10.86
4	**Citi Bank**	**4.14**	**9**	70.77	49.73	16.24	2.20	16.03	0.49	16.56
5	**IndusInd Bank**	**4.24**	**5**	33.56	35.19	14.92	1.91	17.00	0.36	8.31
6	**ICICI Bank**	**4.30**	**1**	38.06	45.82	16.64	1.49	11.43	0.62	7.35
7	**Axis Bank**	**4.27**	**2**	34.08	47.34	14.95	1.72	16.81	0.74	6.7

8	**RBL Bank**	**4.05**	**10**	59.29	18.64	12.94	1.01	11.21	0.59	11.44
9	**HSBC**	**4.20**	**6**	60.75	40.27	20.1	1.53	10.65	0.38	16.2
10	**Kotak Mahindra Bank**	**4.27**	**3**	36.97	38.07	16.3	1.58	12.35	1.06	14.83
Average of Performance Indicators of Private Sector Banks*				**34.45**	**34.87**	**15.00**	**1.45**	**8.00**	**2.52**	**8.68**

*Reserve Bank of India Statistics

1. Impact of Balanced Scorecard Practices on Investment Deposit Ratio

In order to study the impact of the balanced scorecard practices on the performance, the first indicator taken was 'Investment deposit ratio' and based on the results of the regression analysis it was found that there is a significant impact with 'adjusted R^2 value of .216' stating that balanced scorecard have an impact value of 21.6 percent on this ratio (Table 5.27). It was further confirmed with 'beta value at .551', 'T value at -1.865' and 'sig. value at .099' (Table 5.28). Also it may be noted that almost all the banks have fared well on their performance on this indicator as compared to the industry average for private sector banks (Table 5.26), except for 'Shinhan bank' (28.33), 'HDFC bank' (29.99), 'Axis bank' (34.08) and 'IndusInd bank' (33.56) which have marginally lower scores than the average (34.45).

Thus, on the basis of results of analysis and discussions above the null hypothesis **$H_0$4.1** may be rejected as the implementation of balanced scorecard practices have a significant impact on the performance indicator of 'investment deposit ratio'.

2. Impact of Balanced Scorecard Practices on Ratio of Demand and Savings to Total Deposits

In regard to the results of impact of the balanced scorecard practices on the performance indicator of 'ratio of demand and savings to total deposits', the results of regression analysis suggest that there is significant relationship between the implementation of balanced scorecard practices on the stated performance indicator with 'adjusted R^2 value at .372', meaning that these practices comprise of 37.2 percent of the factors that relates to this particular ratio (Table

5.27). It was confirmed with 'beta value at .665', 'T value at 2.515' and 'sig. value at .036' (Table 5.28). The same may be confirmed from the table containing the summary of mean scores and scores on performance indicators (Table 5.26), as most of the banks have scored well above the industry average (34.87) except for 'Shinhan bank' (14.84), 'RBL bank' (18.64) and 'Yes bank' (28.05) which have low scores and it may also be noted that these banks also appear at the bottom on the basis of implementation of balanced scorecard practices.

Thus, on the basis of the results tabulated in summary Table 5.26 and confirmed with results of regression analysis, the null hypothesis **$H_0$4.2** may be rejected as there is significant impact of implementation of balanced scorecard practices on Ratio of Demand and Savings to Total Deposits.

Table 5.27: Model Summary (Regression Analysis) for Impact of Implementation of Balanced Scorecard Practices on Organizational Performance Indicators

Sl. No.	Model	Performance Indicator	R	R Square	Adjusted R Square	Std. Error of the Estimate	F-Value	Df	Durbin-Watson
1	1	Investment Deposit Ratio	.551[a]	.303	.216	13.07686	3.479	1	.099**
2	1	Ratio of Demand and Savings to Total Deposits	.665[a]	.442	.372	9.53078	6.328	1	.036*
3	1	Capital Adequacy Ratio	.325[a]	.106	-.006	1.81983	0.944	1	0.360
4	1	Return on Assets	.350[a]	.123	.013	.47794	1.119	1	0.321
5	1	Return on Equity	.106[a]	.011	-.112	4.56734	0.092	1	0.770

6	1	Net NPA to Net Advances	0.03	.001	-.124	.45954	0.006	1	0.940
7	1	Ratios of Wage Bills to Total Income	.334[a]	.111	.000	3.73592	1.001	1	0.346

* Significant at 0.05 level; ** Significant at 0.10 level

3. Impact of Balanced Scorecard Practices on Capital Adequacy Ratio

The regression analysis results in regard to the impact of implementation of balanced scorecard practices on 'capital adequacy ratio' did not suggest a significant relationship between the two. Though based on the values in Table 5.26 it may be noted that except for 'RBL bank' (12.94), 'Axis bank' (14.95) and 'IndusInd bank' (14.92) that have negligibly lower scores than the industry average (15.00), all the other banks have fared highly above the average scores.

Thus, on the basis of the above results the null hypothesis **$H_0$4.3** may be accepted, since no statistical evidences were found as far as impact of balanced scorecard practices on 'capital adequacy ratio is concerned.

4. Impact of Balanced Scorecard Practices on Return on Assets

On the performance indicator of 'return on assets' with a low 'adjusted R^2 value of .013' (Table 5.27), and insignificant 'beta value at .350', 'T value of 1.058' and 'sig. value at .321' (Table 5.28), it may be inferred that there is no significant impact of implementation of balanced scorecard practices on this performance indicator. However, almost all the banks have higher ratio score than the industry average (1.45) except for 'RBL bank' (1.01) and 'Shinhan bank' (1.23) (as per Table 5.26).

Thus, on the basis of above the null hypothesis **$H_0$4.4** may be accepted since there is no significant relationship between the implementation of practices and 'return on assets'.

Table 5.28: Regression Analysis for Impact of Implementation of Balanced Scorecard Practices on Organizational Performance Indicators

Sl. No.	Model	Performance Indicator	Balanced Scorecard Practices	Unstd. Coeff.		Std. Coeff.	T	Sig.
				B	Std. Error	Beta		
1	1	Investment Deposit Ratio	(Constant)	471.594	229.520		2.055	.074**
			BSC Practices	-101.922	54.643	-.551	-1.865	.099**
2	1	Ratio of Demand and Savings to Total Deposits	(Constant)	-384.598	167.280		-2.299	.051**
			BSC Practices	100.178	39.825	.665	2.515	.036*
3	1	Capital Adequacy Ratio	(Constant)	-14.939	31.941		-.468	.652
			BSC Practices	7.388	7.604	.325	.972	.360
4	1	Return on Assets	(Constant)	-7.158	8.389		-.853	.418
			BSC Practices	2.113	1.997	.350	1.058	.321
5	1	Return on Equity	(Constant)	-9.584	80.164		-.120	.908
			BSC Practices	5.780	19.085	.106	.303	.770
6	1	Net NPA to Net Advances	(Constant)	1.273	8.066		.158	.879
			BSC Practices	-.148	1.920	-.027	-.077	.940
7	1	Ratios of Wage Bills to Total Income	(Constant)	76.504	65.571		1.167	.277
			BSC Practices	-15.620	15.611	-.334	-1.001	.346

* Significant at 0.05 level; ** Significant at 0.10 level

5. Impact of Balanced Scorecard Practices on Return on Equity

In regard to the performance indicator of 'return on equity' all the banks have performed very well with their scores above the private sector average (8.00) for this indicator (Table 5.26). In

first impression it may be inferred that with high scores on implementation of balanced scorecard and high scores on performance indicator, there exist a relationship between the two. However, the same could not be proved with statistical evidences as the values from regression analysis (Table 5.27), with 'adjusted R^2 value at -.112', 'beta value at .106' and 'sig. value at .770', were found to be insignificant (Table 5.28).

On the basis of above inferences and observations the null hypothesis **$H_0$4.5** may be accepted as no significant relationship was found between implementation of balanced scorecard practices and 'return on equity' in private sector banks.

6. Impact of Balanced Scorecard Practices on Net NPA to Net Advances

With insignificant regression analysis values (Table 5.27 and Table 5.28), 'adjusted R^2 value at -.124', 'Beta value at -.027' and 'sig. value at .940', it may be inferred that there is no significant impact of implementation of balanced score card practices on 'net NPA to net advances' performance indicator. However it may be observed from Table 5.26 that all the banks have better scores than the industry average (2.52), and may be there could have been some impact of the implementation of practices on this indicator. But since no statistical results could be derived from regression analysis, thus the null hypothesis **$H_0$4.6** may be accepted.

7. Impact of Balanced Scorecard Practices on Ratios of Wage Bill to Total Income

All the banks except 'Axis bank' (6.7), 'ICICI bank' (7.35), 'HDFC bank' (8.03) and 'IndusInd bank' (8.31), have scored really well on this performance indicator as compared to the industry average (8.68), and there was an indication that implantation of balanced scorecard practices may have some impact on 'ratio of wage bill to total income'. However, the same could not be noted in the results of regression analysis as the critical values were found insignificant (Table 5.27) with 'adjusted R^2 value at .000', 'Beta value at -.334' and 'sig. value at .346' (Table 5.28). Based on the results of analysis the null hypothesis **$H_0$4.7** may be accepted as no significant relationship was found between implementation of balanced scorecard practices and performance indicator of 'ratio of wage bill to total income'.

Conclusion

Based on the results of analysis (Table 5.26 to Table 5.28) and discussions in the above section it may be noted that all the banks have performed well as far as implementation of balanced scorecard and the scores on performance indicators are concerned. But, since statistical evidences could not be found for establishing relationships and impact between the two for all the indicators and taking into consideration that only five of the seven sub hypotheses were accepted, it may further be concluded that null hypothesis **$H_0$4** stands partially accepted and partially rejected as relationship was found on two of the performance indicators.

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The Contribution of Electric vehicles in green growth of Indian economy: an empirical study.

Dr. Kalpana M. Patil

Assistant professor in Commerce

SSVPS B.N.S Arts and M.F.M.A Commerce College,Dhule

Email: kalpana165.patil@gmail.com

Abstract

The government's initiatives and the increase in crude oil prices are helping the Indian EV industry gain traction as more consumers explore for alternate ways to lower their monthly expenses. As the price of regular motor vehicles and fuels continues to increase, many people now prefer to use electric vehicles (EVs) as a long-term alternative and public transport. EVs are efficient and environment-friendly, not to mention cost-effective in the long run, as they require no fuel at all . Fast urbanisation, pollution, traffic jams, parking shortages, increased air pollution, lengthy commutes, and strain on public infrastructure are just a few of the issues driving India towards electric mobility, encouraging the use of electric vehicles domestically and the use of alternative energy sources to lessen pollution and reliance on imports. The increase in oil import prices, growing pollution, and worldwide commitments to combat global warming are all acting as spurs for India to speed its shift to e-mobility. The auto sector in India has grown significantly and is predicted to continue growing at an exponential rate. As far as the market is concerned, the epidemic has created a need for products that lower pollution levels, and electric vehicles (EVs) are an excellent method to

Keywords: Electric Vehicle, Government initiatives, e-mobility, infrastructure

Introduction:

India's economy is developing at one of the quickest rates in the world and it has the second largest population in the world. Some of the biggest and fastest-growing businesses in the world, from local start-ups to global conglomerates, are based there. With new businesses opening up every day, the Indian start-up ecosystem is expanding quickly. India is rapidly approaching the status of one of the world's most populous nations due to its massive population and rapidly expanding economy. This market has seen the entry of

numerous new and established players, including Tata Motors, Ola Electric, Hero Electric, and Ather Energy. The future of the automotive industry is thought to lie with India's EVs. EVs are expected to replace fossil fuels as the industry standard in the wake of the current climate change and concerns about it. making batteries in May 2021. Government funding for the scheme has also been boosted. The PLI plan aims to reduce the cost of this critical component of electric vehicles. The Goods and Services Tax (GST) on electric car sales has been cut from 12% to 5%.

Finance Minister Nirmala Sitharaman made the announcement when introducing the Union Budget 2023, making electric vehicles (EVs) more affordable in India by extending the subsidies on their batteries for another year. In Union budget 2023, Green Growth was the top most priority. The Pro-EV budget focuses on crucial efforts like cutting the customs duty on lithium batteries from 21% to 13% and extending the subsidies for EV batteries by another year. These are positive measures since they will help increase demand.

The policy on replacing old polluting vehicles should hasten the transition to electric vehicles, which is consistent with the budget's goal of encouraging eco-conscious lifestyles and the government's commitment to promoting environmental sustainability. In 2023 the Indian government declared that To further promote green mobility, the basic Customs duty (BCD) exemption has been extended to capital goods and machinery imports needed for the production of lithium-ion cells or batteries used in electrically driven vehicles (EVs). in country. Also, Budget 2023 extended the BCD exemption on Lithium-ion batteries are used to make the batteries or battery packs for electric or hybrid cars and mobile phones till 31st March 2024. The 36th GST Council meeting decided to reduce the GST rate between 12% and 5% for electric cars and between 18% and 5% for chargers or charge stations to boost the electric vehicle market. The sale of electric vehicles is covered under HSN code 870240.

In addition to being safer than conventional cars, electric vehicles are also better for the environment. The main arguments for electric automobiles' safety are listed below.

Advantages of Electric Vehicles:

No noise pollution and no harmful emissions into the atmosphere are produced by EVs.

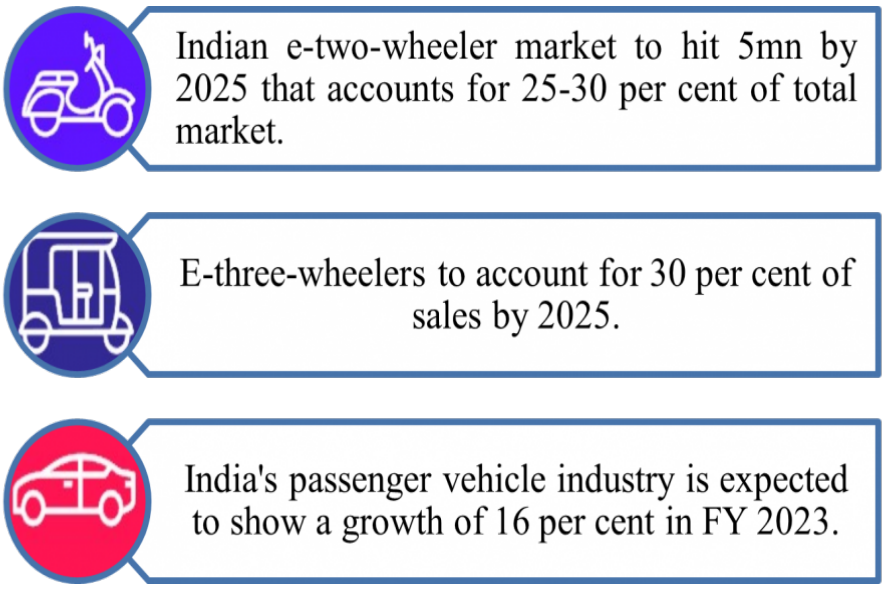
Less maintenance: Compared to traditional cars, EVs have only two moving parts, meaning they require less maintenance. - Because electric cars have a lower centre of gravity, they are more stable when travelling at high speeds and are less likely to topple over. Smoother ride: Since there are no vibrations from a combustion engine, the ride will be more comfortable. Since internal combustion engines provide more thrust than electric motors, less

room is needed for them to avoid collisions. More Convenient: Recharging an electric car is simple. Because they can recharge themselves from an ordinary electrical socket, they don't require refuelling as frequently as gasoline-powered vehicles.

Measures taken to boost the growth of the EV sector in India- First, in order to meet the ambitious target, a large number of traditional automakers and energy firms are making significant investments to increase EV demand. Among them are Skoda, which said that it will start producing electric vehicles (EVs) in India in 2021, and Indian Oil Corporation, which said that it would build 22,000 EV charging stations in three to five years.

Second, the Indian government has been putting various initiatives into place to support the expansion of electric mobility. These initiatives include incubator programmes, shared facilities for small-scale manufacturing and prototyping, 100% foreign direct investment (FDI) through the automotive route in the EV space, financial support through the Credit Guarantee Scheme for Start-ups (CGSS), tax breaks, and consumer subsidies.

Thirdly, funding for electric vehicle companies hit a new high in 2021, increasing by over 255 per



- India's present situation and goals for the EV industryThe automotive industry in India is ranked fifth in the world and is projected to go up to third place by 2030. India is the world's leading producer of tractors, buses, and two- and three-wheelers in addition to being the second-biggest producer of buses overall.At the moment, the automobile sector accounts for 49% of India's manufacturing GDP and 7.1% of the country's GDP. This indicates that the economy of the country is greatly impacted. This implies that many car ancillaries and related industries will expand in the future years in tandem with the EV industry if they continue to follow the trends.

  • The Indian automotive sector is predicted to be worth 222 billion dollars, while the country's EV market is projected to be worth $2 billion by Road Transport and Highways, India). By 2030, this will likely increase by 45–50 Mn EVs on the road.
- Currently, the automotive sector employs around 37 Mn people, and by 2030, it aspires to generate 50 Mn direct and indirect jobs.
  By 2030, the EV market is anticipated to reach 10 Mn annual sales, growing at a Compound A 49% CAGR is projected for the years 2022–2030.
  • The industry received $32.84 billion in stock inflows from Foreign Direct Investment (FDI) between April 2000 and March 2022, or 6% of all FDI in equities during that period.
  •The demand for electric cars increased to 999,949 units in 2022, a record year for sales across all vehicle classes for India Auto Inc. Future EV growth will be fueled by incentives, more product options, and rising consumer eco-consciousness.

  The following table displays the sales of electric vehicles in India as of December 31, 2022, in the evening, according to India's Vahan portal:

SHARE OF ELECTRIC 2WS IN TOTAL 2W RETAILS IN CY2022				SHARE OF ELECTRIC 2Ws IN EV INDUSTRY SALES: CY2022			
Month	Overall 2Ws	Electric 2Ws	% share of e2Ws	Month	EV sales	Electric 2Ws	% share of E2Ws
January	11,26,451	28,193	2.50%	January	50,158	28,193	56.20%
February	10,79,598	33,514	3.10%	February	56,563	33,514	59.25%
March	12,59,429	51,950	4.12%	March	80,848	51,950	64.25%
April	13,00,624	50,782	3.90%	April	75,830	50,782	66.96%
May	13,39,684	40,556	3.02%	May	68,122	40,556	59.53%
June	12,05,210	42,652	3.53%	June	74,109	42,652	57.55%
July	11,23,962	44,854	3.99%	July	79,228	44,854	56.61%
August	11,70,427	51,410	4.39%	August	87,545	51,410	58.72%
September	10,71,516	52,992	4.94%	September	92,994	52,992	56.98%
October	17,12,530	76,638	4.47%	October	1,15,991	76,638	66.07%
November	18,49,019	76,733	4.14%	November	1,19,409	76,733	64.26%
December	10,68,805	65,091	6.09%	December	94,522	65,091	68.86%
Total	**1,53,07,255**	**6,15,365**	**4.02%**	Total	**9,95,319**	**6,15,365**	**61.82%**
Data: Vahan							

ELECTRIC VEHICLE SALES IN INDIA		
Calendar Year	Units sold	% growth
2013	2,693	
2014	2,392	-11.12%
2015	7,772	224.95%
2016	49,065	531.22'%
2017	86,120	75.52%
2018	1,27,576	48.13%
2019	1,63,459	28.12'%
2020	1,21,654	-25.57%
2021	3,22,871	165.40%
2022	9,99,949	209.70%
Total EVs sold	18,83,551	
Data: Vahan		

Sample Size

The number of items selected determines the sample size. It must ensure efficiency, representativeness, dependability, and flexibility.

India's Present Situation and Future Goals in the EV Sector India's car industry now stands at number five in the world, but by 2030, it should be in third place. It is the biggest maker of tractors and other farm vehicles, the second-largest producer of buses, and the largest producer of two- and three-wheelers. India's economy is greatly impacted by the automobile sector, which currently makes up 49% of the country's manufacturing GDP and 7.1% of the country's GDP overall. A number of car ancillaries and associated industries will expand together with the EV industry.

- The Indian automotive market is expected to reach $7.09 billion by 2025, from an anticipated $2 billion in 2023. The industry is valued at around $222 billion. Furthermore, 40% of

worldwide R&D and 8% of national exports come from the automotive sector. constituting 6% of all FDI equity during that period.

- In 2022, India's Auto Inc saw record sales across vehicle segments, with EV sales soaring to 999,949 units.

EV Sales Data for 2022

The Indian EV industry experienced significant growth, with 999,949 EVs sold in 2022, a 210% rise from the 322,871 units in 2021. Due to their lower cost when compared to electric passenger and commercial vehicles, two- and three-wheelers have experienced the most growth. It is anticipated that by 2030, there will be 45–50 million EVs on the road, with 10 million sold annually.

- Four-Wheeler Segment: With cumulative sales of 37,792 units, this segment represents approximately 4% of the EV market in India.
- Two-Wheeler Segment: 622,337 units were sold, accounting for 4% of the two-wheeler market and 62.23% of all EV sales.
- Leading manufacturers: MG Motor India (3,390 units, 9% market share) and Tata Motors (30,284 units, 80% market share).

Monthly Sales and Market Leaders: In 2022, sales of electric two-wheelers reached a record 615,365 units, led by Okinawa Autotech (101,366 units) and Ola Electric (108,130 units).

leading the market. The top 10 OEMs account for 89% of total sales.

- Monthly sales averaged 51,280 units, highlighting the increasing consumer demand.

Ecosystem Creation and Infrastructure

- Creating a widespread charging infrastructure is crucial for the rapid adoption of EVs.

Conclusion

Achieving the Vision 2030 set by the Indian Government requires extensive planning, research, and development. Policies like FAME need regular updates to keep pace with global developments. India must focus on improving the energy efficiency of EVs. Which make them an attractive option for B2B sectors like e-commerce, grocery, food, and courier delivery. New business models, such as energy operators managing battery manufacturing, are being tested, though success remains limited due to low EV penetration. Governments and utility companies need to lead in establishing charging infrastructure to address range anxiety. With a focus on

localization and expected reductions in battery prices, the future looks promising for eco-friendly mobility.

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Determining the Scope of Cloud Database Platforms

Dr. Sujatha Iyer & Ms. Trupti Rongare

Department of Computer Science, Satish Pradhan Dnyanasadhana College, Thane

Email: sujatai@dnyanasadhanacollege.org

Email: truptirongare@gmail.com

Abstract

The analysis on database system features is to establish a pattern of database system's future. These systems are enhancing in multiple dimensions, including storage distribution, query processing, faster performance and increasing type of data persistence. This study will also try to establish pattern on close integration of intelligence in modern database systems. This Analysis is an attempt to provide a point of view on latest database transformations from database systems to database Platforms.

Key words

Modern Databases, Database Platforms, Database systems, Intelligent database, Artificial intelligence in database, Advance Databases, Cloud databases.

Introduction

Actually, there are quite a million of databases are available which supports various business activities. Database models are available from file-based to NoSQL [2]. Each model fulfils some goals of business. New needs have arisen due to more data storage, better performance efficiency. Traditional relational database models cannot satisfy many of these goals of handling structured and unstructured data in an efficient and cost-effective manner. (Berg, Seymour & Goel 2013; Burns, ud; Hellerstein, Stonebraker 2005; Sadalage, Fowler 2013). So, it is checking out solution in the form of database platforms.

Understanding Databases on CLOUD

traditionally software, databases and applications used to install on hardware owned by organizations. Industries are migrating on cloud-based platforms where applications and databases are installed, managed, and operated over cloud [3]. According to some survey almost 36% of the companies are using cloud services (Mimecast Survey, 2011).

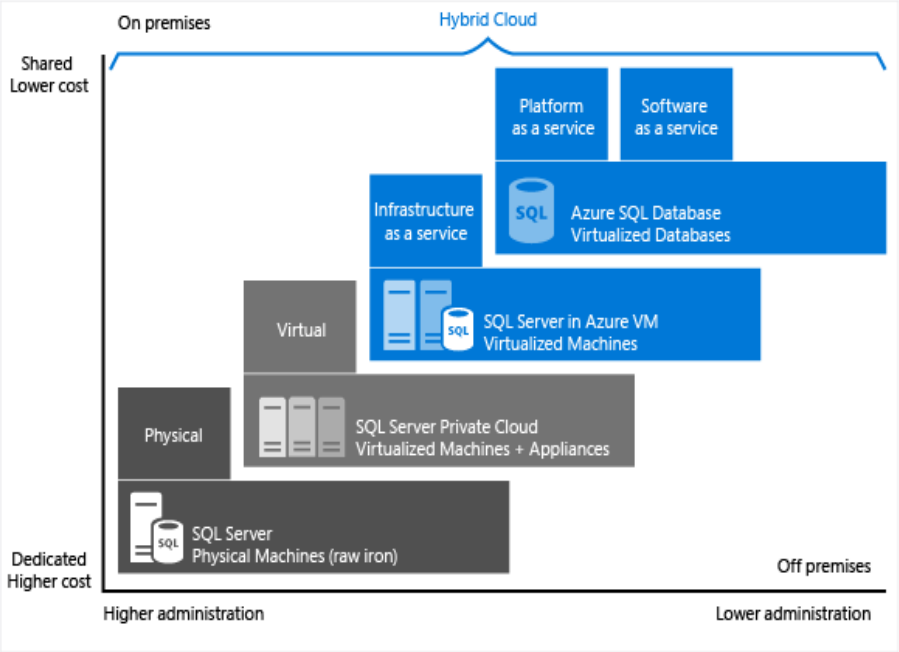

Figure 1.1 Database Platform
(Source: Magenium Solutions)

Cloud enables platform as service multiple context it is considers as value-based service because it provides flexibility, higher availability, improved time to as multi dimension scaling on compute power.

Figure 1.1 compares on premises and off promises database usage. Database storage size can be expanded on run time. Persistence needs will determine the size of the scalable database footprints which is unlikely to non-cloud database environments where provisioning additional size to the databases had been a typical project for technicians.

Adjustable compute power is a big plus added to complex data processing systems in the cloud environments. Pay per use policies from cloud platforms has brought a value driven expenses model from organizations. Visualization tools and analytical data models makes data more discoverable but processing function often needs ability to process at scale, many times compute performance is a key for derivations, for example GPS systems in car navigation, processing at speed is equality important as accuracy of information.

Cost of data persistence looks cheaper in the cloud environment, which is one of the major factors of higher cloud platforms adoption across industry lines. Maintenance costs have been shifted to shared costing model in a way because major database maintenance activities have

been carried out by cloud providers. Activities including backup, recovery, disaster recovery, monitoring, logs etc. are generally carried out by cloud platforms. Which is not only a big cost saver, but it is saving lot of maintenance efforts and troubleshooting on day-to-day basis. More important is the system downtime for maintenance or upgrades, backward compatibility etc. are major issues organizations had been facing frequently before could base databases were introduced.

Every database system has been influenced by surrounding systems. Extraction Load and Transformations (ELT) are typical operations on data warehouse systems. Transactional (OLTP) systems and analytical (OLAP) systems have many online or batch transformations. Cloud eco systems have multiple state of art systems which is catering all database operations including ELT, OLTP and OLAP.

Database transactions have been classified as batch processing, real time and streaming solutions. Each of the transaction types have multiple cloud base tools, products and platforms to simplify these transactions using modern algorithms and intelligence. Interfacing with modern data processing systems on cloud platform has indulge the need to move traditional databases to cloud and enhance.

Relational Databases system (RDBMS), which have been serving in majority, cater to schema base data storage. RDBMS structures limit the data storage, schema is often predefined and majority of times context about data get missed while capturing data [5]. In real world data is contextual to the event or action. Each event of actions has variations of schema and because fix schema of RDBMS limit capturing all aspects of data and store. According to research, 90% of world's data going to be digitalized with the two years. (IBM 2015, Science Daily 2013).

Modern database systems provide ability to store unstructured, structured, and semi structured data storage. Which need flexible and scalable storage and allow distributed complex processing for effective business utilization of data storage. Combination of many aspects of database storage, operations, extraction, performance, maintenance, scalability, flexibility and pay per use cost structure has modernized database over cloud.

Today , database and DBMS are an integral part of any kind of work. It may be business related or managing accounts[1].

SOME DOMINANT CLOUD Databases

A. SNOWFLAKE

It is a Cloud Managed Database, which does not need any installation neither on virtual machines nor on physical infrastructure. Snowflake has fully managed Software as service. enterprise does not need to perform maintenance activities. Replications failovers and disaster recovery have been provided as Software service. Snowflake is cloud only database, which has database persistence, ELT, OLTP and OLAP supporting tools, intelligent analytical tools. Snowflake also provides partitioned data persistence as well as advanced database features like time travel. Snowflake support multiple cloud-based platforms. Some examples are Azure, Google cloud and Amazon web services. The cloud database is easy to use and manage . Mostly it should reduce the costs as well (Curino, Madden).

Connectivity to multiple state of art visualization tools, analytical models, in built data pipelines, data import & export features as well as data sharing ability across multiple customers across secure connections. For example: snowflake provides tableau connector which provides unstructured as well as structure data to the visualization tools. Snowflake operates scalable compute power and distributed computing. Snowflake query performance is recognized as one of the best-in-class complex query performance.

B. Azure Databases (CosmosDB and SQL Datawarehouse)

This is one of most adopted database services on Microsoft Azure platform. It is a Fully managed platform. Cosmosdb provides automated failover and business continuity provisions with time to live feature [4]. CosmosDB has multitenant container. It can be accessed using SQL, Gremlin, Mongo dB, Casandra and Table API. SQL works as relational database acid transactions. These transactions are like traditional RDBMS systems except autoscaling, implicit indexing and auto failover. Gremlin is used when graph or network related use cases need to access. it supports vertex and relations; it also supports graph query language finding anomalies and semantic co relation base applications.

Mongodb tenant facilitates document based No-Sql implementations. Mongo is Json base document database to facilitate high available and high consistence data extractions, mainly suitable for unstructured or semi structured data processing. Casandra tenant has been utilized for analytical use cases, where key value pair-based data processing can be performed. CosmosDB is a Microsoft Azure native tool, which has integral connectivity with rich analytics

library i.e., Microsoft Synapse. Architecture of synapse also includes data bricks (Distributed Parallel Data Processing) and State of Art data visualization tool i.e., Power BI.

C. BIGQUERY

Google Cloud's native database system is known as BigQuery.. Like other cloud databases, big query is also a fully managed platform as service. Where failovers, higher availability, business continuity, higher scalability and other features are integral to the cloud platform. BigQuery supports in built machine learning libraries to perform real time analytics. it is designed to support geospatial queries. Natural Language Processing services are part of analytical system. BigQuery provides data transformation applications to extract load and transform the data. There are prebuilt products to transform data from Teradata or Amazon Red shift. This enables BigQuery platform more connected to other cloud platforms.

D. REDSHIFT

Amazon Redshift is widely used could data warehouse. This is the data warehouse designed to migrate on premise data warehouse systems over cloud like Oracle data warehouse. Typical data warehouse systems are used to create faster and flexible data analysis. Amazon redshift has provided cloud based better option to migrate on-premises warehouses. It includes business analytics, operational analytics, and predictive analytics. Redshift compute cluster has provided scalable, flexible cloud platform. With strong integration with Amazon Sagemaker, Amazon EMR, Amazon Athena and 3rd party services. Amazon Redshift has ability to store query response on Amazon S3. This cloud warehouse system has been established 10 of thousands analytical clusters on AWS cloud platform.

E. MARKLOGIC

Marklogic Datahub is multi cloud data hub which can simplify data curation, transformation, integration for unified data hubs. Marklogic is designed to store document, which can cater structured, unstructured and semi structural documents. Marklogic have three components storage, webserver and analytical services. There are multiple set of tools are available to ingest the data, migrate, import and export of the data. It includes dashboards, machine learning libraries as well as analytical data models.

ADVANTAGES OF DATABASE PLATFORM

1. Cost Saving - Organization can invest in the resources they truly need, without worrying about the maintenance of database.

2.Rapid Provisioning - Comparatively it takes very less time to process and in cost effective manner.

3. Outsourcing – Various operations like “Backups”, ”Optimization” are handled by outsourcing.

4. High Security – Security breaches avoided by ‘by-default’ security mechanism of Database platform.

5. **Tracking –** Easily can track usage time, space, resource consumption.

6. **Manpower** – Freeing up staff is the biggest advantage of this. Manpower can focus on their development.

7. Server Space – Lot of server space frees up.

8. Scalability - on-demand scalability is possible.

Conclusion

Databases on cloud platform are generally fully managed and performing operations more like a platform rather than traditional software applications. Disaster recovery, Intelligent data insight systems, easy extract load and transformation products are integrated in cloud database platforms. Microsoft Synapse architecture is built on SQL DW as well as Power BI, Marklogic machine leaning libraries integration with persistence layers and AWS providing Redshift with EMR as Data platform or Snowflake Data sharing among customers establish a strong pattern indicating that Database systems are evolving towards Database platforms. Data Technologies are migrating towards modern Era of Database platforms. Database platforms are tightly coupled integrations of Data Analytics, Governance, Persistence, Data Data Applications and Intelligent Data processing products hosted on cloud which are ready to consume.

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BREAK THROUGH INNOVATIONS - "QUEST, CHALLENGES, JOURNEY"

HARNESSING INDIA'S ENERGY POTENTIAL -INNOVATIONS AND CHALLENGES IN ENERGY PRODUCTION

SHERLEY ROSE

ASSISSTANT PROFESSOR

Narsee Monjee College Of Commerce And Economics

Vile Parle (West), Mumbai 400 056.

Email Id: sherleyrose23@gmail.com

Contact no.: +91 9930262515

ABSTRACT

Energy, in terms of electricity power, refers to the generation, transmission, and distribution of electricity. It is an essential resource that drives the modern world and is essential for the development and progress of mankind. India's quest for energy development has been a ongoing process since independence in 1947. The country's energy needs have been growing rapidly in recent years due to its rapidly expanding population and economy. India is now the world's 3rd largest consumer of energy and is projected to become the world's 2nd largest consumer of energy by 2040. This paper will examine the various initiatives and challenges that India is facing in its quest for energy development.

INTRODUCTION

Electricity is a form of energy which can be easily converted and transported to power various devices and machines. It is used to power homes, businesses, and industries, and is essential for lighting, heating, and powering appliances and equipment. It is also used for transportation, as electric vehicles become more prevalent.

Electricity is also crucial for the functioning of many vital systems, such as healthcare, communication, and security. In addition, it is essential for the growth and development of industries, such as manufacturing, agriculture, and mining. Energy, particularly electricity, is essential for the development and progress of mankind. It powers the processes that drive our economy, society, and daily lives, and is essential for reducing poverty and promoting economic development. However, it is important to ensure that the energy we use is sustainable and does not harm the environment.

The need for electricity, is increasing as the world's population keep on growing and the demand for goods and services which are energy-intensive is on a rise. Developing countries, in particular, need energy to power their economies and improve the living standards of their citizens.

Moreover, access to electricity is a crucial factor in bring down poverty and promoting economic development. It allows for better education, healthcare, and job opportunities, and enables people to improve their standard of life. However, the increasing need for energy also has negative impacts on the environment, particularly in terms of greenhouse gas releases and air pollution. Thus, it is important to develop and implement sustainable energy solutions that is able to keep up with the energy demands of the world's population while minimizing negative environmental impacts.

HISTORY OF INDIA'S GENERATION OF ENERGY

The history of India's energy generation can be tracked back to the late 1900’s, when the first hydroelectric power plant was established in Darjeeling, West Bengal in 1897. This was followed by commencing of the first thermal power plant in Tuticorin, Tamil Nadu in 1910. These early power plants were primarily used to power local industries and street lighting.

In the 1920s and 1930s, the government of India began to take a more vigorous role in the development of the country's energy sector. In 1948, The Electricity Supply Act was passed, which established the Central Electricity Authority (CEA) and the Central Electricity Board (CEB) to plan, develop, and regulate the power sector.

During the 1950s and 1960s, the government focus was on expanding the generating capacity of the country, primarily through the building of large-scale hydroelectric and thermal power plants. The installed generation capacity rose from 1,362 MW in 1951 to 8,622 MW in 1971. In the 1970s and 1980s, India's energy sector underwent significant changes with the nationalization of the power industry. The National Thermal Power Corporation (NTPC) and the National Hydroelectric Power Corporation (NHPC) was established by the government to develop and operate power plants. In the 1990s, India's power sector underwent a process of deregulation and liberalization, with the government encouraging private sector contribution in the generation and distribution of power. The country also began to focus on renewable energy sources, such as solar & wind power.

In the recent years, India has made significant advancement in the renewable energy development. The country had fit a target of attaining 175 GW of renewable energy capacity by the year 2022, including 100 GW of solar and 60 GW of wind power. As of 2021, India had already exceeded its target of 175 GW and reached around 180 GW of renewable energy capacity.

Overall, India's power sector has gone through significant transformations over the past century, with the country moving from a primarily state-controlled sector to a more liberalized and privatized sector. The focus has shifted from traditional forms of energy production to renewable energy sources, and the government's efforts to increase renewable energy capacity has been a significant part of India's overall energy strategy.

CURRENT STATE OF INDIA'S ENERGY GENERATION

As of 2021, India is the 3rd largest consumer of energy in the world, behind China and the United States. India’s energy generation is primarily based on fossil fuels, like coal, natural gas, and oil. But, in recent years, India has been taking significant efforts to diversify its energy mix and upsurge the part of renewable energy.

Coal remains the primary source of energy of India, which accounts for around 55% of the country's total power generation. However, there have been efforts to reduce the country's dependence on coal. India has fixed a target of reducing the coal import dependency to 0% by 2024 and increasing the natural gas’s share in the energy mix to 15% by the year 2030.

Renewable energy is also a significant part of India's energy mix. India has set a target of achieving 175 GW of renewable energy capacity by the year 2022, including 100 GW of solar energy, 60 GW of wind energy, 10 GW of biofuel, and 5 GW through small hydro-power. As

of 2021, India has already exceeded its target of 175 GW and reached around 180 GW of renewable energy capacity.

India is also making progress in the development of nuclear energy. India has also set a target of achieving 63 GW of nuclear power by the year 2032.The Indian government has also implemented various policies and schemes to promote energy efficient production and conservation. The government is focusing on energy-efficient appliances, buildings, & transportation to decrease energy consumption and emissions.

India's energy generation is currently based primarily on fossil-fuels, with coal leading the primary source of energy. However, the country is making significant efforts to branch out its energy mix and boost the portion of renewable energy, specifically solar, hydro and wind power. The government of India is also executing various policies and schemes in order to promote energy efficiency and conservation and to decrease energy consumption and emissions.

OBJECTIVE OF STUDY

1. To analyze the current state of energy production in India
2. To evaluate the challenges and innovation India's energy sector.
3. To develop strategies for harnessing India's energy potential

RESEARCH METHODOLOGY

The present research paper is prepared mostly with the support of secondary data and sources like journal articles, magazines, conference proceedings, past literature, government reports, newspapers, and other related information data source. According to the objective of the study, all the data collected is analysed and the research is designed in a description manner.

REVIEW OF LITERATURE

(Grover & Chandra, 2006) The paper presents a situation of the growth of electricity in India and a strategy to meet projected demand. The strategy is based on recommendations from various branches of the Indian government. To reduce cumulative energy imports to 30% over the next 50 years, the paper suggests that nuclear energy's contribution to electricity generation must increase from its current 3% to 25% of the total.

(Dubey, 2015) This papers sheds light on how India has made substantial progress in developing its electricity sector over the past 60 years, but still faces challenges in meeting increasing demand and transforming the sector. The power sector has faced fundamental weaknesses, which require reform efforts. This paper highlights these challenges and offers a solution framework to overcome them.

(Sena, Ganguly, Das, Sen, & Dey, 2016) This paper gives an outline of the prospective of renewable energy resources in India, assessing the current status, energy demand, and production estimate. India has been actively working on finding a solution to its power shortage problem for the past 30 years. India has favourable geology and geography for renewable energy and a large customer base. The objective is to evaluate whether India can withstand its growth and society with renewable resources.

(Eapen & Mary, 2016)The paper assesses the existing difficulties in India's power sector giving focus on the three crucial components of generation, transmission, and distribution. The sector is faced with two primary challenges - unstable fuel supply and declining financial stability of distribution companies. The Indian Government has taken quite a few measures to tackle these challenges. At the distribution end, state governments should enhance their management approach by lowering power theft, enhancing energy efficiency, detecting losses, punishing major defaulters, and upgrading metering.

(J & A.Majid, 2020) Discusses the progress, potential, and projections of renewable energy development in India with a emphasis on electricity generation. It highlights the challenges encountered by the renewable sector, and the primary goals of deploying renewable energy, which include advancing economic development, increasing access to energy, improving energy security and reducing climate change.

(Pandey, Pandey, & Tumuluru, 2022) This review provides a complete overview of solar energy growth in India and the latest technological advancements in the field. It covers the types of photovoltaic systems and their structure, as well as the challenges posed by weather changes and cloud enhancement. The review also compares the available solar technologies globally and highlights the importance of recycling waste from solar energy systems.

RESEARCH FINDINGS

INNOVATION

India has been making significant advancements in the energy production sector, with a focus on increasing the usage of renewable energy sources. Here are some of the latest breakthrough innovations in the energy production sector in India are:

1.Floating Solar Power Plants: India has started experimenting with floating solar power plants, which are designed to be installed on bodies of water such as lakes and reservoirs. These plants have several advantages over traditional land-based solar power plants, including reduced land use, better cooling, and lower evaporation.

2.Hybrid Renewable Energy Systems: India has been developing hybrid renewable energy systems, which combine two or more renewable energy sources, such as solar, wind, and hydro

power. These systems present a more reliable and stable source of energy, as they are less altered by weather conditions and can provide energy even during periods of low renewable energy production.

3.Solar-Wind Hybrid Systems: India has been developing solar-wind hybrid systems, which combine wind and solar power to provide a more reliable source of renewable energy. These systems have its own advantages of providing energy even during periods of low renewable energy production, as wind and solar power tend to complement each other.

4.Smart Grid Technologies: India has been implementing smart grid technologies, which use digital communication and control systems to improve the use of energy and enhance the dependability and efficiency of the power grid. These technologies allow for real-time monitoring of energy consumption and generation, enabling grid operators to respond promptly to changes in demand and supply.

5.Energy Storage Systems: India has been developing energy storage systems, like battery storage and pumped hydro storage, to store surplus renewable energy for use during times of low renewable energy production. These systems improve the dependability and stability of the power grid and help to reduce energy waste.

6.Solar Microgrids: India has been implementing solar microgrids, which are small-scale, decentralized power grids that serve a limited number of consumers, typically in rural or remote areas. These microgrids provide a more reliable source of energy for communities that is not connected to the main power-grid, and they are typically powered by solar panels.

CHALLENGES

India's quest for energy has been hindered by a number of challenges. Some of the major challenges include:

1.Insufficient energy supply: In spite of being the 3rd major producer of coal in the world, India still faces a huge energy deficit. The country's energy demand is projected to increase radically in the forthcoming years, but the supply of energy is not keeping pace. This has led to frequent power cuts and blackouts, which have an adverse influence on the country's economy and development.

2.Reliance on fossil fuels: India is greatly reliant on fossil fuels, particularly coal, for its energy needs. This has led to increase in intensity of greenhouse gas emissions and air pollution, which have an adverse effect on the environment and human health.

3.Lack of infrastructure: India's energy infrastructure is not well-developed, which makes it difficult to transport and distribute energy to different parts of the country. These factors have led to inefficiencies in the energy sector and has hindered the country's capacity to meet its energy needs.

4.High costs: The high cost of energy production and distribution is a most important challenge for India. The country's energy sector is heavily subsidized, which has led to inefficiencies and a lack of investment in new and renewable energy sources.

5.Lack of funding: In spite of the high demand for energy in the country, there is a lack of funding for energy projects, particularly in renewable energy sector. This has hindered the development of novel and innovative energy technologies.

6.Limited access to energy: Many people in India, have no access to electricity, particularly people who live in the rural areas. This has a damaging impact on the country's development and on the standard of life of its citizens.

7.Lack of awareness: The lack of awareness among the public about renewable energy and energy conservation also poses as a major challenge in India. Many people are not informed of the benefits that renewable energy sources provide and the impact of energy consumption on the environment.

To overcome these challenges, India needs to invest in infrastructure, increase access to energy, and encourage the usage of renewable energy sources. This can be achieved through government policies and incentives, and increased investing in research and development. A comprehensive energy policy that tackles the challenges faced by India's energy sector is needed to safeguard that the country's energy requirements are met in a sustainable and efficient manner.

HARNESSING INDIA'S ENERGY POTENTIAL

India has the potential to become a global leader in energy production, but there are certain steps that the country must take in order to realize this potential.

1.Expand renewable energy sector: One of the most significant steps that India must take is to continue to spread out its renewable energy sector. India has set an ambitious target of achieving 175 GW of renewable energy capacity by 2022, including 100 GW of solar power, 60 GW of wind power, 10 GW of bio-power, and 5 GW of small hydro power. In order to attain this goal, the government must provide the necessary support and investment to the renewable energy sector, including funding for research and development, as well as incentives for private companies to finance renewable energy projects.

2.Diversify its energy mix: Another key step that India must take is to diversify its energy mix. The country is still heavily reliant on coal-fired power plants, which contribute to significant air pollution and carbon emissions. By increasing the usage of natural gas and nuclear power, India can reduce its dependence on coal and improve the overall environmental performance of its energy sector. The government should also focus on promoting energy efficiency and conservation, which will help in reducing the country's overall energy demand.

3.Increasing energy access: In addition to expanding renewable energy and diversifying its energy mix, India must also focus on increasing energy access. Millions of people in the country still lack access to reliable electricity, which is a major hindrance to economic development and social progress. The government should prioritize the expansion of the electricity grid to remote and rural areas, as well as the development of off-grid and micro-grid solutions.

4.Invest in energy storage technology: Another important step that India should take is to capitalize in energy storage technology. With the improving penetration of renewable energy, storage is becoming a crucial aspect of the energy system. This will enable the country to better integrate renewable energy into its grid and provide reliable and stable power supply.

5.Build strong trading market: India should also work on building a strong energy trading market, this will enable the country to export its surplus energy to other countries and also import energy from other countries when needed.

6.Take leadership role: Finally, India must also play a leadership role in international efforts to address climate change. The country is one of the world's major emitters of greenhouse gases, and it has a responsibility to take action to reduce its emissions and support global attempts to mitigate climate change.

In conclusion, India has the prospective to become a global leader in energy production, but in order to realize this potential, the country must take a number of important steps. These include expanding its renewable energy sector, diversifying its energy mix, increasing energy access, investing in energy storage technology, building a strong energy trading market and playing a leadership role in international efforts to address climate change. By taking these steps, India can help to create a more sustainable and safe global energy future.

CONCLUSION

India is expected to significantly grow its energy production capacity in the coming future. The government's focus on renewable energy sources like solar, wind, and hydro power, combined with the development of new technologies, will play a crucial role in pushing this growth foward.

In addition, the government's efforts to increase energy efficiency and promote energy conservation will also contribute to the growth of energy production capacity. The growing demand for energy and the government's focus on expanding the production capacity are expected to attract investments in the area, particularly in renewable energy. The private sector is also expected to play a substantial role in attaining the government's targets.

In conclusion, India's energy production capability is expected to significantly increase in the approaching future, which will be driven by the government's focus on renewable energy and energy efficiency, along with private sector investments. The government's initiatives and targets, along with technological advancements, are expected to influence the growth of the energy sector and help meet the country's growing energy demand.

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THE EMERGING TRENDS IN ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING IN COMPUTER SCIENCE"

Mrs. Kavita Mandar Chouk

Assistant Professor

kavitachouk@gmail.com

Satish Pradhan Dnyanasadhana College, Thane (west)

off Eastern Highway, Thane (West)-400601

Abstract:

Emerging trends are intimately connected and interdependent. AI, a field within computer science, develops systems that can simulate human intelligence. The term "artificial intelligence" combines "artificial" (man-made) and "intelligence" (the power of thought). AI systems do not require pre-programming; instead, they utilize algorithms to function independently. Today, businesses across various sectors are leveraging AI to automate tasks, achieving efficient and highly accurate results. Deep learning algorithms drive this accuracy and are employed in services provided by companies such as Google, Netflix, email spam filters, and Facebook. AI applications extend to natural language processing (NLP), enabling interactions with computers using human languages.

Keywords: AI, ML,Organization, Google, Email, Natural Language Processing

1.1 Artificial Intelligence

John McCarthy is father of Artificial Intelligence. In our rapidly evolving technological landscape, we encounter new advancements daily. Among these, artificial intelligence is one that is developing especially quickly. Inside informatics, with the potential to create intelligent devices and change the world. AI is pervasive, incorporated into a great deal of our daily activities. It has a broad range of uses, including broad to extremely specialised jobs, as chess, music, theorem proofing, and self-driving cars painting and composition. AI gives robots the capacity to adapt and learn from their experiences to fresh data and carry out tasks that customarily call for human ability. It's currently being leveraged across a number of sectors, like as healthcare and banking.

1.1.1 Applications of AI

1) Deep Learning

DL is part of machine learning much like humans do. This technique is widely used by developers to enhance and innovate their businesses. Deep learning has a broad range of applications in artificial intelligence, including:

Autonomous Vehicles: Technologies like Tesla's Autopilot utilize deep learning to recognize traffic signs and differentiate between pedestrians and objects like lamp posts.

Computer Vision:Deep learning algorithms help computers interpret and understand visual data, which is crucial for tasks such as facial recognition and medical image analysis.

Automatic Text Generation: AI can generate human-like text for purposes ranging from customer service chatbots to content creation.

The scope and use of deep learning are continually expanding, driving advancements across various sectors.

2) NLP:

The discipline of natural language processing, or NLP, is where computer science, linguistics, and artificial intelligence, which makes it possible for machines to understand human language in text and spoken forms.

It leverages AI to accept input, process it, and translate it into a format that computers can understand. Like how humans use ears and eyes to receive auditory and visual information, computers use software to read and microphones to capture sound. Just as the human brain processes sensory input, computers use algorithms and programs to process their inputs appropriately, ultimately converting them into code that the machine can interpret.NLP powers applications that translate text between languages, summarize extensive texts, and respond to voice commands in real time.

3) Voice or Face Recognition

AI has enabled facial recognition through biometric mapping, revolutionizing surveillance technology. This technology matches individual faces against a database of known faces to find matches. However, it has faced criticism for potential privacy invasions. For instance, the US tech company Clearview AI offers law enforcement surveillance systems that use a network of

CCTV cameras to monitor entire cities, accurately determining each citizen's social score in real time.

4) Automating Simple Repetitive Tasks:

AI can repeatedly perform the same tasks without causing inconvenience. For instance, Apple's voice assistant exemplifies this capability by handling numerous commands daily. It can manage various tasks, such as jotting down brief outlines, rescheduling meetings, and navigating streets, taking care of everything efficiently.

5) Ingestion of Data:

The amount of data generated every day is increasing dramatically, and artificial intelligence is essential to controlling this inflow. AI gathers and evaluates data instead of requiring human entry by utilising past knowledge. The process of gathering data include moving information from diverse sources into a data format that businesses utilise and examine on a regular basis. AI, utilising neural networks, aid in the processing of this massive data and the logical conclusion-making process.

6) Conversational AI

A chatbot is a piece of software created to provide textual or audio support for customers. input. Previously, bots could only react to particular commands.

7) Cloud Computing

Cloud computing is a prevalent aspect of artificial intelligence, characterized by the outsourcing of computer software technology. This approach allows remote access to applications and data. With the vast amount of data generated daily, traditional physical storage methods face significant challenges. Cloud computing, driven by artificial intelligence, offers a robust solution for adapting to the business environment, enhancing organizational efficiency, insightfulness, and strategic capabilities. Microsoft Azure exemplifies a leading player in the cloud computing industry, particularly in IoT cloud computing.

8) Quantum Computing

AI has made significant strides in tackling intricate problems in quantum physics. Soon, supercomputers equipped with quantum neural networks will provide precise solutions, driving innovative breakthroughs through artificial intelligence. Quantum computing, an interdisciplinary field, aims to develop advanced quantum algorithms to overcome computing challenges. This concept revolves around utilizing artificial intelligence algorithms enhanced by quantum amplification. Google AI Quantum stands out as a leader in error-corrected quantum computers and molecular simulations.

1.2 Machine learning

The study of algorithms and statistical models utilised by computers is known as machine learning. systems to carry out tasks using patterns and implicit guidance rather than explicit directions conclusions. It is a branch of artificial intelligence that makes it possible for systems to carry out particular jobs without explicit programming. Large dataset analysis is more efficient when machine learning is used

Machine learning enhances the efficiency of analyzing large datasets, addressing tasks beyond the capabilities of traditional algorithms. Its iterative nature is crucial as models autonomously adapt when exposed to new data, leveraging past computations to deliver reliable and consistent solutions.

While not a new field, machine learning has gained renewed significance, revolutionizing various industries including banking, medicine, and scientific research. It has become indispensable in modern technology, enabling tasks like pattern recognition and predictive analytics.

Even in everyday internet use, machine learning plays a vital role. For instance, Google search algorithms learn from previous queries to tailor results based on individual search histories, enhancing user experience and relevance.

1.2.1 Treads in AI and ML:

AI continues to transform our world as businesses aim to engage customers through real-time smart solutions on smartphones, smart TVs, and other devices. However, alongside these new opportunities, corporations are also encountering new challenges.

Some Applications of AI and ML:

1) Data Security & Regulation:

As data becomes a critical asset in the modern economy, AI and ML play essential roles in managing and safeguarding large volumes of personal information, mitigating privacy risks.

2) No Code and Low Code:

In order to tackle the scarcity of proficient AI experts, low-code and no-code systems facilitate AI software may be efficiently used by non-experts, simplifying complex systems through user amiable user interfaces

3) Transformer:

The transformer architecture in AI facilitates the transformation of input data sequences into other sequences using encoder-decoder models, pivotal in numerous applications.

4) Algorithmic Decision Making:

Advanced algorithms enhance decision-making processes in fields like medicine, where AI supports medical professionals but does not replace their expertise, particularly in fields like robotic surgery.

5) Cybersecurity:

With escalating cybersecurity threats, AI and ML are pivotal in detecting and responding to potential data breaches by identifying unusual patterns and activities across various data sources.

6) AI and the Internet of Things:

IoT capabilities are improved by AI through the analysis of large datasets to gain insights and optimise Efficiency of operations in networked devices.

7) RPA:

RPA, AI and ML, automates repetitive tasks such as data processing and email responses, streamlining business processes for improved efficiency.

8) Hyper Automation:

This emerging trend integrates AI, ML, and cognitive automation to enhance customer service, accelerate processes, and optimize workforce productivity across various business functions.

Conclusion:

In conclusion, AI has revolutionized industries by predicting future trends and enhancing current technological capabilities. As businesses increasingly adopt AI-powered solutions, understanding its applications and potential is crucial for navigating the digital age and driving innovation. Looking ahead, machine learning will continue to evolve rapidly, ushering in advancements such as big language models, multi-modal learning, transformers, Tiny ML, and accessible low-code solutions. Industries like creative AI, autonomous systems, distributed enterprise management, and cybersecurity are expected to further integrate ML, enhancing efficiency and security measures in the coming years.

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Effect of Digital Payment on Grocery Deliveries in Thane District

Ms. Mridulla Agarwal

Asst. Professor, Department of Computer Science and Information Technology

Satish Pradhan Dnyanasadhana College

Email : mridulla05@gmail.com

Abstract:

The introduction of electronic and digital payment options has provided customers with a more efficient and streamlined means of payment, removing the need for reliance on traditional payment methods such as cash and checks. The increased convenience and speed of completing transactions has led to a more satisfactory delivery experience for customers, resulting in improved customer satisfaction and loyalty. The impact of online payment on the grocery delivery service industry has been a topic of interest for researchers in recent years. This study seeks to investigate the impact of online payment on the virtual grocery delivery sector, assessing both its advantages and disadvantages as a contemporary payment method. By conducting a thorough examination of available literature, case studies, and statistical evidence, the paper intends to offer a detailed analysis of this influence of online payment on the grocery delivery service industry, with the goal of providing insights into how businesses can optimize their operations and enhance the customer experience through the adoption of this innovative payment method.

Introduction:

In the fast-growing business environment, digital payment system plays a major role. Most of the businesses are get involved into digitalization. Most of the major business activities, business transactions are turned into digitalization era. The people of the developed and developing country like India, are already stepped into a digitalization system. In India most of the transactions are taken place electronically. Most customers do not carry cash, but they all have smartphones and debit or credit cards in their wallets. This shows that, without physical cash, one can fulfil his needs, do all the business transactions by using these electronic gazettes or digital payment modes.

Types of online payment:

1. **Credit and debit cards:** These are the most widely used online payment methods, allowing customers to make purchases using their credit or debit card information. This type of payment is convenient and widely accepted, but may come with higher transaction fees.
2. **E-wallets:** E-wallets, often referred to as digital wallets, are virtual accounts that store payment details, enabling users to make online purchases without the need to repeatedly enter their payment information details every time. Examples of e-wallets include PayPal, Apple Pay, and Google Pay.
3. **Bank transfers:** This payment method involves moving funds from one bank account to another, either through online banking or via a mobile application, this approach might be less expedient compared to alternative online payment methods, but it could entail lower transaction fees.
4. **Prepaid cards:** Also known as gift cards, these cards let customers make online purchases using a preloaded balance. This type of payment is convenient and can be a good option for those without a credit or debit card, but may have limited use beyond the balance loaded onto the card.

An online grocery store is a website or app where customers can buy groceries and other household essentials online, avoiding the need to visit a physical store.

The benefits of online grocery shopping include:

1. Convenience: The main advantage and primary appeal of online grocery shopping is its convenience. Consumers have the flexibility to shop from the comfort of their own homes, at any hour of the day and have their groceries delivered to their doorstep or picked up at a convenient location.
2. **Time-saving:** Online grocery shopping can save time for busy individuals who may have difficulty finding the time to physically visit a store. Customers can quickly and easily search for the products they need, compare prices and place an order in minutes.
3. **Wider selection:** Online grocery stores offer a wider selection of products compared to brick-and-mortar stores. They are unrestricted by physical shelf constraints and can provide a wider variety of products. including specialty items that may be harder to find in physical stores.
4. **Easy comparison:** Customers can easily compare prices and product details across different websites or apps, allowing them to make well-informed decisions and save money.

5. **Contactless shopping:** Online grocery shopping provides a contactless shopping experience, which is particularly important during the COVID-19 pandemic. Customers can avoid physical contact with other people and reduce the risk of infection.
6. **Accessibility:** Online grocery shopping is especially helpful for individuals with disabilities or mobility issues who may have difficulty physically visiting a store.

Review of literature:

Rakesh Kumar's 2017 research study titled "A Study on Consumers Attitude towards online Grocery Shopping in Selected States of Northern India" explored the attitudes of consumers towards online grocery shopping in the Northern Indian states of Punjab, Haryana, and Delhi. The study was based on a survey of 500 respondents. The study concluded that while online grocery shopping is gaining popularity in Northern India, there is still a significant preference for traditional brick-and-mortar stores. The study recommended that online grocery retailers focus on improving the quality and freshness of products, offering better delivery options, and providing attractive discounts and promotions to attract more customers.

Parmar Jitesh's 2016 research study titled "An Empirical Study on the Formation of Consumer Shopping Intention" aimed to investigate the factors that influence consumers' shopping intentions, particularly in the context of online shopping. Perceived utility, ease of use, and attitude were identified as the most crucial factors influencing shopping intentions. This implies that retailers can boost consumers' willingness to shop by improving their perceptions of these elements. The study suggested that online retailers should concentrate on enhancing website design and navigation, providing comprehensive product information, and offering secure and reliable payment options to elevate consumers' perceptions of usefulness and ease of use.

The research by Sudhahar (2017) examines the buying behavior of consumers in departmental stores in Tirupur District, India. The study found that consumer satisfaction with departmental stores positively impacts their future buying behaviour. It influence consumer buying behaviour in departmental stores. The study highlights the importance of creating a pleasant shopping experience for customers and providing quality products and services to ensure customer satisfaction and loyalty.

Objectives of the research

1. To explore the current state of grocery delivery services and digital payment methods in the market.
2. To pinpoint the elements impacting consumers' choices to utilize digital payment for grocery delivery.
3. To evaluate how digital payment affects consumer behavior, encompassing purchase frequency, average order value, and overall satisfaction with the grocery delivery experience.

Hypothesis

Hypothesis 1:

H0: There is no significance relation between product type and mode of payment

H1: There is significance relation between product type and mode of payment

Hypothesis 2:

H0: There is no significance relation between gender and mode of payment

H1: There is significance relation between gender and mode of payment

Hypothesis 3:

H0: There is no significance relation between product type and delivery mode

H1: There is significance relation between product type and delivery mode

Research methodology:

The research study in question utilized a Google questionnaire to collect primary data from 150 participants who were students and professionals from various fields.

Technique of data collection

1.Questionnaire

2.Personal Interview

Data:

Hypothesis 1:

H0: There is no significance relation between product type and mode of payment

H1: There is significance relation between product type and mode of payment

Product	Disagree	Agree	Total
Cold Drinks	7	17	24
Fruits and vegetable	8	26	34
Packaged food	14	52	66
Others	16	10	26
Total	**44**	**105**	**150**

Using, Chi – Square test, p value = 0.570964

As, p value > 0.05, H0 is not Rejected

Therefore, there is **no significance relation between product type and mode of payment**

Hypothesis 2:

H0: There is no significance relation between gender and mode of payment

H1: There is significance relation between gender and mode of payment

Gender	Disagree	Agree	Grand Total
Female	42	20	62
Male	36	52	88
Grand Total	91	59	150

Using, Chi – Square test, p value = 0.0000744

As, p value < 0.05, H0 is Rejected

Therefore, there is **significance relation between gender and mode of payment**

Hypothesis 3:

H0: There is no significance relation between product type and delivery mode

H1: There is significance relation between product type and delivery mode

Product	Disagree	Agree	Grand Total
Cold Drinks	7	17	24
Fruits and vegetable	8	26	34
Packaged food	14	52	66
Others	16	10	26

Grand Total	**44**	**105**	**150**

Using, Chi – Square test, p value = 0.0013088

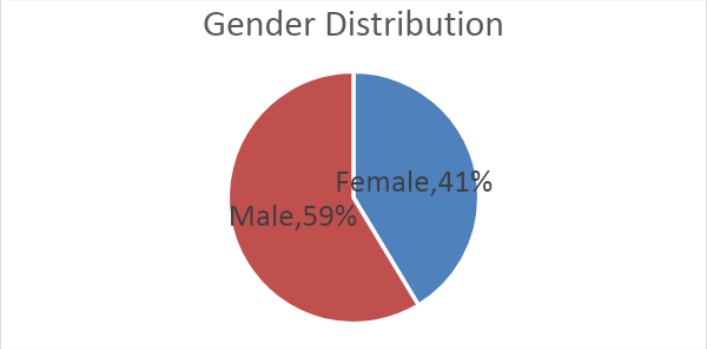
As, p value < 0.05, H0 is Rejected

Therefore, there is **significance relation between product type and delivery mode**

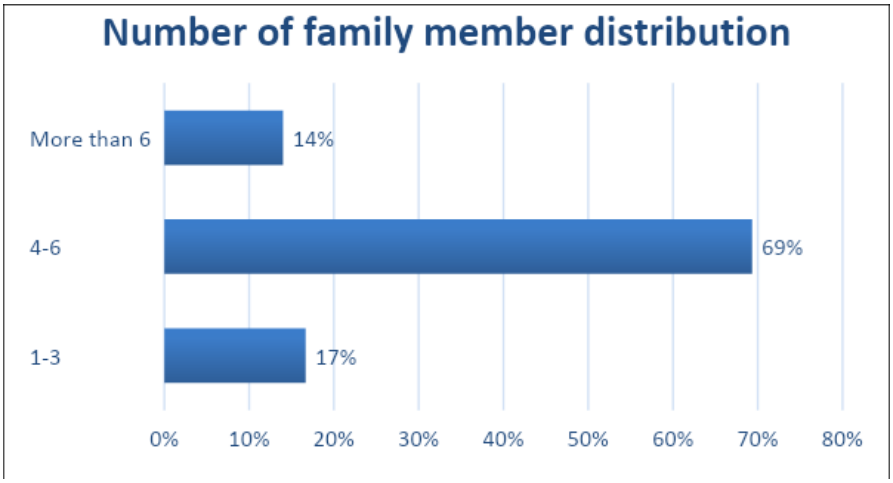
Interpretation and conclusion:

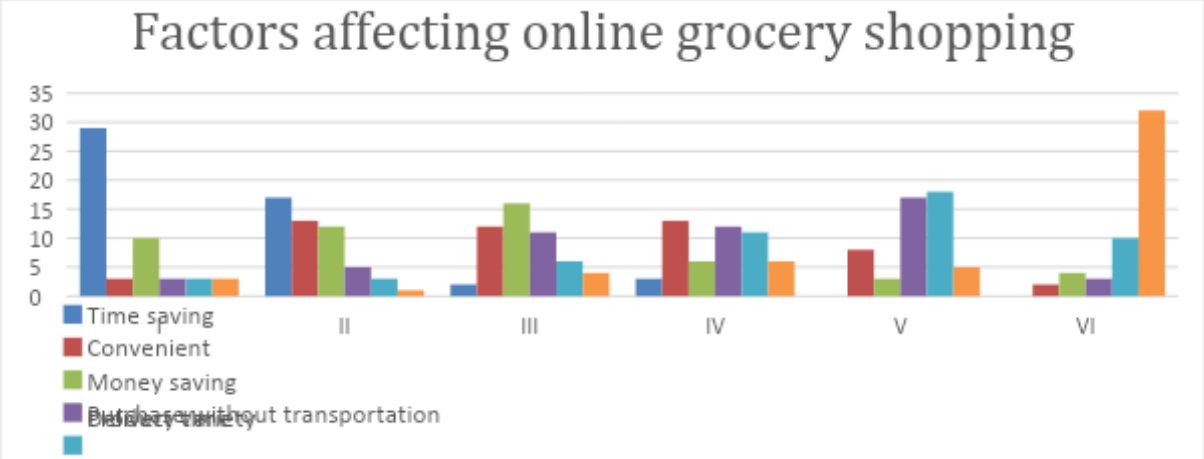
- The dataset consist of 150 responses

- Dataset composed of 59% male and 41% female

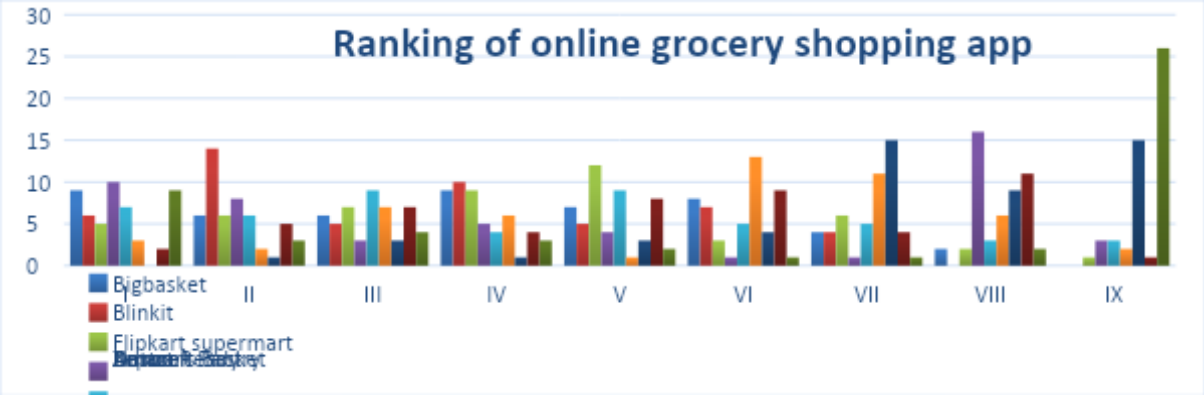


- Dataset consist of family with 4 - 6 member.





From above chart we can interpret that, Factor Time saving is highly preferred while doing online grocery shopping whereas Factor Delivery time is least preferred while doing online grocery shopping



From above chart we can interpret the preferred Online grocery shopping app as No.1 being Bigbasket followed by Blinkit, Zepto and the least preferred being D-Mart Ready in the list.

Reference

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TITLE: DIGITAL INCLUSION - A NEED & REQUISITE IN TODAY'S COMPETITIVE WORLD

RESEARCH PAPER BY Mrs. NISHMITA BHAVESH RANA
RESEARCH SCHOLAR
MUMBAI CITY
Email id: nishmitaahuja1995@gmail.com

ABSTRACT:

Today's world, rather than today's updated world, is full of digitalization & has scrapped the traditional mode of living. In layman's language, we live in a digitally occupied world where adaptation to new & upgraded technology is a must. Every individual must accept revolving changes & apply them to its day to day living. This has introduced a concept "Digital Inclusion" which states the involvement & access of each & every individual to the digital world. India is a country where illiteracy is climbing up more stairs than literacy. It becomes difficult for illiterate people to learn & adapt to new technologies as they don't possess the knowledge of the same. Hence, to cope up with this, digital inclusion becomes a requisite. This research paper studies the general perception of people of all ages towards digital inclusion & the way it must be taught & shared with everyone. The study is done in Mumbai City where data is collected from about 100 people having digital knowledge & experience. The data is collected through a questionnaire & personal interview where they share their own experience. The data was analyzed & interpreted on percentage basis & a conclusion was drawn out of it.

KEYWORDS: Digital Inclusion, digitally occupied, upgraded technology, requisite, digital world.

INTRODUCTION:

Digital inclusion is a term which implies that every individual must take the benefit of internet & technology which is upgraded as the world demands. It makes sure that everybody is reaching out to the facilities which are now available to us. Mobile phones, laptops, tablets etc. plays a very important role in optimizing & curbing digital space to everyone. People have felt the importance of digitalization merely after the breakout of Covid 19 due to which everything went digital. Even children had to be digitally equipped as education has taken a new pace. Lectures, meetings, seminars, conferences etc. were all conducted online which is again an important part of the digital era. But for the entire country to be fully digital, there are many factors.

Requirements of digitalization:

1. **Knowledge of the digital world:** To have 100% digitalization, it is necessary for all of us to have complete knowledge of every aspect of digitalization. Up-gradation to the latest technology is essential to survive in this competitive world.
2. **Internet facility:** Talking about technical aspects of digitalization, it will only work if we have a proper high speed internet facility everywhere. If the internet breaks down, digitalization would not progress.
3. **Proper training & use:** Practice is what is needed to make everything work perfectly. Hence, knowledge is of no use until we start practicing it. People must adopt digitalization as a day to day need & use it in all walks of life. This will help make the entire country fully digitalized.
4. **Updated technology:** Technology is a boom to the country which has made our lives easy & well versed. To have an optimum use of technology, one must have full knowledge of updated technology. Technology does not remain constant. It is dynamic. Hence, to survive in this competitive world, one must be ready to accept the change and update itself.

Digital Inclusion is a relatively new concept which has a framework for addressing the readiness of communities to fully embrace the digital age. It includes availability & affordability of digital technology in the public sphere as well as household. Promotion of digital inclusion would increase the rates of education & employment leading to overall development of the economy.

OBJECTIVE:

1. To aware of digital inclusion among people.
2. To know the perception of people towards digitalisation & its uses.
3. To study the factors necessary for a completely digitized country.
4. To find out the ways through which every single person can be included into the digital world.

REVIEW OF LITERATURE:

1. Safa'A Abujarour, An-Najah National University (June 2021): "Digital Inclusion: The Role of Information and Communication Technology alleviating Social Disruptions". This research paper was written during Covid times as Social disruptions had hit the world. The main purpose of writing this paper was to know how ICT has helped alleviate these disruptions by having a social inclusion of individuals and society. The paper mainly focuses on the conventional model of Work From Home (WFH) and experiences of people with respect to WFH.

2. Vanita, Karuna Sachdeva, I.B.P.G. College, Panipat (2017): "Digital India - Opportunities and Challenges". This research paper is written with a view to highlight the different challenges faced by the Digital India Programme . It also describes the different opportunities of the programme for the people of the country.

SCOPE OF THE STUDY:

This study will help to know how each & every single person can become a part of the digital world. Also, it will further generate ideas to have an upgraded knowledge of digitalisation. The study will help the country to bring in those people who are partially or completely deprived of digital aspects & be fully digital.

RESEARCH METHODOLOGY:

The study was done by collecting primary data through a close-ended questionnaire. A questionnaire of about 15 questions (both open & close ended) was prepared & data was collected with the help of it. Sample size was 72 which means data was collected from 72 respondents. All the respondents were from Mumbai City as the research was done exclusively in the City. Also, the questionnaire consisted of 2 descriptive questions to know about the perception of respondents towards digitalization.

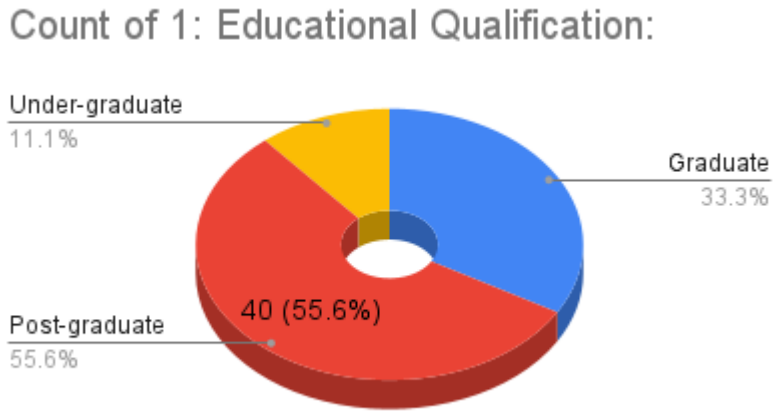
HYPOTHESIS:

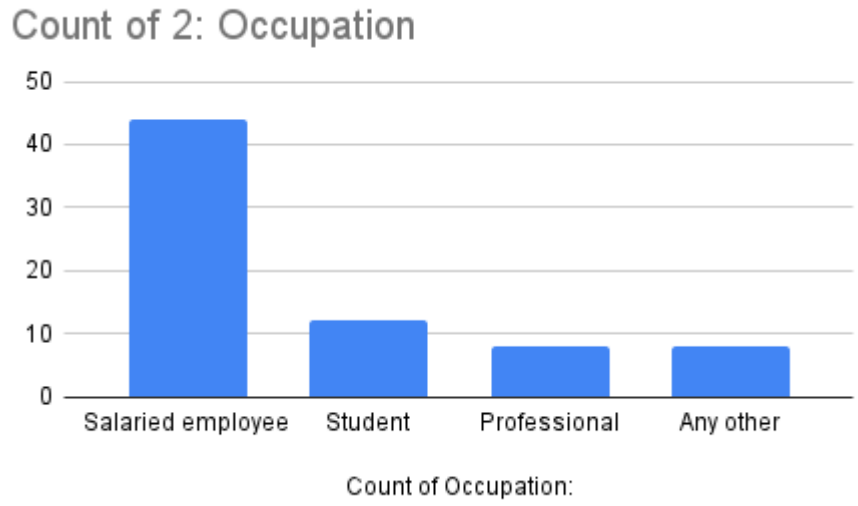
For the purpose of the study, the below given hypothesis was framed:

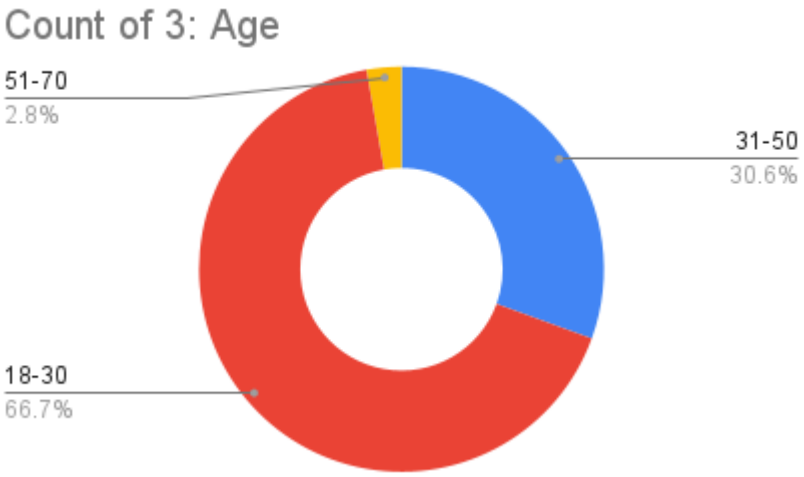
- **Null Hypothesis:** Digital Inclusion is not needed in today's world.
- **Alternative Hypothesis:** Digital Inclusion is needed in today's world.

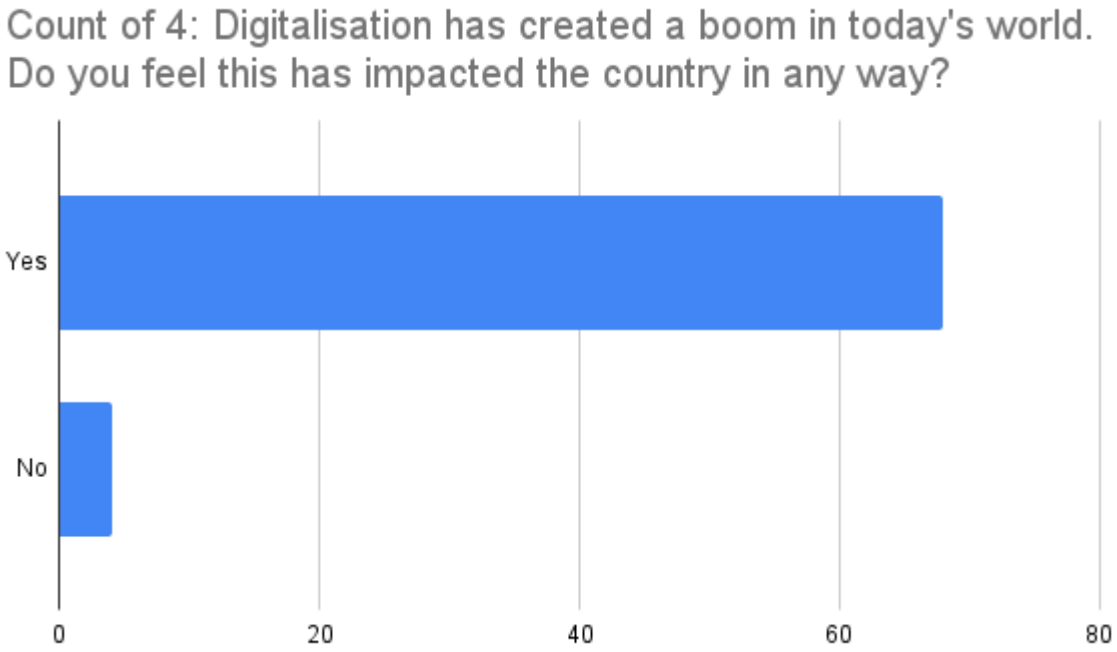
DATA ANALYSIS & INTERPRETATION:

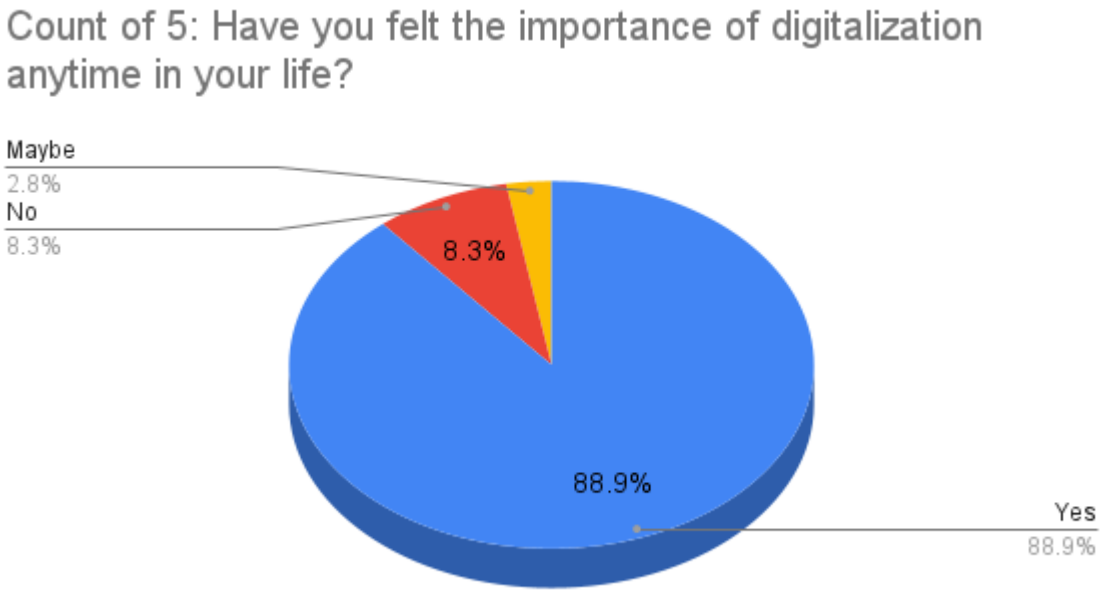
Data collected through the questionnaire was thoroughly analyzed & interpreted. All the data has been represented in diagrammatic & graphical form.

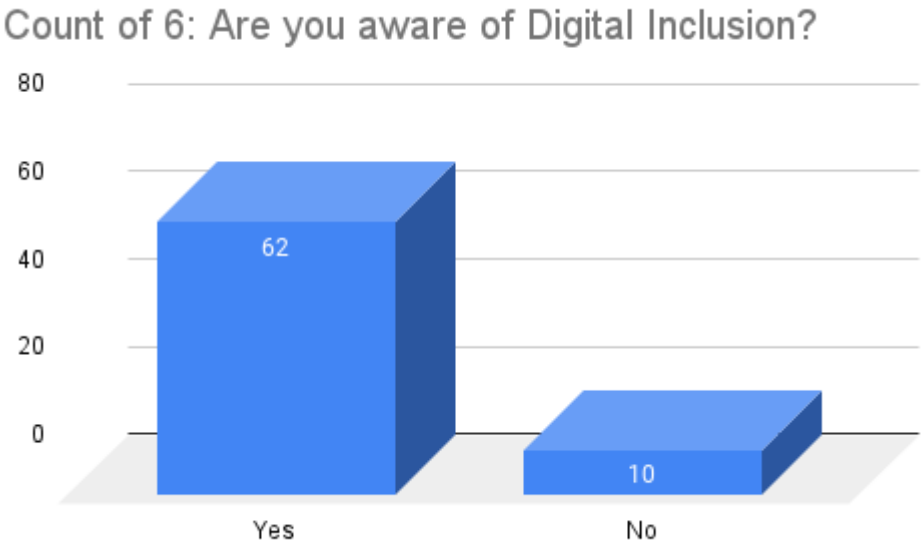


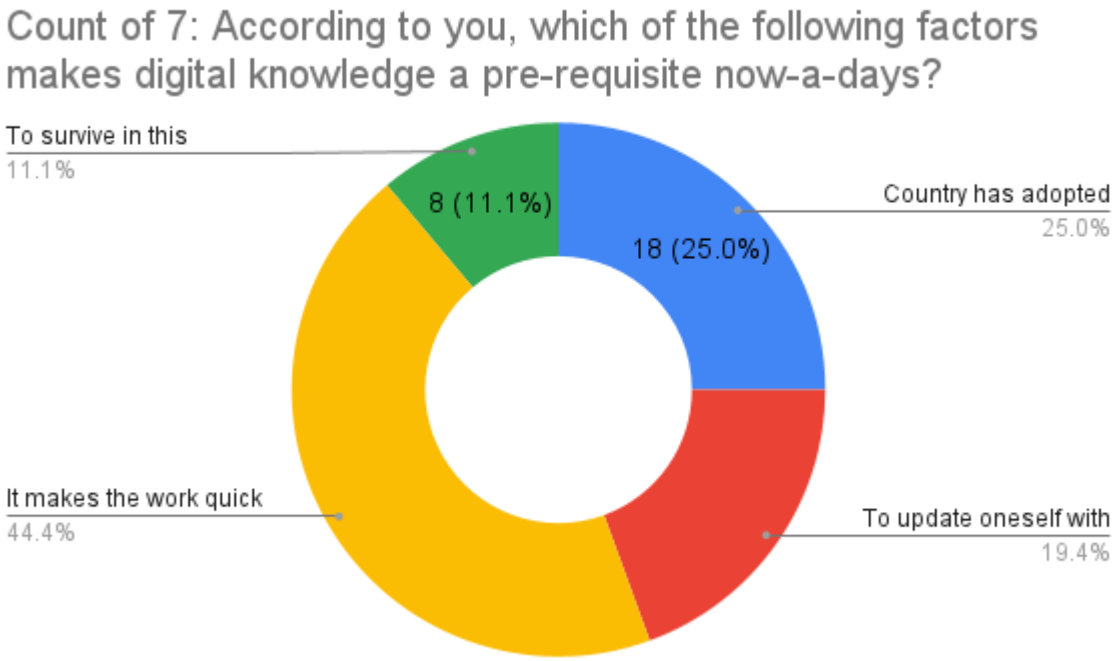


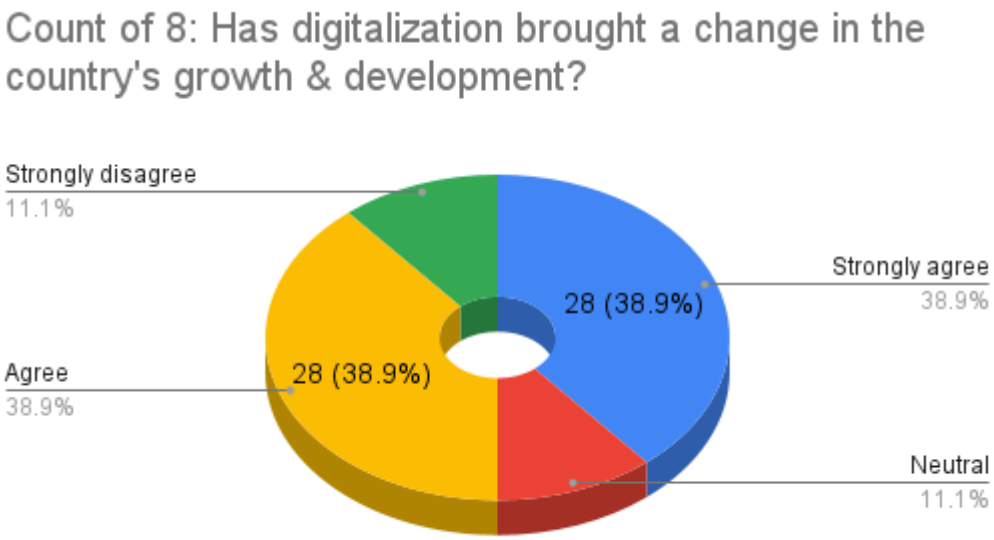

Count of 3: Age
51-70
2.8%
31-50
30.6%
18-30
66.7%

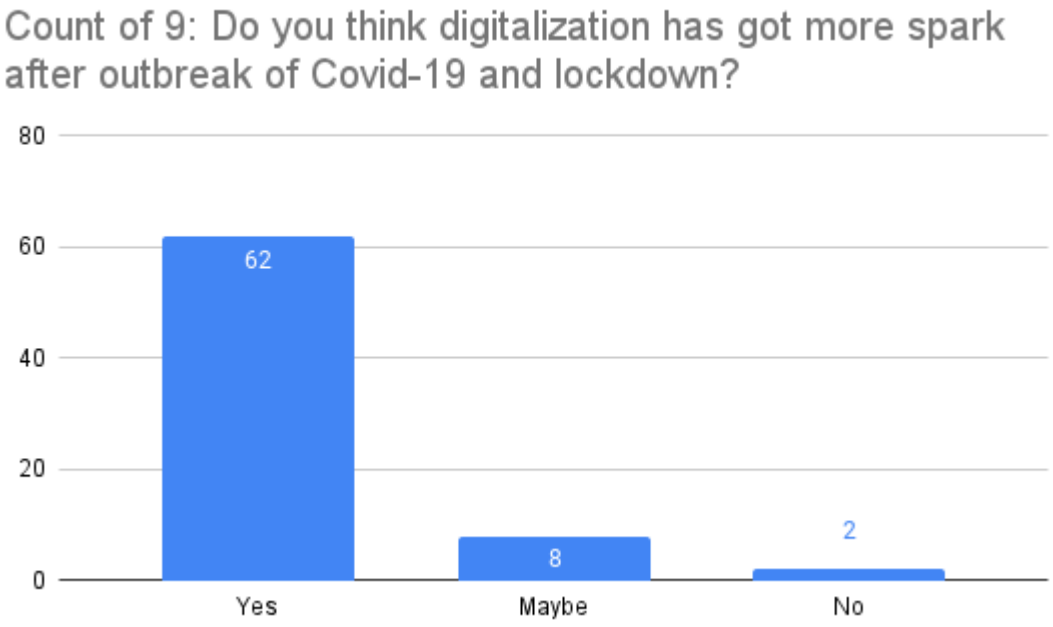

Count of 4: Digitalisation has created a boom in today's world. Do you feel this has impacted the country in any way?
Yes
No
0
20
40
60
80

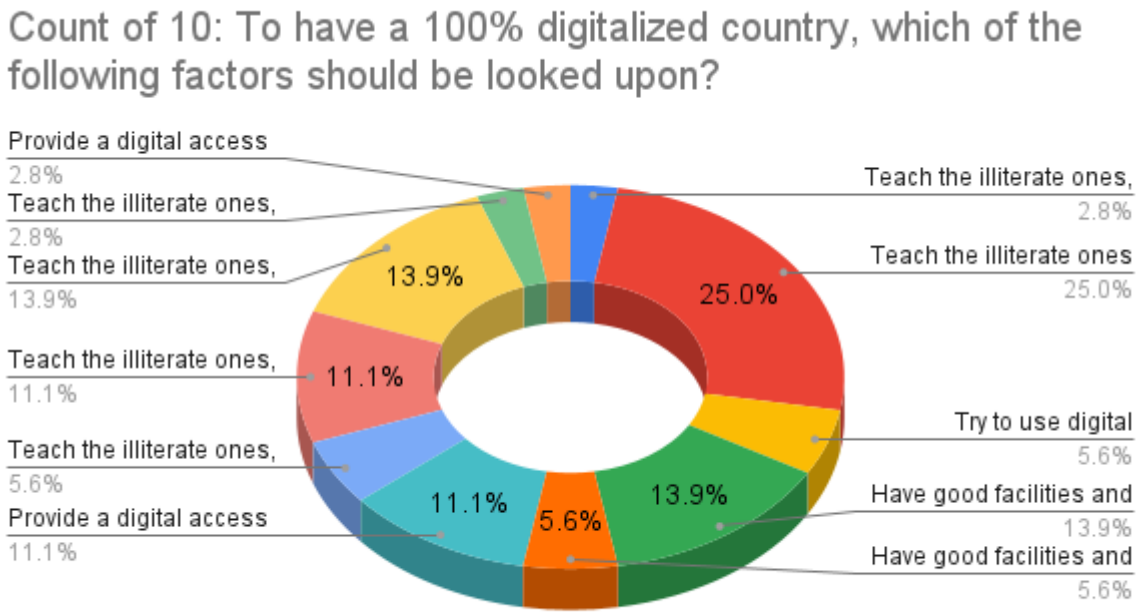

Count of 5: Have you felt the importance of digitalization anytime in your life?
Maybe
2.8%
No
8.3%
8.3%
88.9%
Yes
88.9%

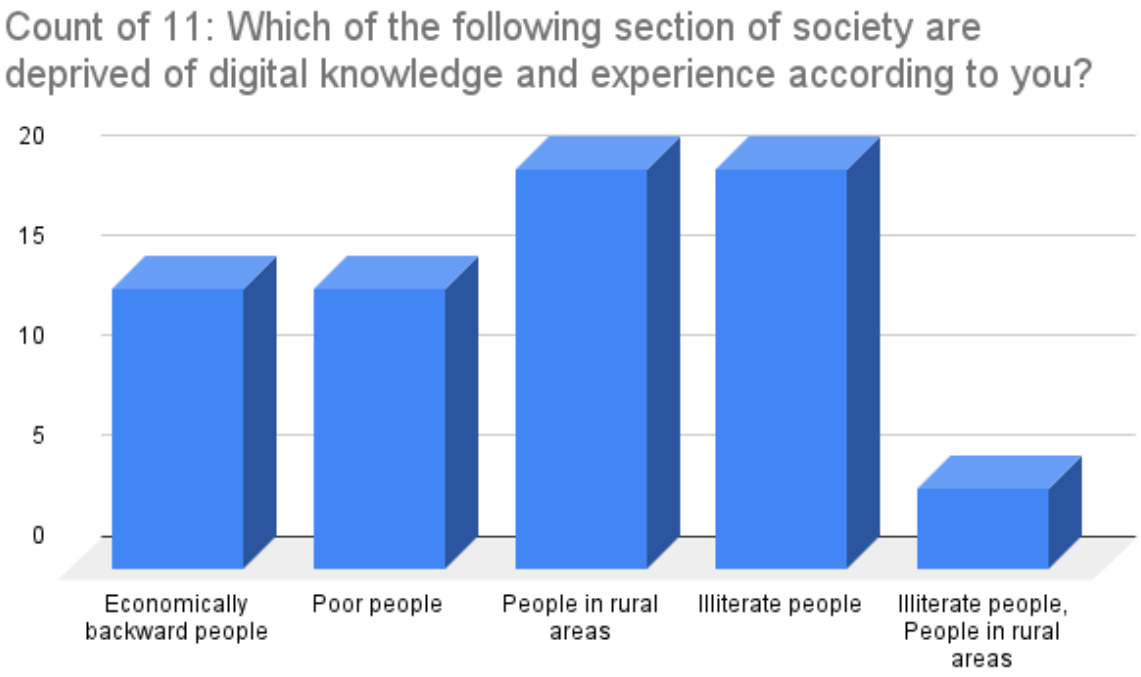

Count of 6: Are you aware of Digital Inclusion?
80
60
40
20
0
62
10
Yes
No

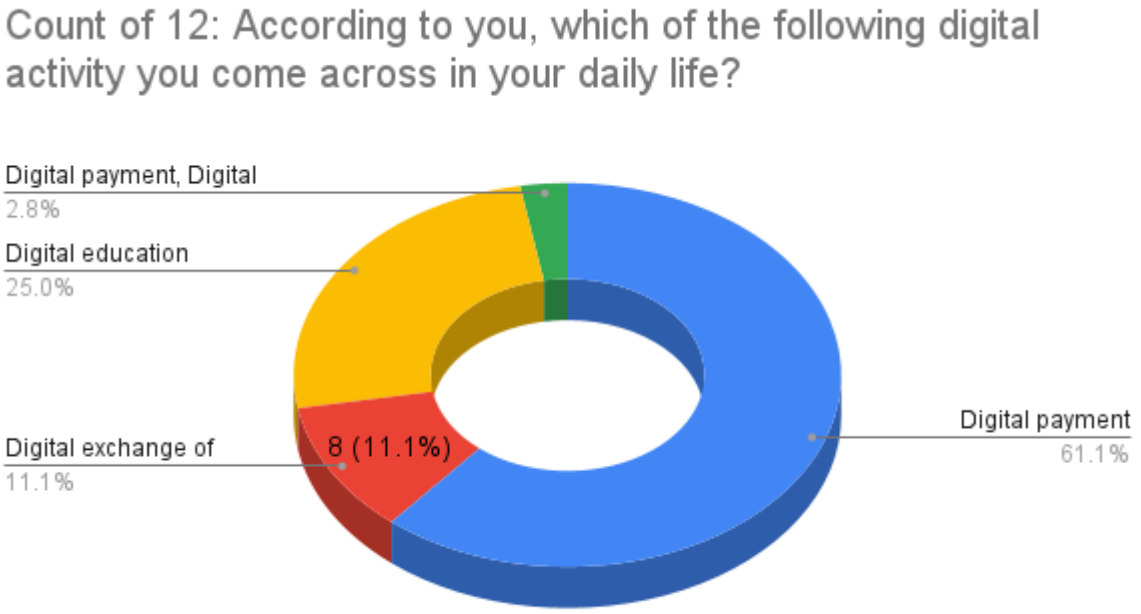

Count of 7: According to you, which of the following factors makes digital knowledge a pre-requisite now-a-days?
To survive in this
11.1%
8 (11.1%)
Country has adopted
25.0%
18 (25.0%)
It makes the work quick
44.4%
To update oneself with
19.4%


Count of 8: Has digitalization brought a change in the country's growth & development?
Strongly disagree
11.1%
Strongly agree
38.9%
28 (38.9%)
Agree
38.9%
28 (38.9%)
Neutral
11.1%


Count of 9: Do you think digitalization has got more spark after outbreak of Covid-19 and lockdown?
80
60
40
20
0
62
8
2
Yes
Maybe
No


Count of 10: To have a 100% digitalized country, which of the following factors should be looked upon?
Provide a digital access
2.8%
Teach the illiterate ones,
2.8%
Teach the illiterate ones,
13.9%
Teach the illiterate ones,
11.1%
Teach the illiterate ones,
5.6%
Provide a digital access
11.1%
Teach the illiterate ones,
2.8%
Teach the illiterate ones
25.0%
Try to use digital
5.6%
Have good facilities and
13.9%
Have good facilities and
5.6%
13.9%
25.0%
11.1%
11.1%
5.6%
13.9%


Count of 11: Which of the following section of society are deprived of digital knowledge and experience according to you?
20
15
10
5
0
Economically backward people
Poor people
People in rural areas
Illiterate people
Illiterate people, People in rural areas


Count of 12: According to you, which of the following digital activity you come across in your daily life?
Digital payment, Digital
2.8%
Digital education
25.0%
Digital exchange of
11.1%
8 (11.1%)
Digital payment
61.1%

FINDINGS:

The data was collected from people having some knowledge & experience of the digital world. Of the entire population, 55.6% were post graduates, 33.3% were graduates & 11.1% of the population were under-graduate. More than 50% of the population were salaried employees whereas the rest of the respondents were divided into professionals, students & others. Also, the respondents were divided into different age groups as the study covers the entire population having digital knowledge & experience. Hence, as per the data collected, 66.7% of respondents fall under the age group of 18 to 30 years of age, 30.6% in the age group of 31 to 50 years while only 2.8% fall in the age group of 51 to 70 years of age. None of the respondents was above 70 years of age. 90.27% of respondents believe that digitalization has a greater impact on the country whereas only 9.72% believe it has no impact on the country's growth & development. 88.9% respondents have felt the importance of digitalization in their lives while 8.3% have not come across the need for it.

When asked about digital inclusion, 62 (86.11%) respondents are aware about it while 10 (14.28%) are not at all aware of it. 44.4% of people think that digital knowledge is a prerequisite now-a-days as it makes the work quicker & faster. 25% of respondents think that it is a prerequisite because the country has adopted digitalization globally. Since the country is becoming completely digital, each one of us also has to accept it. 19.4% of people think that digitization is necessary to update oneself with new upcomings while according to 11.1% of the respondents, it has become a prerequisite to survive in this competitive world. Around 76% of the population think that going digital has brought a change in the country's growth & development. Also, when spoken about the change in digitalization era pre & post Covid 19, 86.11% of the respondents feel that digitalization has got more spark after the outbreak of Covid 19 & lockdown. Many sections of the society are deprived of digital access which consists majorly of people living in rural areas & illiterate people. Also, economically backward classes are one of them. To cope with this, teaching the illiterate ones, having good facilities & providing digital access to a large extent are some of the factors to be looked upon. According to 25% of the population, digital education occupies more space in the digital world followed by digital payment & digital exchange of information.

Therefore, with all these findings, the Null Hypothesis which is "Digital Inclusion is not needed in today's world" is rejected and the alternative hypothesis "Digital inclusion is needed in today's world" is accepted.

SUGGESTIONS:

- A lot of respondents said that the nation should mandate digitization for all economic sectors, including tourism, medical facilities, education, and buy-and-sell activities. Accepting the continuous digital cycle and its upgrades is crucial.
- If the nation is to achieve 100% digital inclusion. To do this, all of the illiterate people need to be educated by raising awareness through commercials or in-person meetings.
- Availability of digital gadgets, internet facilities at lesser cost & wifi access at all places can be a good move towards digital inclusion.
- A good quality technical support is what is needed to make digitalization work well.
- As digital Aadhar Authentication has already served the purpose of digitalization to a greater extent, linking to other ID proofs would be an ideal step for complete digitalization.
- Technical innovations have already changed the way of collaboration with the population. Even at a larger distance, it is now possible to communicate & collaborate with everyone just with a click. This has increased the level & way of communication. Hence, this must be trained to those people living in remote places who do not have knowledge & access to the technical innovations.

CONCLUSION:

As we all are aware of the growing competition in all the sectors, being knowledgeable & experienced is the only way to survive & be a part of the race. For this, having complete information & knowledge of what's going on around the world is highly significant. People with in depth knowledge & competency will only be chosen in comparison with the one who doesn't possess any knowledge. Upgradation with new trends and technology becomes an essential indicator & a requisite for the smooth functioning of the economy. This makes digital knowledge a requirement for all of us in today's competitive world.

Although the covid phase has increased digitalization to a greater extent, still there are many remote areas which are deprived of digital equipment, gadgets, facilities etc. which needs to be taken into consideration if the country wants to be fully digitalized. The areas where people have lesser or no knowledge of technology must be educated by different means. Digitalization

has improvised the country's growth & development in various sectors which ensures that it will have much more benefit if people continue to update & upgrade themselves with newer versions of technology. Technology has made everyone's life easy through completion of work in less time. Also, it has made people pro in downloading, using them & giving valuable feedback which is very useful for different companies. Technology has made online bookings easy with quick digital payments and lesser risk. Also, the banking sector has gained a lot of benefits with digitalization through online banking apps which helps people to transfer money anytime, anywhere & to anyone. Online activities do not require any physical infrastructure but a digital gadget such as mobile phone, laptop, tablet etc.

All these events proclaim that digitalization is very important in today's life. Hence, the Country must strive towards having complete digital inclusion which will make the economy grow & develop in all aspects at a high pace.

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STUDY OF FINANCIAL INCLUSION INDEX: MEASURE EXTENT AND COVERAGE OF FINANCIAL INCLUSION

Priyanka gaur

Assistant professor

Email: priyankagaur1981@gmail.com

ABSTRACT:

Financial inclusion has become a buzzword, drawing the interest of researchers, policymakers, and economists. Promoting an inclusive financial system has become a policy priority for many nations. Despite the recognized importance of financial inclusion, existing studies lack a comprehensive metric to assess its extent across entire economies. This paper aims to address this gap by introducing a Financial Inclusion Index (IFI). The IFI is a multifaceted indicator that aggregates various investment dimensions into a single value between 0 and 1, where 0 indicates complete financial exclusion and 1 signifies full utilization of financial services within the economy. The proposed index is easy to calculate and can be compared across different countries. This paper is more around the calculation of indexes for the Haryana state to understand the usage of the financial services.

It is crucial to establish a comprehensive and robust usage rate system to assess the present status of banking service utilization in the economy and track the advancement of policy measures aimed at promoting the use of financial services. In this paper, Index calculation helps to understand the current scenario about the services usage among the public. This paper suggests the movement of rank among the district in comparable years to get the dimensions of an all-inclusive financial system.

Key words: Index, Financial Inclusion

Index of Financial Inclusion

The Financial Inclusion index was developed by the RBI in collaboration with government authorities and different regulatory bodies. It integrates the details of Insurance, banking, investments, and pension as well as the postal sector. Financial inclusion index has been calculated for measuring the extent and coverage of financial inclusion. The calculation of the financial inclusion index helps in assessing the level and reach of financial inclusion. It easy identification of the availability, usage, and penetration of banking services in Haryana. It helps the policy maker to make wide strategies to the specific district for speeding the awareness

among the various districts in Haryana. This index can be used all over India to identify and understand the current news of the state also.

This paper calculates the movement of ranking among Haryana Districts. The calculation and comparison of FII (Financial Inclusion Index) for 21 districts of Haryana State are explained in this section. The index has been calculated for 21 districts, excluding one new district Charki Dadri, which was added on 1st December 2016. Data from previous years was not available for comparison, so it was not included in the index calculation. Due to the non-availability of data, only a few indicators have been selected to analyze the index.

METHODOLOGY

Various approaches have been utilized by researchers to compute the Financial Inclusion Index (FII). The methodology employed in this research is grounded in a comprehensive analysis of existing literature. Financial inclusion can be assessed using multiple metrics, but this study specifically examines three primary indicators: the accessibility, reach, and practicality of financial services. As per the **Chattopadhyay (2011),** these indicators are considered by RBI for the calculation of Index of Financial Inclusion (IFI).

The three indicators and four dimensions which are used to construct the index are given in the below table:

Table 1.1: Variables taken for calculation of FII

Indicator 1	Indicator 2	Indicator 3
Availability	Penetration	Usability
Population per Branch	Bank accounts per 1000 population	Per capita deposit Per capita credit

-The average number of individuals served by one bank branch in a particular geographic location is identified as the population per branch, or PPB. The Reserve bank database was contacted in order to collect information concerning the number of bank branches within the district. Each branch's population and banking outreach are inversely correlated.

-Bank Balances for every 1000 People (BAPP): The banking penetration is measured as a percentage of people with an account. The number of bank accounts per 1000 persons has been used as an indicator of this dimension in the lack of banked population statistics. The percentage of banking customers is positively linked to the amount.

-PCD (Per Capita Deposit) and PCC (Per Capita Credit): Utilizing banking services appropriately is another sign of economic incorporation. The amount of credit and deposits

deemed suitable for assessing the utilization dimension. If the deposit and credit grow, it gets better to a greater extent.

-The Financial Inclusion Index (FII) was computed by calculating the index for every indicator. Four indexes, namely the Population per Branch Index (PPBI), Bank Accounts Index (BAI), Per capita Deposit Index (PCDI), and Per capita Credit Index (PCCI), have been computed based on the aforementioned four measures. Using the UNDP method (Chattopadhyay (2011), Sarma (2008)), the raw data for each measure (PPB, BAPP, PCD, and PCC) is normalized to determine these indexes:

$$\frac{Xi-mi}{Mi-mi}$$

Xi = Actual value for ith component

m_i = Minimum value

M_i = Maximum possible value for i^{th} component.

The information obtained about the number of bank branches, the number of accounts, and the amount of deposits and credits is used to determine the minimum and maximum value. Every FI measure has an index value that ranges from zero to one. The variables are given equal weight for index formation after normalization (Kumar & Misra 2011 and Ravi 2018). Therefore, an average of all these indexes is used to determine the Financial Inclusion Index (FII):

$$FII = \frac{(1-PPBI)+BAI+PCDI+PCCI}{4}$$

Using this procedure, the financial inclusion index for every district in Haryana for the three years 2010–11, 2014–15, and 2017–18 was calculated for this study.

1.2 Information needed to calculate the Index

The total number of banking institutions

Data about the number of Bank branches was gathered for three specific years in order to determine the first indicator, availability. The information gathered is shown in the table below:

Table 1.21: Number of bank branches across different districts for specified years

District	2010-11	2014-15	2017-18
Ambala	163	260	271
Bhiwani	125	191	153
Faridabad	**182**	**288**	**314**
Fatehabad	85	146	155
Gurgaon	345	616	716
Hisar	154	237	274
Jhajjar	94	149	163
Jind	98	155	161
Kaithal	97	151	164
Karnal	166	292	326
Kurukshetra	111	202	224
Mahendragarh	68	115	124
Mewat	36	68	77
Palwal	69	104	110
Panchkula	132	215	234
Panipat	124	225	235
Rewari	97	156	175
Rohtak	136	199	218
Sirsa	122	181	199
Sonipat	157	254	282
Yamuna nagar	129	203	221

Source: *Compiled from reports of Statistical Abstract of Haryana, Various Issue*

Count of the accts:

For a period of three years, data on the number of bank accounts was collected to measure the penetration of the second indicator. The information gathered is shown in the following table:

Table 1.22: Number of accounts across different districts for specified years

District	2010-11	2014-15	2017-18
Ambala	13,71,191	21,26,861	26,28,323
Bhiwani	9,82,335	16,61,063	16,17,721
Faridabad	**18,66,767**	**31,19,874**	**42,03,025**
Fatehabad	5,45,466	9,94,815	14,60,258
Gurgaon	31,08,519	53,17,099	77,65,145
Hisar	13,01,267	21,32,239	28,01,244
Jhajjar	6,67,998	11,20,886	15,12,944
Jind	6,97,450	12,25,357	19,74,475
Kaithal	6,10,226	12,12,640	17,69,506
Karnal	10,85,304	20,64,350	28,39,546

District	2010-11	2014-15	2017-18
Ambala	13,71,191	21,26,861	26,28,323
Bhiwani	9,82,335	16,61,063	16,17,721
Faridabad	**18,66,767**	**31,19,874**	**42,03,025**
Fatehabad	5,45,466	9,94,815	14,60,258
Gurgaon	31,08,519	53,17,099	77,65,145

Kurukshetra	7,76,895	14,29,860	19,34,854
Mahendragarh	7,05,437	11,07,933	14,97,062
Mewat	2,79,455	5,41,554	8,76,742
Palwal	5,28,132	10,01,116	13,52,158
Panchkula	9,04,608	14,66,717	18,83,062
Panipat	9,65,242	15,83,074	22,02,519
Rewari	8,73,079	13,79,143	18,47,434
Rohtak	11,08,260	16,72,485	21,50,936
Sirsa	8,19,236	15,50,041	21,71,314
Sonipat	11,10,618	18,27,588	24,98,139
Yamuna nagar	11,45,148	17,97,328	24,00,656

Source: *Compiled from reports of Statistical Abstract of Haryana, Various Issue*

Credits and deposits

Information on deposits and credits was gathered for three years in order to provide the third indicator, usability. The information gathered is shown in the table below:

Table 1.23: Deposits and credits across different districts for specified years

District	Deposits			Credits		
	2010-11 (In millions)	2014-15 (In millions)	2017-18 (In millions)	2010-11 (In millions)	2014-15 (In millions)	2017-18 (In millions)
Ambala	58,347	1,07,457	1,55,931	28,714	5,15,921	69,960
Bhiwani	30,349	50,843	57,951	22,612	38,229	41,524
Faridabad	1,43,362	2,58,880	3,79,324	82,366	1,60,287	1,91,818
Fatehabad	15,195	26,760	44,486	15,640	33,391	46,619
Gurgaon	3,90,439	7,67,246	14,58,031	1,73,094	3,80,647	6,60,426
Hisar	52,022	81,749	1,27,714	97,537	1,34,622	1,14,930
Jhajjar	31,023	51,164	83,588	19,139	36,691	41,034
Jind	18,832	33,532	56,350	20,670	42,963	53,597
Kaithal	15,578	28,800	44,650	28,810	45,117	55,752
Karnal	47,947	87,793	1,26,944	81,024	1,46,989	1,65,150
Kurukshetra	31,762	58,285	88,202	25,072	45,914	58,750
Mahendragarh	17,401	30,289	50,836	8,542	28,585	22,403
Mewat	7,883	13,330	20,310	3,635	6,954	9,197
Palwal	14,788	25,798	41,645	9,460	17,159	23,495
Panchkula	1,62,560	1,62,218	2,29,262	1,21,367	1,44,977	1,64,209
Panipat	41,895	69,589	1,02,628	51,513	86,386	1,07,749
Rewari	37,044	58,942	99,332	18,207	24,434	36,615
Rohtak	59,743	99,520	1,52,146	44,602	49,332	64,269
Sirsa	23,916	42,383	63,959	24,432	50,754	73,588
Sonipat	53,552	97,511	1,52,453	24,617	1,19,929	75,480
Yamuna nagar	40,171	74,750	1,05,219	26,812	43,970	59,287

Source: Compiled from reports of Statistical Abstract of Haryana, Various Issue

Populace

Data obtained for the designated time is needed to calculate all parameters. The population data came from the 2011 Census, and population estimation for the remaining years (2015, 2018) was based on the average growth rate (from 2001 to 2011) provided by the 2011 Census.

Table 1.24: Population of different districts in Haryana for specified years

District	2011 (Actual)	2015 (Estimated)	2018 (Estimated)
Ambala	11,28,350	11,79,036	12,17,050
Bhiwani	16,34,445	17,30,550	18,02,630
Faridabad	18,09,733	20,45,288	22,21,954
Fatehabad	9,42,011	10,05,503	10,53,122
Gurgaon	15,14,432	19,62,461	22,98,454
Hisar	17,43,931	18,37,755	19,08,122
Jhajjar	9,58,405	9,92,524	10,18,114
Jind	13,34,152	13,98,885	14,47,435
Kaithal	10,74,304	11,32,531	11,76,202
Karnal	15,05,324	16,14,550	16,96,470
Kurukshetra	9,64,655	10,29,711	10,78,505
Mahendragarh	9,22,088	9,71,807	10,09,096
Mewat	10,89,263	12,54,525	13,78,473
Palwal	10,42,708	11,50,149	12,30,729
Panchkula	5,61,293	6,05,815	6,39,206
Panipat	12,05,437	13,24,052	14,13,013
Rewari	9,00,332	9,63,859	10,11,505
Rohtak	10,61,204	11,15,877	11,56,882
Sirsa	12,95,189	13,78,029	14,40,160
Sonipat	14,50,001	15,27,431	15,85,503
Yamuna nagar	12,14,205	12,94,683	13,55,041

1.2.1 Calculation of Dimension values and ranks:

Values of the various dimensions (Population per Branch, Bank Accounts per 1000 Population, Per Capita Deposit, and Per Capita Credit) are computed based on the data provided above and

are described accordingly. Each and every number is rounded off. These values were compared across several Haryana districts, and a ranking was created. The years 2011, 2015, and 2018 are computed.

The ranking of all districts for the year 2010–11 is provided in Table 5.25. It takes into account the number of individuals per division, bank account per 1000 persons, per capita deposit, and per capita credit.

Table 1.25: Indicator values and ranking for the year 2010-11

Districts	Population per branch	Rank	Bank Account per 1000 population	Rank	Per capita deposit	Rank	Per capita credit	Rank
Ambala	6922	3	1215	3	51710	5	25448	10
Bhiwani	13076	17	601	16	18568	15	13835	18
Faridabad	**9944**	**11**	**1032**	**5**	**79217**	**3**	**45513**	**5**
Fatehabad	11082	15	579	17	16130	17	16603	16
Gurgaon	4390	2	2053	1	257812	2	114296	2
Hisar	11324	16	746	12	29830	13	55929	3
Jhajjar	10196	12	697	14	32369	11	19970	13
Jind	13614	19	523	19	14115	20	15493	17
Kaithal	11075	14	568	18	14501	18	26817	8
Karnal	9068	6	721	13	31852	12	53825	4
Kurukshetra	8691	5	805	8	32926	10	25991	9
Mahendragarh	13560	18	765	10	18871	14	9264	19
Mewat	30257	21	256	21	7237	21	3337	21
Palwal	15112	20	506	20	14182	19	9072	20
Panchkula	4252	1	1612	2	289617	1	216228	1
Panipat	9721	10	801	9	34755	8	42734	6
Rewari	9282	8	970	6	41145	6	20222	12
Rohtak	7803	4	1044	4	56297	4	42030	7
Sirsa	10616	13	632	15	18465	16	18864	14
Sonipat	9236	7	766	11	36932	7	16977	15
Yamuna Nagar	9412	9	943	7	33084	9	22082	11

Based on the number of people per branch, Faridabad is ranked eleventh in this table. It is ranked fifth in terms of bank accounts per 1000 people. It comes in third place for per capita deposit and fifth place for per capita credit rankings. Therefore, it can be concluded that Faridabad is lagging behind in terms of population per branch.

The districts are ranked according to population per branch, bank account per 1000 people, per capita deposit, and per capita credit for the 2014–15 fiscal year, as shown in Table 5.26.

Table 1.26: Indicator values and ranking for the year 2014-15

Districts	Population per branch	Rank	Bank Accounts per 1000 population	Rank	Per capita Deposit	Rank	Per capita Credit	Rank
Ambala	4535	3	1804	3	91140	4	437579	4
Bhiwani	9060	19	960	18	29380	16	22091	16
Faridabad	7102	13	1525	4	126574	3	78369	3
Fatehabad	6887	12	989	17	26614	17	33208	17
Gurgaon	3186	2	2709	1	390961	1	193964	1
Hisar	7754	16	1160	12	44483	13	73254	13
Jhajjar	6661	11	1129	14	51549	12	36967	12
Jind	9025	18	876	19	23971	19	30712	19
Kaithal	7500	14	1071	16	25430	18	39837	18
Karnal	5529	5	1278	9	54376	10	91040	10
Kurukshetra	5098	4	1389	7	56603	9	44589	9
Mahendragarh	8450	17	1140	13	31168	14	29414	14
Mewat	18449	21	432	21	10626	21	5543	21
Palwal	11059	20	870	20	22430	20	14919	20
Panchkula	2818	1	2421	2	267768	2	239309	2
Panipat	5885	7	1196	10	52558	11	65244	11
Rewari	6179	9	1431	6	61152	7	25350	7
Rohtak	5607	6	1499	5	89185	5	44209	5
Sirsa	7613	15	1125	15	30756	15	36831	15
Sonipat	6014	8	1196	11	63840	6	78517	6
Yamuna Nagar	6378	10	1388	8	57736	8	33962	8

According to the table, Faridabad ranks fourth in terms of bank accounts per 1000 people and 13th in terms of population per branch. It holds the third position with regard to per capita credit and deposit. Gurgaon holds the top spot in every category, with the exception of population per branch.

The ranking of all districts for the year 2017–18 is provided in Table 5.27 and is based on the following metrics: population per branch, bank account per 1000 people, per capita deposit, and per capita credit.

Table 1.27: Indicator values and ranking for the year 2017-18

Districts	Population per branch	Rank	Bank Accounts per 1000 population	Rank	Per capita Deposit	Rank	Per Capita Credit	Rank
Ambala	4491	3	2160	3	128122	5	57483	7
Bhiwani	11782	20	897	20	32148	20	23035	18
Faridabad	7076	14	1892	4	170716	3	86329	4
Fatehabad	6794	12	1387	17	42242	16	44267	13
Gurgaon	3210	2	3378	1	634353	1	287335	1
Hisar	6964	13	1468	16	66932	13	60232	6
Jhajjar	6246	11	1486	14	82101	8	40304	15
Jind	8990	18	1364	18	38931	17	37029	16
Kaithal	7172	15	1504	13	37961	18	47400	12
Karnal	5204	5	1674	9	74828	11	97349	3
Kurukshetra	4815	4	1794	7	81782	9	54474	9
Mahendragarh	8138	17	1483	15	50378	14	22201	19
Mewat	17902	21	636	21	14734	21	6672	21
Palwal	11188	19	1099	19	33838	19	19090	20
Panchkula	2732	1	2946	2	358667	2	256895	2
Panipat	6013	9	1559	11	72631	12	76255	5
Rewari	5780	8	1826	6	98202	6	36199	17
Rohtak	5307	6	1859	5	131514	4	55554	8
Sirsa	7237	16	1508	12	44411	15	51097	10
Sonipat	5622	7	1576	10	96154	7	47606	11
Yamuna Nagar	6131	10	1772	8	77650	10	43753	14

Based on the figures calculated and presented in the table, Faridabad ranks 14th in terms of population per branch. It is ranked fourth in terms of per capita credit and third in terms of per capita deposit. Regarding bank accounts per 1,000 people, Faridabad came in fourth. Once more, Gurgaon holds the top spot in 2018, with the exception of population per branch.

1.2.4 Change of rank of the different dimensions

Additionally, an analysis has been conducted on the shift in rank for each of the four dimensions over the chosen study years. This has been done in order to determine which districts have performed better than others in terms of the scope and coverage of financial inclusion. Each of the four parameters is shown independently.

Number of people in each bank branch

The table below shows how the districts' rankings changed over the three years under consideration based on the number of people per bank branch:

Table 5.28: Change of rank in respect of population per branch (PPB) over study period

District	PPB (2011)	Rank (2011)	PPB (2015)	Rank (2015)	Change in rank (2011-2015)	PPB (2018)	Rank (2018)	Change in rank (2015-2018)
Ambala	6922	3	4535	3	0	4491	3	0
Bhiwani	13076	17	9060	19	-2	11782	20	-1
Faridabad	9944	11	7102	13	-2	7076	14	-1
Fatehabad	11082	15	6887	12	3	6794	12	0
Gurgaon	4390	2	3186	2	0	3210	2	0
Hisar	11324	16	7754	16	0	6964	13	3
Jhajjar	10196	12	6661	11	1	6246	11	0
Jind	13614	19	9025	18	1	8990	18	0
Kaithal	11075	14	7500	14	0	7172	15	-1
Karnal	9068	6	5529	5	1	5204	5	0
Kurukshetra	8691	5	5098	4	1	4815	4	0
Mahendragarh	13560	18	8450	17	1	8138	17	0
Mewat	30257	21	18449	21	0	17902	21	0
Palwal	15112	20	11059	20	0	11188	19	1
Panchkula	4252	1	2818	1	0	2732	1	0
Panipat	9721	10	5885	7	3	6013	9	-2
Rewari	9282	8	6179	9	-1	5780	8	1
Rohtak	7803	4	5607	6	-2	5307	6	0
Sirsa	10616	13	7613	15	-2	7237	16	-1
Sonipat	9236	7	6014	8	-1	5622	7	1
Yamuna nagar	9412	9	6378	10	-1	6131	10	0

Table 1.29: Change in rank of districts in respect of population per branch (PPB)

Change in Rank	Districts (2011-2015)	Districts (2015-2018)
Unaltered Rank	Ambala, Faridabad, Gurgaon, Hisar, Kaithal, Mewat, Palwal, Panchkula	Ambala, Faridabad, Fatehabad, Gurgaon, Jhajjar, Jind, Karnal, Kurukshetra, Mahendragarh, Mewat, Panchkula, Rohtak,Yamuna nagar
Improved Rank	Fatehabad, Jhajjar, Jind, Karnal, Kurukshetra, Mahendragarh, Panipat	Hisar, Palwal, Rewari, Sonipat
Declined Rank	Bhiwani, Rewari, Rohtak, Sirsa, Sonipat, Yaminna Nagar	Bhiwani, Faridabad, Kaithal, Panipat, Sirsa

Three different kinds of rank changes—unaltered, improved, and lowered—are shown in the table. The districts' names are listed in this table according to how many bank branches are accessible to the general public. From 2011 to 2015 and from 2015 to 2018, Faridabad's rank in terms of population per branch did not change.

Bank account for every 1000 people

The table below shows how the districts' rankings changed over the three years under consideration based on the number of bank accounts per 1,000 people:

Table 1.30: Change in rank in respect of bank account per 1000 population (BAPP) over study years

District	BAPP (2011)	Rank (2011)	BAPP (2015)	Rank (2015)	Change (2015-2018)	BAPP (2018)	Rank (2018)	Change (2015-2018)
Ambala	1215	3	1804	3	0	2160	3	0
Bhiwani	601	16	960	18	-2	897	20	-2
Faridabad	**1032**	5	1525	4	1	1892	4	0
Fatehabad	579	17	989	17	0	1387	17	0
Gurgaon	2053	1	2709	1	0	3378	1	0
Hisar	746	12	1160	12	0	1468	16	-4

District	BAPP (2011)	Rank (2011)	BAPP (2015)	Rank (2015)	Change (2015-2018)	BAPP (2018)	Rank (2018)	Change (2015-2018)
Jhajjar	697	14	1129	14	0	1486	14	0
Jind	523	19	876	19	0	1364	18	1
Kaithal	568	18	1071	16	2	1504	13	3
Karnal	721	13	1278	9	4	1674	9	0
Kurukshetra	805	8	1389	7	1	1794	7	0
Mahendragarh	765	10	1140	13	-3	1483	15	-2
Mewat	256	21	432	21	0	636	21	0
Palwal	506	20	870	20	0	1099	19	1
Panchkula	1612	2	2421	2	0	2946	2	0
Panipat	801	9	1196	10	-1	1559	11	-1
Rewari	970	6	1431	6	0	1826	6	0
Rohtak	1044	4	1499	5	-1	1859	5	0
Sirsa	632	15	1125	15	0	1508	12	3
Sonipat	766	11	1196	11	0	1576	10	1
Yamuna Nagar	943	7	1388	8	-1	1772	8	0

Table 1.31: Variation in rank of districts in respect of bank account per 1000 population (BAPP)

Change in Rank	District (2011-2015)	District (2015-2018)
Unaltered Rank	Ambala, Fatehabad, Gurgaon, Hisar, Jhajjar, Jind, Mewat, Palwal, Panchkula, Rewari, Sirsa, Sonipat	Ambala, Faridabad, Fatehabad, Gurgaon, Jhajjar, Karnal, Mewat, Panchkula, Rewari, Rohtak, Yamuna Nagar
Improved Rank	Faridabad, Kaithal, Karnal	Jind, Kaithal, Sirsa, Sonipat
Declined Rank	Bhiwani, Mahendragarh, Panipat, Rohtak, Yamuna nagar	Bhiwani, Hisar, Mahendragarh, Palwal, Panipat

In two time periods, 2011-2015 and 2015-2018, the districts' names were projected in the table according to their change in rank: Unaltered, Improved, and declined. In terms of bank accounts per 1000 people, Faridabad's ranking rose between 2011 and 2015 but did not change between 2015 and 2018.

Per capita deposit

The table below shows how the districts' rankings changed over the three years under reference based on per capita deposit:

Table 1.32: Change in rank in respect of per capita deposit (PCD) over study period

District	PCD (2011)	Rank (2011)	PCD (2015)	Rank (2015)	Change in Rank (2011-2015)	PCD (2018)	Rank (2018)	Change in Rank (2015-2018)
Ambala	51710	5	91140	4	1	128122	5	-1
Bhiwani	18568	15	29380	16	-1	32148	20	-4
Faridabad	79217	3	126574	3	0	170716	3	0
Fatehabad	16130	17	26614	17	0	42242	16	1
Gurgaon	257812	2	390961	1	1	634353	1	0
Hisar	29830	13	44483	13	0	66932	13	0
Jhajjar	32369	11	51549	12	-1	82101	8	4
Jind	14115	20	23971	19	1	38931	17	2
Kaithal	14500	18	25430	18	0	37961	18	0
Karnal	31851	12	54376	10	2	74828	11	-1
Kurukshetra	32926	10	56603	9	1	81782	9	0
Mahendragarh	18871	14	31168	14	0	50378	14	0
Mewat	7237	21	10626	21	0	14734	21	0
Palwal	14182	19	22430	20	-1	33838	19	1
Panchkula	289617	1	267768	2	-1	358667	2	0
Panipat	34755	8	52558	11	-3	72631	12	-1
Rewari	41145	6	61152	7	-1	98202	6	1
Rohtak	56297	4	89185	5	-1	131514	4	1

Sirsa	18465	16	30756	15	1	44411	15	0
Sonipat	36932	7	63840	6	1	96154	7	-1
Yamuna nagar	33084	9	57736	8	1	77650	10	-2

Table 1.33: Variation in the rank of the district in respect of per capita deposit (PCD)

Change in Rank	District (2011-2015)	District (2015-2018)
Unaltered Rank	Fatehabad, Hisar, Kaithal, Faridabad, Mahendragarh, Mewat	Ambala, Gurgaon, Hisar, Kaithal, Kurukshetra, Mahendragarh, Mewat, Panchkula, Faridabad
Improved Rank	Ambala, Gurgaon, Jind, Karnal, ,Sirsa, Kurukshetra, Sonipat, Yamuna nagar	Fatehabad, Jhajjar, Jind, Palwal, Rewari, Rohtak, Sirsa
Declined Rank	Bhiwani, Jhajjar, Palwal, Panchkula, Panipat, Rewari, Rohtak	Bhiwani, Karnal, Panipat, Soniat, Yamuna Nagar

The table showed the variations in the position of districts on the basis of per capita deposit. The various districts have improved in their performance and few of them further need to improve. The rank of Faridabad has not changed from 2011-2015, as well as from 2015-2018.

Per capita Credit

The change in the rank of the districts on basis of per capita credit over the referred three years can be seen in the table given below:

Table 1.34: Change in rank in respect of per capita credit (PCC) over study period

District	PCC (2011)	Rank (2011)	PCC (2015)	Rank (2015)	Change of Rank (2011-2015)	PCC (2018)	Rank (2018)	Change of rank (2015 -2018)
Ambala	25448	10	437579	4	6	57483	7	-3
Bhiwani	13835	18	22091	16	2	23035	18	-2
Faridabad	45513	5	78369	3	2	86329	4	-1
Fatehabad	16603	16	33208	17	-1	44267	13	4
Gurgaon	114296	2	193964	1	1	287335	1	0
Hisar	55929	3	73254	13	-10	60232	6	7

Jhajjar	19970	13	36967	12	1	40304	15	-3
Jind	15493	17	30712	19	-2	37029	16	3
Kaithal	26817	8	39837	18	-10	47400	12	6
Karnal	53825	4	91040	10	-6	97349	3	7
Kurukshetra	25991	9	44589	9	0	54474	9	0
Mahendragarh	9264	19	29414	14	5	22201	19	-5
Mewat	3337	21	5543	21	0	6672	21	0
Palwal	9072	20	14919	20	0	19090	20	0
Panchkula	216227	1	239309	2	-1	256895	2	0
Panipat	42734	6	65244	11	-5	76255	5	6
Rewari	20222	12	25350	7	5	36199	17	-10
Rohtak	42030	7	44209	5	2	55554	8	-3
Sirsa	18864	14	36831	15	-1	51097	10	5
Sonipat	16977	15	78517	6	9	47606	11	-5
Yamuna nagar	22082	11	33962	8	3	43753	14	-6

Table 1.35: Variation in the rank of the district in respect of per capita credit (PCC)

Change in Rank	Districts (2011-2015)	Districts (2015-2018)
Unaltered Rank	Kurukshetra, Mewat, Palwal	Gurgaon, Kurukshetra, Mewat, Palwal, Panchkula
Improved Rank	Ambala, Bhiwani, Faridabad, Gurgaon, Jhajjar, Mahendragarh, Rewari, Rohtak, Sonipat, Yamuna Nagar	Hisar, Jind, Kaithal, Karnal, Panipat, Sirsa
Declined Rank	Hisar, Jind, Kaithal, Karnal, Panchkula, Panipat, Sirsa	Ambala, Bhiwani, Faridabad, Jhajjar, Mahendragarh, Rewari, Rohtak, Sonipat, Yamuna nagar

The districts' names were shown in this table according to how much their per capita credit has changed, increased, decreased, or stayed the same. It gives districts whose ranking declined during the study period guidance on what needs to be done to improve the current situation. Between 2011 and 2015, Faridabad's standing improved; however, between 2015 and 2018, it declined.

1.2.5 Calculation of Four Indexes

Following the calculation of indicator values, the data is normalised using the previously described approach to determine the associated indexes: Population per Branch Index (PPBI),

Bank Account Index (BAI), Per capita Deposit Index (PCDI), and Per capita Credit Index (PCCI).

The following table (5.36) shows the four dimensions' indices for the 2010–11 year:

Table 1.36: Dimension indexes of different districts for the year 2010-11

Districts	PPBI	BAI	PCDI	PCCI
Ambala	0.10	0.53	0.16	0.10
Bhiwani	0.34	0.19	0.04	0.05
Faridabad	**0.22**	**0.43**	**0.25**	**0.20**
Fatehabad	0.26	0.18	0.03	0.06
Gurgaon	0.01	1.00	0.89	0.52
Hisar	0.27	0.27	0.08	0.25
Jhajjar	0.23	0.25	0.09	0.08
Jind	0.36	0.15	0.02	0.06
Kaithal	0.26	0.17	0.03	0.11
Karnal	0.19	0.26	0.09	0.24
Kurukshetra	0.17	0.31	0.09	0.11
Mahendragarh	0.36	0.28	0.04	0.03
Mewat	1.00	0.00	0.00	0.00
Palwal	0.42	0.14	0.02	0.03
Panchkula	0.00	0.75	1.00	1.00
Panipat	0.21	0.30	0.10	0.19
Rewari	0.19	0.40	0.12	0.08
Rohtak	0.14	0.44	0.17	0.18
Sirsa	0.24	0.21	0.04	0.07
Sonipat	0.19	0.28	0.11	0.06
Yamuna Nagar	0.20	0.38	0.09	0.09

The district indices for the state of Haryana for the years 2010–11 are presented in the table above. Each index ranges from 0 to 1, with numbers closer to 1 indicating a better position.

However, for the population per branch index (PPBI), which is inversely related, a number closer to 0 is preferable as it indicates fewer branches. For example, in Faridabad, the PPBI is 0.22.

The indexes of four dimensions for the year 2014-15 are shown in the following table (5.37):

Table 1.37: Dimension indexes of different districts for the year 2014-15

Districts	PPBI	BAI	PCDI	PCCI
Ambala	0.11	0.60	0.21	1.00
Bhiwani	0.40	0.23	0.05	0.04
Faridabad	**0.27**	**0.48**	**0.30**	**0.17**
Fatehabad	0.26	0.24	0.04	0.06
Gurgaon	0.02	1.00	1.00	0.44
Hisar	0.32	0.32	0.09	0.16
Jhajjar	0.25	0.31	0.11	0.07
Jind	0.40	0.20	0.04	0.06
Kaithal	0.30	0.28	0.04	0.08
Karnal	0.17	0.37	0.12	0.20
Kurukshetra	0.15	0.42	0.12	0.09
Mahendragarh	0.36	0.31	0.05	0.06
Mewat	1.00	0.00	0.00	0.00
Palwal	0.53	0.19	0.03	0.02
Panchkula	0.00	0.87	0.68	0.54
Panipat	0.20	0.34	0.11	0.14
Rewari	0.22	0.44	0.13	0.05
Rohtak	0.18	0.47	0.21	0.09
Sirsa	0.31	0.30	0.05	0.07
Sonipat	0.20	0.34	0.14	0.17
Yamuna Nagar	0.23	0.42	0.12	0.07

Compared to the data from 2010-11, the PPBI has risen to 0.27, indicating an increase in population per branch, which is unfavorable for inclusion. On the other hand, the BAI and

PCDI have shown improvement, while the PCCI has decreased compared to the previous study year (2010-11).

The indexes of four dimensions for the year 2017-18 are shown in the following table (5.38):

Table 1.38: Dimension indexes of different districts for the year 2017-18

Districts	PPBI	BAI	PCDI	PCCI
Ambala	0.12	0.56	0.18	0.18
Bhiwani	0.60	0.10	0.03	0.06
Faridabad	**0.29**	**0.46**	**0.25**	**0.28**
Fatehabad	0.27	0.27	0.04	0.13
Gurgaon	0.03	1.00	1.00	1.00
Hisar	0.28	0.30	0.08	0.19
Jhajjar	0.23	0.31	0.11	0.12
Jind	0.41	0.27	0.04	0.11
Kaithal	0.29	0.32	0.04	0.15
Karnal	0.16	0.38	0.10	0.32
Kurukshetra	0.14	0.42	0.11	0.17
Mahendragarh	0.36	0.31	0.06	0.06
Mewat	1.00	0.00	0.00	0.00
Palwal	0.56	0.17	0.03	0.04
Panchkula	0.00	0.84	0.56	0.89
Panipat	0.22	0.34	0.09	0.25
Rewari	0.20	0.43	0.13	0.11
Rohtak	0.17	0.45	0.19	0.17
Sirsa	0.30	0.32	0.05	0.16
Sonipat	0.19	0.34	0.13	0.15
Yamuna Nagar	0.22	0.41	0.10	0.13

The table above shows the indexes for all districts of Haryana state for the period of 2017-18. Comparing these indexes with the previous study year (2014-15), the PPBI has further increased to 0.29, indicating an increase in population per branch and highlighting a supply-side issue. Additionally, both the BAI and PCDI have decreased, while the PCCI has increased during this period.

1.2.6 Calculation of Composite Index of financial Inclusion

Using the previously described method, the composite index of financial inclusion is finally calculated following the computation of the four indexes. Following the FII calculation, a ranking of every district was completed. The Financial Inclusion Index (FII) for each district, along with its three-year ranking, is shown in the section that follows.

Table 5.39: FII and ranks of different districts for the study years

District	FII (2011)	Rank (2011)	FII (2015)	Rank (2015)	Change of rank (2011-2015)	FII (2018)	Rank (2018)	Change of Rank (2015-2018)
Ambala	0.42	3	0.68	3	0	0.45	3	0
Bhiwani	0.24	18	0.23	18	0	0.15	20	-2
Faridabad	0.42	4	0.42	4	0	0.43	4	0
Fatehabad	0.25	16	0.27	16	0	0.3	16	0
Gurgaon	0.85	2	0.85	1	1	0.99	1	0
Hisar	0.33	11	0.31	12	-1	0.32	13	-1
Jhajjar	0.30	13	0.31	13	0	0.33	12	1
Jind	0.22	19	0.22	19	0	0.25	18	1
Kaithal	0.26	15	0.27	15	0	0.3	15	0
Karnal	0.35	7	0.38	6	1	0.41	6	0
Kurukshetra	0.33	10	0.37	7	3	0.39	7	0
Mahendragarh	0.25	17	0.26	17	0	0.27	17	0
Mewat	0.00	21	0	21	0	0	21	0
Palwal	0.19	20	0.18	20	0	0.17	19	1
Panchkula	0.94	1	0.77	2	-1	0.82	2	0
Panipat	0.34	8	0.35	10	-2	0.37	9	1
Rewari	0.35	6	0.35	9	-3	0.37	8	1
Rohtak	0.41	5	0.4	5	0	0.41	5	0
Sirsa	0.27	14	0.28	14	0	0.31	14	0
Sonipat	0.32	12	0.36	8	4	0.36	10	-2
Yamuna nagar	0.34	9	0.35	11	-2	0.36	11	0

The financial inclusion index and rankings of various districts at various points in time (study years) were displayed in the above table. Faridabad's average inclusion index (FII) is 0.42. A number close to 1 is high, and a number close to 0 is extremely low. This illustrates the need for Faridabad banks to step up their efforts to promote financial inclusion. When compared to other districts in Haryana, Faridabad came in at number four in 2011, and it remained there in 2015 and 2018. Therefore, Faridabad has maintained the same position in FII throughout the study years. In terms of financial inclusion, Gurgaon, Panchkula, and Ambala are in a better position in Haryana. In 2011, Gurgaon was ranked second; in 2015, it rose to the top; and in 2018, it remained there. The district Mewat has not contributed anything, as evidenced by the table, where it consistently ranks last in the list. In terms of development, Faridabad is clearly doing better than the other districts in Haryana, but there is still much work ahead of it.

Table 1.40: Movement in rank of districts on the basis of FII years

Change in Rank	Districts (2011-2015)	Districts (2015-2018)
Unaltered Rank	Ambala, Bhiwani, Faridabad Fatehabad, Hisar, Jhajjar, Jind, Kaithal, Karnal, Kurushetra, Mahendragarh, Mewat, Palwal, Rohtak, Sirsa	Ambala, Faridabad, Fatehabad, Gurgaon, Kaithal, Karnal, Kurukhetra, Mahendraghar, Mewat, Panchkula, Rohtak, Sirsa,Yamunanagar.
Improved Rank	Gurgaon, Sonipat	Jajjhar, Jind, Palwal, Panipat, Rewari
Declined Rank	Panchkula, Panipat, Rrewari, Yamuna Nagar	Bhiwani, Hisar, Rohtak, Sonipat

This table presented the names of the districts whose position has changed (increased or decreased) or remained unaltered, on the basis of FII value. It provides an indication for taking steps to improve the current situation to those districts whose rank deteriorated during the time of the study. Position of Faridabad remained unaltered from 2011 to 2015, as well as from 2015 to 2018.

1.2.7 Summary of Indexes and Rank of Faridabad District

Table 5.41: Index and rank summary

Year	PPBI	BAI	PCDI	PCCI	FII
2011	0.21(11)	0.43(5)	0.25(3)	0.19(5)	0.42 (4)
2015	0.27(13)	0.48(4)	0.30(3)	0.16(6)	0.42 (4)
2018	0.28(14)	0.45(4)	0.25(3)	0.28(4)	0.43 (4)

** Numbers in parentheses represent rank.*

Faridabad's ranking in terms of the population per branch index (PPBI) dropped from 11th in 2011 to 13th in 2015 and then to 14th in 2018. The ranking in terms of BAI increased from fifth in 2011 to fourth in 2015 and stayed there in 2018. Third place in terms of PCDI stayed the same. The PCCI ranking fell from fifth in 2011 to sixth in 2015, then rose to fourth in 2018. The Faridabad District's ranking in terms of the composite index (FII) remained at #4. The primary cause of their lower ranking in the Index of Financial Inclusion was the absence of bank branches.

Conclusion:

This paper concludes that District Faridabad in the state of Haryana is keeping a fair position in terms of accessibility, usage and penetration of the banking services. Faridabad,Panchkula Gurgaon district amongst the top position holder in the state in terms of spreading inclusive financial system.But still lot of work need to be done to get the full inclusive growth at country level.

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A STUDY ON FACTORS INFLUENCING SATISFACTION TOWARDS ONLINE FOOD DELIVERY SERVICES IN THANE

Mr. Shailesh B Sargade
Assistant Professor
MET – Institute of Management,
Bhujbal Knowledge City, Reclamation, Bandra (W)
Mobile No. 9769559816
Email ID : shaileshs_iom@met.edu

Dr. Manisha Dilip Bhingardive
Associate Professor
Satish Pradhan Dnyanasadhana
College, Thane (W)
Mobile No. 9833955526
Email ID: manishabhingardive@rediffmail.com

Abstract

The rapid societal development has led to a growing interest in the realm of services regarding online food delivery. The COVID crisis significantly disrupted global markets, compelling businesses to adapt their practices. Online food delivery emerged as a solution due to various factors: consumers' inability to cook, fear of contracting COVID-19, boredom with home-cooked meals, or safety precautions. This scenario created a mutually beneficial situation for consumers and restaurant owners. Additionally, the rise of IT professionals facilitated the development of mobile applications simplifying meal ordering, comparison, and tracking. This study concentrates on identifying and assessing the primary things that cause customer satisfaction with food delivery services online in Mumbai.

Keywords: Delivery System, Satisfaction

Introduction

Customer satisfaction is defined as the proportion of customers reporting that their experience with a firm's offerings meets or surpasses satisfaction targets. Satisfaction surveys typically ask customers if their expectations were met. High expectations, when unmet, lead to dissatisfaction. Technology has enabled consumers to perform various tasks online, including ordering food for home delivery. The convenience of online food delivery appeals to diverse groups, from busy workers to idle students. Companies strive to deliver food quickly to attract more customers, increasing dependency on these services. Consequently, the popularity of online food delivery services (OFD) is steadily rising.

Literature Review

- **Leong Wai Hong (2016):** Technology has transformed business models across industries, enhancing restaurant efficiency and revenue. A survey of 150 customers indicated that online meal delivery services support significant online business and occasionally aid in business development.

- **Pathan (2017):** An online meal ordering system simplifies placing orders, tracking, and maintaining customer information. It enables easy updates to online menus and allows potential customers to order conveniently.

- Das J(2018):elucidates that customers are drawn to online food delivery (OFD) services primarily due to punctual delivery and attractive discounts, alongside additional factors such as doorstep convenience, loyalty incentives, and cashback offers.

- **Gupta M. (2019):** The impact of Swiggy and Zomato on restaurants has been positive, with internet technologies boosting online food services. The ease of comparing costs and accessing services has led to significant growth in online ordering, positively changing restaurant operations.

Objectives

1. To figure out the level of contentment among user in Thane about conveyance of food.
2. To decide what actually affects choice of food through online service of food delivery.
3. To gauge the way customers perceive online food delivery services.

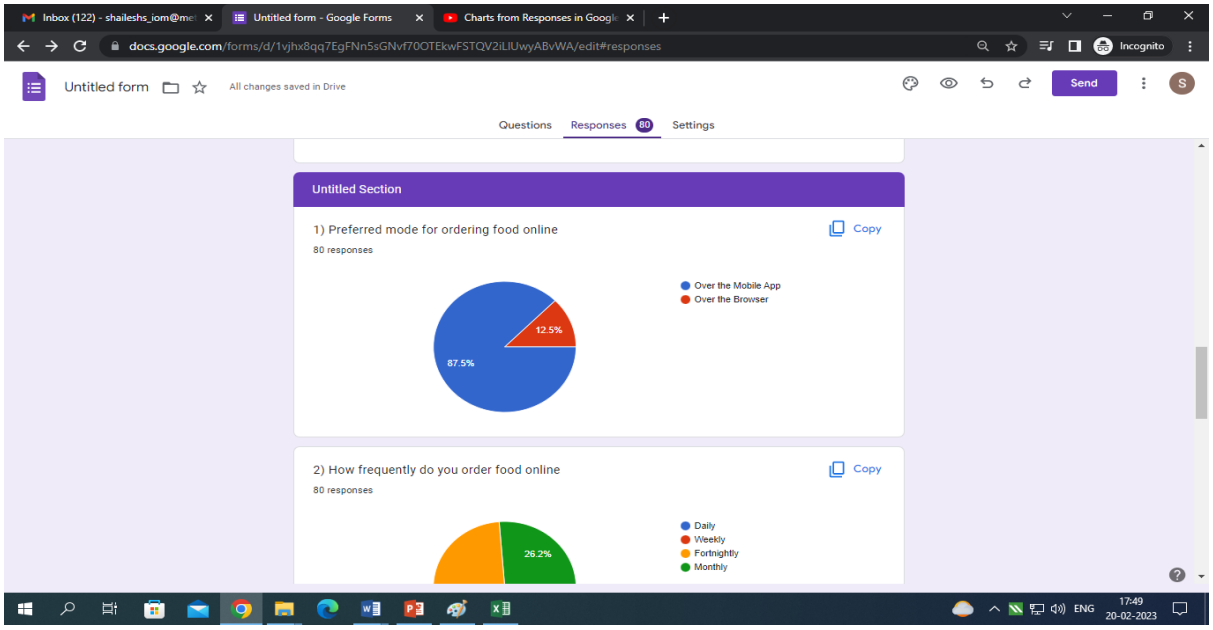
Research Methodology

The research targets individuals who have experienced online meal delivery services on at least one occasion. A group of 80 participants residing in the Thane area was selected through a straightforward random selection process. A combination of firsthand and secondary information sources was utilized. Primary data was gathered through participant observation and direct engagement, while secondary data was obtained from various publications, journals, books, and newspapers.

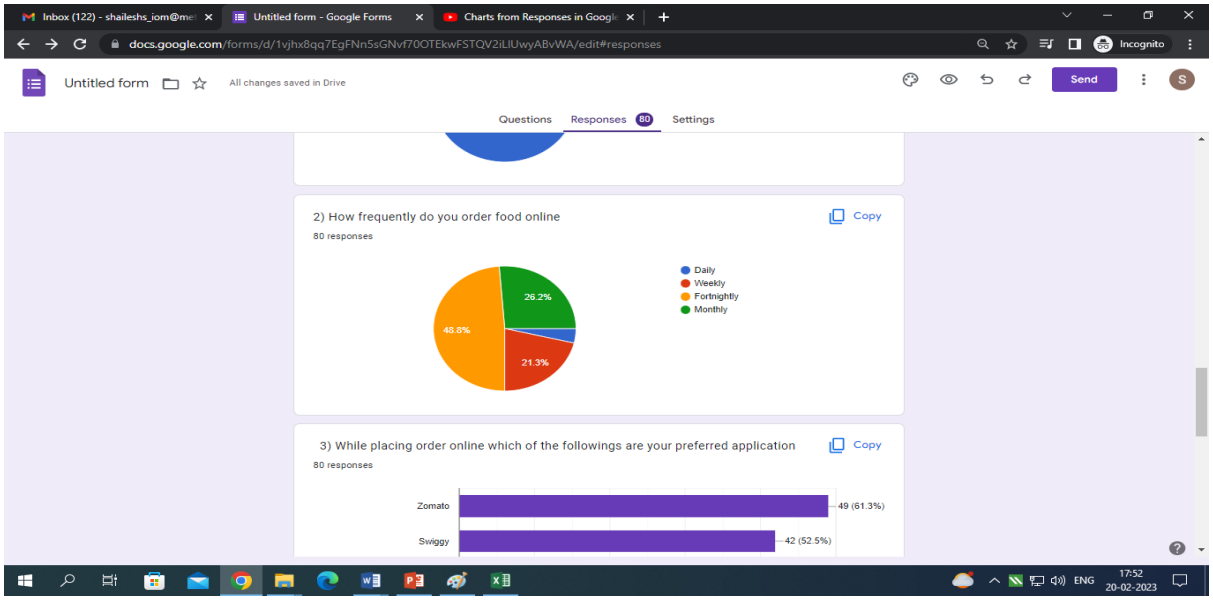
Data Analysis & Interpretation

Eighty respondents completed the questionnaire, with the following demographics:

- **Age Groups:** 70% (25-40 years), 20% (below 25 years), and 10% (above 40 years).
- **Occupation:** 63.7% salaried individuals, 11.3% students, 8.8% professionals.
- **Gender:** 52.5% female and 47.5% male respondents.

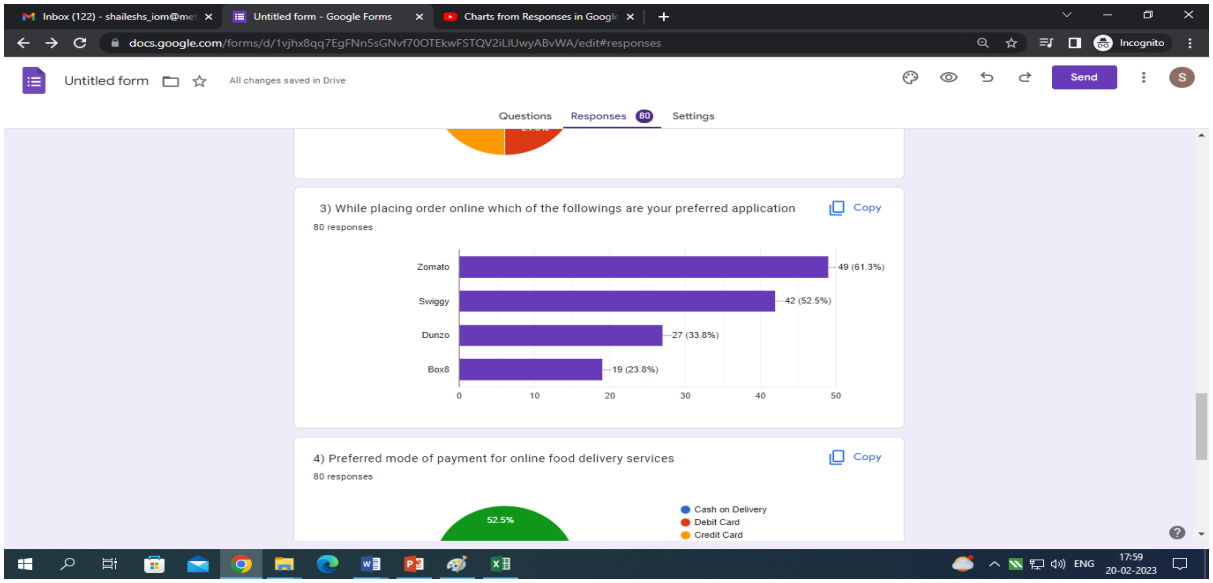


It is evident from the above pie chart that 87.5% respondents prefer to order food through the mobile app itself. Very rarely people order over the browser. One of the reasons for this can be the convenience of using mobile phones and at times it can be just impulsive decision to order food online so apps make it comparatively easy to order food through mobile.

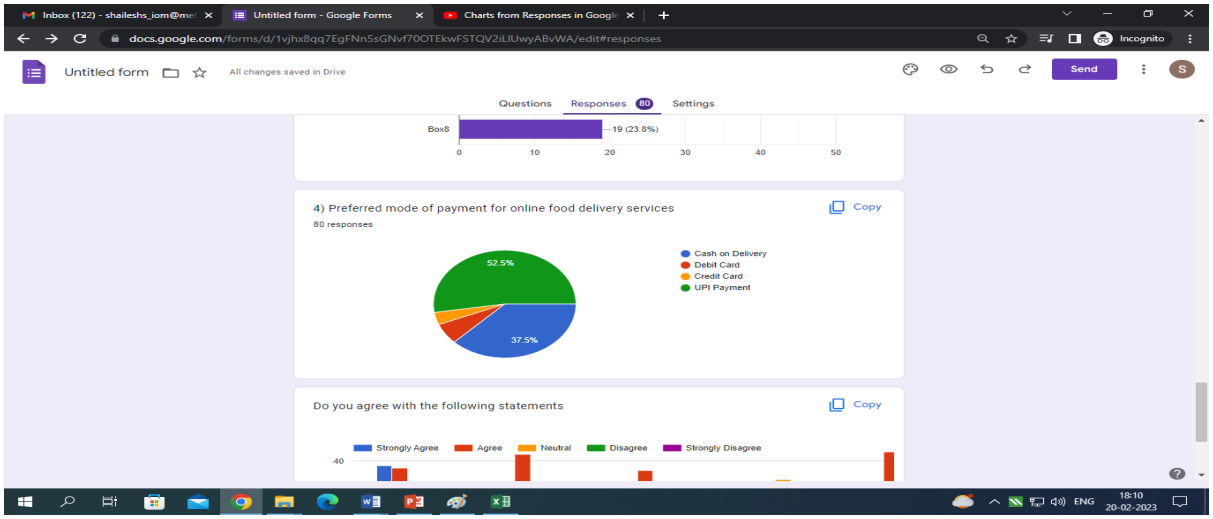


From the depicted graph, it's evident that most of the participants order food fortnightly which is 48.8% and 26.2% monthly. Daily ordering online food is very rare but to order food online weekly there are sizable respondents. It shows that the culture of ordering food online is slowly getting adapted as earlier people used to prefer to go outside and have food in the hotel or

restaurant but now that culture is changing and people do not mind getting at their doorstep as per their convenience



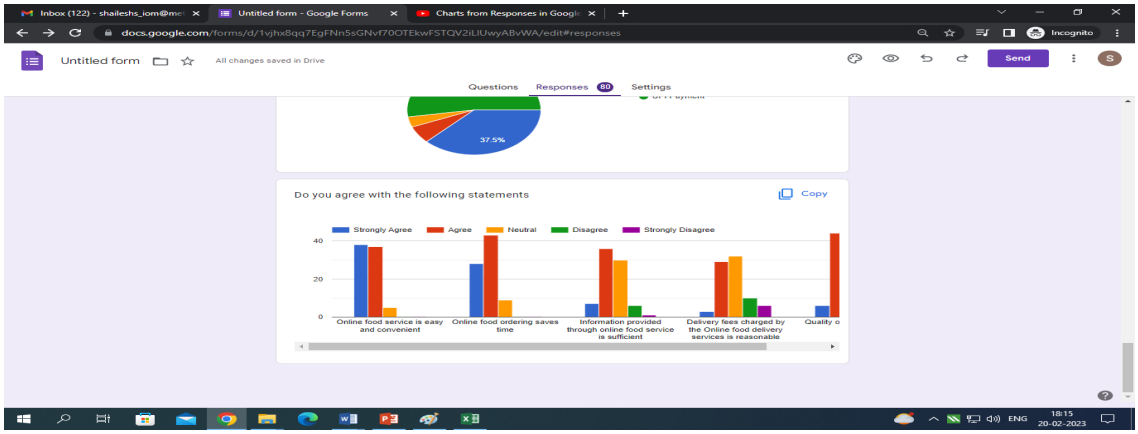
This chart shows that Zomato and Swiggy are the top contenders when it comes to choosing an app to order food online. 49% & 42 % are preferred respectively from the respondents. Box8 is the least preferred app to order food online. This can be possible because of the geographical reach of the service provider. As Thane is widespread geographically, the network of Zomato and Swiggy is strong as compared to other players. As well Zomato & Swiggy are well known brand in the mind of the people



From the above pie-chart, it is very clear that when it comes to making payment online UPI Payment & Cash on Delivery. But the Majority 52.5% prefer UPI Payment. As the service provider provides options not only while delivering the food but even when it comes to make

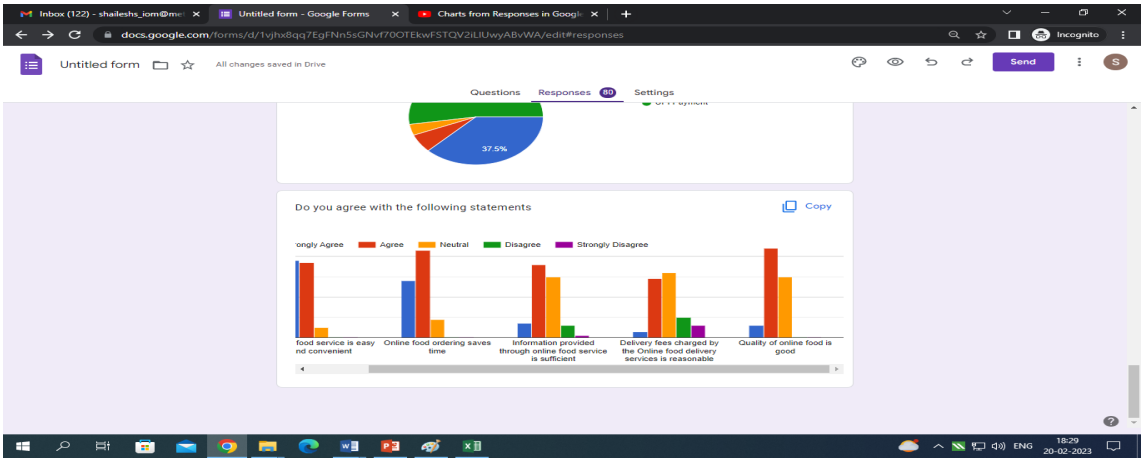
the payment after delivering the food the customers can still make UPI Payment through the scanner which the delivery personnel carry along with them. Therefore, other options of Debit Card & Credit Card are least preferred

Table 5.1



It is obvious from the above chart 5.1 that the almost all of the people participating feel that online food service is easy and convenient as very few are neutral about it and more than 90% of the respondents feel online food delivery service has made their life a bit easier when it comes to ordering food at their place of convenience. Moreover, most respondents believe that ordering food online saves them time and energy. However, when it comes to the information provided by online food services, people are somewhat hesitant to accept that they receive complete information. There are instances where people feel that information provided through online food delivery is not sufficient.

Table 5.2



This chart 5.2 shows that Delivery fees charged by the online food service provider is not completely accepted by the respondents where they feel at times there are certain hidden charges when it comes to delivery fees, at times they feel delivery fees is charged too high, due

to which the bill amount is increased unnecessarily and also when it comes to quality of online food around 39% of the respondents have neutral feelings about it but most of them believe that quality of food is decent.

Conclusion

In here, we are certain that most of the people use food delivery online, which has for sure effeciently invaded the Indian economy. These services are convenient and cater to customer needs by providing high-quality services. This research seeks to emphasize the pricing dimension of online meal delivery services, where a majority of customers are dissatisfied with the delivery charges imposed by these apps. Additionally, the survey indicates that compared to other service providers, Zomato and Swiggy enjoy a more favorable reputation among customers. It is seen that the people living in Thane like using the delivery option a lot, with mainly those people being between the ages of 25 and 40. They choose to online order more frequently.

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Study on the development and challenges of Banking and Insurance sector in India

Author - Sneha Santosh Kumar Mishra

Abstract

India has witnessed significant economic growth over the past decade, with the banking These sectors have experienced profound changes due to evolving public interests, demographic shifts, regulatory updates, and rapid advancements in technology. These industries depend on both governmental and private institutions. This essay seeks to describe in full the traits, current developments, obstacles, and suggestions for the growth of the insurance and banking industries in India. According to the report, public sector banks are dealing with problems. Implementing the proposed interventions is crucial for meeting the goals set for 2022.

Introduction

Both the sectors play a very important role in the economic growth and stability of a nation. The development of the Indian banking system has occurred in three stages: the first involved the establishment of formal banks, the stage of maturity when regulatory frameworks were introduced, and the current stage, which is impacted by changes in consumer demands and technology breakthroughs, and the period of innovation after liberalisation.

India's insurance market has also seen growth, with LIC and GIC being dominant players since their inception. Private sector participation has increased since the implementation of liberalization policies.

Objectives

1) Analyze the present condition of the insurance and banking sectors.
2) Investigate the primary characteristics of these industries.
3) Examine recent trends in insurance and banking
4) Recognize the challenges encountered by these sectors
5) Suggest strategies for advancement.

Methods of Research

This study employs secondary data from many sources, such as publications, regulatory bodies, and academic articles, to examine the banking and insurance industries in India.

Important Results

1) Well-structured industries: India's banking and insurance systems are excellently organised and cater to a wide range of economic sectors.

2) Predominance of the public sector: Public sector banks and

entities hold considerable sway, although private counterparts are increasingly influential.

3) Optimal regulatory environment: The RBI and IRDA regulate banking and insurance, ensuring growth and stability.

4) Employment opportunities: The banking and insurance sectors offer significant job opportunities, contributing to India's economy.

5) Service sector contributors: Banking and insurance contribute significantly to India's GDP.

6) Maturity and emerging sectors: Both sectors are maturing and embracing innovation to meet consumer demands.

New Developments

1) Innovation in services: Financial institutions are innovating to stay competitive amid emerging fintech companies.

2) Business practice modifications: Banks and insurers are adopting new technologies for efficient operations and customer service.

3) Financial inclusion: Efforts are made to reach underserved populations and promote financial literacy.

4) Challenges Facing the Sectors

Banking Sector

1) Rising NPAs: Non-performing assets pose a significant challenge for banks.

2) Ensuring financial access: Extending services to rural and low-income populations, particularly in this regard, presents a significant challenge.

3) Technology adoption: Banks face challenges in implementing technology to improve services.

4) Cybersecurity threats: Online transactions face increased cyber risks.

Insurance Sector

1) Slow growth: The non-life insurance market faces challenges in growth.

2) Customer dissatisfaction: Discrepancies between expected and actual performance lead to dissatisfaction.

3) Pricing challenges: Setting the right pricing for products is a complex issue.

4) Regulatory changes: Sudden regulatory changes impact product segments.

Possible Improvements

1) Stimulate demand: Focus on technology adoption and financial literacy to boost demand.

2) Reduce operating costs: Public sector banks need to address their high operating costs.

3) Strengthen regulations: Implement strict guidelines for customer defaults.

4) Promote competitiveness: Address challenges posed by foreign players.

5) Enhance distribution channels: Improve distribution networks to reach remote areas.

6) Address economic factors: Collaborate with the government to address economic challenges.

7) Product innovation: Offer a variety of insurance products to meet consumer needs.

Conclusion

The banking and insurance sectors play vital roles in India's economic growth. However, challenges such as NPAs, slow growth, and regulatory changes need to be addressed. Initiatives at the grassroots level are crucial for attaining the objectives established for 2022.

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TITLE OF THE PAPER

EFFECT OF SPIRITUAL BREATHING EXERCISES (BRAHMAVIDYA) ON STRESS LEVEL, EXPIRATORY PEAK VOLUME,NUMERICAL ABILITY PERFORMANCE IN PHYSICS AND ATTITUDE TOWARDS PHYSICS SUBJECT ON XI SCIENCE STUDENTS OF MAHARASHTRA BOARD

AUTHOR

MR.SURESH. V.HALBANDGE

M.sc.(Phy),M.A.(yoga);B.Ed.

DESIGNATION

TEACHER IN PHYSICS

(DEPARTMENT OF PHYSICS)

SATISH PRADHAN

DNYANASADHANA COLLEGE,THANE.

Email id: sureshhalbandge@gmail.com

EFFECT OF SPIRITUAL BREATHING EXERCISES (BRAHMAVIDYA SPIRITUAL BREATHING EXERCISES ON

1)STRESS LEVEL

2) PEAK EXPIRATORY LUNG VOLUME

3) NUMERICAL ABILITY PERFORMANCE IN PHYSICS

4) ATTITUDE TOWARDS PHYSICS SUBJECT

ON XI SCIENCE STUDENTS OF MAHARASHTRA BOARD

Background:

The world is becoming more and more competitive. Quality of performance has become the key factor for personal progress. The desire for the high level of achievement puts a lot of pressure on students, teachers, Schools and in general educational system. Achievement is the end product of all educational Endeavors. It seems that our present education system has become more mechanical and has failed to nurture all round development of the personality of the student. Academic problems of students are related to difficulty in concentration, difficulty in

remembering, unable to understand a particular subject or topic, unable to understand the language and examination anxieties. Sometimes well-prepared students cannot perform well in examinations due to mental confusion. Examination fears and other types of fear of failures can greatly halt the students' progress. In the present technological age students are under high level of stress, depression, anxiety and frustrationY.oga helps the students for promoting the Academic performance.

Practice of Yoga would directly contribute to human resource development and improvement in the quality of life by developing their fitness (Physical, mental, emotional as well as spiritual). It enhances the quality of life by improving motor ability.Yoga helps the students for promoting the Academic performance, so that it fulfills the dreams of our Father of Nation Mahatma Gandhi", who defines education-a system of an all-round drawing out best in child and man – body, mind and soul.

MAIN PURPOSE OF THE STUDY:

1) To evaluate the effect of spiritual breathing exercises to reduce stress.

2) To evaluate the effect of spiritual breathing exercises on peak expiratory volume.

3) To evaluate the effect of spiritual breathing exercises on numerical ability performance in physics.

4) To evaluate the effect of spiritual breathing exercises on attitude towards physics subject on XI science students of Maharashtra board.

Null hypothesis(H_0):

1) There is no significant difference between pre and post test scores of student stress inventory (SSI) test.

2) There is no significant difference between pre and Post test values of peak expiratory volume using a spirometer.

3) There is no significant difference between pre and post test scores of numerical ability performance in physics.

4) There is no significant difference between pre and post test scores of attitude towards physics subject on students of XI science students of Maharashtra board.

RESEARCH DESIGN AND METHODOLOGY

RESEARCH DESIGN :

The present study is informal experimental hypothesis testing research. It is a single group study with pre-post group design, only experimental group is studied

PRE-TEST	INTERVENTION	POST-TEST
STUDENTS STRESS INVENTORY(SSI) SCORE	Omkar, Nadi-shodhan pranayama. four different types of brahmavidya dynamic breathing exercises followed by positive affirmations	STUDENTS STRESS INVENTORY(SSI) SCORE
Numerical ability test.		Numerical ability test.
Peak expiratory volume		Peak expiratory volume
Attitude towards learning physics		Attitude towards learning physics

Population:

Population is the entire aggregate of cases that meet a designed set of criteria. In this study population is students from XI science comprising of four division from Satish Pradhan Dnyanasadhana college, thane.

Sampling technique: Non probabilistic convenient sampling. Convenient sampling is also called accidental sampling.

Sample size:

size of samples is the number of items to be selected.it should fulfill the requirements of efficiency, representativeness, reliability and flexibility.in the present study, sample size is 31. 12 girls and 19 boys.

criteria of sample selection:

Inclusion criteria

I) Any student from XI science.

ii) mixed samples i.e. boys and girls.

Exclusion criteria

I) students are taken from only XI science and not arts and commerce

ii) students suffering from chronic ailments.

Variables:

i) Dependent variable: In present study dependent variables are student stress inventory (SSI) SCALE, Numerical ability, Expiratory peak volume and attitude towards learning physics.

II) Independent variable:In present study, independent variables are:

Yogic practices mainly

1. **Omkar chanting**
2. **nadi-shodhan pranayama**
3. **dynamic breathing exercises taught in Brahmavidya courses.**

I) Memory developing breath. ii) Revitalising breath.

iii) Inspirational breath. iv) physical perfection breath.

LECTURES:

1. **Lectures were given on yoga and brahmavidya.**
2. **Some lectures on physics were given to correlate physics and yoga such as sound, light, energy, electric field, magnetic field, subtle energies. conversion of matter into energy.**
3. **Feeling and visualization techniques.**

Techniques and tools of data collection:

The technique of data collection was questionnaire method and measurement method.

A) FOR MEASUREMENT OF STRESS:

Students undergo stress to a large extent because of various reasons such physical,academic,interpersonal relationship and environmental. For measuring stress students stress inventory (SSI) SCALE IS used. **PRE AND POST students stress inventory were given.** Details in appendices

B) NUMERICAL ABILITY AND PROBLEM-SOLVING TEST:

It involves numerical ability and problem-solving abilities in physics. A questionnaire was given to students of XI science students to check their ability. PRE-TEST AND POST TEST were given. Details in appendices

C) Measurement of peak expiratory volume:

After dynamic breathing exercises, it is said that peak expiratory volume increases. So, in order to test it pre and post peak expiratory volume readings are taken with the help of MINI-BELL PEAK FLOW METER.

D)Questionnaire about attitude and interest in learning physics after the yoga workshop:

PRE AND POST questionnaires were given. After taking the questionnaire from the students the categories of answer were divided into only three parts 1)Agree 2) Neither agree nor disagree 3) Disagree. It was done for simplifying the responses from the students. Details in appendices

Place, time and duration of conducting yoga practices:

PLACE: It was conducted in N.S.S. OFFICE on 4th floor or sometimes in Physics laboratory on third floor in Satish Pradhan Dnyanasadhana college, thane

TIME: 10.45 AM TO 12.00 NOON Before college

DURATION: 4/12/2019 TO 6/2/2020

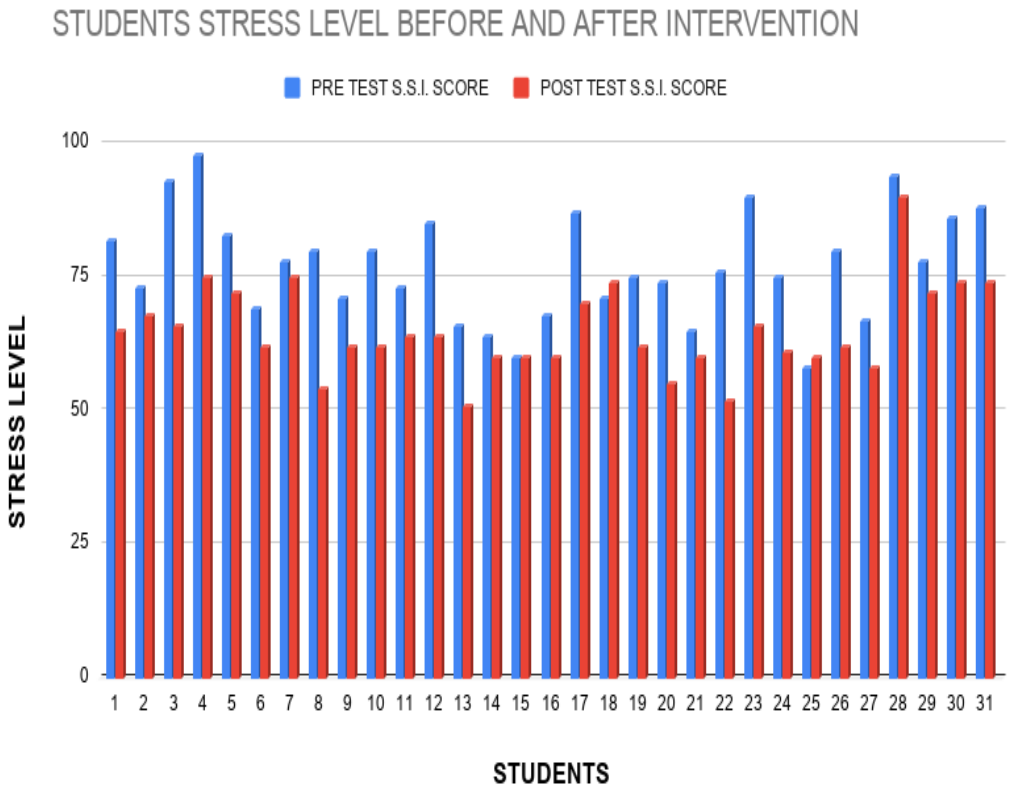
Twice or thrice a week, half time yoga and half-time lecture and rest of the days, students were asked to practice yoga at their home.

DATA ANALYSIS AND INTERPRETATION:

ANALYSIS OF DATA: I) ANALYSIS OF STRESS LEVEL:

NAME	S.S.I. SCORE	
	PRETEST	POSTTEST
SHIVANI.M.GAWADE.	82	65
SHUBHANGI. G. DAHIBHATE.	73	68
KASHISH. S.JADHAV.	93	66
PRIYANKA. R.YADAV.	98	75
SAKSHI. S, DESHMUKH.	83	72
KARISHMA.U.KADAM	69	62
SAKSHI. BAGUL	78	75
ASTHA.M. CHAVAN	80	54

SHRUTI.D.GURAV	71	62
LEKHANI. M. BURTE.	80	62
SAKSHI.SAWANT	73	64
SAKSHI.S. WAJE	85	64
SOHAM.M.SATHE.	66	51
ROHAN.C.SHIVADE.	64	60
MADHUR.S.JOSHI.	60	60
PRANAY.P.KADAM.	68	60
ADITYA.M.SINGH.	87	70
HARSH.S.DHANAVADE	71	74
PRATHMESH.N.BANDAL	75	62
SHAILESH.S.PAL	74	55
ATHARVA.K.DEVDE.	65	60
ROSHAN.N.ANSARI	76	52
ROSHAN.B.SHAW	90	66
SAHIL.T.DIGE	75	61
RAVI.A.YADAV.	58	60
SUYOG.S.GAIKWAD	80	62
PRAJWAL.ABHANG	67	58
PARTH.S.BHOIR	94	90
HARSH.S.PAL	78	72
SARVAN.R.VISHWAKARMA	86	74
VISHAL GUPTA	88	74

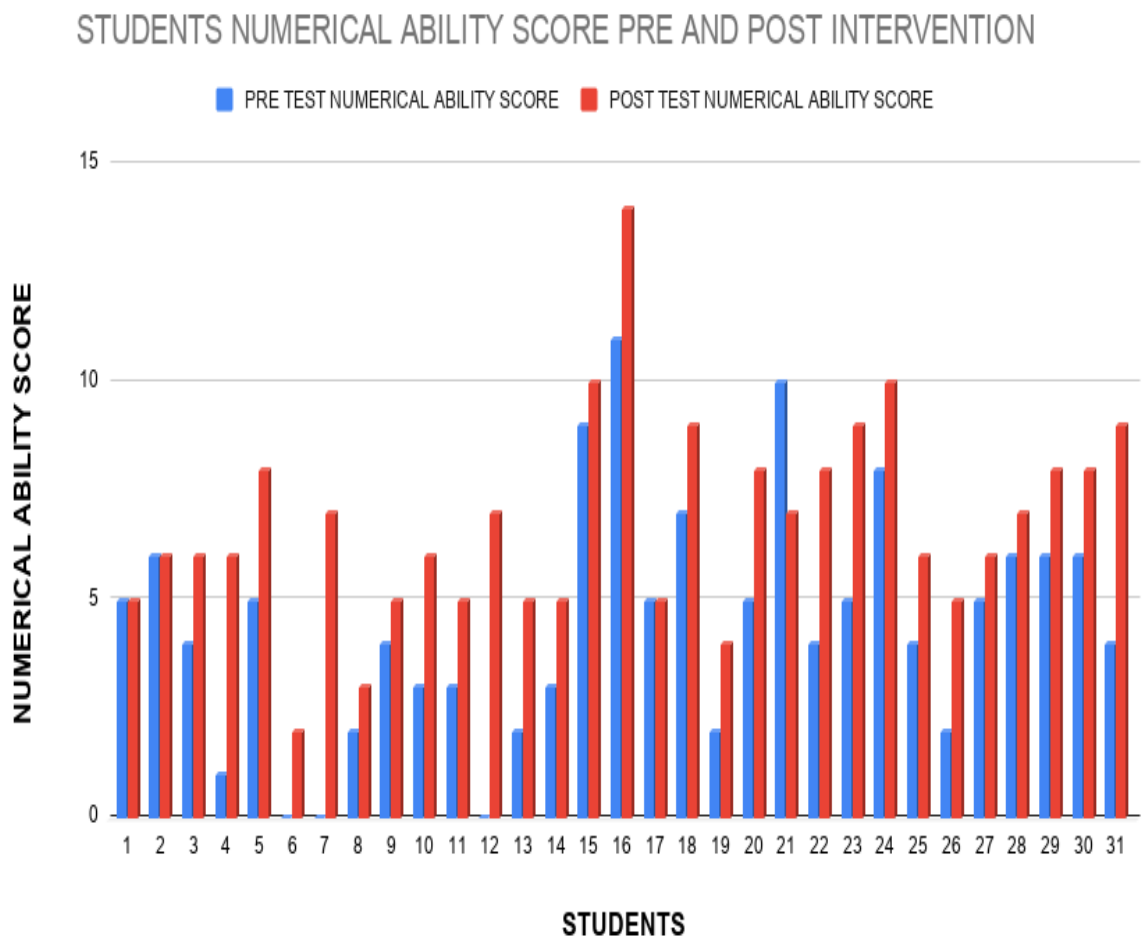


From bar graph it is observed that stress level of every student has been significantly decreased after the intervention of yogic practices.

ii) ANALYSIS OF NUMERICAL ABILITY SCORE

NAME	NUMERICAL ABILITY SCORE	
	PRETEST	POSTTEST
SHIVSNI.M.GAWADE.	5	5
SHUBHANGI. G. DAHIBHATE.	6	6
KASHISH. S.JADHAV.	4	6
PRIYANKA. R.YADAV.	1	6
SAKSHI. S, DESHMUKH.	5	8
KARISHMA.U.KADAM	0	2
SAKSHI. BAGUL	0	7

ASTHA.M. CHAVAN	2	3
SHRUTI.D. GURAV	4	5
LEKHANI. M. BURTE.	3	6
SAKSHI.SAWANT	3	5
SAKSHI.S. WAJE	0	7
SOHAM.M. SATHE.	2	5
ROHAN.C. SHIVADE.	3	5
MADHUR.S. JOSHI.	9	10
PRANAY.P. KADAM.	11	14
ADITYA.M. SINGH.	5	5
HARSH.S. DHANAVADE	7	9
PRATHMESH.N. BANDAL	2	4
SHAILESH.S.PAL	5	8
ATHARVA.K. DEVDE.	10	7
ROSHAN.N. ANSARI	4	8
ROSHAN.B. SHAW	5	9
SAHIL.T. DIGE	8	10
RAVI.A. YADAV.	4	6
SUYOG.S. GAIKWAD	2	5
PRAJWAL.ABHANG	5	6
PARTH.S. BHOIR	6	7
HARSH.S.PAL	6	8
SARVAN.R. VISHWAKARMA	6	8
VISHAL GUPTA	4	9



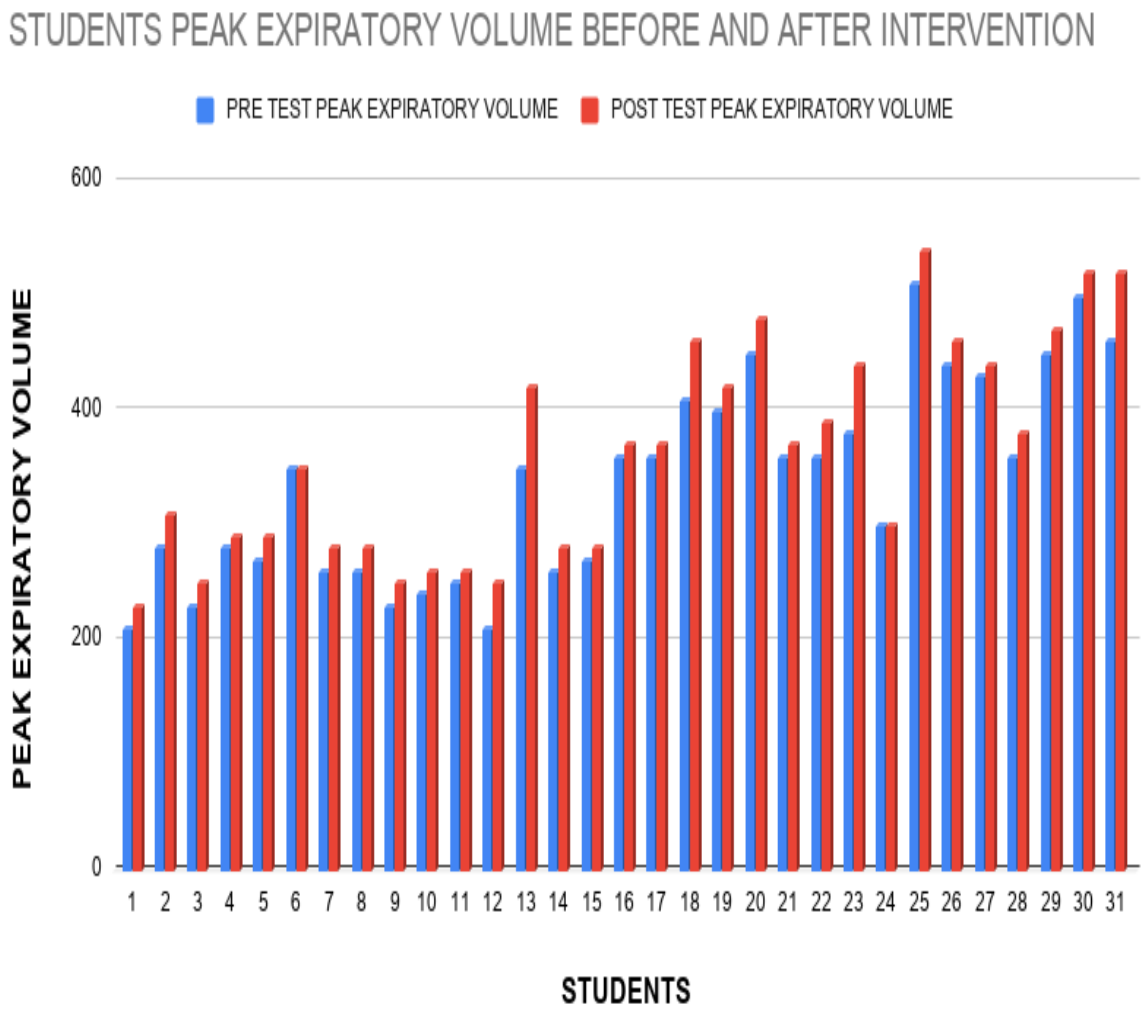
From bar graph it is observed that SCORE OF NUMERICAL ABILITY OF MOST OF THE student has been significantly increased after the intervention of yogic practices.

iii) Analysis of peak expiratory volume

NAME	Peak expiratory volume	
	PRETEST	POSTTEST
SHIVANI.M.GAWADE.	210	230

SHUBHANGI. G. DAHIBHATE.	280	290
KASHISH. S.JADHAV.	230	250
PRIYANKA. R.YADAV.	280	290
SAKSHI. S, DESHMUKH.	270	290
KARISHMA.U.KADAM	350	350
SAKSHI. BAGUL	260	280
ASTHA.M. CHAVAN	260	280
SHRUTI.D.GURAV	230	260
LEKHANI. M. BURTE.	240	250
SAKSHI.SAWANT	250	260
SAKSHI.S. WAJE	210	260
SOHAM.M.SATHE.	350	350
ROHAN.C.SHIVADE.	260	420
MADHUR.S.JOSHI.	270	280
PRANAY.P.KADAM.	360	280
ADITYA.M.SINGH.	360	370
HARSH.S.DHANAVADE	410	370
PRATHMESH.N.BANDAL	400	460
SHAILESH.S.PAL	450	420
ATHARVA.K.DEVDE.	360	480
ROSHAN.N.ANSARI	300	370
ROSHAN.B.SHAW	380	390
SAHIL.T.DIGE	300	440
RAVI.A.YADAV.	510	540
SUYOG.S.GAIKWAD	440	460
PRAJWAL.ABHANG	430	440
PARTH.S.BHOIR	360	380

HARSH.S.PAL	450	470
SARVAN.R.VISHWAKARMA	500	520
VISHAL GUPTA	460	520

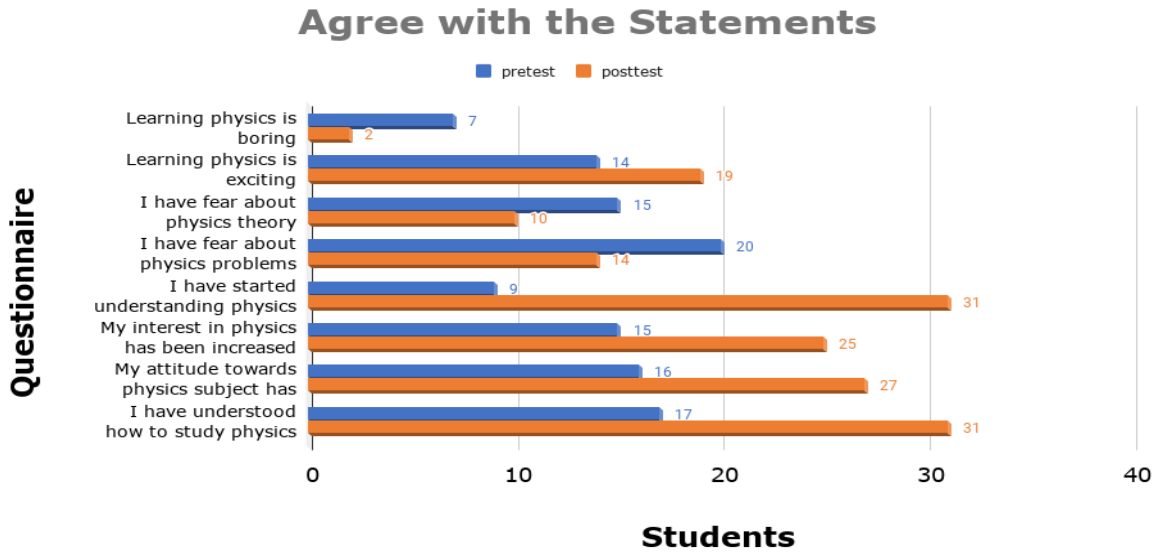


From the bar graph it is observed that PEAK EXPIRATORY VOLUME OF ALL THE STUDENTS has been significantly INCREASED after the intervention of yogic practices.

V) ANALYSIS OF ATTITUDE OF STUDENTS TOWARDS PHYSICS SUBJECT.

i)AGREEMENT WITH THE STATEMENTS

questionnaire	pretest	posttest
Learning physics is boring	7(22.58%)	2(6.45%)
Learning physics is exciting	14(14.16%)	19(61.29)
I have fear about physics theory	15(48.38%)	10(32.25%)
I have fear about physics problems	20(64.51%)	14(45.16%)
I have started understanding physics better	9(29.03%)	31(100%)
My interest in physics has been increased	15(48.38%)	25(80.64%)
My attitude towards physics subject has become positive	16(51.61%)	27(87.09%)
I have understood how to study physics	17(54.83%)	31(100%)

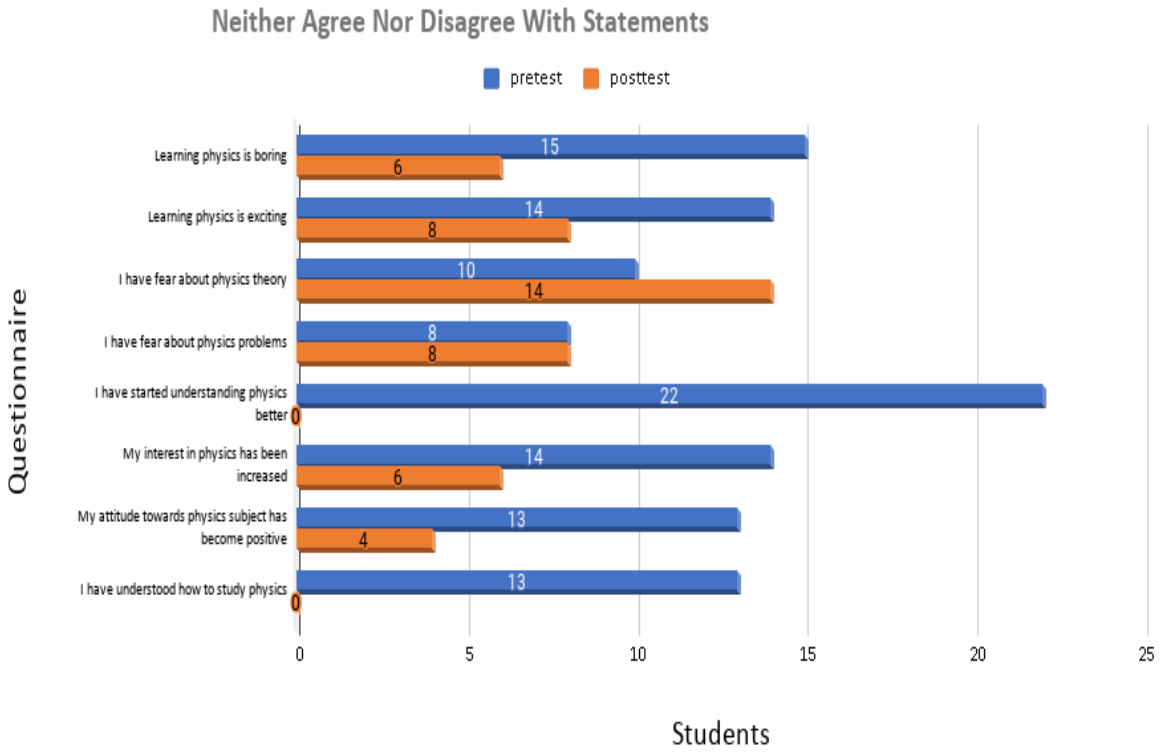


From bar graph students have shown considerable positive attitude towards interest, learning ability and understanding in physics after the intervention of yogic practices

ii) NEITHER AGREE NOR DISAGREE WITH STATEMENTS

questionnaire	pretest	posttest

Learning physics is boring	15(48.38%)	6(19.35%)
Learning physics is exciting	14(45.16%)	8(25.80%)
I have fear about physics theory	10((32.25%)	14(45.16%)
I have fear about physics problems	8(25.80%)	8(25.80%)
I have started understanding physics better	22(70.96%)	0(0%)
My interest in physics has been increased	14(45.16%)	6(19.35%)
My attitude towards physics subject has become positive	13(41.93%)	4(12.90%)
I have understood how to study physics	13(41.93%)	0(0%)

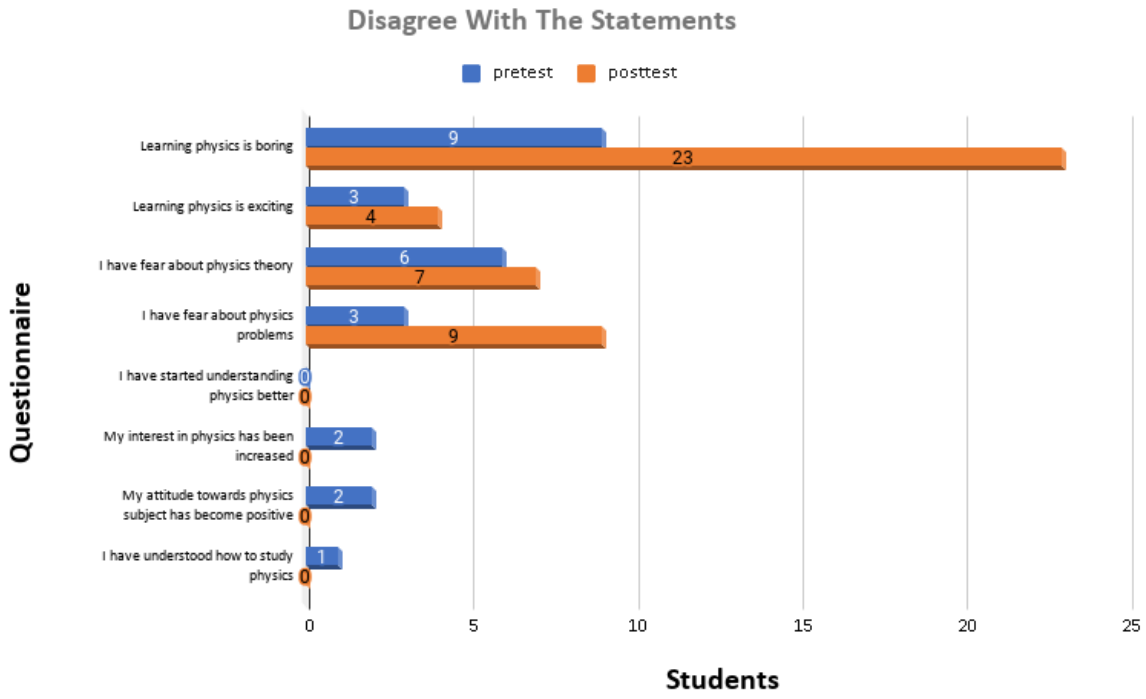


From bar graph students have shown considerable positive attitude towards interest, learning ability and understanding in physics after the intervention of yogic practices

III) DISAGREE WITH THE STATEMENT

questionnaire	pretest	posttest

Learning physics is boring	9(29.03%)	23(74.19%)
Learning physics is exciting	3(9.67%)	4(12.90%)
I have fear about physics theory	6(19.35%)	7(22.58%)
I have fear about physics problems	3(9.67%)	9(29.03%)
I have started understanding physics better	0(0%)	0(0%)
My interest in physics has been increased	2(6.45%)	0(0%)
My attitude towards physics subject has become positive	2(6.45%)	0(0%)
I have understood how to study physics	1 (3.22 %)	0(0%)



From bar graph students have shown considerable positive attitude towards interest, learning ability and understanding in physics after the intervention of yogic practices.

1. **ANALYSIS OF NUMERICAL ABILITY FROM THE PAIRED T-TEST AND DESCRIPTIVE STATISTICS:**

i) in paired sample t test for numerical ability, p-value < 0.001 at 95% Confidence Interval (C.I) ie with level of significance (α) = 0.05 which is less than 0.05. This indicates strong evidence against the null hypothesis. Therefore,we reject our null hypothesis (H_o) and conclude that there is a significant difference between pre and post Numerical Ability Score tests.

ii) The mean difference of pre and post Numerical Ability Score is -2.32 ie. there is an increase of mean=2.32 in the post Numerical Ability score as compared to pre Numerical Ability Score.

iii) For pre-numerical ability score test ,skewness=0.461 which lies between -0.5 and 0.5 we conclude that the pre numerical ability score test is fairly symmetrical in nature. For post-numerical ability score test,skewness=0.759 which lies between 0.5 and 1 and conclude that it is moderately positively skewed.

iv) Standard deviation for the pre test=2.75
Standard deviation for the post test=2.35
Since,standard deviation for the post test is less than standard deviation for the post test . so we can conclude that the mean in the post test dataset is close to the mean as compared to that of the pre test.

2. ANALYSIS OF PEAK EXPIRATORY VOLUME FROM THE PAIRED T-TEST AND DESCRIPTIVE STATISTICS.

i) In paired sample t test for peak expiratory volume, p-value < 0.001 at 95% Confidence Interval
(C.I) ie with level of significance (α) = 0.05 which is less than 0.05.This indicates strong evidence against the null hypothesis. Therefore,we reject our null hypothesis (H_o) and conclude that there is a significant difference between pre and post peak expiratory volume.

ii) The mean difference of pre and post peak expiratory volume is -23.5 ie. there is an increase of mean=23.5 in the post peak expiratory volume test as compared to pre expiratory volume test.

iii) For pre- peak expiratory volume skewness=0.287 which lies between -0.5 and 0.5 we conclude that pre peak expiratory volume is fairly symmetrical in nature.For post-numerical ability score test skewness=0.342 which lies between -0.5 and 0.5 and conclude that it is also fairly symmetrical in nature.

iv) Standard deviation for the pre test=88.9

Standard deviation for the post test=94.2

since,standard deviation for the post test is greater than standard deviation for the pre test so we can conclude that the mean in pre test dataset is close to the mean as compared to that of a post test.

3) ANALYSIS OF S.S.I FROM PAIRED T TEST AND DESCRIPTIVE STATISTICS

i) **In paired sample t test for S.S.I, p-value < 0.001 at 95% Confidence Interval (C.I) ie with level of significance (α) = 0.05 which is less than 0.05.This indicates strong evidence against the null hypothesis.Therefore,we reject our null hypothesis (H_o) and conclude that there is a significant difference between pre and post S.S.I .**

ii) The mean difference of pre and post peak S.S.I score is 12.2. ie. there is a decrease of mean=12.2 in the post S.S.I score test as compared to pre S.S.I score.

iii) For pre-S.S.I score skewness=0.159 which lies between -0.5 and 0.5 we conclude that pre

expiratory volume is fairly symmetrical in nature.For post-S.S.I score ,skewness=0.848 which lies between 0.5 and 1 and conclude that it is moderately positively skewed in Nature.

iv) Standard deviation for the pre test=10.1
Standard deviation for the post test=8.21
Since,standard deviation for the pre test is greater than standard deviation for the post test so we can conclude that the mean in the post test dataset is close to the mean as compared to that of the pre test.

7. Discussion,Conclusion and Recommendation.

7.1 Discussion: **I**t seems that our present education system has become more mechanical and has failed to nurture all round development of the personality of the student. The higher secondary students which are no longer children nor adults is an important area to study. To study their emotions, anxiety and environmental factors influencing their educational achievements and how we can provide suitable methods to control them is our aim. Academic problems of students are related to difficulty in concentration, difficulty in remembering, unable to understand a particular subject or topic, unable to understand the language and examination anxieties. Sometimes well-prepared students cannot perform well in examinations due to mental confusion. Examination fears and other types of fear of failures can greatly halt the students' progress. In the present technological age students are under high levels of stress, depression, anxiety and frustration. Present research is an effort to investigate the yoga modules which can improve the overall development of Secondary Level Students. Mahatma Gandhi", who defines education-a system of an all-round drawing out best in child and man – body, mind and soul.Various research in yoga shows that integrated approach of yoga helps to bring about all round development in the students.Academic problems of students which are related to difficulty in concentration, difficulty in remembering, unable to understand a particular subject or topic, unable to understand the language and examination anxieties can be easily overcome.Yoga builds up confidence,will power and develops concentration,memory and visualization power along with good physique and inner strength

7.2 Conclusion:

Our present study shows following results:

1)Brahmavidya spiritual breathing exercises along with omkar and nadi-shodhan pranayam shows that there is a significant difference between the pre and post values of stress level and null hypothesis is rejected.

2)Brahmavidya spiritual breathing exercises along with omkar and nadi-shodhan pranayam shows that there is significant difference between the pre and post values of numerical ability score and hence null hypothesis is rejected.

3)Brahmavidya spiritual breathing exercises along with omkar and nadi-shodhan pranayam shows that there is significant difference between the pre and post values of peak expiratory volume.Hence null hypothesis is rejected.

4)Brahmavidya spiritual breathing exercises , omkar and nadi-shodhan pranayam along with lectures on physics,correlating concepts of sound,energy,light,electric and magnetic fields with yoga has helped a lot to develop positive attitudes of students towards understanding and learning physics.

7.3 Recommendations:

In this research study,the effect Brahmavidya spiritual breathing exercises , omkar sadhana and nadi-shodhan pranayama on stress level,peak expiratory volume and numerical ability score on xi science students of Satish Pradhan Dnyanasadhana college has been studied and it has given a positive effect.There is lot of scope to reinvestigate in this research.The sample size was very small and the study included students from one college only.there is lot of scope for extension in the study of this research.Moreover control group was not taken while studying due to lack of various constraints.this study can be extended to the long period along with control group.more rigorous statistical techniques can be applied to get more and more insight into this research.

SPDC
Dnyanakosh

Thane off Eastern Express Highway, Dnyanasadhana Marg,
Thane - 400604 Maharashtra, India

www.dnyanasadhanacollege.org