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Digital Learning Methodologies: Transformation of Business, Management and Education Practices

Editors

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Dr. Aashka Thakkar
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About the Conference

In the era of digitalization, the world has shrunk and has succeeded in bringing people closer than expected. It has provided a social platform which enables people to interact with an individual group of users anywhere in irrespective of time. It has assisted in various academic, non-academics as well as social activities which has made lives more various. Various researches have been conducted that explored the versatile use of the internet by the language communities and there has been growing research with various strands based on the possibilities of new technologies for the revitalization as well as for the documentation and preservation of cultures. Digitalization could indeed be the best possible methodology to revive the Business, Education and Management practices all over the world would be useful to demonstrate innovative technologies and achievements in the field.

Digitalization already played a major role in public Education, Business, Finance, Marketing and Healthcare in wake of COVID 19 Pandemic. The scale, scope and power of digital transformation as evidenced by phenomena such as connectivity, platforms, algorithmic power, and big data is vigorous. The strong interconnectedness and interdependence between technologies and markets are key features of this transformation. In only a few months, the pandemic upended the daily lives of people around the world. Business, Marketing, Production, Education was among the sectors most affected as pedagogy went digital. Meaningful links between the digitalization of education and the economy, business leadership and national security was been observed.

Managers, Teachers, Leaders, Doctors, Entrepreneurs as well as the other specialists in different industries and spheres, admit that in the future, digital technologies will become increasingly important. That's why it's quite logical to presume that these processes will be more technology and capital intensive worldwide over time.

Today, more and more executives of companies and entrepreneurs have realized the need for changes in their business. It is useless to struggle with the concept of universal digitalization - it needs to be accepted and companies should understand how it can be built in. This is one of the most important directions that will help to make a new technological breakthrough in the world economy, while significantly reducing costs and optimizing production processes to preserve the environment, save human, money and time resources, and also improve the standard of living in general. Companies that do not start the digital transformation of their business today will be ineffective and will simply disappear under the pressure of new market realities and more pragmatic "digital" competitors of tomorrow. After a major global economic breakdown in 2020 due to pandemic, it was the digitalization in businesses that has helped us handling the difficult times.

Therefore, with the growing need of becoming Digitalized, Faculty of Management Studies, Parul University Vadodara Gujarat, feels proud in announcing an Online International Conference on the topic "Digital Learning Methodologies: Transformation of Business, Management and Education Practices"

In this conference we will discuss, how technology has evolved and helped us in easing up business, management, and educational practices and bringing us out of the situation with ease.

About Parul University, Gujarat

Parul University is an amalgamation of 28 Institutes offering 100+ programs in Engineering & Technology, Pharmacy, Physiotherapy, Homoeopathy, Ayurveda, Architecture, Management, Business Administration, Computer Application, Fine Arts, Social Work and Vocational Education at Diploma, Under Graduate, Post Graduate & Doctoral Level in a 150+ acre fully equipped campus housing 25000+ students, 300+ International Students from 26 Different Countries, 2000+ faculty members & providing in-campus residential facility to 7000+ students making it India's Premier Multidisciplinary University. Nevertheless, the fact is that it is the only institution in Gujarat to have 109 faculty members from reputed organizations such as IITs & NITs.

Parul University has various support cells which facilitate 360 degree learning and career building opportunity during the learning period as well as after the completion. Research & Development Cell, Entrepreneurship Development Cell, Career Development Cell, Training & Placement Cell, International Relations Cell, International Students' Affair Cell, Department of Events & Media Relations, Students' Council and Alumni Association to name a few.

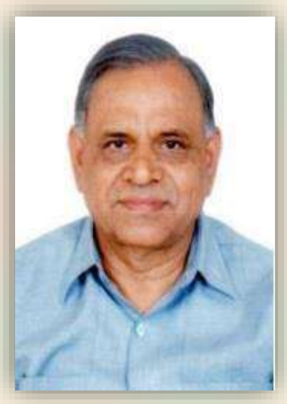
Message from Dr. Devanshu Patel, President

Stephen Covey, a management guru and author of “Seven Habits of Highly Effective People” has elaborated at length in the story of the woodcutter on the importance of sharpening the axe. As stated in the story, the woodcutter didn’t sharpen his axe which he used for cutting woods and as time passed, his axe lost its sharpness with each blow and lowered the efficiency of the woodcutter. In 21st Century, whether you are a student or a professional or a business magnate, it is imperative that you are constantly in search of knowledge. It is likely that if you don’t update your knowledge, you will not be able to keep pace with the ever changing dynamics of professional world. This Conference Proceeding is a compilation of quality papers presented by the researchers, academicians and management professionals from different walks of life during 2nd International E- Conference On “Digital Learning Methodologies: Transformation of Business, Management and Education Practices” organized by Faculty of Management Studies, Parul University. By going through this compendium, the reader will be able to acquaint himself/herself with the latest Digital practices adopted by today’s industries and organizations in order to achieve growth and prosperity. I am also confident that this exercise will help the reader immensely in imbibing the principles of management in his/her life.

Dr. Devanshu Patel
President, PU- Gujarat

Message from Dr. M. N. Patel, Hon'ble Provost

Faculty of Management Studies, Parul University has selected quality papers which were presented during AICTE Sponsored 2nd International E-Conference On "Digital Learning Methodologies: Transformation of Business, Management and Education Practices" organized by Faculty of Management Studies, Parul University on 23rd October 2021. The conference was held on a Virtual Platform. A total of 68 papers were received for the said National Conference which highlighted Digital learning Methodologies and practices adopted by the firms post Pandemic specially. I am pleased to learn that Faculty of Management Studies has scrutinized and selected quality papers and has published them in the form of "A Compendium of Ideas on Digital Transformation in Management Research



This compendium will be useful for researchers, management professional, corporate thinkers, academicians etc....and will apprise them of Innovative Management Practises. I congratulate and applaud the dynamic and enterprising team of Faculty of Management Studies for putting great efforts in publishing this "A Compendium of Ideas on Digital Transformation in Management Research

Dr. M. N. Patel
Provost

About Editors & Editorial Committee

- **Dr. Bijal Zaveri**- *Dean & Director Faculty of Management Studies*
- **Dr. Aashka Thakkar-** *Assistant Professor- Faculty of Management Studies, MBA*
- **Dr. Divyang Joshi** – *Associate Professor - Faculty of Management Studies, MBA*
- **Prof. Saikrishna Vaidya-** *Assistant Professor- Faculty of Management Studies, MBA*

Conference Team

Dr. Bijal Zaveri

Dr. Bijal Zaveri is a Dean & Director of Faculty of Management studies at Parul University. She has 14 years of teaching and 1 year of Industry experience. She currently teaches Marketing management programmes at Faculty of Management (MBA Programme). She has done Ph.D. at M S University Baroda in the area of Online Marketing and completed PG diploma in Cyber law from Asian School of Cyber Law Mumbai. Her research Interest includes Marketing, Advertisement, Communication and E-commerce. She has published her various papers in National Journals (viz; IIM Indore,NITIEBombay,Symbiosis) &inInternational Journals (viz MICA and IGI Global) and in the form of book proceeding / Edited bookViz, Tata Mc Graw hill, Excel,Mc Millan Publishers. She has presented numerous papers in 40 International and National Conferences and attended 14 workshops and FDPs.She won National Level Case writing competition at Shri Ram Group of Colleges at New Delhi, 2nd Rank for Paper presentation at IPE Hyderabad and 2nd Rank- Ph.D. thesis competition at Prestige Institute of Management Gwalior. She awarded for Best Paper Presentation at IPE, Hyderabad and B.K.School of Management. She is Ph.D. register guide at Parul University and currently Indian and foreign Research scholars are pursuing Ph.D. under her guidance in area of Marketing Management. She has published book on E-marketing in the year 2012.She is one of the members of Editorial board of IGI Global International Journal of Marketing. She has worked as review committee members and session chair experts for the various conferences.She has Published papers in UGC listed Journal, Scoupus Indexed Journal & 8 Ph.d Scholars are pursuing PhD Under her guidance.

Dr. Aashka Thakkar

Dr. Aashka Thakkar, Assistant Professor at Parul Institute of Engineering and Technology – MBA Department, Faculty of Management Studies, Parul University, and Vadodara has 10 years of teaching experience. She has completed her Masters in Commerce and Masters in Philosophy from the esteemed Sardar Patel University. Her research interest area is Accounting, Corporate Governance, Financial Services, Digital Accounting and Taxation. She is also pursuing her PhD from Parul University. She has published papers in International and National journal and also presented paper in various National & international conferences. She is a recipient of Best Teacher Award from Vice Chancellor of Parul University for excellence in Academics. She has attended several workshops and FDPs. She is essaying the role of IQAC Coordinator, MIS Coordinator and also is a member of Indian Accounting Association.

Dr. Divyang Joshi

Dr. Divyang Joshi is working as Associate Professor at the MBA Department, Parul University. He is having 13 years of teaching experience and 2 years of industry experience. During this tenure; he was acknowledged and appreciated for the contribution in research, promotional work, admission counselling, syllabus development, student counselling, participation in surveys, developing alumni network, establishing industrial relationships and, many more. His academic achievements, in the last 12 years, were like; he was awarded the Ph.D. degree, completed 8 online courses, awarded, thrice, as the best faculty at FMS, received a three-time excellence award for the best research paper, delivered talks at FDPs and seminars, conducted 7 workshops, presented 12 research papers, published 20 research papers, published 1 chapter, participated in 10 FDPs and workshops, conducted short term course titled Investment Banking and guiding 4 Ph.D. Scholars.

Prof. Saikrishna Vaidya

Prof. Saikrishna Vaidya is an MBA Agribusiness graduate from Symbiosis Institute of International Business. He has 1 year work experience in Samasta Microfinance as Divisional Manager Rural Rajasthan and also worked as Marketing Executive with Shri Shankar Masala Pvt. Ltd. in Vadodara. He Is currently Assistant Professor in Agribusiness Department, Parul Institute of Management and Research, Parul University and academic areas of interest are Agribusiness, Microfinance, Rural Marketing, Statistics and Economics.

Preface

In the era of digitalization, the world has shrunk and has succeeded in bringing people closer than expected. It has provided a social platform which enables people to interact with an individual group of users anywhere in irrespective of time. It has assisted in various academic, non-academics as well as social activities which has made lives more various. Various researches have been conducted that explored the versatile use of the internet by the language communities and there has been growing research with various strands based on the possibilities of new technologies for the revitalization as well as for the documentation and preservation of cultures. Digitalization could indeed be the best possible methodology to revive the Business, Education and Management practices all over the world would be useful to demonstrate innovative technologies and achievements in the field.

After the great success of INC 2020, Faculty of Management Studies, Parul University organizes a National Conference 2021 on 'Digital Learning Methodologies: Transformation of Business, Management and Education Practices'. This year also, the conference gathered many delegates from different countries, industries and from all over Gujarat who had the opportunity to share their ideas and experiences, present the results of their research, as well as build up new contacts in the field of management. The main goal of the conference was to examine how technology has evolved and helped us in easing up business, management, and educational practices and bringing us out of the situation with ease. This book comprises of selected papers from INC 2021.

Sustainable marketing can contribute to sustainable development not only through every day's practice of minimizing the environmental impact but also by implementing new policies and strategies to bolster a wider concept of sustainable growth as a fundamental part of economic entities. The paper entitled '**The impact of Financial Digitalization on State Bank of India**' examined the main aim of this paper is to analyse the relationship between IT investment and performance of SBI. Through Bag of Words method total 25 words were classified and relationship between these words and financial of SBI were measured. The paper titled '**An Empirical Study on Selected Young OTT Subscribers' Opinion on OTT Platforms' where** the researcher in the study tries to understand the attitude of selected young OTT subscribers. The responses from 154 young OTT subscribers were collected on 22 statements about OTT Platforms using five points Likert Scale.

A study on **"vicissitude execution of HRM in the era of digitalization**" examined the changing role of human resource management in an age of digital change. The paper entitled "**Determinants of enterprise resource planning system effective implementation the case of ethiotelecom corporation"** with the objective of identifying determinants of Enterprise resource planning system effective implementation with reference to Ethio-telecom Corporation. Based on the findings of the study, possible recommendations were forwarded for Ethio-telecom Corporation to work on statistically significant variables due to fact that they have significant influence in improving ERP system effective implementation.

In a paper entitled "**FinTech Drivers- A Study of Customers' Attitude and Adoption of Fintech in Gujarat"** explained the Advancement that Artificial Intelligence offers to FinTech and the various manners by which it can improve the activities of an Indian financial area.

We sincerely hope and believe that this edited book shall be a great source of learning to all the academic fraternity, researchers and business managers etc.in and around the globe.

Acknowledgements

After the great successes of INC 2020, Faculty of Management Studies, Parul University organizes an Online International Conference on the topic **"Digital Learning Methodologies: Transformation of Business, Management and Education Practices" on 23rd October, 2021.**

Academicians, Research Scholars, Industry delegates all over Gujarat and India were a part of the conference. The purpose of this conference is to make a significant contribution to the field of Innovation and Management. Contributions come from many relevant disciplines, including Finance, Human Resources, Marketing and General Management. This book comprises of selected papers from INC 2021.

This book is a collection of selected research papers contributed by scholars and practitioners of the National Conference on **"Digital Learning Methodologies: Transformation of Business, Management and Education Practices" 2021.** We express our deep sense of gratitude to all who have contributed and put in their dedicated efforts to help the book into its present form. This book would not have been possible without the support, cooperation and encouragement of several people and we would like to extend our heartfelt gratitude to one and all.

The Conference Coordination committee members of the INC 2021 Would like to place on record our heartfelt appreciation and gratitude to all those who helped us in various ways which resulted in making the event a grand success. National conference of this magnitude could not have been held without the whole hearted cooperation and support form a number of people. Their tireless effort and extreme hard work have contributed to the conference's smooth organisation and operation.

We acknowledge with thanks, the excellent support extended by reviewers from various prominent Universities, who helped us in selecting papers that are being presented at the conference from a total paper which we had received. We are indeed grateful to them for their significant contribution in making this conference to grand success. We received papers for the four-track category for Marketing, Finance, HRM, IT, Agri-Business, Rural Management, Operations, Pharma and General Management. We thankful to all researchers from various Institutes who contributed for their research.

We acknowledge the tremendous support that we received from various departments of Parul University.

We are also indebted to Dr. Aleksandra (Ola) Jaskólska, Faculty of Political Science and International Studies University of Warsaw, Prof. HON Tung Hiu Germen, Assistant Professor- Hong Kong Metropolitan University, Hong Kong. for accepting our invitation to be esteemed Speakers of the conference and share their views and practical expertise in the area of Digital Learning Methodologies.

We thankful to Dr. M. N. Patel- Provost, Dr. Devanshu Patel- President Dr. H. S. Vijayakumar- Registrar at Parul University for their Continuous Secretarial and Administrative Support.

We also express our appreciation and thanks to the all the research scholars, participants, Authors, particularly the members of the Publication Committee Dr. Divyang Joshi, Dr. Aashaka Thakkar, Prof. SaiKrishna Vaidya and Review committee members for their hard work for making his conference a success.

Finally, we thank our Publishers ***Journal Press India*** for timely publication of this book. We at FMS- Parul University hope that this book would be useful to the academic fraternity.

Dr. Bijal Zaveri

Dr. Aashka Thakkar

Dr. Divyang Joshi

Prof. Saikrishna Vaidya

Foreword

In the era of digitalization, the world has shrunk and has succeeded in bringing people closer than expected. It has provided a social platform which enables people to interact with an individual group of users anywhere in irrespective of time.

Therefore, with the growing need of becoming Digitalized, Faculty of Management Studies, Parul University Vadodara Gujarat, feels proud to bring various academic and Industry experts on the Virtual platform during Online International Conference on the topic "Digital Learning Methodologies: Transformation of Business, Management and Education Practices" on 23rd October, 2021

Today, more and more executives of companies and entrepreneurs have realized the need for changes in their business. It is useless to struggle with the concept of universal digitalization - it needs to be accepted and companies should understand how it can be built in. This is one of the most important directions that will help to make a new technological breakthrough in the world economy, while significantly reducing costs and optimizing production.

Digitization has brought storms to the world, learning industry has also seen the impacts of various advantages of Digital learning and evolution. From e-learning courses, games, webinars to simulations, digital learning revolutionizes the learning industry, and more and more other industries are now choosing digital training and development solutions to provide better solutions in the Organisation.

We included various research papers /innovative thoughts that include current thinking and developments by practitioners and academicians, combining theoretical foundations on markets and corporate responsibility with practical insights that help managers in decision-making processes. Therefore, INC 2021 offers a platform for scholarly and applied conversations among a wide variety of stakeholders concerned in the diverse areas such as Digitalization and Human Resources: Productivity, Incentives, engagement, leadership, teamwork, Digitalization and Pharma Manufacturing, Food & Agricultural Industry, Digitalization and banking, firm valuation, investment strategies.

The key premise of the Virtual International conference is that business that leverage personalized, carefully-integrated digital learning models generate effective employees and dynamic business strategies and Digital learning is pillar of the successful pyramid of the Organisation. Digital learning methods are continuous learning platforms that give businesses a competitive edge while fostering a collaborative culture. Nevertheless, its benefits and advantages all rely on the human element and intending businesses should endeavour to integrate digital learning into existing formal training methods.

Publication Partner: Journal Press India Group

Journal Press India is Publishing Partner for the conference. The selected papers from the conference will be published in "Manthan: Journal of Commerce and

Management", a peer-reviewed journal published by Journal Press India (www.journalpressindia.com), indexed with Index Copernicus International (ICI), EBSCO, Summon (ProQuest), CrossRef, Research Gate, Google Scholar, Indian Citation Index, J-Gate, Scilit, i-Scholar etc. databases. The papers to be published would be selected (after double blind peer-review) based on the scope of the journal, review and screening by the editorial team.

Editors

Dr. Bijal Zaveri

Dr. Aashka Thakkar

Dr. Divyang Joshi

Prof. Saikrishna Vaidya

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Prof. Aniruddh Tambe
Director PGDM

Programme Schedule

AICTE Sponsored 2nd International E- Conference

On

"Digital Learning Methodologies: Transformation of Business, Management and Education Practices"
On 23rd October 2021

Organized by

Faculty of Management Studies in association with Baroda Management Association.

Inauguration Ceremony

Time: 10.00 to 11.30 AM

Sr. No.	Time	Flow of the Inauguration Ceremony
1	10:00 AM to 10:05 AM	General Address & Welcome by Dr. Aashka Thakkar - Core Committee INC
2	10:05 AM to 10:15 AM	Address By Dr. Bijal Zaveri – Dean Faculty of Management Studies, Convener – INC (About the Conference)
3	10:15 AM to 10:20 AM	Speech by Dr. Devanshu Patel, President – Parul University
4	10:20 AM to 10:25 AM	Speech by Dr. **H.S. Vijayakumar – Pro. Vice Chancellor Parul University** Speech by Dr. M.N. Patel – Provost, Parul University
5	10:25 AM to 10:30 AM	Speech by Dr. M.N. Patel – Provost, Parul University
6	10:30 AM to 11.00 AM	Speech by Chief Guest- Dr. Aleksandra (Ola) Jaskólska, Faculty of Political Science and International Studies University of Warsaw on the topic "Digital transformation: Meeting the Digital age.
7	11.00 AM to 11:15 AM	Key note Address by Dr. P. G. K. Murthy Professor, Faculty of Management Studies - Parul University and Team Member, Research Project funded by Royal Academy of Engineering, UK under Transforming Systems Through Partnership.
8.	11.15 to 11.20 AM	Vote of Thanks by Prof. Anirudhha Tambe

AICTE Sponsored 2nd International E- Conference

On

"Digital Learning Methodologies: Transformation of Business, Management and Education Practices"
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<u>Valedictory Ceremony</u>

Time: 4.00 to 4.45 PM

Sr. No.	Time	Flow of the Valedictory Ceremony
1	4.00 to 4.05 PM	Welcome Address by Dr. Divyang Joshi – Core Committee INC
2	4.05 PM to 4.10 PM	Address By Dr. Bijal Zaveri – Dean Faculty of Management Studies
3	4.10 PM to 4.30 PM	Speech by Guest of Honour – HON Tung Hiu Germen, Assistant Professor- Hong Kong Metropolitan University, Hong Kong.
4	4.30 PM to 4.35 PM	Speech by Prof. Manish Pandya – Registrar Parul University
5	4.35 PM to 4.40 PM	Announcement of Best Paper Presentation – By Dr. Aashka Thakkar - Core Committee INC
6	4.40 PM to 4.45 PM	Vote of Thanks by Prof. Sai Krishna Vaidya - Core Committee INC

Track - Technical Session Judge- INC 2021

Overall Track Coordinator- Mr. Saikrishna Vaidya

23rd October 2021			
Track	**Domain**	**Technical Jury- Session Chair**	**Track Coordinator**
T1	Finance	Dr. Purvi Derashri	Prof. Amrita Singh
T2	Marketing	Dr. Dipak Gaywala	Prof. Rajeshwari Parmar
T3	Human Resource	Dr. Harsha Jariwala	Dr. Bijal Shah
T4	General Management	Dr. Swati Sharma	Prof. Ayazahmed
T5	Student Track	Dr. Prashant Amin	Prof. Axita Thakkar

List of Articles

Digitalization in Higher Education - Issues and Challenges in the Context of State Universities of Bihar, India

*Abhinav Kumar Shandilya**

ABSTRACT

Like all other institutions, digitalization is helpful in higher education. This simplifies the processes involved in an academic institution and brings transparency. The pandemic COVID-19 has put pressure on the higher education system to switch from traditional to digital mode. The developing countries where digitalization is in its infancy are facing more problems. Bihar, which is a state of India, is also struggling with this situation. In this study, an attempt has been made to know the status of digitalization of the state universities of Bihar. A desktop study was conducted to investigate the issues and challenges of digitalization in the state universities of Bihar. This was followed by interviewing faculties of different state universities of Bihar. Study results show that state universities will have to digitize academic processes in a phased manner. The interest of teachers and students is very high, and they are continuing online education with limited resources. Systematic and continuous efforts are needed to digitize higher education in the right way.

Keywords: *Digitalization; Higher education; State university; ICT.*

1.0 Introduction

COVID-19 was declared a pandemic by WHO on 11th March 2020 (WHO, 2020). The spread of the virus was exponential, and India announceda complete lockdown on 25th March 2020, as a pause button. The lockdown was extended in phases till 31st May 2020. After that, the process to unlock was started by the Central and State Governments of India in a phased manner. At present, the list of prohibited activities is concise but educational institutes are not allowed to start the teaching-learning process (Union Home, 2020).

Traditionally, the Indian education system is based on physical classroom teaching. With a few exceptions, most of the state universities are dependent on physical contact hours. This study is an attempt to explore the present status and associated issues and challenges of digitalization in higher education in the context of state universities of Bihar, India.

2.0 Methodology

The study was limited to the state universities of Bihar, India, as they cater to the major sections of society and have a large number of student enrolments. A two-pronged approach was used to have a better understanding of the subject. First, the desktop study was conducted to investigate the issues and challenges of digitalization in higher education. The website of all the state universities of Bihar with student enrolments close to fifty thousand or above was explored for relevant information. Second, the professors of state universities of Bihar were interviewed with an open-ended questionnaire over the phone, or the link of the questionnaire was circulated to get the primary data. It was aimed to understand the opinion of the professors about the present status of digitalization in state universities. In total, the view of 21 professors was taken either by telephonic interview or online circulation of questionnaires. The various approaches to data collection were used as they supported each other. Data collection was done in the month of September 2020.

**Assistant Professor, Department of HMCT, Birla Institute of Technology, Ranchi Jharkhand, India.*
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3.0 Digitalization in Higher Education

Digitalization in higher education has various aspects and it has been ignored for decades. Transformation of the Indian higher education system is required. To implement the online education system effectively, modification of entire higher education system is the need of time (Jha & Shenoy, 2016). But the transformation must be done in phases, and overnight changes must not be expected. Unfortunately, the higher educational institutes are not equipped to match the pace at which industry upgrades (Maram, 2019). Digital education can facilitate the higher education system to bridge the industry-academia gap. It has the reach to remote areas and can benefit the students of rural India.

During the last decade, India is using technology in education to reach rural areas, improve understanding and create awareness (Akash, 2018). Digital accessibility in higher education in India is at its different levels of development in various parts of the country. The level also varies with the type of institutions like central universities, state universities and deemed universities to name a few. Bihar is establishing itself as the educational hub for Eastern and North-Eastern India (Rani, 2019). There are thirty universities in Bihar, including three central universities, nineteen state universities, one deemed university, and seven private universities in Bihar (UGC, 2020). The state universities have a wider reach and cater to the mass.

The nineteen state universities of Bihar are located in various Bihar districts and are the only hope for the lower middle class and rural students. Table 1 illustrates the state universities of Bihar with student enrolments close to fifty thousand or above. These six universities are providing higher education in various streams like Science, Arts and Commerce. Moreover, the professional programs in Computer Application, Management, Mass Communication, Library Science, Fish & Fisheries, Journalism, Law and Ayurveda to name a few are also offered. The total student enrolments in these state universities show the mass acceptance of the programs offered.

4.0 Discussion

The academic institutions are closed since the last six months due to COVID-19. It is understood that there is an urgency to switch from an on-campus higher education system to an approach where contact hours within the university campus can be optimally reduced. This is only possible if digitalization in higher education is implemented in the true sense. By and large, the dependence of state universities on traditional teaching methods is very high.

Government agencies are trying to expedite the development of e-content and encouraging online and distance learning (UGC, 2020) in the present crisis. Probably, it is the only option available to maintain the continuity of teaching and learning. However, the bitter truth is that the higher academic institutions are not fully equipped to switch to online teaching-learning process except the reputed ones like IITs, IIMs and a few well-known universities.

4.1 Status of digitalization in state universities of Bihar

Out of nineteen state universities, fifteen universities have furnished the web address on the UGC website (UGC, n.d.). The web address of the remaining four state universities namely Bihar Animal Sciences University, Munger University, Patliputra University and Purnea University were searched from Google.

The websites of all the 19 state universities were accessed on 17th September 2020 to check their status. It was found that out of fifteen state universities, who have furnished web addresses on the UGC website, seven were incorrect or not updated. The correct web addresses of these seven universities were searched from Google. Surprisingly, a functional web address of Veer Kunwar Singh University could not be found from any source. (See Table 2)

4.2 Investigation of the website of select state universities

The website of six state universities with student enrolments close to fifty thousand or above was investigated for the information on online learning, e-content and digitalization of the education system. The findings are undermentioned-

1. Babasaheb Bhimrao Ambedkar Bihar University: The University has moved a step towards the digitalization of the education system. It is declared that in X plan, UGC has proposed to establish UGC Network Resource Centres (UGC-NRC) in colleges, and assistance is available for computers and internet connectivity (B. R. Ambedkar Bihar University, n.d.). The website has provided a hyperlink for the new website, which is well organized. Under quick links of the new website's home page, the hyperlinks for undergraduate admission, post graduate admission, results, syllabus, etc. are furnished. The hyperlink "Student Counseling Lecture Video" directs to the YouTube channel – BRABU Lectures. Seventy-eight videos are available on various subjects related to the programs offered by the university. The lecture videos include graphics and digital photos to make the presentation interesting and informative. A hyperlink "Study Materials (PDF Format)" has scanned copy of handwritten notes or book chapters (B. R. Ambedkar Bihar University, n.d.).
2. Jai Prakash Vishwavidyalaya: Unlike B. R. Ambedkar Bihar University, the website of Jai Prakash Vishwavidyalay is not well designed. However, the important informations like links for lecture videos and notes are available to support the students' learning (Jai Prakash University, n.d.). The website directs to a YouTube channel that has a separate playlist for different streams. Screencast, Video Show, Kine Master etc. are used to make lecture videos. Scanned copies of handwritten or typed study materials are made available to students by creating a Facebook page named "Jai Prakash University, Chapra". A hyperlink for a Twitter account is also given for students, but the tweets are protected and only approved followers can see. Hyperlinks for admission and results are available on the website.
3. Lalit Narayan Mithila University: The study materials are made available to students by sharing Google Drive links for undergraduate and postgraduate programs (L.N. Mithila University, 2020). The university website directs to the SWAYAM portal, which has many online courses. The university offers free online courses to impart software training in collaboration with Spoken Tutorials, IIT Bombay. The university has included these online courses as MOOCs (Massive Open Online Courses) for practical courses (L.N. Mithila University, 2020).
4. Magadh University: The University has provided hyperlinks that direct to the portals of SWAYAM, SWAYAMPRABHA, National Digital Library and e-PG Pathshala under the digital initiatives section. Online lectures are uploaded on YouTube, and hyperlinks are furnished for various programs as e-content under "Online teaching and reports" (Magadh University, 2020). The syllabus, admission information and examination details are made available to the students.
5. T.M. Bhagalpur University: The hyperlinks for e-content in the form of YouTube lecture videos on the YouTube channel "Tilka Manjhi Bhagalpur University, Bhagalpur" are furnished. Google Drive links are also provided for class notes (Tilka Manjhi Bhagalpur University, n.d.). The hyperlinks of SWAYAM portal, e-PG Pathshala and Spoken Tutorial are furnished on the website's home page. Students can get the information regarding admission and examination online.
6. Veer Kunwar Singh University: The web address furnished by the University at UGC website is non-functional. Google search shows a web address - https://vksu.ac.in/new/ which is also non-functional. Another web address - https://vksuonline.in/ is found in Google search, which has relevant information for admission 2020-21 like admission rule, important dates, seats

availability etc. (Veer Kunwar Singh University, 2020).

4.3 Opinion of professors

Professors have accepted the new role and are eager to learn and redesign their lecture plan with the help of available technology. They need support in terms of infrastructure, faculty development programs and workshops. A respondent from Babasaheb Bhimrao Ambedkar Bihar University noted-

"Due to lockdown and lack of prior planning, training or FDP couldn't be conducted properly by state universities earlier but now it's being organized."

The major issues and challenges of digitalization in state universities are inadequate infrastructure, lack of technological awareness, poor internet connectivity, and course structure and examination system. The students have communicated a mixed response to professors about online classes. They face poor internet connectivity problems, lack of technological awareness, and monotonous one-way communication during online classes. For example, when asked about the acceptance of the hybrid or online learning mode among students, a respondent said that

"It has a mixed reaction, as there are many reasons behind it. Like lack of awareness of technology, one-way communication, poor connectivity and so on."

Professors are trying alternative approaches to reduce the academic loss of students. They are connected to students with simple means like WhatsApp or Facebook. They are taking online classes through various apps like CISCO WebEx, Google Meet, Microsoft team, Zoom etc. These alternative methods have many questions associated with them, especially in the context of state universities of Bihar. Like - Is there learning during the online contact hours? Are the facilities available to conduct online classes sufficient? Is the university ready with the basic training modules to conduct and attend online classes for faculties and students? For instance, a respondent from Patliputra University pointed -

"Lack of Infrastructure and digital awareness as hurdles to adopt the hybrid or online learning mode."

4.4 Initiatives of government of India

The Central Government of India has launched a ₹9,000 crore plan to transform the education system of schools and colleges. The goal is to digitize the education delivery and adopt a new interactive pedagogical approach called flipped learning (Nanda, 2019). Ministry of Education, Government of India, has taken information and communication technology (ICT) initiatives to improve efficiency and effectiveness of the higher education system under National Mission in Education through ICT. Audio-Video e-contents are made available by SWAYAM and SWAYAMPRABHA. SWAYAM makes Massive Open Online Courses (MOOCs) available to learners free of cost, and SWAYAMPRABHA telecasts educational programs on a 24X7 basis (Department of Higher Education, 2020).

Access to journals and e-books is permitted to students and faculties by the virtual repository of learning resources like National Digital Library, e-PG Pathshala, Shodhganga and e-Shodh Sindhu. Similarly, other ICT initiatives are taken like e-Yantra, FOSSEE, Spoken Tutorial, Virtual Labs, SAMARTH, VIDWAN and Shodh Shudhhi to improve the quality of education (Department of Higher Education, 2020).

4.5 The path ahead

Digitalization in higher education is an untapped section in the state universities of Bihar. It offers many benefits to an academic institute. It ensures smooth operations that may be teaching-learning process or administrative tasks. Transforming a university's entire academic and non-academic operations into a digital system has substantial financial implications and complexity. However, the management should plan phased digitization based on priority. The essential academic activities like admission, teaching-learning and examination should be digitalized initially.

Higher education institutions should choose an effective Learning Management System (LMS) to integrate online teaching-learning aspects. This is a tool that eliminates or reduces the requirement of campus attendance, and the students can learn at their own pace in the comfort of their homes. LMS enables the teachers to interact with the students, share content in the form of videos or documents, and assess students' progress. Also, students can discuss among themselves, submit assignments, and pause, rewind or play the lectures whenever needed. The popular Learning Management Systems are Moodle, Blackboard, Canvas by Instructure, Google Classroom, Gnomio to name a few.

The flipped class and hybrid class concepts can be understood and implemented as per the suitability of a course or a program. The flipped class will ensurepersonal learning spacefor each student. In Hybrid classes, traditional and online approaches should be clubbed so that the advantages of both systems can be harnessed.

MOOCs (Massive Open Online Course) are available online and free of cost. Students should be encouraged to register in the suitable MOOCs and a fixed percentage of the total credits of a program can be offered by this means.

5.0 Conclusion

Education and development of any society go hand in hand. This study has investigated specifically the state of digitalization of state universities of Bihar. The results have highlighted the poor internet connectivity, lack of technological awareness and inadequate infrastructure as major barriers to online classes. These barriers have a negative impact on the acceptability of digital education among teachers and students. 5G network connectivity which is expected in near future is required for seamless online learning. Customized training modules should be developed to create technological awareness among various stakeholders of digital education. University administration should utilize the funds available under government schemes to expand the infrastructure for digitalization.

Despite of hurdles, the teaching and learning process is being enjoyed by teachers and students. The use of social media like Facebook, WhatsApp or Twitter for transferring study material or academic information shows the high involvement of teachers in the present extraordinary situation of COVID-19. Teachers are using free apps like Video Show or Kine Master to make Lecture videos.

Digitalization of state universities is required in a professional way to give an edge to the present education system. The concerned Government agencies and state university administration should come forward to develop a uniform LMS implementation plan. The pedagogical approaches-flipped class and hybrid class should be adopted based on the need of a program. MOOCs should be included in the course structure. All stakeholders must be sensitized to digitalization in higher education.

The Government of India has taken several initiatives under National Mission in Education through ICT but they have to be publicized so that people get the correct information at the right time. The media should prioritize the news related to education and educational schemes. This will help in strengthening education.

The results of the study may be used to plan digitalization in higher education in the state universities of Bihar. The study has assessed the present state and scope of digital education in Bihar. Further research can be conducted on central universities, deemed universities and private universities of Bihar to check the validity at large.

Table 1. State Universities with Student Enrolments Close to Fifty Thousand or Above

Sl. No.	Name of state university	Year of establishment	Student enrolments
1.	Babasaheb Bhimrao Ambedkar Bihar University	1952	87826
2.	Jai Prakash Vishwavidyalaya	1995	76767
3.	Lalit Narayan Mithila University	1972	82533
4.	Magadh University	1962	49715
5.	T.M. Bhagalpur University	1960	59904
6.	Veer Kunwar Singh University	1994	68952

Source: Data for year of establishment is from (UGC, 2020) and student enrolments from (UGC, n.d.)

Table 2. Status of website of state universities of Bihar

State university	Web address	Status of website
Arybhatta Knowledge University	http://akubihar.ac.in/	Functional*
Babasaheb Bhimrao Ambedkar Bihar University	http://www.brabu.net/	Functional
Bhupender Narayan Mandal University	http://bnmu.ac.in/	Functional*
Bihar Agricultural University	http://bausabour.ac.in	Functional
Bihar Animal Sciences University	https://www.basu.org.in/	Functional#
Chanakya National Law University	http://www.cnlu.ac.in	Functional
Jai Prakash Vishwavidyalaya	http://jpv.bih.nic.in	Functional
Kameshwar Singh.Darbhanga Sanskrit Vishwavidyalaya	https://www.ksdsu.edu.in/home.htm	Functional*
Lalit Narayan Mithila University	https://lnmu.ac.in/	Functional*
Magadh University	http://www.magadhuniversity.ac.in/	Functional
Maulana Mazharul Haque Arabic & Persian University	https://mmhapu.ac.in/	Functional*
Munger University	https://www.mungeruniversity.ac.in/	Functional#
Nalanda Open University	http://www.nalandaopenuniversity.com/	Functional
Patliputra University	http://www.ppup.ac.in/	Functional#
Patna University	http://www.patnauniversity.ac.in	Functional
Purnea University	https://purneauniversity.org/	Functional#
Rajendra Agricultural University	https://www.rpcau.ac.in/	Functional*
T.M. Bhagalpur University	http://tmbuniv.ac.in/	Functional*
Veer Kunwar Singh University	http://www.vksu-ara.org	Non-functional

Source: Data for list of state universities of Bihar and their websites from (UGC, n.d.). Website accessed on 17th September 2020 to check the status.

 # Web address is not furnished at (UGC, n.d.), and taken from Google search.

** Web address furnished at (UGC, n.d.) is non-functional and a functional web address is taken from Google search.*

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Innovation on Adjustable Multi Spindle Drilling Attachment: Cost effective for MSMEs

Abhishek Patel, Kalpitkumar Patel** and Dhwani Bhavsar****

ABSTRACT

The drilling machine is a machine that is necessary in practically every industry. The manufacturing sector's growth is mostly determined by its productivity and quality. By lowering total machining time, merging operations, and so on, productivity can be increased. Multi drilling machines are required to boost productivity, precision, and quality. Using a particular purpose machine is the greatest technique to increase production rate (productivity) and quality.

This invention relates to an improved drilling machine with a low manufacturing cost, high accuracy, and interchangeability, one in which the parts are removable attached to allow for cleaning, repair, and oiling, and which is adapted to be quickly and easily removed from the attached drill machine, and is capable of drilling holes in various adjustable positions and has a greater range of adjustable and lateral movement of the drills with respect to each other. The present inventions aim to provide a new and improved multi-spindle drill, a multi-spindle drill with a novel gear in which the gears and related parts may be easily and quickly assembled and disassembled, and a novel uniformly arranged multi-spindle drill. As the design is completely cost effective for smaller firms, this would assist MSMEs in developing independent and constructive development.

Keywords: *Multi spindle drilling attachment; Design; Innovation; Cost effectiveness; Application in MSMEs.*

1.0 Introduction

Perhaps the most important procedure in industry is whole production. Almost every work piece or product has a hole in it. Holes can be made in a variety of processes, including casting, forging, punching, and drilling. Drilling is a very basic and practical approach to make holes. Drilling machines are used to drill holes. All drilling machines have spindles that rotate in a fixed relative direction parallel to their axis.

When the sleeve carrying the spindle with the cutting tools is moved in the forward direction, the cutting tools approach their position in the sleeve, which does not revolve but may slide in its bearings in an or is fed into the work, and when the sleeve is moved in the reverse direction, the cutting tools are withdrawn from the work. The drills are held by the spindle, while the rotating spindle and drill are carried by the non-revolving sleeve. Feeding pressure is given to the sleeve by hand or by power, causing the rotating drill to cut a few thousands of an inch into the work with each rotation.

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2.0 Problem Statement

Currently, industry development is at an all-time high. All sectors strive for optimum quality and precision in order to boost production rates. Industries strive to meet their objectives ahead of schedule while also meeting all of the needs of their consumers. In our project, we attempt to cover the main parameters of the production department, such as production rate, quality control, and accuracy, among others. Four holes, for example, are drilled to create a flange. If a universal drilling machine is used to make a hole, it will take longer to complete the procedure because each drill will take longer to complete. This will also increase the machine's setting time and idle time.

Other multi-spindle drilling attachment is available in the industry, but they have limits, such as only employing one attachment for one type of flange or for a specific diameter. If the dimensions are changed for a larger size flange to be drilled, the attachment becomes useless. The gearbox is intended for a specific one-dimension standard in this sort of attachment. Adjustable signifies that we must be able to interchange the size of the attachment's output in a flexible manner. This form of flexible attachment is found in the multi-spindle drilling machine's head. However, fulfilling this demand on a standard drilling machine is expensive, thus we created the adjustable multi-spindle drilling attachment.

3.0 Literature Review

[1] Tushar b. Malode, Prof. R.R. Gandhe (JULY 2016) The productivity and quality of the Indian manufacturing sector are critical to its growth. Productivity is determined by a variety of variables, one of which is the manufacturing efficiency with which the organization's operations/activities are carried out. By decreasing overall machining time, merging processes, and so on, productivity may be increased. It is critical to create the work at a faster rate in cases of mass production where the diversity of jobs is limited and the quantity to be produced is large. This is not conceivable if we use general-purpose machinery to complete the manufacture. Using a specific purpose machine is the greatest approach to increase production rate (productivity) and quality. By developing and constructing a multi-spindle head attachment, the usefulness and performance of an existing radial multi-spindle machine will be improved. This article is about the design and development of a multi-spindle head for component cycle time optimization.

[2] Bajirao H. Nangare Patil, Prof. P. R. Sawant (MAY 2013) The focus of this project will be on designing, modeling (AutoCAD), and creating a gearbox that will run a multi-spindle drilling machine for counter bore drilling operations of 5 mm, 6.8 mm, and 14.4 mm for a cylinder block. Different variables impacting gear performance and gear selection for power transmission (at high rotational speeds) from prime movers and driven units are investigated. To solve this challenge and optimize efficiency and profitability by boosting production rates without sacrificing quality by reducing time frames, labor costs, component rejections, and so on, Special Purpose Machines are developed, which play an important role in higher output and may be achieved by creating gearboxes that can run a large number of various types of drilling tools at the same time.

[3] Mr. Tushar T. Bhaisare, Prof. M.V. Kavade (APRIL 2017) Drilling activities are carried out in most industries utilizing various drilling machines depending on the requirements. One of the most significant machine tools in a workshop is the drilling machine. It was created to drill a cylindrical hole of the desired diameter and depth in metal or woodwork. Though many machine tools in a workplace can make holes, a drilling machine is built particularly to do drilling and comparable activities. A drilling machine can quickly drill at a low cost and in a shorter amount of time. Drilling is the process of removing metal with the spinning edges of a drill to create a cylindrical hole of the desired diameter and depth. The drill is a cutting instrument that is attached to the drilling machine's spindle. A center punch is used to make an indentation mark at the necessary place. The spinning drill is inserted into the work after being pushed into place. The hole can be dug to the specified depth.

[4] Sainath patil, Dr. S. R Basavaraddi (SEP 2017) Most local brake component manufacturing companies in developing nations like India still use two or more drilling heads on two or more machines to drill holes in casting parts. This buildup creates a storage issue and promotes idle time. A gang-drilling (or multiple spindle drilling) equipment that can do all of the drilling operations in one go. A Multiple-Spindle Drilling Head (MSDH) was created in response to this. The machine was created as an add-on (accessory) to a primary drill, from which it draws power to operate. In the mechanical sector, multi spindle head machines are used to enhance the productivity of machining equipment. Spindle heads with numerous tools for conducting machining operations are included in such machines. The cycle time is the most notable benefit of multi-spindle machines; owing to parallel machining, overall operating time is drastically reduced. Additional advantages include a lower risk of mistake, a lower cumulative tolerance error, and the elimination of tool modifications. An item to be machined is mounted on the table of a multi-spindle machine.

4.0 Design

4.1 Gear calculation: -

HELICAL GEAR: -

4.1 GEARS

• Calculation of master gear

Normal module = 2.5 mm
No. Of teeth = 36
P.C.D. = 93.175 mm
Addendum = 2.5 mm
Dedendum = 1.25 * addendum
= 3.125 mm
Helix angle =15^{o}

Addendum diameter = (no of teeth/ cos15 +2) * module
= (36/cos 15 + 2) * 2.5
= 98.17 mm
Dedendum diameter = (no of teeth/cos 15-2) * module
= (36/cos 15 -2) * 2.5
= 86.92 mm

Small gear: -

Normal module = 2.5 mm

No. Of teeth = 18

P.C.D. = 46.78 mm

Addendum = 2.5 mm

Dedendum = 1.25 * addendum

= 3.125 mm

Helix angle =15^{o}

Addendum diameter = (no of teeth/ cos15 +2) * module

= (18/cos 15 + 2) * 2.5

= 51.58 mm

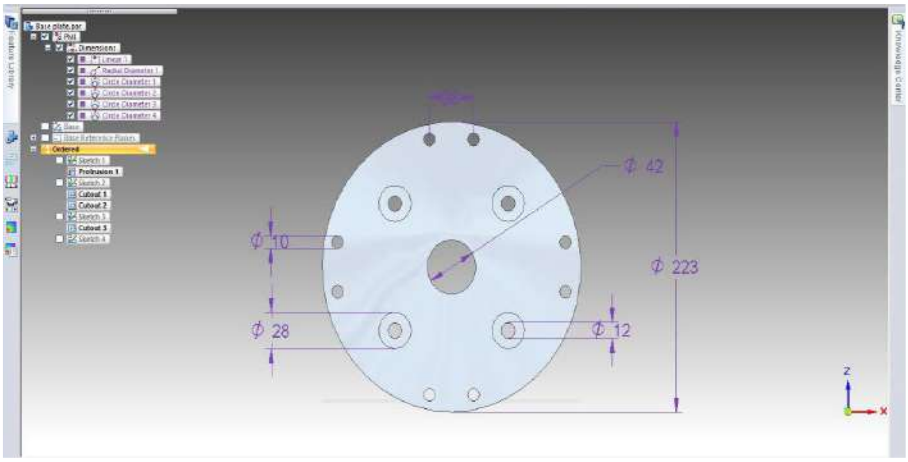
Dedendum diameter = (no of teeth/cos 15-2) * module

= (18/cos 15 -2) * 2.5

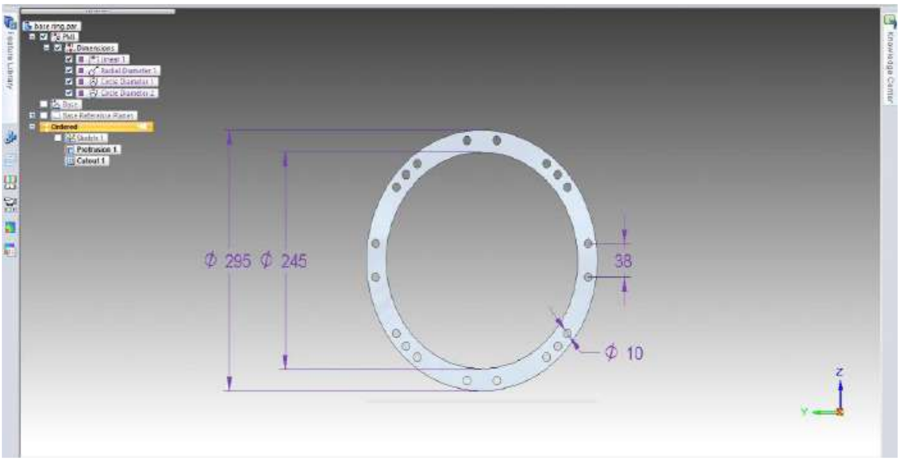
= 40.33 mm

4.2 Design of parts: -

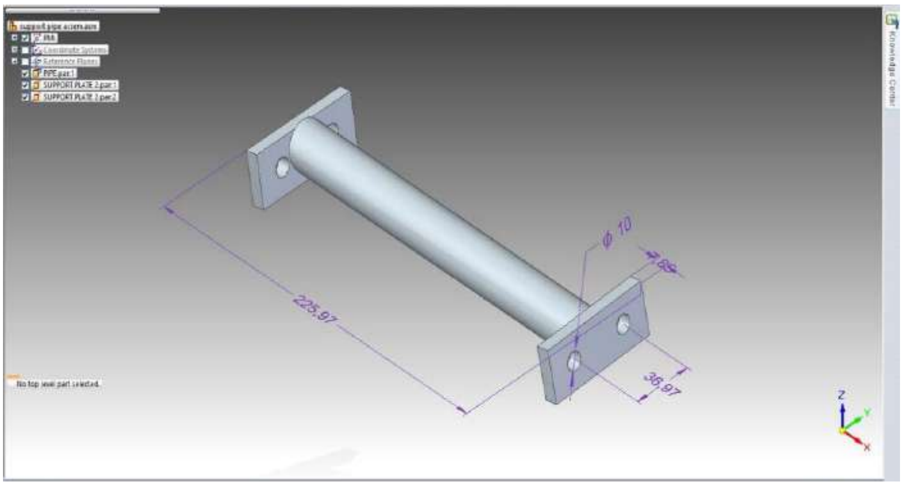
4.2.1 Base Plate



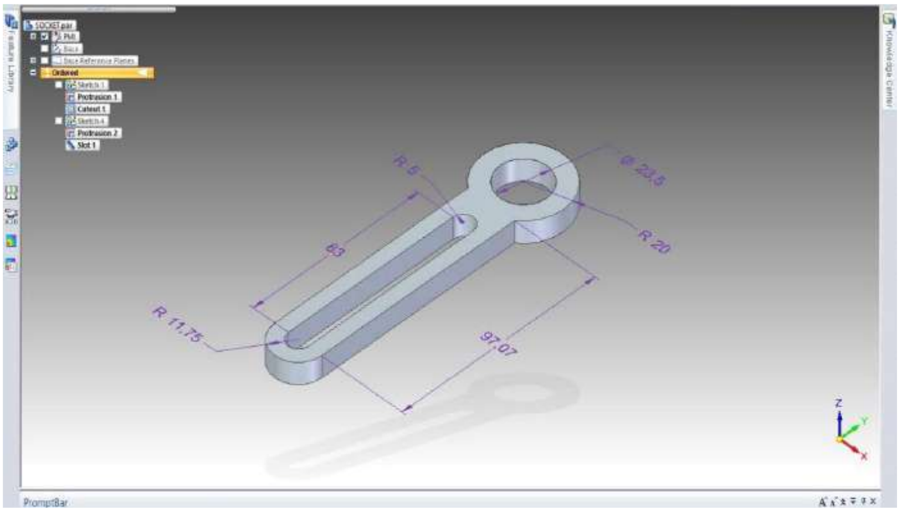
4.2.2 Base Ring



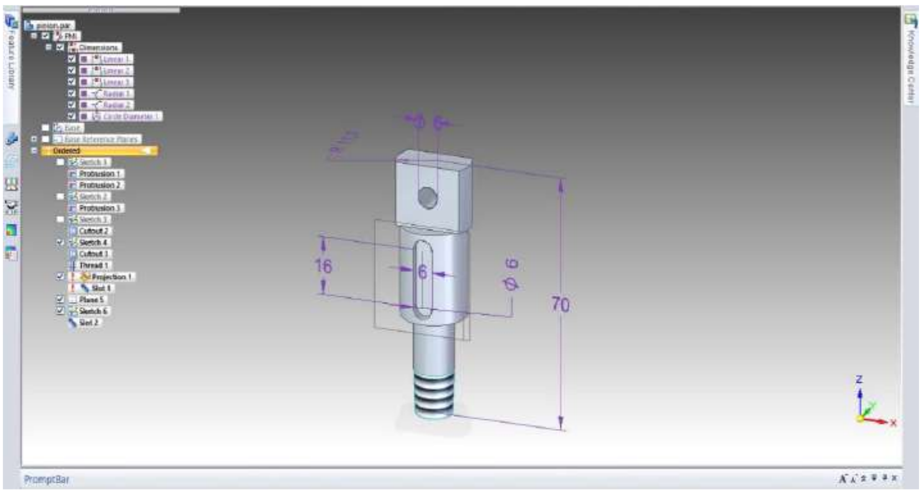
4.2.3 Rod



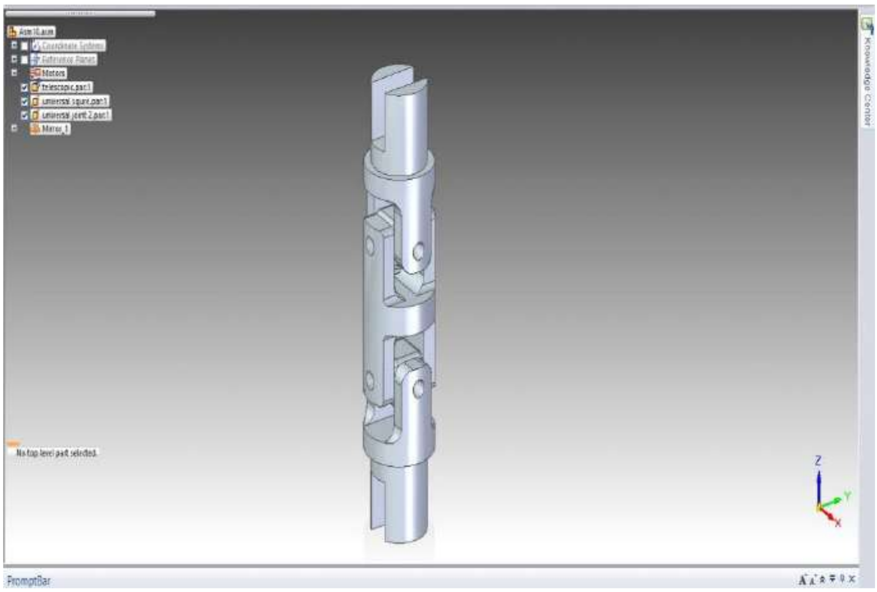
4.2.4 Socket



4.2.5 Pinion



4.2.6 Universal joint



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4.3 Assembly

4.3Adjustable Multi Spindle Drilling Attachment

4.4 Design methodology

Design consists of application of scientific principles, technical information and imagination for development of new or improvised machine or mechanism to perform a specific function with maximum economy & efficiency. Hence a careful design approach has to be adopted. The total design work has been split up into two parts;

1. System design.
2. Mechanical Design.

System design is related with the various physical constraints and ergonomics. It also relates with space requirements, arrangement of various components on main frame at system, man + machine interactions, No. of controls. System design is related with position of controls, working environment of machine, safety measures to be provided, servicing aids, ease of maintenance, scope of improvement, weight of machine from ground level, total weight of machine and a lot more.

5.0 Advantages

- With the aid of this attachment, idle time such as setting time is minimized and production rate is enhanced.
- Throughout the drilling process, accuracy and repeatability are maintained.
- Drilling holes and different adjustable locations are possible with this attachment.
- The drills have a larger range of adjustability and lateral movement in respect to each other.
- It can execute many operations at once with different diameter drilling instruments.
- This attachment may be installed with any regular drilling machine rather than a multi-spindle drilling machine (SPM). We were able to lower the capital cost of the production shop in this way.
- Attachment includes interchangeable components, one of which is a drilling machine, and the other is a cleaning, repair, and oiling attachment. Worker is free of headaches throughout the process, and skill workers are not necessary.

6.0 Conclusion

We may drill two holes at once with the aid of this attachment, which allows us to change the center distance between the four drilling spindles. It has the benefit of being portable. Because the machine is smaller than the previous model, it is very easy to transport from one location to another. As a result, this machine is portable. The total amount of space required is likewise shrinking. This machine has a higher efficiency than the previous one. There has been a significant reduction in electricity use. The machine is really easy to use. It drills the holes more quickly.

Productivity can be increased by utilizing a multi-spindle drilling head. Reduced overall machining time is also required. At the same time, four holes of various diameters may be drilled. This machine is both simple to use and small in size. It is also quite light in weight. This machine has a very high efficiency. When compared to other devices, it is relatively inexpensive.

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Neuromarketing: Recent Trends and their Impact on Purchasing Behavior of Consumers

Amisha Gupta, Rupanshi Toteja**, Prachi Bhardwaj*** and Shubham Sharma*****

ABSTRACT

Neuromarketing, a process that is being widely used by many corporations since the past five years, helps to access and stimulate the responses of customers through the use of various technologies of paralanguages like Eye gaze, packaging, product designing, color coordination, decision making and the subconscious human brain. The term Neuromarketing was independently coined by Ale Smidt's, a tool that is very essential in terms of Retail since it helps to study a human brain and how it reacts towards advertisements, images and other marketing tools through functional Magnetic Resonance Imaging (fMRI). A few successful cases of companies using Neuromarketing are Yahoo, Hyundai, PayPal, Cheetos and VI. The objective behind this research paper is to find how Neuromarketing is being intensively used by various companies that is not only helping them to boost their profits but to also have a strong understanding of a customer's psychology.

Keywords: *Neuromarketing; Brain research; Eye tracking; Electroencephalogram (EEG); FMRI; Neuro-imaging.*

1.0 Introduction

Neuromarketing is a combination of two words, 'Neuro' referring to the nervous system in a human being and 'Marketing' referring to the process of promoting a product or service to the consumers. Therefore, Neuromarketing refers to the process as used by various organizations which deals with activities that helps such organizations in promoting a product or service to the consumer after studying the various psychological aspects that might affect their buying behavior. Neuromarketing is usually executed in two ways either by measuring the neurological brain activity using activities such as EEG, fMRI, etc. or inferring neurological responses directly from the consumers using activities such as eye tracking, face coding, etc.

Some of Neuromarketing techniques for marketers are: -

Eye Tracking - Eye tracking is a tool of analysis that associated visual attention with the cognitive and emotional responses of the consumers which makes the measurement process subtle and accurate with less or no interaction between the researcher and the subject & it indicates by its name that eye contact allows us to know the potential thinking of the customers while seeing the packaging, designing &etc. of the product in real time purchasing as well as in the labs. The main motive is to gather the attention of the customer/purchaser. It also helps in differentiating between the two similar products but with different packaging to gather information that which packaging had more impact on the buyer.

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Electroencephalogram (EEG) - EEG continues to be one of the most frequently used techniques of measurement as used by researchers for its speed and accuracy. This process of measurement involves small metal discs called electrodes that are firmly placed on the subject's scalp and that helps in measuring the activity that is going on inside the brain. It helps in tracking the minds of the customer while they are planning to purchase an item basically it specializes in reading the mind. This technique can be used in tracking the preferences of the customer for example I they saw a product whether they liked it or repelled to the product.

Facial coding -Happy, sad, disgust, confused and various other emotions play a very vital role for marketers whenever they launch a new advertisement to know how their consumers feel about the same, it basically depicts that it is the main characteristics to code what is the first impression that the customer has perceived. The main through which we can depict in facial expression are eyes, as it is been said that eyes never lie.

Sensory Marketing - Facial coding is the process as used in Neuromarketing which involves in face reading and understanding a consumer's reaction as they watch and review an advertisement, a product or a service for the first time. As we know there are many sensory organs which we can help us to market i.e., eyes, nose, tongue, skin & touch. These sensory organs help for example if we visit a market where we see a brighter color hoarding / banner we get attracted to it similarly when some sales person is pitching everyone to visit him then also, we get attracted to it so which states that sensory marking is effective in Neuromarketing.

Psychological tricks - There are numerous psychological tricks used by researchers in order to get the best results while using Neuromarketing. A few of those psychological tricks are empathizing with the consumers, providing convenience and discounts, improving user experience, making your consumers feel safe, providing great consumer support, and making use of social media.

2.0 Literature Review

Christophe Morin (2011) explains_neuromarketing is an arising field that connects the investigation of customer conduct with neuroscience. This paper talks about the guarantee of the expanding field of Neuromarketing and recommends it can possibly fundamentally improve the viability of both business and cause-related promoting messages all throughout the planet.

Further Harit Kumar and Priyanka Singh (2015) explains the theoretical part of Neuromarketing as a compelling apparatus for an advertiser in the new period of business sectors research for our present wise purchaser. The goals of their examination center around the position and rise of Neuromarketing just as the practices engaged with current situation as Neuro-imaging, EEG, fMRI, Eye Tracking, and so forth paper measure the customer rationalization purchasers repudiate themselves, saying what they need, yet doing what they feel.

Further Clement Levallois, AleSmidts & Paul Wouters (2019) explains the emergence of neuromarketing through the first mention of the term in traditional and new media until the stabilization of the field. Their main interest is to establish whether neuromarketing developed separately as an academic field and as an industry (with knowledge transfer from the former to the latter), or whether it was an act of co-creation. Based on a corpus gathered from a systematic search on the Web, they trace the multiple forms of engagement between academic and commercial communities, echoed but also shaped by reports in traditional and new media. They found that neuromarketing developed an identity through a set of practices and a series of debates which involved intertwined communities of academic researchers and practitioners.

Further Lorena Robaina-Calderín & Josefa D.Martín-Santana (2021) explains the growing interest in a deeper understanding of consumer behavior. This study is mainly aimed at carrying out a systematic revision of the literature on neuromarketing from a holistic point of view, analyzing its definition and processes, as well as more specific aspects such as its ethics and applications. Based on the results of their review, following a combined methodology with a base dictionary and text mining, their study presents both the current lines of research and the future lines of work.

Further Margherita Zito, Alessandro Fici,Marco Bilucaglia,Francesco S. Ambrogetti, and Vincenzo Russo(2021) explains the effectiveness of the UNICEF bequest campaign in terms of emotional response, comparing different creative proposals to optimize communication, applying neuromarketing tools to the social area.

3.0 Analytical Framework

Dependent Variable **Independent variable**

Purchase decisions of a customer →

- Taste
- Packaging
- Overall Attractiveness
- Color of a logo
- Creativity in an advertisement
- Jingles/Music used in an advertisement

4.0 Research Methodology

4.1 Research objective

- To understand the factors influencing the purchase decisions of a customer with respect to the various neuromarketing tools used by organizations at present.

4.2 Hypothesis

H1: To find out the impact of taste of a product on the buying behavior of a customer.

H2: To find out the different types of packaging, new trends related to packaging and the impact of these trends on the purchase decisions of various customers.

H3: To find out the importance of the overall attractiveness of the packaging of a product in the purchase decisions of a customer.

H4: To find out the impact of the color of a logo in its overall attractiveness leading to a customer purchasing that product.

H5: To find out the new trends and technology being used in commercials/advertisements and their impact on a customer's buying behavior.

H6: To find out the impact of jingles/music used in an advertisement on a customer's purchase decision.

H0: Factors such as taste, packaging, overall attractiveness, color of a logo, creativity in an advertisement and jingles/music used in an advertisement does not affect the purchase decisions of a customer.

4.3 Research statistics

Reliability Statistics	
Cronbach's Alpha	N of Items
0.705	9

Cronbach's Alpha is more than 0.7, which means that the mentioned 9 variables are reliable.

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.653
Bartlett's Test of Sphericity	Approx. Chi-Square	183.563
	df	36
	Sig.	0.000

This test fulfills the assumption of KMO which needs to be more than 0.6 and here it is 0.653 which means that the sample is adequate up to 65.3%. Also, the significant value should be less than 0.05 and here P-value is 0.000 which means the result is appropriate and normality is achieved.

Communalities		
	Initial	Extraction
PRICE	1.000	0.781
exciting packaging	1.000	0.551
Appealing logo	1.000	0.700
Innovative and attractive advertisement	1.000	0.501
Exciting jingles/music in the commercial	1.000	0.626
Environment-friendly product	1.000	0.723
Health conscious product	1.000	0.770
Social message	1.000	0.728
Taste of the product	1.000	0.720
Extraction Method: Principal Component Analysis.		

The basic assumption about communality is that it should be more than 0.5 and in the above table it is achieved as all the values are above 0.5.

Total Variance Explained									
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.831	31.455	31.455	2.831	31.455	31.455	2.256	25.068	25.068
2	1.947	21.629	53.084	1.947	21.629	53.084	2.177	24.193	49.260
3	1.322	14.688	67.772	1.322	14.688	67.772	1.666	18.511	67.772
4	0.897	9.971	77.742						
5	0.543	6.032	83.775						
6	0.455	5.055	88.830						
7	0.419	4.657	93.487						
8	0.330	3.663	97.150						
9	0.256	2.850	100.000						
Extraction Method: Principal Component Analysis.									

The above table shows the total variance explained by 3 factors and it is 67.772 which is satisfactory. This states that 67.772% of variance is explained by mentioned 3 factors in the model.

	Rotated Component Matrix[a]			
		Component		
S NO.		1	2	3
1	PRICE	0.080	-0.011	0.880
2	exciting packaging	0.070	0.739	-0.010
3	Appealing logo	0.286	0.684	-0.387
4	Innovative and attractive advertisement	-0.068	0.698	0.096
5	Exciting jingles/music in the commercial	0.187	0.768	0.022
6	Environment-friendly product	0.819	0.213	0.082

7	Health conscious product	0.874	-0.079	0.021
8	Social message	0.816	0.183	0.166
9	Taste of the product	0.150	0.008	0.835
	Extraction Method: Principal Component Analysis. *Rotation Method: Varimax with Kaiser Normalization.*			
	a. Rotation converged in 5 iterations.			

The above rotation component matrix shows the statements falling under which factors. The KMO value for each statement is near or more than 0.6 which fulfills the basic assumption. As from the table, we can say that statements 6-8 come under Component 1 which is Societal Factors. Statements 2-5 come under Component 2 which is Sensory Factors. Statements 1 and 9 come under Component 3 which is Actual product related factors. So, from this table, we can get the statements and appropriate factors, and all the hypotheses and criteria are met.

Reliability Statistics	
Cronbach's Alpha	N of Items
0.811	3

Cronbach's Alpha is 0.811, more than 0.7, which means that the Societal Factors are reliable.

Cronbach's Alpha	N of Items
0.720	4

Cronbach's alpha is 0.720, which is more than 0.7, which means that the Sensory factors are reliable.

Reliability Statistics	
Cronbach's Alpha	N of Items
0.705	2

Cronbach's Alpha is 0.705, which is more than 0.7, which means that the product related factors are reliable

5.0 Conclusion

The purpose of this research paper is to study the purchase behavior of various customers and the influence of factors such as price of a product/service, exciting packaging of the product, appealing logo as used by the brand, innovating and attractive advertisement, exciting jingles/music used in a commercial, how environment-friendly the product is, how health conscious is the brand and the product that it is manufacturing, social message behind a commercial/brand, and taste of the product being manufactured.

It is true that the awareness of Neuromarketing and its execution is rapidly rising in the market and all the marketers are coming up with new ways to study the changing behavior of their customers and how they can use different neuromarketing techniques to influence these customers in purchasing their product/service. Variables such as price of a product and the eight others, as studied in this paper, have been concluded as the major reasons that influence these customers and affect their buying behavior severely.

We have come a long way in terms of marketing and marketing techniques and in the current ongoing era, studying neuromarketing and its influence on customer has become more important than manufacturing the product. Lastly, from the primary research (survey) that was executed as a part of the ground work for this paper, we found out that not only the variables that are directly related to the product influence these customers but also variables that indirectly related to the product or the brand such as the social message behind a commercial or even the music that a brand uses for its advertisement. This can just be noted as the beginning of neuromarketing and in the coming era of AI and AR, Neuromarketing is going to become one of the major attractions and key areas for marketers.

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Trade Logistics: A Bibliographic Review

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ABSTRACT

International trade and its supporting factors become the backbone of a country's economic wellbeing which leads to tremendous research in the field of international trade. In this paper we study trade logistics with the objective to understand the past, present and future scenario for further research. Study used bibliographic bibliometric and network analysis of 329 documents on trade logistics. Bibliographic, co-citation and co-occurrence of reference journals, journals and conference proceedings considered. Study found focused on cost, perforce, competitiveness, sustainability and facilitation while ICT, Information, global connectivity, global infra projects and logistics policy as scope of future research. Study suggested research areas for future research.

Keywords: *Trade Logistics; Review paper; Bibliographic; VOS viewer.*

1.0 Introduction

Advancement in policies related international trade, tariff and non-tariff barriers have been significantly removed by the developed and developing countries increased importance of logistics and related factors considered as most important factor during the globalization (Osman T. Aydas, 2019; Yugang HE, 2021; Oualid Kherbash, 2015; Gunjan Malhotra, 2019). Such growing importance we can observe in the report published by World Bank, Connecting to Complete: Trade Logistics in the global economy, in the year 2018 (World Bank, 2018). International logistics has become one of the most essential new services in the 21st century. International logistics, as a bridge and hub of international trade development, breaks down national barriers and offers a solid foundation for international trade as economic globalization deepens. Valuable contribution for the academician and research scholars with different scales, variable, factors, time and size concluded the importance of the trade logistics in the global trade (Carruthers, 2003; Devlin, 2005; Dong, 2017; Gani, 2017). Economic globalization entails a greater integration of global employment and financial markets. From an economic standpoint, two macro forces appear to be driving the globalization trend. The first is the recent reduction in barriers to the free flow of commodities, services, and capital. The second reason is technical change, particularly the rapid advancements in communication, information processing, and transportation technology in recent years (Muller, 2004). International logistics encompasses services such as international freight forwarding, relocation and storage, warehousing and storage, project shipping, office construction, and letters of credit. There are already groups that specialize on making international logistics more manageable for international businesses. A supply chain is a network of facilities and distribution choices that handles the functions of material procurement, transformation into middle and final products, and delivery of these finished products to customers (Westaway, 2012).

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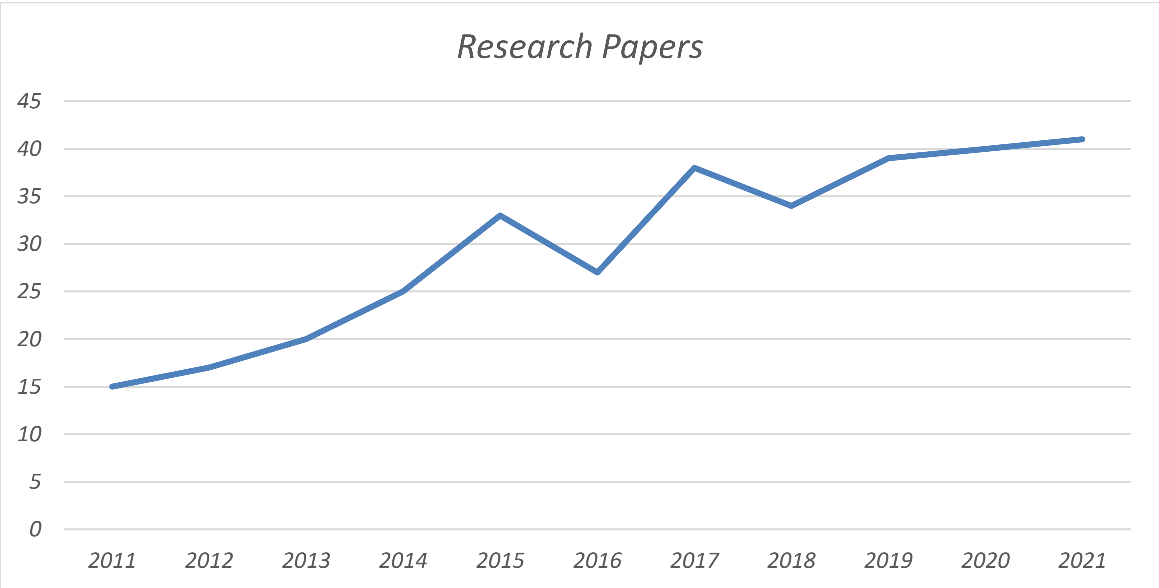
The ultimate purpose of trade logistics is to effectively provide all trade goods and sales items in goods distribution centres in order to reduce storage costs and maximize profit for a business. An inventory management system that fulfils the customer's requirements, as well as the optimization of management and logistics procedures, enabling a trading organization to be successful in the end. The flow of goods must be thoroughly thought out and systematically managed ahead of time to ensure that particular items and trade goods are always available at the "point of sale" (POS). If a trading company understands the goal of trade logistics, it gains the significant advantage of not having to store trade goods and sales merchandise for an extended period of time, but rather handling and shipping them to customers or manufacturers more frequently through the appropriate service partners.

2.0 Descriptive Analysis

Study used the Scopus database for identifying the literature related to trade logistics. Initially we used Trade logistics as a key word and found more than 450 research papers. Study limited search focusing on the business, commerce, accounting and econometrics. Also, we limit our search with English language and exclude the book and book chapters as well and finally we reached the total number of 329 research articles associated with the word called Trade logistics in various domains like engineering, information technology, agriculture, trade, economics etc.

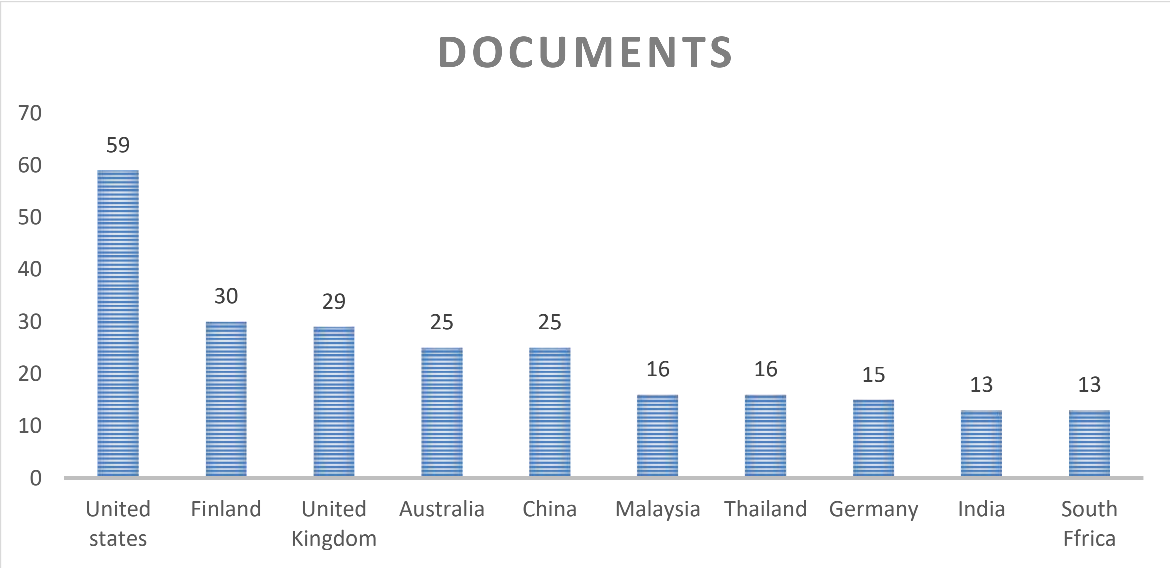
Figure 1: Year wise Publication, Source: Scopus Database



Source:

The publication in the field of trade logistics is increasing constantly. The research showed a hike in the number of publications during the years. Data was used for the years during the 2011 till 2021. The contribution by the research in the trade logistics area is significantly increasing as the importance of the trade logistics increased due to increment in the trade. Figure 2 showed that the United States of America published the maximum number of papers in trade logistics. Finland, UK, Australia and China are also contributing a good number of articles in the trade Logistics. Especially after the 2013 OBOR project, China started supporting trade logistics research and that leads to an increase in the research area. Especially around 1000 research articles are published only on OBOR project which is a global logistics project.

Figure 2: Country wise publication



Source: Scopus Database

Table 1 represents the country wise publication, citation and average publication by the country. The United States of America published the highest documents with the highest citation. Finland also stood a significant contribution in terms of publication and citation. Notable things in Table 1 are that the highest average citations per document are from UAE, Spain, Switzerland, Canada and Taiwan. UAE's average citations are 37, Spain's are 31, Switzerland's and Taiwan's are 24. These countries' contributions in the number of documents are low but the citations of the published documents are of extremely good quality.

Table 1 Country wise citation and average citation

Country	Documents	Citations	Avg. Citation per Document
United states	59	892	15.12
Finland	30	489	16.30
United Kingdom	29	423	14.59
Australia	25	417	16.68
India	13	256	19.69
Spain	8	249	31.13
Germany	15	219	14.60
Canada	9	202	22.44
Taiwan	7	155	22.14
United Arab Emirates	4	150	37.50
Switzerland	6	147	24.50
Brazil	10	146	14.60
Thailand	16	145	9.06
France	10	135	13.50
Sweden	9	110	12.22
China	25	109	4.36
South Korea	11	105	9.55
Malaysia	16	103	6.44

Source: Scopus Database, Authors calculations

Table 2, the list of the Authors with highest citation. Lauri Ojala had highest 252 citations when data was collected. Solakivi Tomi and Töyli j. hade same citation 217. Harri Lorentz had 178 citations. Majority of the researchers key focus would be on trade logistics, supply chain, Logistics cost, financial performance with respect to Logistics and SCM, customer drive SCM and green SCM.

Table 2 Top authors - Citation Wise

Author	Documents	Citations	Average Citation per Document
Ojala l.	10	252	25.2
Solakivi t.	7	217	31
Lorentz h.	12	178	15
Laari s.	3	159	53
Goh m.	4	128	32
Saranga h.	1	118	118
Sreedevi r.	1	118	118
Martí l.	3	115	38
Puertas r.	3	115	38
Awadallah b.	1	106	106
Malik a.	1	106	106

Source: Scopus Database, Authors calculations

Table 3, represented the authors with highest documents publication in the trade logistics related areas. The publications are covering the major issues of trade logistics, cost, SCM and green SCM concentrating on Logistics related to Trade only.

Table 3 Top Authors with Publications

Author	Documents Published	Citations	Average Citation
Lorentz h.	12	178	14.83
Ojala l.	10	252	25.2
Solakivi t.	7	217	31
Töyli j.	7	217	31
Hilmola o.	6	65	10.83
Wong w.p.	6	39	6.5
Goh m.	4	128	32
El baz j.	4	82	20.5
Laguir i.	4	54	13.5
Soh k.l.	4	24	6

Source: Scopus Database, Authors calculations

Table 4, the top journals publishing the trade logistics documents. World Customs Journals, Journal of cleaner production, international journal of logistics research and applications and Journals related to maritime logistics, shipping and logistics systems contribute the most with a good number of the citations as well.

Table 4 Top Journal's Publication and Citation

Journal	Documents	Citations	Avg. Citation
World customs journal	12	48	4
Journal of cleaner production	11	405	37
International journal of logistics research and applications	10	110	11
Asian journal of shipping and logistics	8	107	13

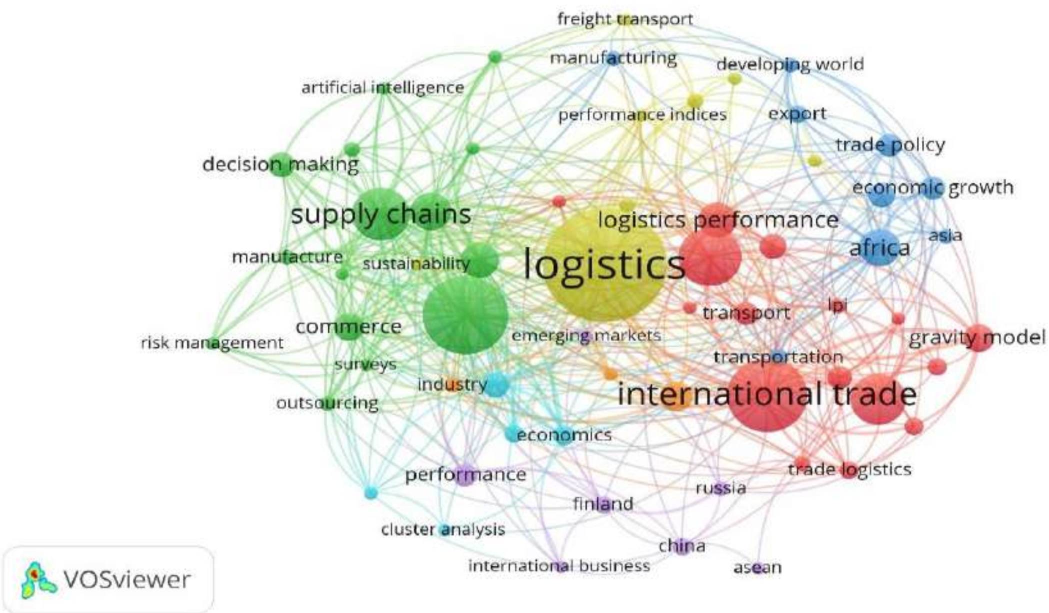
Maritime economics and logistics	7	71	10
Research in transportation business and management	7	91	13
International journal of logistics systems and management	6	31	5
International journal of production economics	6	255	43
International journal of shipping and transport logistics	6	29	5
International journal of supply chain management	6	9	2
International journal of logistics management	5	42	8
World economy	5	71	14
Journal of Asian finance, economics and business	4	4	1
Journal of transport and supply chain management	4	10	3
Production planning and control	4	136	34
Transportation research part e: logistics and transportation review	4	178	45

Source: Scopus Database, Authors calculations

3.0 Data Analysis and Discussion

The following section focused on the analysis of the clusters of Keyword, Journals, citations and trend analysis. This section will also understand the importance of the funding agencies and its impact on the research activity. Data analysis also used the same database with bibliographic analysis based on documents, citation, key words and funding agencies. The discussion started with understanding the keywords analysis.

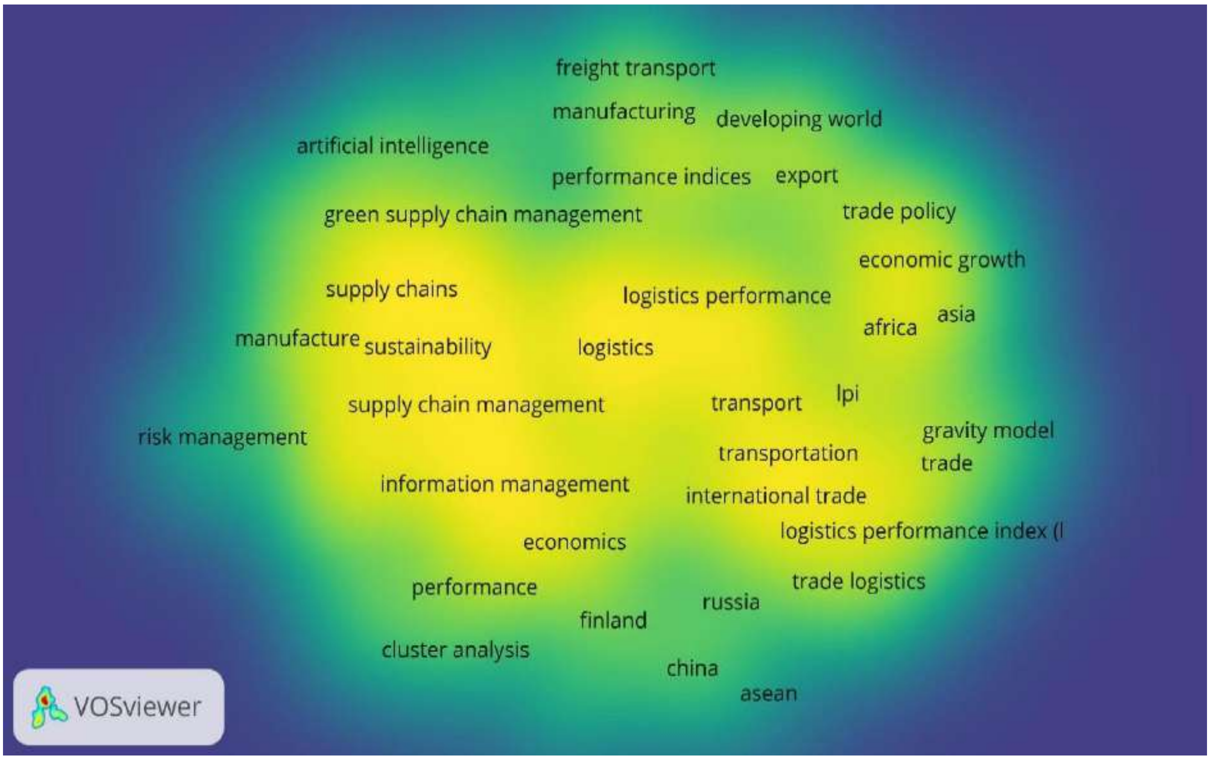
Figure 1 Keywords Analysis



Source: Scopus Database

Total 63 items divided in the 7 clusters focusing on trade logistics directly or indirectly. The analysis of the keywords focused on the logistics, SCM, international trade, logistics performance, trade logistics, international business, export etc. The cluster 1 comprises Brazil, Competitive advantage, Competitiveness, Gravity model, Infrastructure, International logistics, international trade, Logistics performance, Logistics performance index, Logistics performance index (lpi), Lpi, Trade, Trade costs, Trade facilitation, Trade logistics, Transport. Cluster 2 comprised Artificial intelligence, Commerce, Competition, Costs, Decision making, Developing countries, green supply chain management, Logistics service provider, Manufacturing, Outsourcing, Risk management, Supply chain management, Supply chains, Surveys, Sustainable development. Cluster 3 comprises Africa, Asia, Developing world, Economic development, Economic growth, Export, Manufacture, Trade policy, Transportation. Cluster 4 comprised Data envelopment analysis, Freight transport, Global logistics, Logistics, Malaysia, Performance, indices, South Africa, Sustainability. Cluster 5 comprises ASEAN, China, Emerging markets, Finland, International business, Performance, Russia. Cluster 6 comprises Cluster analysis, Economics, Information management, Innovation, Resource-based view. Cluster 7 comprises Industry, Research and Supply chain. The keywords analysis identified that the trade logistics related study is moving towards regional areas. Analysis witnessed that general theories and understanding phase is over now researchers are moving towards region specific studies and trying to develop specific theories and models for trade and logistics enhancement.

Figure 2 Keywords - Density Visualisation

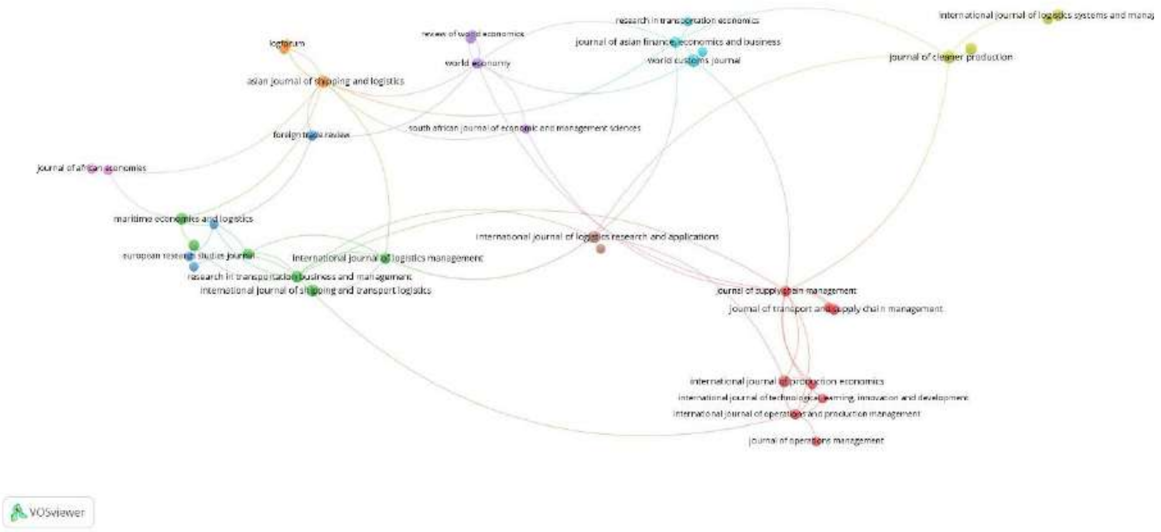


Source: Scopus Database

Journal Analysis

Figure 4, Journal analysis analysed 37 research journals divided in 9 different clusters. Analysis suggested that the International Journal of logistics research and application, World customs journals, Asian Journal of shipping and Logistics, Journal of transport and SCM, International journal of Logistics system considered as best journal for trade logistics related research articles. All the journals are contributing directly as trade logistics and indirectly as supply chain, green supply chain and maritime logistics. The journal analysis found that now the trends of research in the field of trade logistics are increasing. The researchers are trying to make their study limited to certain areas like trade cost, transportation, use of technology, logistics efficiency, competitiveness and trade which includes both export and import.

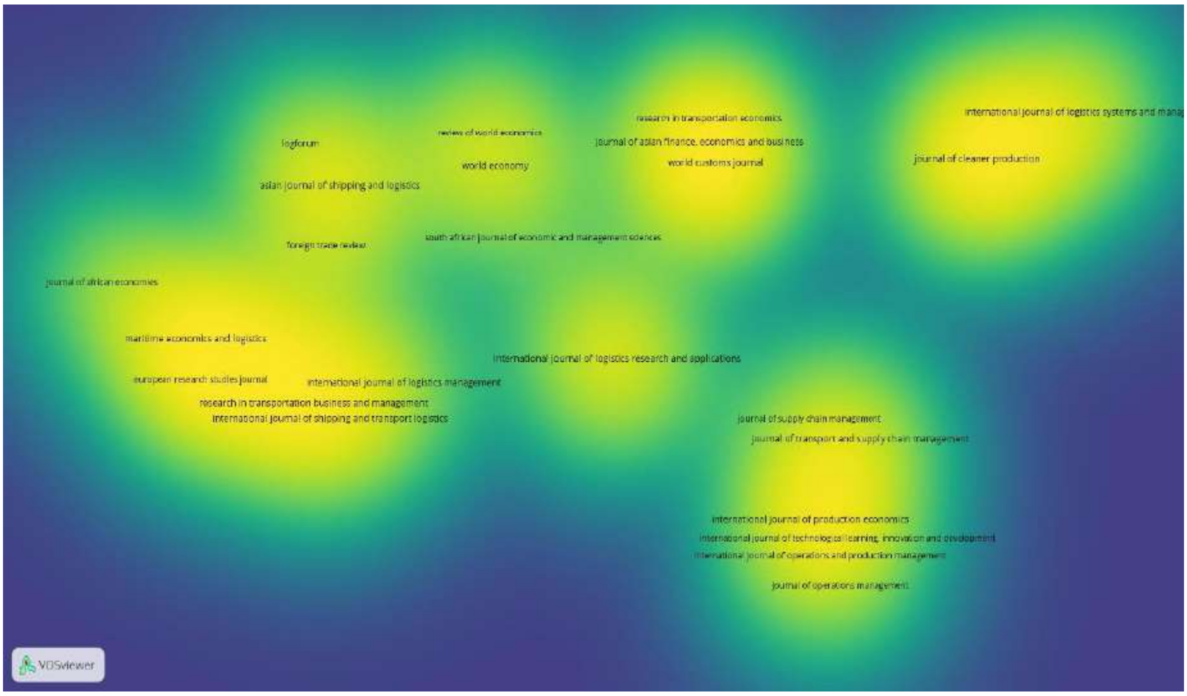
Figure 3 : Journal Analysis



Source: Scopus Database

Density analysis clearly suggests that the few journals are publishing trade logistics related research articles frequently. Such journals also come with special issues focusing on the emerging topics such as trade openness, Logistics cost, Global trade routes, Global logistics and SCM, Global competitiveness through logistics, Logistics and trade etc. Journals also started special issues focusing on Asia, Africa, Europe, and Eurasia etc with the objective of understanding and enhancing the logistical environment.

Figure 4 Journals - Density Analysis



Source: Scopus Database

Bibliographic analysis will focus on documents, sources, authors, organization and countries. Table 5, It is noteworthy that the researcher's 52% work is not cited by the research community. The reasons might be due to logistics dynamic nature which always comes with new areas and new discussion and the second thing is that it is limited to certain regions with limited objectives. Hence very low published material cited by the community. Even no major theories developed in recent years meaning researchers are following the previous theory changing variables in the studies and trade logistics is still in the age of exploratory.

Table 5: Documents wise Citation

Number of Citation of a document Citation	No of Documents
No citation	172
1 to 5	153
6 to 10	98
10 to 15	72
16 to 20	56
21 to 25	43
26 to 30	37
31 to 35	29
36 to 40	20
More the 40	19

Source: Scopus Database, Authors calculations

4.0 Conclusion

The literature found for trade logistics is in large quantities as expected as logistics is very popular and a key factor for business but the quality research in the field of logistics specifically with respect to trade is limited. The literature suggested future research in the field of Green Logistics, Information Technology and information in Logistics, Customer service, Infrastructure in terms of maritime logistic and global connectivity. The current literature focused on cost, perforce, competitiveness, sustainability and facilitation. The current literature most commonly mentions the ICT, Information, global connectivity, global infra projects and logistics policy as scope of future research.

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Digitalization: A Blessing or Curse for Employee Engagement in India

Bijal Shah and Ravi Sankar Maripi***

ABSTRACT

The Republic of India is a developing nation. It is a rapidly developing country and it has a large number of skilled work force. It is one of the major exporters of software employees and information technology services.

The aim of the study is to establish the relationship between digitalization and employee engagement. Basing on the review of literature, it was observed that the digitalization influences the employee engagement in organizations. Descriptive method was employed in this study. The results of the study indicate that the digital transformation of the industry is a boom to employee engagement. A Plan of action was developed for blooming the digital work places.

Keywords: *Employee engagement; Digitalization; Digital work place.*

1.0 Introduction

The republic of India is a magnificent and distinctive country in the world. By area, India is the seventh largest country in the world. It is the second most populated and largest democratic country. It is remarkably an affluent country ranked fifth in terms of overall Gross Domestic Product. The Human Development Index of India is 0.64. India is a developing country with rapidly flourishing market economy. It is fastly developing, industrialized country with substantial amount of experienced labor force.

2.0 Labor Force in India

The skilled labor force or employees working in Indian organizations contributing their best towards the effective management of their organizations. Employees are the reliable and precious resources for any industry or organization for the following reasons:

- Employees manufacture the finished goods in industry.
- Employees supervise the finances of the organization.
- Employees can elevate the business.
- The intelligent attempts placed by the employees bring prosperity to the organization.
- The ardent employees look after the organization with their unfounded efforts.
- Employees are exactors of revenue.

The vigor, devotion, zeal and their psychological relations with the organization make the employee's a strong foundation to the organizations. Employees play a pivotal role in the advancement of Indian economy.

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3.0 Objectives of Study

The major objectives of the study are:

A) To study the importance of Employee Engagement in organizations
B) To find out the effectiveness of Digitalization in enhancing the Employee Engagement.
C) To suggest measures to maintain a good digital work place.

4.0 Research Methodology

In the words of best (1959) “Research is considered to be the more formal, systematic, intensive process of carrying on the scientific method of analysis”.

Research studies are distinguished on the basis of the methods they adopted. In this study, the researcher employed the method of theoretical research. The theoretical research increases the understanding of a fact. Hence the researcher employed the theoretical approach to analyze and make connections between the Digitalization and Employee Engagement.

The work place research foundation found that employees who are engaged are 38% more likely to have above average productivity.

5.0 Review of Related Literature

To provide a background for the problem area, the review of related literature is necessary. It sharpens and defines existing knowledge in the problem area. It contributes to the general learning of the researchers.

6.0 Employee Engagement

The psychological allegiance of the employee towards the organization is called the employee engagement. It is a work place perspective evolving engagement. it is a workplace perspective evolving the righteous environment for all associates of non-organization.

Better engaged employees are jovial and faithful. They manufacture quality products. They evince less absenteeism. Organizations with high levels of employee engagement are more profitable high levels of employee engagement can transform an ordinary organization into an extra ordinary organization.

The basic requirements of employee engagement in an organization are:

- Trust
- Identification
- Stimulation
- Ambience
- Observation
- Growth

7.0 Digital Work Place

By employing suitable technologies and mechanisms like Digitalization, the organizations can manage and engage their employees for getting adequate production with lower costs.

Digitalization is a helping hand on creating more possibilities for development Digitalization develops amalgamation and inner association between different sections in an organization.

Digitalization of an organization has advantages like omni presence of data, easy and immediate transmission of data. The digital changeover is the incorporation of digital technology into all sections of an organization.

The digital transformation of an organization requires:

- The revamp the revamp of procedures and activities in the organization
- The restructuring of functioning and
- The realignment of association with consumers.

In the opinion of the leading research and advisory company, "Gartner", The digitally transformed work place (Digital Workplace), facilitate successful way of functioning, elevating employee engagement and briskness. The digital work place upgrades the inner connections in an organization. It revamps inner association among employees. It refines the experience the employee engagement. The digitalized work places are a timely benefit the employee engagement.

8.0 Intensification of Employee Engagement

The strategies to increase employee engagement digitally are given below:

- Command employees' noteworthy activities through work place group chat.
- Encourage and implement peer to peer recognition via cloud-based platform.
- Link up with online course providers like courser, Udemy, LinkedIn learning etc. and encourage employees to upgrade their learning at their convenience.
- Form online communities embroiling all employees under social networking services.
- Provide necessary digital tools to all employees required at the work place.

9.0 Conclusions

- Employees are most important and reliable asset to any organization
- Employees are the strong base to any organization
- Enhancing employee's capability is a priority to organizations.
- Digital up skilling and employee engagement is the need of the hour to organizations.

10.0 Suggestions

The following one the suggestions to maintain a good digital work place

- Conduct virtual meetings instead of in person participation meetings.
- Use intranet software so that employees can associates from anywhere
- Utilize the digital looks like google does to get more works from employees
- Promote two ways interaction between lower and higher-level employees
- Develop teamwork and professional bond between employees
- Use digitools to identify key performance indicators
- Facilitate remote work for all employees
- Provide proper digital tools to employees at work place, so that they can work efficiently with less.

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According to Dale Carnegie (2017) study, “Just 26% of leaders surveyed say that, employee engagement, is a very important part of what they think about, plan and do every day. Another 42% say they work on it frequently, and the rest only occasionally rarely or never”,

Glan (2006) Suggests that the work environment may play a key role in predicting engagement along with organizational process, role challenge, values, work-life balance, information etc.

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The digital environment is the modern arena for business activities which use varieties of computer and networking technologies. It may be seen from the above studies, that the digital work place plays a significant role.

Cyber Law and its Importance: Case on Social Media and ICICI Bank

Bijal Zaveri and Prashant Amin***

ABSTRACT

The increasing changes in digital technology have initiated many benefits for businesses, and individual consumers worldwide. On the other hand, some people are always looking for new ways of negatively and illegally exploit the weaknesses of digital technology. With many Information technology specialists spread across India, the Cybercrimes and Fraud have been at the highest peak, and frequently experienced in the recent digital era than ever before.

Even if the rate of cybercrimes has increased a lot in the recent era, the government of India has created laws prohibiting such crimes, and imposing heavy punishments for the involved criminals. This article is meant to briefly talk about cybercrimes and assert some of the key cyber laws in India.

Keywords: *Cybercrimes; Cyber laws; Digital technology.*

1.0 Introduction

Normally, criminals are not necessary very educated and skilled people, but for cybercrimes, a criminal has to be incredibly skilled in Information Technology to be a professional hacker. On the other hand, some cybercrimes don't require many skills except the ability to use digital tools and internet. Ranging from simple cybercrimes that can be performed by anyone using internet, to sophisticated bank heists and governments private files illegal access and sharing, cybercrimes are notorious crimes that hurts the society in many ways.

According to Oxford dictionary, cybercrimes are defined as "the criminal activities carried out using a computer and internet" (oxford dictionary, 2018).

According to Techopedia.com, cybercrimes include hacking, and spamming but also represent all criminal offenses done with the use of computer and internet like cyber terrorism, cyber bullying, phishing, child pornography, scams, defamation, identity theft, etc. (Techopedia.com,2018).

On the other hand, Cyber laws are defined as "legal laws that are meant to deal with cyberspace, internet, and all related crimes and issues" (computerhope.com, 2018).

The following is a brief description of cybercrimes, and some key punishments found in the Indian Government IT Act of 2000.

2.0 Literature Review

In the following part of this article, we are going to point out the major forms of cybercrimes.

2.1 Cyber terrorism

According to Techopedia.com, cyberterrorism is defined as the use of internet to conduct premeditated cybercrimes involving deliberate hacking, disruption of IT networks, creating and sending viruses, phishing, web jacking etc. These crimes have to be performed on a large scale, and results in chaos, panic, and disturb the general public order. (Techopedia.com, 2018). Cyber terrorists do so by arrogance or pursuing their own monetary gains and interests,

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and they attack government institutions, banking and financial institutions, hospitals, nonprofit organizations, media corporations, trading and manufacturing corporations etc. Hackers should know that they can become cyber terrorists if whatever they are doing negatively affect many people at a large scale and cause panic and chaos in the society.

On the other hand, even terrorists' organizations are switching their activities on the web because of the easy accessibility, anonymity of terrorists, the large number of people or entities that can be attacked, the chaos that it creates, relatively cheap compared to traditional forms of terrorisms, recruiting, coordination of attacks, worldwide targets etc.

2.2 Cyberattacks

According to Hathaway Oona and her colleagues in their article called "*the Law of Cyber-Attack*", cyber-attacks are defined as deliberately exploiting computer systems, Networks, or systems that uses Technology. (Hathaway et all, 2012)

Cyber-attacks might consist of:

Identity and information theft, privacy invasion: Cybercriminals steal other people's identities; and collect private and personal information for their personal monetary gains. This malpractice starts by violating the victim's privacy, and goes up to the extent of stealing his bank and credit cards details, accessing his email accounts, gaining access to his ATM codes and passwords etc.

Malware, viruses, malicious software, Trojans, phishing, illegal use of web browsing data, instant messaging abuse etc.: cybercriminals also engages themselves in the mentioned crimes and they do so to gain access of the users web history, illegal data collections, login passwords and credentials, etc. phishing consists of deluding victims by using false profiles and ask victims to share their personal details by making them believe that they are dealing with a reputable organization that they know very well. For example, someone can create false E-mail Id, use phone calls, or social media contacts as an Apple company employee, and start to sell false promises to victims.

2.3 Invading financial institutions its systems

Cyber criminals have been also targeting financial institutions and trying to steal as much money as they can, or at least disturb and confuse their system. they hack into baking data storage and steal personal client information, changes the codes and move money to ghost accounts, etc. they also steal information regarding bank debit and credit cards, and steal from the card owners. On the other hands, banks and financial institutions have understood that they need to reinforce their system's security and protect their client's private and confidential information maximally to avoid cyber-attacks.

2.4 E-commerce cybercrimes, frauds and trafficking

Even though E-commerce has provided an opportunity for different business across the globe, some individuals hide themselves behind the unregulated selling platform, and make false claims about the products and services they pretend to sell. Once they have got customers, who pays online for the inexistent products, the business is nowhere to find and criminals get away with large sums of stolen customers money. Many of them also have become experts in tax evasion, whereby, they sell products and services but do not pay taxes, by using unregistered companies, misrepresentations and manipulation of prices, fake documents and bills etc. traffickers also have found a safe haven with digital technology. They can traffic different illegal products like, weapons, drugs, elephant teeth, precious minerals and even human beings.

Many of the digital businesses in E-commerce fail to protect their client's personal data, or misuse it for their personal gains, spamming, etc.

2.5 Copyrights, trademark infringements and piracy

It is also a crime to illegally use someone else's trademarks or violate copyrights on his products and services. Cybercriminals take advantage of the anonymity, and lack of vigorous control of online markets, and sell different products and services illegally developed or acquired without owner's consent. Examples here include downloading and selling music movies, books duplicating someone else's products, brands imitation, etc. Piracy is also another crime that is manifesting itself in this recent digital era, and it largely includes software piracy, duplicating digital tools, stealing devices technology, etc.

2.6 Defamation and cyber stalking

Many people hidebehind the unanimity of internet and use it wrongfully by demeaning other people. They do so by making false claims that are meant to make someone loose dignity and credibility in the eyes of the society.

The victim is falsely accused on the web and social medias, and not only he is embarrassed in front of his family and friends, coworkers, people in the neighborhood, he might lose credibility national wide, but if he cannot properly defend himself, he loses his good image.

This also goes along with people sending threatening messages, emails, or phone calls, following someone's movement, or openly criticizing or demeaning him.

2.7 Child sexual abuse, adult pornography and sexual content

Even though some countries tolerate adult pornography; child pornography is strictly prohibited in many countries, and punishable by the law. This doesn't stop cyber criminals, to produce, distribute and sell child pornography on internet. This goes along with illegal production and sharing of sexual content to different users of the internet even if they didn't sign up for it. In the past many people have experienced the anonymous hackers who randomly posted nude photos and pornography videos on random people's Facebook accounts.

Pornography and sexual cybercrime are popular among the youth and different cyberspace users, where they immorally use its content to disturb the public and ethical order of the society. In India, it is strictly prohibited to share such content, and failure to do so is highly punishable by the law.

The list of cybercrimes is long, but above are just some common crimes, and the following part explains what shall be done by the users to minimize the risks of being attacked.

3.0 Cyberspace User's Safety

Cyberspace users shall be informed about the dangers that they face since cyber criminals always work hard to find the next victim. The following are some of the important strategies that users might adopt to minimize the risks of becoming cybercrimes victims.

The following are some of the tips for better cyber security:

Strong password and codes: some people use short and easy password that can be easily hacked. They use their birthdates, parts of their names or children's names, pets etc.

Instead of having short and easy password, it is always advised to have long passwords, and must include capital letters, symbols and signs to make it stronger. In addition to that, users shall never share their passwords to friends or family, or allow different website to save password if they are not sure about their security features. A stronger password or bank card code is very hard to hack.

System updates: cyber users should be advised that they better update their computer systems and anti-viruses regularly. Hackers and cyber criminals are always trying to find new ways of invading people's privacy, but they reach a dead end if your system is highly protected

Avoid visiting unsecured or untrusted websites**:** with the internet widely available and used by many people around, some users find themselves visiting untrusted websites, with popups that install viruses in thickener system and make it vulnerable for cyber-attacks.

These untrusted websites include pornography websites, online movie streaming websites, online gambling and lottery websites, dating websites, etc. cyberspace users should avoid clicking on pop-ups, suspicious banners and unclear external links since most of them contain viruses and malicious software that can make them vulnerable to cyber attacks

Purchase from trusted online retailers only*:* well-known and reputable online retailers have developed security measures that allow them to protect their client's data against cyber-attacks. If one has to make online payments, they shall do so only on the trusted websites, to avoid any identity theft or their payment details to be stolen. They can also consider using online payments special methods like PayPal to minimize the risks or choosing the cash on delivery option whenever applicable.

Only share necessary information*:* cyber users shall be advised that they must consider sharing necessary rather than sensitive information. Sharing all information creates vulnerability and once found in wrong hands, that information can be wrongly used to harm someone in many ways. People should learn to be reserved, and avoid sharing anything and everything online even when they have been guaranteed the security.

4.0 Some Cyber Laws, and Corresponding Punishment in India

According to computerhope.com, cyber law is created to protect cyber users from cyber criminals. (Computerhope.com, 2018). This is meant to protect people from the consequence of improper use of digital technology by cybercriminals, and just like any other law, impose punishments for committed crimes. It serves as guidelines and disseminates what practices are morally and ethical acceptable, and set the boundaries by which cyber users shouldn't cross. The following are some of the key paragraphs on cyber law in India, commonly known as Information Technology ACT, passed in 2000.

Hacking with computer system: As described in section 65 of the Indian IT act, anyone found guilty can be sentenced up to 3 years imprisonment or/ and be fined up to 500,000**₹**.

Cheating using a computer resource*:* found in the 65D section of the Indian IT act, anyone found guilty can be jailed up to 3 years or/and pay a fine of up to 100,000**₹**

Publishing private Images of others**:** found in the section 66E of the Indian IT act, it includes taking, distributing and sharing other people's private parts. Once found guilty, a criminal can be jailed up to 3 years or/and imposed a fine of up to 200,000**₹**

Cyber terrorism**:** found in the section 66F, it includes anyone who deliberately performs a cyber-act that threatens the unity, integrity serenity and security of the government of India. Once found guilty, one can be jailed for life.

Causing or publishing obscene information in an electronic form: Found in the section 67 of Indian IT act, and anyone found guilty can face 5 years imprisonment or/ and up to 1,000,000**₹**of fines.

Publication of sexual images and videos: found in the section 67A of the Indian IT act, anyone found guilty can be imprisoned for 7 years or/ and 1,000,000**₹** of fines and penalties

Predating minors online, creating or publishing child pornography: as found in the section 67B of the Indian IT act, a guilty criminal will face 5 years imprisonment or/and up to 1,000,000**₹** in fines for the first time, and if he does it again, he can face 7 years imprisonment or/and up to 1,000,000**₹** in fines and penalties

Wrongly Using someone else's password: as found in in section 66C of the Indian IT act, it includes stealing and using his identity, online signature etc. the guilty criminal might face up to 3 years imprisonment or/ and up to 100,000**₹**offines and penalties.

Tampering with computer source documents*:* as found in the section 65 of Indian IT act, it includes concealing, destroying or altering computer source code, computer system, or computer networked. guilty criminal can face up to 3 years imprisonment or/and up to 200,000₹ in fines and penalties

Receiving stolen computer or digital device: As found in the section 66B of the Indian IT act, anyone found guilty can face up to 3 years imprisonment or/and up to 100,000₹ in fines and penalties.

5.0 Case Studies

5.1 Phishing attack against ICICI bank

ICICI bank profile: According to ICICI Bank website, ICICI is the largest private bank in India, with over 4,867 branches and 14,367 ATMs nationwide. Founded in 1994, this bank is very profitable with consolidated assets valued at ₹11,242.81 billions, Which is approximately $172.5 billion, and last year, this bank made a net profit of ₹66.77 billions, which is approximately $1 billion. (icici.com, 2018)

Description of the phishing case: Cyber criminals targeted this bank and its customers by sending fake E-mails but disguised as official bank Employees, and sent E-mails to the Bank customers. In those Emails, they were asking the customers of this bank to update their banking details and their personal financial information.

According to www.blog.comodo.com, they were sending E-mails to the victims, containing links that they had to follow and fill their banking details pretending to be operated by ICICI bank. (www.blog.comodo.com, 2018). After clicking to the link, they were redirected to another page that looked genuine, and they were supposed to fill the required information as they were asked.

They were asked to share their bank card details, pin numbers, transaction passwords, email ID, etc.it is obvious that by revelling such sensitive and private financial information, the victims though that they are dealing with their bank, but in reality, with a bunch of cybercriminals ready to misuse the received information and steal from many victims as they possibly could. (www.Indiaforensic.com,2018)

Bank official comments: Luckily, ICICI bank has strong security features. According to www.blog.comodo.com, ICIC bank have a multi-level security system which is designed to prevent cybercrimes including phishing. They assured their clients that even though there has been this attack, they shouldn't worry since their accounts are secure, and that they have efficiently solved the issue. They urged the customers to be vigilant and report any suspicious Email information update requests, and assured them that ICIC bank doesn't conduct or ask any personal or banking information via email. They advised their clients to never share with anyone their banking, and personal information in any situation.

5.2 Orkut fake profiles cases

Orkut description: www.Orkut.com was a social networking website just like Facebook, and it was meant to connect people with the same interests, and allow them to easily interact with each other. Users were required to create profiles and interact with each other, make friends, date, share content, etc. According to www.Wikipedia.com, Orkut.com was owned by Google company, but has been dissolved in 2014 due to different legal issues the company faced, including too many fake profiles, failure to protect users' privacy, copyrights problems etc

Description of the cases: Orkut has been characterised by a very high number of fake profiles, created by many users for different reasons. According to www.cyberlawsindia.net, the most popular case of fake profile was the one created by a 19 years old student who created a fake profile of a girl classmate, describing her in a defamatory way. (www.Cyberlawsindia.net, 2007).

According to www.scribd.com, this fake profile of the girl was created with correct names, home address, and phone numbers, describing her as a girl who is interested in having sexual relations with anyone who wish so. (www.scribd.com, 2018). This created a very big case of harassment since this girl was being called all the time by different people who believed that what was portrayed on Orkut was true, and wanted to have sexual relations with her. After the girl contacted the police, this fake profile was tracked and linked to his class mate Abhishek and he was arrested by the police.

This not the only fake profile case that created controversial debates. Many more fake profiles have been identified and misused for personal interests of the creators. They did so for many reasons such as revenge, defamation, demeaning someone and make him loose his dignity in the society, jealousy, etc. fake profiles on Orkut were also linked to individuals who were advocating for racial hate, sexual content and pornography, Trickery, scamming etc

In many occasions, Orkut was accused of lack of control and allowing fake profiles to be created and to fully operate. According to www.theeconomictimes.com, Google, who owned Orkut, was fined 500,000$ for allowing fake profiles of the formula one racer Rubens Barrichello in Brazil where it operated for many years before its catastrophic downfall. It was not only one fake profile of this man, but more than 300 fake profiles were registered under the names of Rubens Barrichello and fully operational. Many issues like this marked the beginning downfall of Orkut Company and lead to its complete closure in 2014.

6.0 Conclusion

As digital technology continues to spread across India and worldwide, many people are using it for better, and changes their personal lives, business practices, economic development etc. On the other hand, cyberspace is not a perfect system which is hard to monitor and control everyone's activities. Cyber criminals choose to go against the laws governing cyberspace due to monetary profits and immoral gains but they do so on their own risks. Indian government has passed the Information Technology act in 2000, and it has been updated many times, but meant to provide cyber laws, that should be followed by Indians for fair, moral, ethical and legal use of cyberspace. Failure to comply with it results in punishment up to life imprisonment and up to 1,000,000₹ in fines and penalties depending on the nature of the crime.

7.0 Future Work Proposal

Above are just some of the sections of the Indian IT Act of 2000, but there are more sections to be analyzed like section 72 regarding the breach of privacy and confidentiality, Section 77A regarding compounding crimes, Section 85 regarding corporate offences, Crimes committed outside of India and many more.

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The impact of Financial Digitalization on State Bank of India

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ABSTRACT

Indian Financial Industry is rapidly transitioning from traditional financial services to the digital financial services. This digital revolution is challenging the traditional business model of financial services providers, in particulars to the banks. The digitalization of banking and financial services had changed the face of traditional banking activities. Customers no longer need to visit the banks physically; they can now access the majority of banking services such as money transfer, balance enquiry, bill payment, and account statement online. Technological innovation and IT-based improvement proved the important drivers to the expansion of digitalization in the banking industry. The adoption of digitalization will attract huge investment and bring growth for the banks and countries. It can be seen that digitalization contributes to increased customer satisfaction, better products, better financial services, lower transaction costs, more profitability, positive perception, and higher bank share prices. In India, there are 27 Public Sector Banks, of which the SBI is the second largest public bank of India and ranked 7th among all Indian Banks (Top 10 Largest Banks in India 2021). The main aim of this paper is to analyze the relationship between IT investment and performance of SBI. Through Bag of Words method total 25 words were classified and relationship between these words and financial of SBI were measured. The higher the company is concerned about digitalization, the higher the impact can be observed on the revenue, advances, deposits, reverence and number of customers. On the other hand, the RoA, RoE and number of employees were observed less effected due to digitalization.

Keywords: *Digitalization; Information Technology; Banking; Text as data; Financial Performance.*

1.0 Introduction

Indian Financial Industry is rapidly transitioning from traditional financial services to the digital financial services. This digital revolution is challenging the traditional business model of financial services providers, in particulars to the banks. The core function of banks is to raise the deposits from the customer and used it as lending money. In India, Reserve Bank of India is regulating Indian Banking sector (Impact of Technology on Banking Sector - Inventive, n.d.). The major types of banks in India are scheduled public sector bank, scheduled private sector bank, scheduled small finance banks, payment banks, regional rural banks, and foreign banks (Reserve Bank of India - Database, n.d.). Currently, these financial institutions compete not only with one another, but also with consumer brands like Amazon, Facebook, and Google (Impact of Technology, n.d.).

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In 1988, Dr. C. Rangrajan advocated for financial services computerization and digitalization. Digitalization improves client interaction and customer relationship management (CRM) while decreasing the likelihood of human error (Harchekar, 2018). The rapid adoption of IT and ITES services has contributed significantly to the advancement of the Indian banking sector to world-class level. In 1992, the Indian government had opened the economy for the foreign investment which plays vital role in computerization of banking system. The digitalization of banking and financial services had changed the face of traditional banking activities. Customers no longer need to visit the banks physically; they can now access the majority of banking services such as money transfer, balance enquiry, bill payment, and account statement online. Technological innovation and IT-based improvement proved the important drivers to the expansion of digitalization in the banking industry. The millennial generation's increased use of smart phones has led in distinct buying patterns, payment habits, and attitudes toward financial products and services. Today, the customers required quick, reliable, and cheap financial services which is possible because of the Artificial Intelligence (AI) and Machine Learning (ML). Customers' financial transactions have altered as banking services have evolved. Improved financial services contribute in development of society, industries, foreign trade, and the economy.

In 2020, half of all millennial shopped online for a deposit account and over 50 percent of consumers now interact with their bank through mobile apps or websites at least once a week—compared to just 32 percent two years ago(*Tech Spend of Banks*, n.d.). The financial inclusion campaign of developing nations added 69% young population worldwide to access banking services(*Fin Inclu*, n.d.). According to Forbes the banks are required to accommodate the upcoming technologies like Digital account opening, Application programming interfaces (APIs), Video collaboration, P2P payments and Cloud computing(Shevlin, n.d.). The adoption of digitalization will attract huge investment and bring growth for the banks and countries. It can be seen that digitalization contributes to increased customer satisfaction, better products, better financial services, lower transaction costs, more profitability, positive perception, and higher bank share prices. However, banks have not been candid about the profits they have made as a result of the digitalization of their products and services (Andonova et al., 2016).

Digitalization and technology advancements have the potential to make Indian banks more competitive. Thus, the Indian banking sector is significantly investing in IT which will change the face of Indian Banking sector. In India, there are 27 Public Sector Banks, of which 21 are Nationalized Banks and 6 belong to the State Bank Group. In addition, 45 Foreign Private Sector Banks. From the public sector bank, the SBI is the second largest public bank of India and ranked 7th among all Indian Banks (Top 10 Largest Banks in India 2021). During the reform period from 1992-99, the State Bank group were observed more efficient than the competitors (Shanmugam & Das, 2004). According to the annual report of the financial year 2020-21 SBI is having 45.92 cr customers, 22,219 branches, 13.19% market share in POS machines, 19.77% market share in Advances, 23.29% market share in Deposits, 29.23% market share in Debit card spending, 16.23 Cr financial inclusion accounts, 62,617 ATMs, 41 lakh home loan customers, Agriculture Business to 1.37 Cr farmers, owning 20 Non-Banking subsidiaries, having presence in more than 31 countries with 229 points, second largest bank with credit card issue in 2020, 88% digital transactions during Covid, leader in Individual mortgage loan with 34% market share, home loan of Rs. 5 Lakh Cr, market leader in providing education loan with 29% market share, market share of 34% in country's total ATM transactions, market leader in highest NPS accounts with 22% market share, market leader with highest transactions with the Government, Highest Agri Business of Rs. 2,13,000 Cr., highest SHG covering 75 Lakh women through YONO Krishi, 37.09 million users of YONO app which included personal loan of Rs, 21,268 cr, Agri Loan of 45,701 Cr and Letter of credit of Rs. 3562 Cr YONO Business. The adoption and application of IT generate good business for the SBI and other banks. The main aim of this paper is to analyze whether and to what extent one of the main factors of digitalization, i.e., investment in information technology (IT) affects the financials of State Bank of India (SBI).

2.0 Review of Literature

The financial services business, particularly banking services, is undergoing a technological revolution. The digital services bring about significant changes in the country (Niemand et al., 2021). The influence of digitalization on the financial services sector was researched by Ekinci (2021). The data of 26 Turkish commercial banks was studied using a truncated regression model, and it was concluded that digitization has a positive impact on financial performance. (Wadesango & Magaya, 2020) had studied the relationship between the digital banking services and its impact on financial performance of Commercial Banks in Zimbabwe. It was concluded that because of digital banking the online deposits, fees commissions, and banks transactions were increased which resulted into increased in ROA and total assets ratio. In contrast to that, Andonova (2016) had found that there is negative relationship between the banks' investment on IT-Software and profitability. They analyzed the relationship between investment in IT and profitability. The financial ratios from 2012 to 2015 were considered for the analysis purpose and concluded that the profitability of Macedonian banking sector is negatively related to the investments in IT and Software.

Payments and receipts in banks are not the only applications of IT. IT allows for services such as credit card payments, balance checks, ATM transactions, fund transfers, shopping, ticket booking, FX transactions, mobile banking, and phone banking, among others. (Dangolani, 2011) looked into the impact of technology on the financial industry. Bank clients and bank employees were polled for their opinions. It was concluded that IT could help with cost-cutting, expense-cutting, time-saving, and employee visibility. As a result, IT has become critical to banking efficiency. Customers are increasingly tried to avoid going to banks for the majority of their everyday banking transactions. Human relationship banking, on the other hand, is as vital. Banks with good customer relationships can better understand their clients' needs and offer innovative products and services, which can lead to higher business (Jakšič&Marinč, 2019). Banks have begun to collaborate with Fintech companies in order to strengthen their core competitiveness and expand market share through new customer acquisitions. The biggest challenge, though, is getting clients to adopt new financial technology. (Hu et al., 2019) used the Technology Acceptability Model to investigate the elements that influence technology acceptance (TAM). According to the 387 responses, the customers' attitudes regarding the adoption of Fintech services were influenced by the popularity of the internet, intelligent terminal equipment, perceived risk, privacy, and usefulness, perceived ease of use, user innovativeness, brand image, and government support. IT is advantageous, but its advancement necessitates the development of ICT infrastructure such as telephone, mobile phone, internet access, and broadband availability. (Bahrini&Qaffas, 2019) investigated the influence of ICT on economic growth in 45 developing nations in the Middle East and North Africa region, as well as Sub-Saharan Africa, from 2007 to 2016. The two-step panel GMM growth model was used, and it was determined that other information and communication technologies, such as mobile phones, Internet usage, and broadband adoption, were the primary drivers of economic growth in selected developing nations from 2007 to 2016.

Doubtlessly there are many advantages to adopt IT and digitalization in banking and financial markets but there is little evidence where the relationship between IT investment and profitability is measured. The relationship between digitalization and performance of cooperative banking studied by (Agboola et al., 2019). Based on 80 responses and financial data it was concluded that the digitalization can increase efficiency in terms of better services and products. The customers were more satisfied, the sales-force were able to increase sales and positive relationship between digital investment and profitability of the banks. The IT spending impact positively on the growth of the company in the year of investment and first year while there was negative impact of IT spending observed in the year of investment and first year of investment (Lee et al., 2016).

While there is a big dilemma, do IT investments improve profitability? Because IT infrastructure improve the operating efficiency of firms it becomes difficult to compare the effect of IT on profitability like impact of marketing, advertising, research, and development (Mithas et al., 2012). The IT investment leads outflow of money which impact negatively in the year of investment but it leads to reduction in the costs, increase in efficiency, and increased in the profitability. In the manufacturing units the impact could be measured in terms of reduction in cost and increase in production while in service sector it needs complex procedure to measure the impact of IT investment on companies' profitability. In India, after 1991 major banks had modernized their services. They started to offer ATMs, Internet Banking, Passbook printing machines, NEFT, RTGS, debit card, credit card, phone banking, mobile banking and many more (Gupta et al., 2018). The earlier research was failed to establish relationship between IT investment and profitability because of unavailability of internet connectivity and lack of infrastructure in rural area. But in current scenario banks are doing great due to great Indian IT infrastructure. The IT oriented banks are reaching to rural customers and able to offered services at lower rates compared to traditional banks. The FinTech had offered great benefits to the big size Indian banks like SBI, PNB, ICICI, HDFC, Kotak Bank and others. These banks have the big client base and huge network. The IT investments make them prosper in tough economic conditions.

Based on the review of previous research papers, the positive and negative correlations observed between IT investment and performance of the Banks. The most of the studies are in the context of developing and developed countries but very few research work have been done in Indian context in recent years. Indian Banking sector is promising sector which contribute in economic growth. Annually the Indian banking is spending around INR 200-400 Cr which is expected to grow INR 800-1000 Cr. Only SBI is planning to invest INR 3500 Cr in coming 5 years (ANI, 2018). Gradually banks make the big investment in business development and IT. The impact of this investment can observe gradually in coming years. Thus, the paper studies the relationship between IT investment and performance of SBI.

3.0 Methodology

The IT investment needs huge capital investments which reduce cash balance, increase assets, increase operational expenses, and increase the liability. But the IT infrastructure can increase operating efficiency which results in improvement of profit efficiency. The impact of capital expenditure can be observed on Return on Assets (RoA), Return on Equity (RoE), Dividend payout, Earning per Share (EPS). These quantitative variables are easily obtained from the financial statements but there are qualitative features like improvement in customer services, fast payment, easy fund transfer, online availability of different products (insurance, saving account, FD, recurring deposit), accessibility of financial services, and comfort in using banking services, online advisory, financial inclusion and many more which cannot be traced from financial statement. The objective of the study is to find out the progress of adoption of IT by the India's largest public sector bank, SBI, and its impact on the bank's performance.

Table-1: Year wise usage of IT Related words in Annual Report of SBI

Words	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Information Technology/IT	4	29	0	29	48	48	82	90	99	81
Information	21	48	22	59	57	46	54	90	92	101
Digital/lly/isation	0	1	0	30	66	86	117	86	129	158
Software	9	14	11	14	20	16	12	14	26	30
Hardware	5	5	8	4	5	4	4	4	4	4
Technology/ies	13	29	32	50	85	90	78	73	62	97
Web/Website/Websites	4	22	26	26	32	31	26	20	44	50
Social Media	0	0	2	13	10	10	7	5	8	3
Online	8	15	12	33	64	47	36	39	50	67
OnlineSbi	0	1	1	2	9	1	0	4	2	0
Online Banking	0	0	0	3	4	2	1	4	0	0
Modern Banking	0	0	0	2	1	0	0	0	0	0
Internet	5	15	16	23	27	23	17	13	14	16
Internet Banking	4	11	14	16	17	15	9	7	10	9
Mobile	8	10	15	56	61	110	31	54	36	46
Mobile Banking	0	1	1	23	20	23	11	8	6	7
Financial Inclusion	7	13	11	11	10	12	14	11	20	12
Big Data	0	0	0	2	3	7	2	4	0	0
Analytics	0	2	0	5	10	22	7	20	17	16
Network/s	5	20	5	28	17	25	18	30	42	38
Connect/vity	0	1	1	9	4	8	6	11	5	15
App (Mobile App)	0	0	0	4	15	26	23	18	35	23
electronic	8	12	12	13	25	23	27	21	10	14
Cashless	0	0	0	4	3	7	1	0	1	0
Green	10	13	7	17	15	17	12	20	27	25
Total	**111**	**262**	**196**	**476**	**628**	**699**	**595**	**646**	**739**	**812**

To obtain list of words, we had considered the annual reports of SBI from 2011 to 2021. The annual reports provide the summary of yearly progress made by the company. The efforts regarding adoption of digitalization and new banking services and products were mentioned in the annual reports.

It becomes necessary to identify the meaningful important words which highlight the adoption and importance of digitalization for the bank. There is no specific data is available regarding investment in IT and technology in audited report. So, to study the impact of technology the Bag of word approach was applied. This method is very simple and easy to interpret. It matches the list of words with the words mentioned in the audited report and counts them. We gone through the audited reports of last 10 years starting from F.Y 2011-12 to 2021-22 and identified the usage of IT related words. We had shortlisted twenty-five words which emphasized on the usage and adoption of digitalization by the SBI. The bag of words approach is concerned about how often specific words occur in a document irrespective of the place of occurrence is not considered. Then after we calculated how many times those words were mentioned in the audited reports of all ten years (See Table 1). The common observations are

- The SBI had started to focus on adoption of IT and digitalization from 2011 but it increased drastically after 2014 and kept rising till 2021.
- “Digital”, “technology” and “information” were the top 3 words repeatedly used in audited reports while “modern banking”, “online banking” and cashless were least used words in the audited reports.

These words are not sufficient to interpret the impact of Digitalization. So, to set the relationship between these words and the accounting data and other related facts we had collected and summarized the facts (see Table 2). The lists of words were classified under four major heads – Technology, Online, social media and Financial Inclusion. So, our data includes ten years financial with total 620 observations.

Table-2: Year wise financial descriptive in Annual Report of SBI

Details	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Branches- Domestic	14097	14816	15869	16333	16,784	17170	22414	22010	22141	22219
Branches-Overseas	173	186	190	191	198	195	206	208	233	229
ATMs		32752	43515	54560	59000	59263	59541	58415	58555	62617
Pan-India village coverage	12931	12931	52260	84036	103,565	104991	NA	NA	NA	NA
POS Machines		70000	135853	200000	300000	509000	610000	575000	672000	747000
POS Transactions				56500000	88200000	NA	NA	NA		
Mobile Bankig Transaction				77100000	144100000	24100000	27600000	27400000	138200000	
Mobile Banking Users			9500000	13500000	17700000	19800000	30500000	14100000	16800000	
Internet Banking Transaction (Cr.)				90	124	149	159	162	158	
Internet Banking Users		143000	17700000	22000000	25500000	32700000	47900000	60823000	73500000	
Total Revenue - Consolidated (Cr.)	176673	200087	226502	257289	272871	298640	301491	334163	365357	385416
Total Revenue - SBI Standalone (Cr.)	120739	135338	154487	174972	191843	210979	257111	277219	296209	305481
Retail Banking Revenue (Cr.)	54091	82613	89329	90340	76531	84411	111809	120968	130906	131783
Operating Expenses- Consolidated (Cr.)	46856	52819	63368	73848	73717	87290	96154	114800	131781	150429
Operating Expenses- SBI Standalone (Cr.)	26068	29284	35725	38053	41782	46473	59943	69687	75173	82652
Operating Profit (Cr.) - Consolidated (Cr.)	31574	31082	32109	39537	43258	50848	59511	55436	68133	71554
Net Profit - Consolidated (Cr.)	11707	14105	10891	13102	9951	10484	-6547	862	14488	20410
Cost to Income Ratio	45.23	48.51	52.67	49.04	49.13	47.75	50.18	55.7	52.46	53.6
Operating Profit as a percentage to Working Funds (%)	2.38	2.01	1.78	1.94	1.92	1.99	1.72	1.49	1.71	1.6
The business per employee (BPE) (Lakh)	798	1063	944	1234	1411	1624	1670	1877	210	237
profit per employee (PPE) (Lakh)	5.31	6.45	4.85	6.02	4.7	5.1	-2.43	0.33	5.78	8.28
No. of Employees - Total	230570	228296	222033	213238	207739	209567	264041	257252	249448	245652
No. of Employees - Officers	81600	80796	78579	78,540	80818	81041	107077	108113	106361	108772
No. of Employees - Assistant	110778	109686	106575	94,455	88606	92979	110348	105440	103134	100796
No. of Employees - Sub-staff Others	38192	37814	36879	40,243	38315	35547	46616	43699	39953	36084
Return on Asset	0.88	0.97	0.65	0.68	0.46	0.41	-0.19	0.02	0.38	0.48
RoE	14.36	15.94	10.49	11.17	7.74	7.25	-3.78	0.48	7.74	9.94
EPS - Standalone	184.31	210.06	156.76	17.55	12.98	13.43	-7.67	0.97	16.23	22.87
DPS	35	41.5	30	3.5	2.6	2.6	Nil	Nil	Nil	4
Debit card users	110000000	136000000	170000000	210000000	233000000	345000000	395000000	509500000	542400000	
Credit Card Users				3100000	3294000	4569000	6258000	8271000	10000000	
Active Customers			219200000	273200000	301200000	337500000	424200000	435100000	449000000	459200000
Core Banking Transactions (daily average transactions)			56300000	64000000	72200000	NA	NA			
Deposits (Cr.)	1043647	1202740	1394409	1576793	1730722	2044751	2706343	2911386	3241621	3681277
Advances (Cr.)	867579	1045617	1209829	1300026	1463700	1571078	1934880	2185877	2325290	2449498
Business Size (Cr.)			2639531	2900000	3190000	3600000	NA			
Net NPA (Cr.)	15818	21956	31096	27591	55807	96978	110855	65894	51871	36809

Estimating the impact of digitalization on SBI was not straightforward. So, we had applied regression model. Very strong too strong to moderate correlations across different dependent variables for the different text count as independent variables which show a multiple linear regression mode for each specific Dependent variable, however limitation is that the analysis is based on a small data set. Table 3 represents the summary of result. It was observed that total consolidated revenue, total standalone revenue, advances, and operating expense are having higher R with *p value* less than 0.05. While net profit, number of staff, RoA, RoE and EPS had moderate to lower correlation. So, the study supports the earlier findings and conclude that the digital expansion initially impacts on operational efficiency but negatively impact on the profitability. The technology adoption had statistically significant positive relationship with all dependent variable compared to online, social media, and financial inclusion.

Table - 3 The relation between the digitalization and Financials of SBI

DV (Y)	R2	Adj R2	Technology	Online	Social Media	Financial Inclusion
TOTREVCON	0.975542	0.951683	**0.017931876**	0.198566221	0.12541945	0.372298968
TOTREVSTDALO	0.94499	0.94499	**0.006951052**	0.07504004	0.105568459	0.186442746
RTLBNKREV	0.94255	0.8884	**0.013715066**	**0.042720173**	0.168430967	0.426771042
OPEXPCON	0.942737	0.888752	**0.032527077**	0.195101578	0.300335117	0.581872611
OPEXPSTDALO	0.960207	0.921998	**0.009317488**	0.070605536	0.147902541	0.240500085
OPPRO	0.944397	0.891885	**0.053759987**	0.29258272	0.277149807	0.531928153
NTPRO	0.528581	0.279398	0.527607505	0.795271039	0.700957427	0.299513384
COSTOINCOM	0.83557	0.698178	**0.059504738**	0.091790422	0.204186676	0.183373416
OPPROPCTWKFUND	0.884737	0.782759	**0.04079909**	0.118887509	0.193274236	0.139908203
BIZPEREMPLO	0.557203	0.310475	0.97751921	0.444788009	0.746562916	0.602973399
PROPEREMPLO	0.557407	0.310703	0.417597976	0.673529487	0.636271573	0.269178737
TOTEMPL	0.86566	0.749368	**0.018071047**	**0.06260257**	0.396645876	0.263411565
OFFICEREMPL	0.930208	0.865286	**0.00747793**	0.063474039	0.311224926	0.218492853
ASSISTEMPL	0.883581	0.780715	0.070869514	**0.029067248**	0.293511658	0.272705934
SUBSTAFFEMPL	0.546705	0.298887	0.211755302	0.81404596	0.802210252	0.760473873
ROA	0.804672	0.647498	0.23508563	0.586854533	0.353950016	0.153487409
ROE	0.746363	0.557058	0.310776284	0.668804452	0.428383605	0.179315874
EPS	0.912441	0.832549	0.61934608	0.182673514	0.720915893	0.993798388
DEPOSITS	0.916038	0.848869	**0.012228124**	0.101779013	0.180504836	0.270275077
ADVANCES	0.952018	0.913632	**0.004069047**	**0.040557054**	0.074094556	0.137866619
NETNPAT	0.545497	0.181895	0.886749894	0.97101017	0.343474897	0.260262603

4.0 Conclusion

Even though, the digitalization is difficult both to quantify and to differentiate from general innovation(Fritzsh et al., 2020). The impact of digitalization was observed but there are other factors which may responsible for the better financial of the company. The higher the company is concerned about digitalization, the higher the impact can be observed on the revenue, advances, deposits, reverence and number of customers. On the other hand, the RoA, RoE and number of employees were observed less effected due to digitalization. This study is limited to SBI only so studying a greater number of banks can give more clarity on the impact of digitalization on the performance of the Bank.

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Impact of Application of New Areas in Project Management 4.0, India

Isha Sharma and Dhwani Bhavsar***

ABSTRACT

Project Management exists way before it has come into existence officially. The making of Pyramids of Giza, Great Wall of China, and Coliseum are all some good examples of project management.
The evolution to project management has started around the year 1950, when companies started working with project management tools. Later in the 1970s and 80s some software was developed and gave rise to technological advancement. In the 2000s when the Internet arrived the new project management 2.0 was born, it has increased collaboration between the team members directly by using the project management software's.
PM 2.0 = PM 1.0 + collaboration.
The new age when there was an explosion of mobile phones that had been named the era of Project Management 3.0, the use of mobile devices had given increased efficiency in collaboration, mobility and so on.
Project management 4.0 has been defined as the fourth industrial revolution i.e., Industry 4.0, which mainly focuses on the technological tools keeping in mind the fourth industrial revolution. The main focus areas for Project Management 4.0 are the management of time, cost, quality, project team, communication, project risk, procurement and risk.

Keywords: *Project management; Technological tools; Industry 4.0; Collaboration.*

1.0 Introduction

The various advancements that have been made in the IT industry have been used in various fields of different industries and become a part of their development.

The emergence of Project Management 4.0 has come up with the evolution of Industry 4.0. This fourth industrial revolution is based on both, human-machine communication and machine-machine communication. The introduction of cobots, robots that will be with humans and not necessarily replacing them is the main manifestation of Industry 4.0, i.e., fourth industrial revolution.

A key project should have:

On a primary basis it should identify its stakeholders, its primary target market and final beneficiaries.

Clearly defined planning, implementation process and financial arrangements. ● A support system that monitors and evaluates the performance of the project.

A project should have an appropriate amount of finance and an economic analysis, that will indicate how much cost benefit it will be giving in future.

According to PMBoK (sixth edition) The life cycle of any Project looks like:

Initiation: It is a process that defines a new project or a new phase of an existing project by obtaining to start a new project or a new phase.

Planning: The process that is required to define the scope of the project, clarify the objectives and outline the course of action required to achieve the project's objectives.

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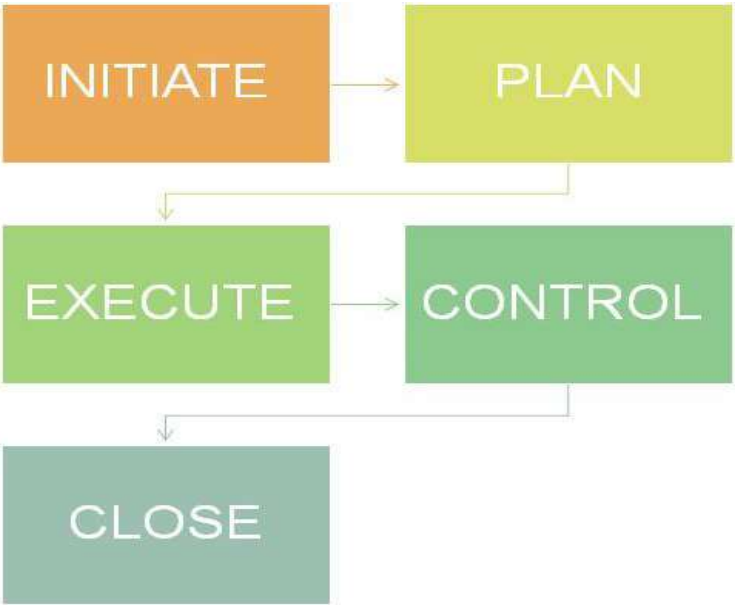
Execution: Those procedures used to execute the task outlined in the project management plan in order to meet the project's requirements.

Controlling & Monitoring: Those processes that are required to track, review, and regulate the project's progress and performance; identify any areas where adjustments to the plan are required; and implement the necessary changes.

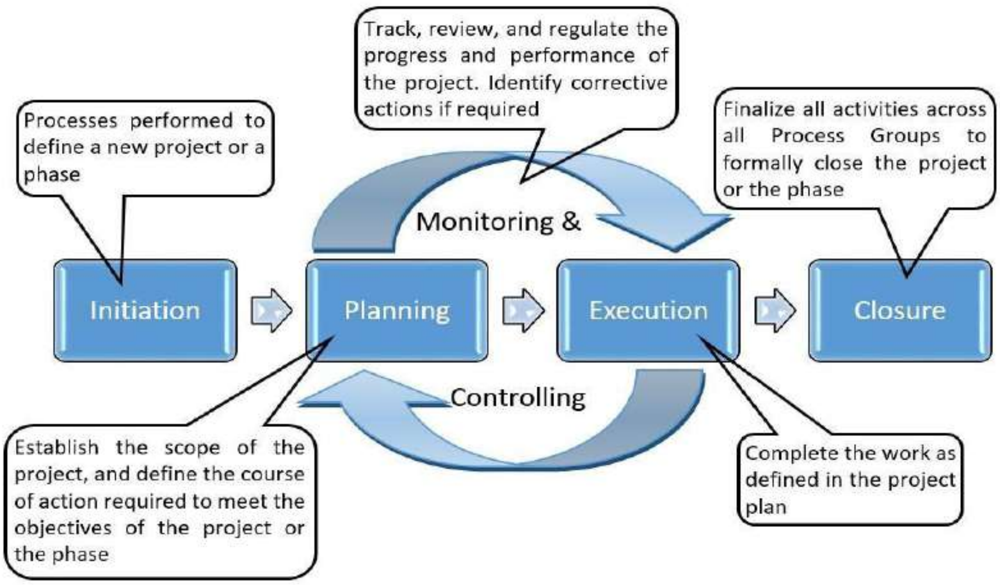
Closing: These processes are used to formally finish a project or phase by completing all activities across all Process Groups.

Figure 1: Life Cycle of Project



Source: PMBoK

Figure 2: Boundaries of a Project



Source: Goggle

Figure 3: Core processes of Project Management or Knowledge Areas

Source: Google

2.0 Project Management 4.0

The Project Management 4.0 concept intends to concentrate the principles of Industry 4.0 to Project Management Cycle Operations. Industry 4.0 entails bringing together all sophisticated biological, technological, and industrial automation research in order to improve our current way of life.

A new approach to how we use natural resources and, of course, a new way to improve our current way of life. In today's competitive environment, Industry 4.0 has become a requirement.

We must integrate Industry 4.0 principles such as decentralised decision-making, interoperability, technical assistance, alternative energies and new materials, nanotechnology and artificial intelligence, robotics, the Internet of Things, autonomous vehicles, and 3-D printing into project management to achieve success.

Principles to Project Management 4.0:

- Decentralised decision making.
- Analysis and Team Management using an interdisciplinary approach.
- Technical assistance.
- New materials and alternative energies.
- Mobile assistance.

2.1 Decentralised decision making

Decision making in the project management cycle plays an important role in achieving the objectives. A decentralised decision-making process makes it easier to work in teams because it gives authority to a larger group of people to make decisions. It helps involve lower-level workers, functionaries and executives in the decision-making process.

Analysis and Team Management using an interdisciplinary approach: For successful project management in traditional Project Cycle Management, we use need analysis, target analysis, and stakeholder analysis. Interdisciplinary analysis for productivity and sustainability is part of the Project Management 4.0 strategy. When doing these analyses, the team should include a technical expert, a sociologist, an economist, a software professional, and other necessary experts. The project preparation stage benefits from a variety of perspectives and paradigms. A project management team comprising various specialists and stakeholders must be constituted. Networking or say interactive Ness will be possible in this case.

2.2 Technical assistance

Technical assistance means sharing information and expertise, transmission of working knowledge, instruction, skills, training and consulting services. Mobile applications, cloud storage, smart technologies, and project management software are all part of Project Management 4.0's technical aid for project management.

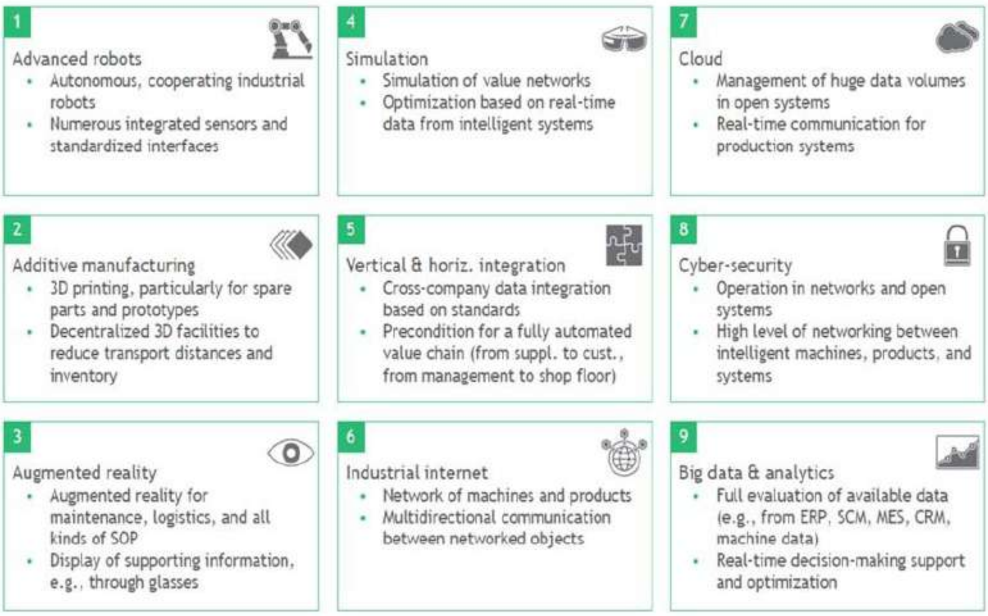
2.3 New materials and alternative energies

Energy usage, climate change effects, waste management, and consumption effects are all considered in the Project Management 4.0 methodology. In all the phases of projects, we use preferable energy technologies, climate change mitigation ideas, and waste management terminology.

2.4 Mobile assistance

Project Management 4.0 has shown us the importance of mobile technology and software’s. We’ve found that having frequent and extensive meetings reduces productivity and motivation in workers. For our tasks and deadlines, we employ project management and team planning software. We use mobile devices to check tasks, decentralisation (role distribution), and deadlines.

Figure 4: Future Scope of Project Management



Source: PMBoK

3.0 Literature Review

The area of Project Management 4.0 has not been explored that much. All the literature that we have gone through are about either Project Management in Industry 4.0 or about the Risk Factors but much details about the fourth revolution in Project Management has not been talked about.

Project management 4.0 has become a part of discussion after the advancement made in Industry and Industry 4.0 has come. In this paper we have focused on the new areas where Project Management 4.0 will be giving more emphasis and what will be its impact in the near future. All the papers published during the recent times focus more on the changes occurring during Industry 4.0 on Project Management and Project Managers. However, the working of a project is a very complex process and the changes that have come during this revolution has made it more complex as technology is working along with the human resources.

The aim of this paper is to present the framework of future scope of project management, its applications and impact in this fourth revolution.

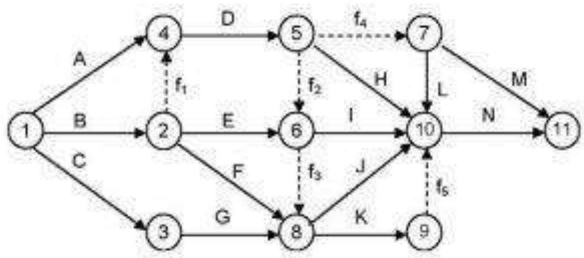
4.0 Research Methodology

The contribution this study aims to provide on how Project Management 4.0 can or should be applied to the new future scope of Project Management. Based on this methodology of the study and the observation, the role of Project Management 4.0 in the new areas is still unexplored.

From the review of past literature, we have found that Project Management has been explored much from the point of view of Industry 4.0 and not particularly Project Management 4.0, which is also the fourth revolution in the field of project. From “CEM Solutions”, we have found that the origin of Project Management is in between 1900s and 1950s Work Breakdown Structure and Gantt Chart, by Henry Gantt was also introduced. Both are playing a key role in all project management software’s like Primavera Project Management and Microsoft Project.

The second era came in between 1958-1979. This was the time when CPM/PERT and Material Requirement Planning were introduced. The additional improvements were in schedule planning and controlling through network techniques.

Figure 5: CPM/PERT Network Diagram



Source: CEM Solutions

In between the 1980s and mid 1990s was the time when the IT/IS sectors were rising up in the market and has given a major contribution in building up the high proficiency controlling and overseeing the projects through multitasking computers. The major thing which had happened in this era was the opinion to originate changing in project management’s system, inclusion of the functions of the project such as scope, risk, procurement, communication, risk and human resource in time and cost, different ways to deal with the project and product life cycle, more focus was also given to the external environmental factors and stakeholders.

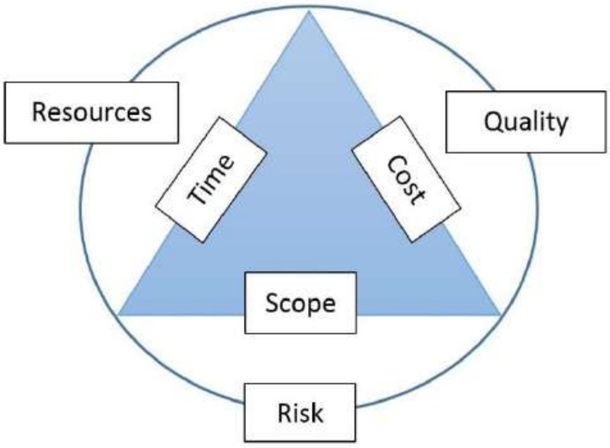
The current era, the fourth revolution in project management, relies mostly on the internet and technology. This helps industries to be more efficient, profitable and adequate in achieving their particular objectives and parallelly helps the project manager in handling different aspects of the project in a well-organized and productive way.

This fourth era of Project Management is mostly technology based, working of human resources has been limited to certain extent, more to technological experts and machine experts will be needed in future to handle the software’s of Project.

This advancement of technology in Project Management will be giving industry a boom and will be providing interesting working areas to the future generation that too will be technology based.

5.0 Constraints of Project Management

Figure 6: Constraints of Project Management



Source: Google

It includes when should the output be delivered? Time constraints include planning and defining activities as well as rearranging the activities in order and estimate resource requirements.

Cost:

It says how much money is available to achieve this outcome? Cost constraints include estimation of cost for the project, preparation of budget for the activities that have to be covered in the project. To complete the project in estimated cost preparation of budget and cost controlling is necessary.

Scope:

It guides to milestones, goals and to the objectives of the project. To keep the scope according to the project is important or else scope creep will likely happen.

Resources:

Who and what is required to do the work is narrated by the resources? Resources are always limited, how to utilise it depends on the project team working for the project. To get the maximum output from the limited resources available is the main task of the team.

Risk:

What can go wrong and what can be done about it, is what risk talks about. To be prepared for risk constraints, a backup plan has to be there so that the project will not stop and the team can grab any opportunity that comes their way.

Quality:

How does the outcome match expectations? To overcome this constraint the manager has to make sure that the project team will work as efficiently as it can so that the defects could be minimised and the desired outcome would come.

6.0 Conclusion

From the above research we have found that the future of Project Management has a wide scope. As it has many versatile fields it can work on and that are all technology based. All the four phases of project management are upward graphing. It has improved and improved, whether it is related to techniques or technologies.

As the new version of Project is going to be based on technology it should be more focused on its safety as digital threats are more likely to happen. It should work like it would be able to keep the data secured from data leaking and theft.

Successful project can only happen if the team will work on all the factors equally which are risk management, issue management, budgeting, time management, cost and resource management.

This new system of handling the projects with the help of modern technology and with the new methods is slowly replacing the traditional system of project management which is helpful in reducing the complexity of the project.

In this digital era every industry must adopt new technology so as to cope up with the present environment and be competitive in the market. This will reduce the risk and also will help in achieving the new milestones.

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Consumer Engagement on Social Media – Youth Perspective

Jayprakash Lamoria and Tushar Pradhan***

ABSTRACT

Social media is buzzing around and people around playing tune to it. People voice their opinions and experiences of brands/products on social media. The research paper looks at the consumer engagement of youth on social media and attempts to measure the usage of social media respecting consumer goods viz. convenience, shopping, consumer durable and unsought goods. It further assesses the usage of social media respecting purposes viz. getting information about brands/products, referring reviews, recommending brands and offering feedback considering WhatsApp, Facebook, Twitter and LinkedIn from youth perspective.

Keywords: *Social media; Consumer engagement; Youth perspective; Convenience; Shopping; Consumer durable and unsought goods.*

1.0 Introduction

Social media is buzzing around and people around playing tune to it. People voices their opinions and experiences of brands/products on social media (Zaglia, 2013; Chen et al., 2013). Social media becomes center of the sharing of knowledge in terms of subjective and/or objective forms ((Okazaki et al., 2015). Customers' statements on a product or company are available on the Internet to a wide range of people and institutions (Hennig-Thurau et al., 2004, p. 39). The term "online engagement" is used to describe a multi-dimensional idea (Calder et al., 2009; Hollebeek et al., 2014).

How to engage the consumers in brand-related activities remains a major challenge for social media (Hodis et al., 2015; Moran and Gossieaux, 2010). They make it easier to translate customer interactions with brands and other consumers, social networking sites have become crucial in dealing with this problem (Morrison and Humlen, 2015). Social networking helps building brand communities ((Trusov et al., 2009) later on affects judgement of products (Lee and Youn, 2009). Credibility perceived by people influences people ‘s communication process (Chu and Kim, 2011; Matute et al., 2016; Teng et al., 2014). So, marketers look for credible social media for delivering the messages (Levy and Gvili, 2015).

The present research attempts to study the youth’s engagement on social media considering consumer goods and purpose of uses of social media empirically.

2.0 Literature Review

Consumer engagement beyond transactions may be the behavioural manifestations of brand (Van Doorn et al., 2010, p. 254). It's a psychological state brought on by interactive, co-creative customer interactions with a focal agent/object, such as a brand (Brodie et al., 2011, p. 9). While it can be a series of actions that customers engage in to interact with others and communicate about brands, it can also be a set of activities that consumers engage in to interact with others to communicate about brands (e.g., Shin et al., 2016; Rossmann et al., 2016).

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Consumers remain engaged in giving, sharing, recommending brand reviews (Van Doorn et al., 2010). Consumer engagement can be attributed to co creation value and experience of consumers. (Brodie et al., 2011; Liou et al., 2016).

Consumer engagement can be explained through cognitive dimension (Thought process during the consumer and brand interaction for brands), emotional dimension (Extent of affection towards brands), and behavioural dimension (Brand centric activities of consumers) (Hollebeek et al., 2014). Receiving, commenting, enjoying, or sharing product/brand information to others via social media is referred to as consumer engagement (Interactive Advertising Bureau, 2009).

Sense of involvement and connect by offered by the channel affects the consume involvement (Calder and Malthouse, 2008). Attributes of social media facilitates interaction and participation of consumer with others of brands (Levy and Gvili, 2015; Steffes and Burgee, 2009).

What drives the consumer engagement includes concerns about merits and demerits of brands, enriching and detrimental aspects of brands in social media circle (Van Doorn et al., 2010). Such attributes are contingent upon the

Communication channel (Loiacono, 2015). Active use of social media enhances consumer brand engagement (Rossmann et al., 2016).

Individuals' expected utility of an action or behaviour, according to expectancy value theory (EVM). The assumption that an action/behaviour has specific properties and the evaluation of those traits are the underlying factors of EVM (Fishbein and Ajzen, 1975). Evaluated qualities influence an individual's intention to behave in a certain way, which leads to that behaviour (Fishbein and Ajzen, 1975; Henning et al., 2012). The applied aspect of EVM can be seen in customer loyalty enhancement (Hur et al., 2011), consumer response to social media advertising (Loda, 2014; Dao et al., 2014), and word-of-mouth (Smith and Vogt, 1995).

Expectancy value theory is used to improve client loyalty (Hur et al., 2011), consumer response to social media advertising (Loda, 2014; Dao et al., 2014), and word-of-mouth (Smith and Vogt, 1995).

2.0 Objectives

- To study the consumer engagement of youth on social media
- To measure the usage of social media respecting consumer goods
- To assess the usage of social media respecting purposes

3.0 Hypotheses

- HO_1: The consumer engagement of youth on social media is not greater than low (i.e., 2)
- HA_1: The consumer engagement of youth on social media is greater than low (i.e., 2)

- HO_2: The usage of social media respecting consumer goods is not greater than low (i.e., 2)
- HA_2: The usage of social media respecting consumer goods is greater than low (i.e., 2)

- HO_3: There is no significant difference in usage of social media respecting purposes
- HA_3: There is significant difference in usage of social media respecting purposes

4.0 Research Methodology

- Research Design: Descriptive Research Design
- Source of data: Primary and Secondary

- Data collection Method: Online survey through Google form
- Population: Youth aged 18 to 26 years in Gujarat
- Sample size: 182 respondents
- Sampling plan: Convenience sampling
- Sample unit: Youth aged from 18 to 26 years
- Data collection tool: Structured questionnaire

5.0 Limitations

- Data collected through online survey
- Data collection restricted to youth only
- Sample size is small

6.0 Analysis and Interpretation

Profile of Respondents

Attributes	Particulars	Numbers	Percentage (%)
Gender	Male	105	42
	Female	77	58
Age	18-20 Years	32	18
	21-23 Years	139	76
	34-26 Years	11	6
Education	Post Graduate	85	47
	Graduate	97	53
Employment	Student	87	48
	Job	95	52
Place	Gujarat	88	48
	Others	94	52
Annual Family Income	Less than 1.25 Lakhs Rupees	53	29
	1.25 Lakhs to 3 Lakhs Rupees	57	31
	More than 3 Lakh Rupees	72	40

Total 182 respondents have participated in survey. Majority of them have been from the age group of 21 to 23 years. Respondents have either graduate or post graduate background. A quite similar number of the respondents have engaged in studying or job. Respondents have been more or less in same numbers from Gujarat and other states. Majority of the respondents have family income more than 3 Lakh rupees.

- **Users of social media**

Social Media	WhatsApp	Facebook	LinkedIn	Twitter	Others
Respondents (Numbers)	181	108	87	48	43

Majority of the respondents have used WhatsApp and Facebook and followed by LinkedIn, Twitter and Others.

- **Time spent by youth daily on social media**

Less than 1 hour	1 to 3 hours	More than 3 hours
46	109	27
25%	60%	15%

Majority of the respondents have used social media daily from 1 to 3 hours followed by less than 1 hour and more than 3 hours.

- **Rank based on usage of social media for different consumer product categories**

Particulars	1st Rank	2nd Rank	3rd Rank	4th Rank
Convenience Goods	40	40	37	65
Shopping Goods	65	63	35	19
Consumer Durable Goods	38	40	63	41
Unsought Goods	41	41	38	62

Maximally social media has been used for shopping goods followed by unsought goods, consumer durable goods and convenience goods.

- **Purpose of the use of social media**

To get information about the brands (product, price, place, promotion)	To refer to reviews	To recommend the brand	To offer the feedback
155	72	36	38

Majority of the respondents have been using social media for getting information about the brands (product, price, place, promotion and then next for referring to reviews.

- **Use of social media for convenience goods**

Particulars	Very High	High	Moderate	Low	Very Low
WhatsApp	78	42	41	18	3
Facebook	20	40	58	25	39
LinkedIn	12	38	55	41	36
Twitter	12	28	51	49	42

For convenience goods WhatsApp has been used much more than rest others. Yet Facebook has been ahead than LinkedIn and Twitter.

- **Use of social media for shopping goods**

Particulars	Very High	High	Moderate	Low	Very Low
WhatsApp	43	35	62	23	19
Facebook	20	31	53	38	40
LinkedIn	12	22	47	49	52
Twitter	13	26	43	52	48

For shopping goods WhatsApp has been used much more than rest others. Yet Facebook has been ahead than LinkedIn and Twitter.

- **Use of social media for consumer durable goods**

Particulars	Very High	High	Moderate	Low	Very Low
WhatsApp	44	39	63	22	14
Facebook	17	39	63	33	30
LinkedIn	6	28	51	58	39
Twitter	7	33	49	57	36

For consumer durable goods WhatsApp has been used much more than rest others. Yet Facebook has been ahead than LinkedIn and Twitter.

- **Use of social media for unsought goods**

Particulars	Very High	High	Moderate	Low	Very Low
WhatsApp	75	45	44	13	5
Facebook	25	42	57	28	30
LinkedIn	14	39	56	45	28
Twitter	14	28	55	48	37

For unsought goods WhatsApp has been used much more than rest others. Yet Facebook has been ahead than LinkedIn and Twitter.

- **Use of social media for getting information about the brands (product, price, place, promotion)**

Particulars	Very High	High	Moderate	Low	Very Low
WhatsApp	50	48	56	18	10
Facebook	38	42	57	32	13
LinkedIn	21	33	63	42	23
Twitter	21	38	63	42	18

WhatsApp has been used more than other social media for getting information about the brands (product, price, place, promotion). Face book has remained on second and followed by Twitter and Linked in.

- **Use of social media for referring review about the brands (product, price, place, promotion**

Particulars	Very High	High	Moderate	Low	Very Low
WhatsApp	43	47	59	17	16
Facebook	41	41	58	31	11
LinkedIn	15	35	53	45	34
Twitter	14	34	52	44	38

WhatsApp has been used more than other social media referring review about the brands (product, price, place, promotion). Facebook has remained on second and followed by LinkedIn and Twitter.

- **Use of social media for recommending the brands (product, price, place, promotion)**

Particulars	Very High	High	Moderate	Low	Very Low
WhatsApp	49	45	57	20	11
Facebook	37	41	58	33	13
LinkedIn	18	33	56	47	28
Twitter	19	34	55	45	29

WhatsApp has been used more than other social media for recommending the brands (product, price, place, promotion). Facebook has remained on second and followed by LinkedIn and Twitter.

- **Use of social media for offering feedback about the brands (product, price, place, promotion)**

	Very High	High	Moderate	Low	Very Low
WhatsApp	49	49	57	16	11
Facebook	35	37	56	35	19
LinkedIn	11	36	58	48	29
Twitter	12	38	58	46	28

WhatsApp has been used more than other social media for offering feedback about the brands (product, price, place, promotion). Facebook has remained on second and followed by Twitter and Linked in.

- **Rate your overall engagement on social media**

Particular	Very High	High	Moderate	Low	Very Low
Overall Engagement	4(2%)	11(6%)	65(36%)	64(35%)	38(21%)

Overall Respondents have considered their engagement on moderate or lower side.

- **Hypothesis Test based on t-test**

Hypothesis to Test	P-Value	T-statistic	Interpretation
The consumer engagement of youth on social media is greater than low (i.e., 2)	p-value is 4.50640e-13, (p(x≤T) = 1.00000). Since p-value is very small it supports H1.	The test statistic T is 7.691352 which is quite greater than T critical value of 1.6533 at 95% confidence.	There is significant consumer engagement of youth on social media.
The usage of social media respecting consumer goods is greater than low (i.e., 2)	p-value equals 0.00000, (p(x≤T) = 1.000000). Since p-value is very small it supports H1.	The test statistic T is 23.699877 which is quite greater than T critical value of 1.6533 at 95% confidence.	There is significant usage of social media respecting consumer goods

- **ANOVA for Usage Rating of social media for different purposes**

ANOVA - Single Factor Results	
Alpha	0.05

Groups	Count	Sum	Mean	Variance
To get Information about brands	182	768	4.22	0.82436
To refer to reviews	182	695	3.819	0.79015
To recommend the brand	182	640	3.516	1.00249
To offer feedback	182	589	3.236	1.23116

Source of Variation	SS	df	MS	F	P-value	F critical
Between Groups	97	3	32.33	33.6092	2.41E-20	2.617204
Within Groups	696.52	724	0.962			
Total	793.52	727				

Anova Interpretation: Since p-value is < 0.05 or F value is greater than F critical, null hypothesis is rejected and that the usage rate of media is different for at least one purpose for using social media.

6.1 Major findings

- Majority of the respondents have used WhatsApp and Facebook.
- Majority of the respondents have used social media daily from 1 to 3 hours.
- Maximally social media has been used for shopping goods followed by unsought goods, consumer durable goods and convenience goods.
- Majority of the respondents have been using social media for getting information about the brands (product, price, place, promotion and then next for referring to reviews.
- Majority of respondents use WhatsApp and Facebook for convenience goods, shopping goods, consumer durable goods and unsought goods.
- Majority of respondents use WhatsApp and Facebook more than Twitter and LinkedIn for convenience goods, shopping goods, consumer durable goods and unsought goods.
- Majority of respondents use WhatsApp and Facebook more than Twitter and LinkedIn for getting information about the brands, referring to review of brands, recommending brands and offering feedback of the brands
- Overall Respondents have considered their engagement on moderate or lower side.
- The consumer engagement of youth on social media is greater than low (i.e., 2)
- The usage of social media respecting consumer goods is greater than low (i.e., 2)
- There is significant difference in usage of social media respecting purposes

7.0 Conclusions

- Majority of respondents are active on WhatsApp and Facebook and spend 1to 3hours daily. They consider their use of social media as moderate or lesser than that.
- Respondents use WhatsApp and Facebook more than Twitter and LinkedIn for convenience, shopping, consumer durable and unsought goods.
- Respondents use Majority of respondents use WhatsApp and Facebook more than Twitter and LinkedIn for getting information about the brands, referring to review of brands, recommending brands and offering feedback of the brands.
- Consumer engagement on social media and usage of it for consumer goods is significant. At the same time there is significant difference in usage of social media respecting purposes.

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A Review on Green Supply Chain Management

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ABSTRACT

Green Supply Chain Management (GSCM) is an environmental concept that integrates environmental factors to supply chain management. The purpose of this study is to review the latest features of GSCM and to develop a new directional area for this growing topic for this growing topic. Complete reviews are used to compile content and additional research. The focus of the review is on the development of GSCM in India, and includes all applicant researchers environmental and social feasibility in SCM and operations. It points out the lack of courses to investigate the adoption, implementation and integration of GSCM processes explicitly in developing countries such as India. This paper focuses on secondary data which was available for analysis and review.

Keywords: *Green Supply Chain Management; GSCM; Environment; Close-Loop Supply Chain; Reverse Logistics; Reverse Supply Chain; Sustainable Supply Chain.*

1.0 Introduction

Supply chain covers all of those activities associated with transporting goods from the raw material categories to the end user, proponents of the issued business process that dramatic increase in productivity can only occur in controlling relationships, knowledge, and the flow of material across all business boundaries. In other words, SCM are managers who integrate the practical movement of goods and related information, from purchasing to final use, customer enrichment, and economic value.

Carbon emissions are considered one of the key factors when it comes to making economic growth sustainable. In this framework, waste and emission from the supply chain have become major sources of major environmental problems. The GSCM exist as one of the latest ecosystems. Itnot only helps to improve the efficiency of the organization but also profits. Therefore, there is a huge scope in developing countries like India to embrace GSCM processes and organizational intelligence.

Through improvements in environmental efficacy, GSCM may become a source of competitive advantage for organizations. Enterprises may embrace the most environmentally friendly practises and set a model for non-green organisations to follow. While the pressure on value for money, bottom line, risk, delivery times, and flexibility is not going away. Environmental sensitivity has become a critical component of company’s functioning in order to achieve its objectives.

1.1 Green Supply Chain Management (GSCM)

Patrick Penfield of the Whiteman School of Management very fittingly defines Green Supply Chain Management as “The process of using environmentally friendly inputs and transforming these inputs into outputs that can be reclaimed and re-used at the end of their life cycle thus, creating a sustainable supply chain”.

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Organisations around the world continue to use hazardous chemicals, wasteful packaging, and transportation system that emit greenhouse gases that to add global warming. However, from the acquisition and production of building materials to the packaging, management and distribution, all stages of the supply chain offer opportunities to reduce waste and land pollution.

Here recycling and effective and efficient use of resources can essentially help in plummeting pollution. The companies should take note of the fact that GSCM actions can not only improve their performance levels but also help in safeguarding the environment.

1.2 Benefits of GSCM

The effects of GSCM extends to all area, both tangibly and intangibly. SCM roles, including environmental and societal ones, could be endorsed by GSCM traits which in turn could be categorised as, material, immaterial, and emotional. From the materialistic standpoint, GSCM would help lower environmental load on environment, in lowering cost for supplier, in lowering the cost for the producer, in lowering the cost of ownership for the client, and in declining consumption of resources for society. From the immaterialist standpoint, GSCM would be cooperative in overcoming prejudice and scepticism for the environment, in declining rejects for the supplier, in an easier state of manufacturing for the procedure, in creating a sustainable situation and cheerful atmosphere for the customer, and in satisfying for societal advancement.

Lastly, from an emotional standpoint, GSCM would help inspire the stakeholder towards the environment, in improving the image in suppliers' and producers' minds, assisting clients in feeling good about themselves and their quality of life, as well as putting industry on the right road for social good (Sorraya and Edie, 2008)

1.3 GSCM and CSR

GSCM is a recent initiative by firms, especially small and medium business, to strengthen supply chain management capabilities (Singh,2013). His would allow business to acquire the trust of all stakeholders, including customers, employees, shareholders, and entire communities.

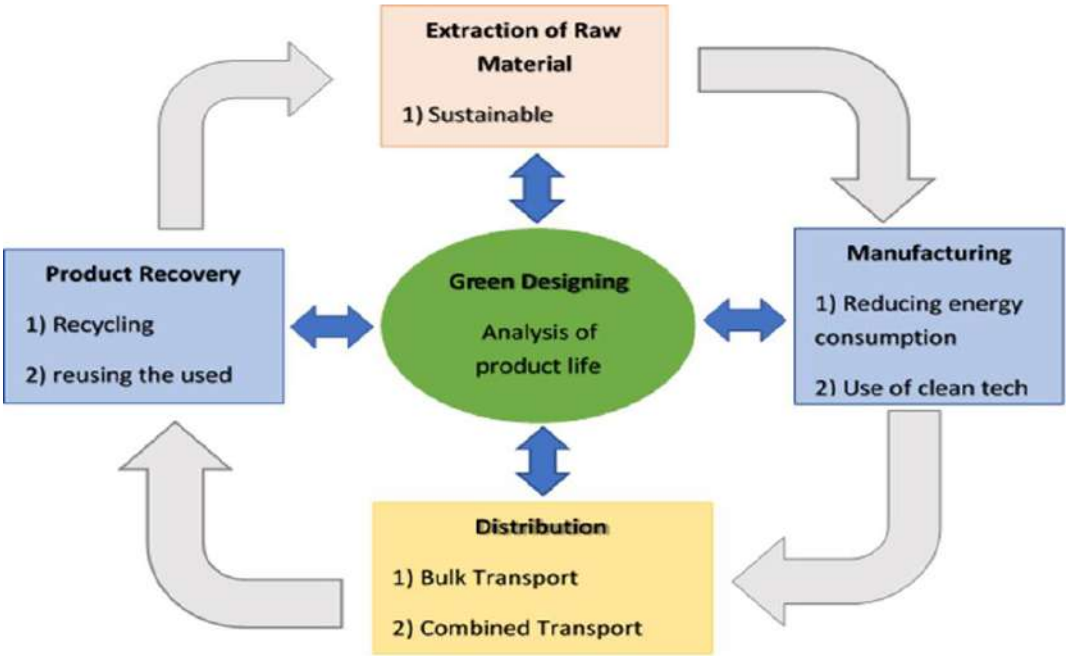
Furthermore, organisations have been urged to take responsibilities for teaching their executives to favour ecologically friendly goods and services. Following the above-mentioned devoted concerns would be difficult for prospective organisations and long-standing huge firms, but doing so would be a positive step in correct direction from three perspectives: reputation capital, eco-social perspective, and rights-based perspective (Ananda,2009).

The socio-environmental logic's stability and sustainability pave the way for the market's long-term viability. New generation firms and new-economy entrepreneurs are playing a pivotal role in putting this kind of thinking into reality, having instilled in them the value of being socially responsible. Such corporate endeavours would eventually lead to a reduction in poverty, which is primary cause of political instability.

As a result, to prevent a condition of political uncertainty that is detrimental to business, firms should implement policies that emphasise on "eco-social" approach (Ananda, 2009). From an eco-social standpoint, corporate social responsibility (CSR) can be considered as both a value and a strategy for ensuring the business' long-term viability.

GSCM =	Green purchasing + Green manufacturing/ material management+ Green Distribution/ marketing + Reverse logistics

Figure 1: Phases of Green Supply Chain Management



Source: Self-understanding of topic

2.0 Literature Review

Until now, there have been few research on sustainable supply chain management, often known as GSCM. Some researchers have aimed to explore the topic.

[1] Shang et al. (2010) researched environmental engagement, green marketing, stock and suppliers, eco-designing, green production, packaging and other aspects of GSCM. The findings suggested that companies that against their opponents, green marketing has become a successful competitor. [2] Wang et al. (2009) created a system to identify clients ready to pay extra for green products, recognising consumer behaviour toward green products to be a major commercial concern.[3] Yuang and Kielkiewicz Yuang (2001) gave an overview of existing techniques in supply chain network, [4] Ramudhin A. et al. (2010) offered a strategic planning model and emphasised the relevance of internal and external control mechanism to decision-makers.

Green supply chain management: pressure, practises, and performance in the Chinese automobile industry was studied by [5] Qinghua Zhu in 2006, and he found that increasing pressure from various stakeholders had prompted to improve both their economic and environmental performance, Chinese car SCM should evaluate and adopt GSCM struts. [6] Lamming and Hampson (1996) the notion of effective environmental management was investigated and related to procurement management techniques such as retailer audits, SCM strategies, procurement policy formulation, and working with suppliers to improve.[7] Chung-Hsiao investigated GSCM techniques in electronics sector in 2008, stating that while there were various proposals to implement GSCM, no investigations on the reliability and validity of such process were investigated in the electronics sector. According to results, the firms considered supplier management performance to be a critical factor in implementing GSCM. GSCM practices implementation was conceptualized by [8] QuinghuZhu et al. (2008) as embracing multirole dimensions of practices such as Green Procurement, Internal Environmental Management, Eco-design, Customer Cooperation, and Investment Recovery.

[9] Fengfei Zhou in 2009 studied the implementation of raw materials procurement management in the textile industry and saw that GSCM could be very helpful in resource utilization

and also provided a special reference for how to use GSCM in specialized industrial operations. A decision model for measuring the environmental practices of suppliers using a multidisciplinary approach was devised by Handfield et al. (2002) [10].[11] Walton et al (1998) tagged the magnitude of certain changes to maximize the influence of acquisition on environment outcomes.

GSCM is a novel concept in the Indian context where there were a few studies conducted by researches and therefore the concept is slowly speeding. In addition, new and old companies recognize the importance of GSCM's practices of increasing their loyalty to stakeholders in order to keep the business afloat. There have been many lessons about it. Some of them are printed as follows.

[12] Srivastava (2007) highlighted the concept of operational planning that gives GSCM a new angle of integrated and new research. The literature review began with concept of GSCM, followed by the division of GSCM based on the context of the problem in the area that had a significant influence on sales. It also categorized GSCM based on accepted process and method. Various mathematical tools/strategies/maps have been used in the literature according to GSCM scenarios. [13] Goknur et al. (2010), in their study, provided a critical literature review of the performance of the supply chain. The research also followed basic research method; related to the problem in asset sales and provided sound solution for better performance management in new procurement times. The study focused on procurement management and took into account the relevant data in such areas such as service delivery, IT, operation and management of business processes. [14] Rajesh Nair et al. (2010), highlighted green marketing in the automotive sector focusing on the perception of Indian Customer in green vehicles and the analysis of the demand gap. Identify area for the development of green makers that need to focus on them. In addition, it includes the most internationally accepted methods that can be used in India as well to increases the level of acceptance of green cars in essence to achieve a frugal competitive edge. [15] Deepak Bhagat et al. (2011) investigated critical issues involved in agricultural procurement management while conducting in-depth research on various aspects of the agricultural business. The study also provides insight into various research models that have demonstrated a good understanding of performance, communication and relationships in the supply chain of agriculture.

[16] Rakesh Rajpal, B.K. Roy and Pawan Kumar (2011) have studied the impact of green on procurement management. In addition, various barriers and opportunities were identified and evaluated from the study although Indian business regulatory, competitive and marketing pressure and forces have enhanced their environmental awareness, but this knowledge has never been transferred into GSCM's practice execution. [17]Moloy Ghosh (2011)highlighted in his paper the principle and ideas of green advertising, which are part of GSCM. This paper emphasised the importunate of raw marketing; explorers some of the reason why organizations are interested in adopting a green marketing philosophy. In addition, it outlined some of the problems the organization may face in order to exploit its raw marketing and its management implications as well as a few points of litigation. [18]Nimavat Dheeraj and Namdev Vishal (2012) focus on dealing with companies and their need to meet environmental and distribution policy requirements and distribution activities. They also integrate India's EPI with activities such as raw purchasing, manufacturing, marketing, recycling.

[19] Kottala Sriyogi (2012), in his study, proposed a method of calculation of procurement measure, their quality interpretation, and the general marking of the internal supply chain w.r.t. financial perspective. This paper emphasised that there is a strong link between SCM and the financial success of the companies that operates most in SCM. This is a concept paper that encourages business houses and administrative institution to reflect on their role in achieving sustainable developments through green advertising.

3.0 Research Background

The idea of buying green is a new concept, appearing in the latest sections of the book. While this was very important to the business, it was introduced recently and now the textbooks on environmental issues are still limited.

"Sustainable Development" is a key concept as discussed at the 1992 World Summit in Rio, in order to create long-term economy, governments and other international bodies resolved to adopt actual steps to safeguard the environment. The aim of today's agenda is to boost environmental usage and production in essence to improve environmental quality, alleviate poverty, and spur economic growth by providing improves health, working conditions, and long-term sustainability.

The researcher looked at green procurement management, including pressure and performance, in the Chinese automotive sector, and found that increasing pressure from variety of sources had prompted Chinese vendors to initiate managing GSCM and greenhouse gas management policies in essence to improve their economic and environmental processes.

4.0 Objectives

The rapid and continuous growth of India's industries could be manufacturing, IT, chemicals etc. has posed significant challenges to energy security. The sector's concern for the environment is very limited and information on GSCM practices is limited. There are a few Indian companies that follow the environmentally friendly GSCM system. Difference in acquisition rates have some retailers use ecological methods such as green buying and eco-design.

Indian manufacturing companies have experienced an increase an environmental pressure while at the same time recognizing the multiple benefits and incentives to green their supply chain. Therefore, GSCM practice have emerged as a systematic way in India to measure the economic and environmental sustainability of firms. Research is trying to highlight the advantages of using the concept of GSCM. It also seeks to recognize the need to promote and facilitate the implementation of GSCM projects to increase the competitiveness of Indian industries. A GSCM project selection study was conducted in collaboration with national and international companies in the development of GSCM strategies. Lastly, the aim is to understand the problems, latest trends and challenges associated with GSCM and the benefits associated with participating participants.

5.0 Research Methodology

The research is based in information gathered from reviews of various journals, articles, research papers, magazines, etc. Numerous innovative processes were considered in business, industrial, and cooperative environments. An in-depth study of the various companies' plans for GSCM has been conducted and appropriate recommendation have been obtained.

5.1 Challenges

Doing GSCM is not so easy. Organization may face certain challenges, some of which include:

- Cost is said to be major problem in implementing GSCM.

Generally, Companies usually use any new technology or process where they can see results in unambiguous terms. But since GSCM is a naïve concept, it has become increasingly difficult to exploit any measurable data to test the value of the value chain.

- There is a need for right technology to be used to complete the business with Green Practices.

Lack of green architects, consultants, green engineers, regional contractors. Due to the shortage of green workers, organizations are afraid to continue investing. An important feature of GSCM is the integration of reusable products. It is a major challenge for many companies to integrate waste (recycled) as recycling materials for recycling facilities.

Another challenge is the fear of failure. Organization is not confident that the green program will lead to success or failure.

- Lack of awareness about implementation process, regulation and best practices.

The most important factor in implementing the GSCM system is the support and commitment from senior management but unfortunately due to lack of confidence in the original thinking and investment, senior management became alarmed at the use of crude practices.

- Since transactions have a large number of participants, the doubts of anyone's acceptance and involvement in the design and technology process affect the performance of the entire series.

Finally, due to a lack of customer awareness about GSCM and Green products, companies are reluctant to continue to do so.

5.2 Indian Context

India is an important destination for the global economy. The availability of natural resources, low production costs and a large number of skilled workers make Indian business an attractive partner in international companies. With duplication of global supply chains due t impact of COVID-19, India continues to be on the radars of international companies as they look to build strong supply chains that can meet current and future business needs

India has promoted 10 places in the latest World Bank rankings for trade freedom, from 111 in 2019 to 101 of the 195countries in September 2021. Business changes over the past few years have helped India gain the position. Many Indian states hold consultation and meeting with international organizations to discuss investment opportunities and business growth in India. From April to July 2020, India has attracted investment and pledges from 15 companies to $20 bn.

Within the country, there is a growing emphasis on the campaigns in the Make in India campaigns and the Self-Reliant India of Prime Minister Narendra Modi and a deeper focus on regional integration strengthening frugality in the supply chain of Indian Supply Chains. Under the India-Reliant India Campaign, a vision known as Aatma Nirbhar, a special economic package was released by the government in May 2020.

The idea is to provide financial support to the industry to help business manage the effects of COVID-19, return to work at first opportunity and increase the range of industries to get more business as they open up operations. In addition, the aim is to attract investment and create more opportunities for Indian business to become part of the global supply chain.

5.3 Indian Companies following GSCM

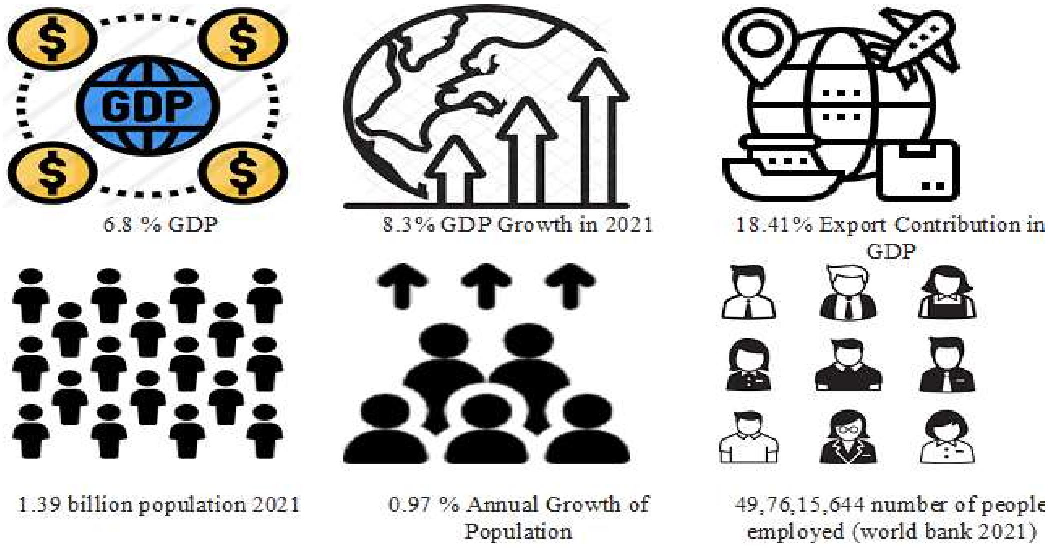
5.3.1 ITC Ltd.

Nowadays, the consequences of global warming and hateful climate change are threatening threats to sustainable economic growth and long-term business. To address such threats, the ITC has transformed and implemented its plans for its integration strategy, keeping social and national priorities. Demonstrating their commitment, the ITC adopted a strategy similar to that outlined in the Indian Government's National Action Plan on Climate Change (NAPCC) to tackle climate change.

The ITC continues to peruse The Triple Bottom Line Approach that contributes to economic, environmental and social development ("ITC Sustainability Report", 2012). The establishment of Green Buildings is one of the most appropriate answers to these environmental challenges. The start of construction of the ITC Green Center in Gurgaon marked the entry of ITC into the green building organization. This marks the first step that ITC has taken in achieving its green goals. In addition, the

Green Center in Gurgaon received recognition as the largest LEED platinum area limited by offices in the world in 2004

Figure 2: Key statistics of India



Source: Data World Bank, (2019) https://data.worldbank.org/country/india

Recently, the new ITC building has been using raw materials that are being gradually developed in existing buildings and industries to meet green standards. This year, the Tobacco industry in Bangalore and Saharanpur has also received a LEED platinum rating from the Indian Green Construction Council and all major ITC hotels are now LEED-certified green buildings with platinum standards, with exceeding 38% of ITC total energy intake from renewable sources and is expected to affect 50%in the next 4-5 years.

For more than 5 years the ITC has had a `strong solid waste recycling capacity'. It also launched a unique project-`Wealth out of Waste' (WoW), a re-awareness program through the `Reduce-Reuse-Recycle'. As part of this project, the ITC approach creates public awareness about the advantages of the `Reduce-Reuse-Recycle' process to protect the enjoyment, improves public health and hygiene as well as make inexpensive paper, plastic, metal and glass industries. The viability of resources allocation is emphasised by providing special bags for the collection of dry waste such as paper, plastic and metal thereby organizing their periodic collection b external agencies. The ITC has used waste paper and rest is sold to recycling industries.

Dry waste collection can save up to 40% of waste management costs, which can be used to improve public service. With the implementation of project in a way with families, it has begun to spread to school, government offices, companies and other bodies. The WOW initiative collected monthly increased to 26000 MT in 2011-12 from 100MT in2007.

5.3.2 Aditiya Birla Group

As one of Fortune 500 companies, the AB group was ranked first in the Asia Pacific and under the survey of `Global Top Companies for Leaders' ranked 4th, worldwide in 2011. The study, `Top Leaders' Companies, was conducted by Aon Hewitt, Fortune Magazine and RBL (HR and Leadership Advisory company), which is detailed study of organizational leadership. Of the total revenue from various companies and organizations in the group, 53% are contributed by overseas jobs. It has made its mark in 36 countries including Asia-Pacific, South-East Asia, Europe, Africa and North America (''Aditya Birla Group",2013)

The team is present in various fields that play a crucial part in each of the following areas: Production Manufacturers of the world’s cheapest aluminium and copper

- The Leading firm in Viscose Staple Fibre
- A leading factory in Carbon Black
- The fourth-largest manufacturer of protectors
- The fifth-largest manufacturer of acrylic fibre
- One of the top ten cement manufacturers

Outside of business, this group focuses on the commitment of the Social Work Organization to having respect for a society that sees its responsibility as a `Corporate Citizen’ (“CSR policy Report”, 2013).

The team does the following to achieve its goals of social responsibility:

- The group operates in 3,000 districts.
- For the community to start developing rural areas, the AB group reaches seven million people, led by Mr Rajeshree Birla. It is done every year.
- The group focuses on healthcare, education, sustainable livelihoods, infrastructure, and social transformation activities in India, Egypt, The Philippines, Thailand, Loas, Indonesia, Korea and Brazil.
- In addition, the AB group runs Scholl by providing education to 45000 children, among them 18000revice free education.
- Hospitals its 18 hospitals often expand to serve millions of rural people.
- The team has partnered with Columbia university in forming the Earth Global Institute of Columbia in Columbia, to fulfil its commitment to sustainable development.
- Has established FICCI Center – AB CSR Center for Excellence, Delhi to embed CSR commitment to its organisations as a way of life in full use.

5.3.3 L&T

Larsen & Toubro Limited (L&T) is a $14 billion-a-year engineering and construction company. The company is mainly involved in construction, heavy engineering, infotech etc. It is the first corporation in India to begin publishing sustainability reports. The organisation has incorporated a 3R Conception in its numerous initiatives, which stands for Reduce, Reuse and Recycle. L&T can now collect more than 23 million litres of rainwater. There has been a 6 percent reduction in rainwater usage, and wastewater has been discharged on 16 sites.

In terms of architecture, they’ve built offices that use electricity and the widespread use of renewable energy such as winds and solar energy in all their buildings. The company uses recycled material such as fly ash, crushed sand etc. The firm is constantly engaging in stakeholder engagement (internal and external) in identifying key material problems. The organization also promotes the use of video conferencing in internal meetings so that stuff travel is minimized and indirectly reduced vehicle use

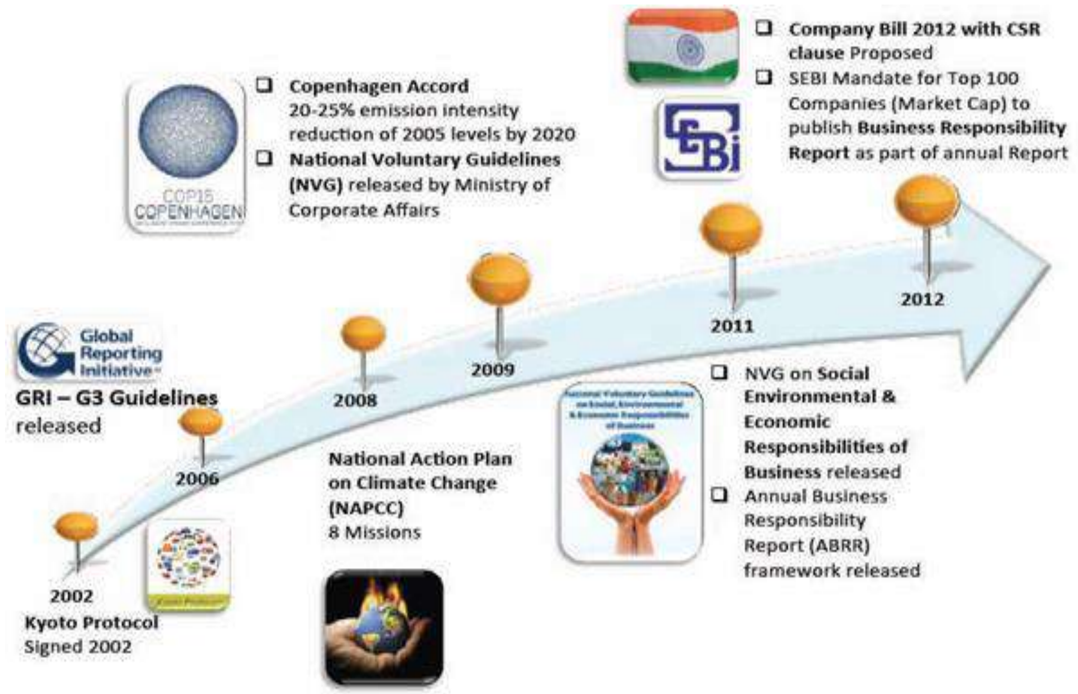
5.3.4 TCS

In all of its programs, TCS is dedicated to utilising ecological friendly products. TCS has extended the usage of renewable energy in its workplace as a result of its infrastructure. According to 2012-13 statistics, the quantity of solar water produced per day is around 86,600 litters per day, a 55 percent increase over the previous year’s estimates. The corporation also concentrates on purchasing raw materials from its vendors.

Some of the basic things like turning off computers at the end of the day, reducing the use of lights in many technologies such as installing frequency drivers. With the introduction of rainwater harvesting, sewage treatment plants and other water management systems TCS could lessen saltwater use by more than 13% compared to 2008 figures.

The biggest challenge for all IT majors is the issue of e-waste. Outdated/Obsolete computers are officially deposed of through government-approved renewable energy users. Promotion of video conferencing was conducted at all TCS firms to shorten the movement of staff in customer area by vehicles, thereby reducing greenhouse gas emissions.

Figure 3: Progress of India in terms of environment and sustainable issue



Sources: Company websites, Annual reports, CSR Reports, RT, Books & Company analysis

6.0 Findings

Table 1: Findings on mentioned companies

Company	Objectives		
	Reduction of Carbon Footprint	Reverse Logistics	CSR
ITC Ltd.	1) Green Building Construction 2) Achieving LEED-Platinum certification for green building	1) “Wealth out of Waste” approach 2) “Strong Solid-Waste-Recycling-Capacity” Policy	1) Rural Education 2) Public Healthcare
Aditya Birla Group	1) Advanced heat transfer enhancement 2) Thermography	1) Waste heat recovery 2) Man-Made cellulosic fibre (MMCF)	1) Free rural education & awareness 2) Free rural healthcare & awareness 3) Awareness towards anti-social norms of society
L&T	1) 3-R policy “Reduce-Reuse-Recycle” 2) Rain water Harvesting 3) Solar energy	1) 3-R policy 2) Reuse of Fly-ash and crushed sand	Collab with communities, institutes and NGOs to promote skill development and health & sanitation awareness

TCS	1) Use of Renewable Energy 2) Solar water 3) Use of Star-Rated appliances 4) Rainwater Harvesting	1) Smart tagging for track-and-trace operations 2) Autonomous vehicles & drones for faster shipping and returns	1) Education and skill development programs 2) Healthcare and wellness programs
ONGC	1) Energy-Efficient Crematorium 2) Replacement of traditional heating equipment 3) Reduction of wood consumption 4) Reduction of Air & Water Pollution	Advanced and efficient heat transfer equipment's	1) Girl-Child development programmes 2) Protection of Heritage Sites (UNESCO)

Source: Self-analysis on various report published by companies

7.0 Recommendations for GSCM

7.1 Biomimicry

The emerging fields of biomimicry (or biometrics) has spawned new technologically engineered technologies at both macro scale and nanoscale levels. Companies need to test this method of efficiency and sustainability as well

7.2 Product and Environmental Friendliness

Companies must use parts of environmentally safe products and finished products. Consumption of perishable material can reduce the harmful effects on the environment.

7.3 Adoption of clean technology

With a plethora of young engineering talent and the low cost of manufacturing products, India is well suited to create a hub of clean technology products. Open earth spaces can be used effectively to influence solar energy.

7.4 Green Stakeholders

It should be necessary category for companies to research their supplier and supplier should do the same for their supplier. Guidance on GSCM should be developed for all stakeholders to sphere to do it

7.5 Waste Management

Waste disposal by companies during operation should be used as an assist for further operation after treatment. Hazardous waste cannot be used and should be disposed of safety. A proper method is used to separate the waste from the source to dodge contagion of non-hazardous waste and hazardous waste.

7.6 The Order of Order

Many regulations and laws are designed too late to prevent companies from dumping waste unnecessarily. Companies often worry only about the quality of the product produced but do not show the same interest in holding the end of product life. Therefore, the time has come for the postponed things to happen. The company's transaction must now begin accepting and installing the refundable product for reuse or disposal. Therefore, there will be a closed loop of retail sales starting at acquisition, manufacture, production and renewal/disposal of the product.

7.7 E-waste

As India is becoming a leader in IT sector, E-waste forms an important part of all IT companies. All obsolete computers, peripherals, batteries, cartridges etc. should be returned to e-waste vendors or to the suppliers who are authorized to dispose them appropriately

7.8 Driver, not a barrier

Companies have to recognize the green concept as a driver rather than a barrier to innovation. This will enable them to see opportunities and growth area where other apprehend risk and increased costs.

7.9 3I and 2C approach

Incorporate- GSCM should become a part of corporate strategy and business goals.

In Toto – The implementation and initiative should focus the entire cycle from the start till the finish

Intensive - GSCM should be intensive and no comprise in behalf of the upcoming opportunities.

Continues – Creating benchmarks and publishing innovations, ideas and impact of GSCM initiative. The proliferation of the findings to other divisions of the company.

Computable – Success should be measured in numbers, thus defining parameters metrics to quantify the success.

8.0 Limitation/Scope

The above studies suggest that if the quantitative analysis is done on carbon emissions, waste products etc. then we can substantiate the green supply chain benefits even more. We can take a case study of big conglomerate that is willing to initiate a green supply chain scheme and can then calculate process efficiency and cost benefits. A numerical value can be focused on specific industries so that the finding can be generalized among the industries. A comparative study can be conducted between Indian companies following GSCM practices vis-à-vis other countries companies to have a better viewpoint on green supply chain sustainability.

9.0 The Conclusion

Green is a journey and not a destination. Raw scales are a sector issue that will only grow in importance in the next years. Green energy requires ongoing time and effort to utilise and grow. The existing organizational action structure, not just in India but also internationally, is harmful to the environment, and the damage done to our planet will soon be irreversible.

If the land is to be maintained green, GSCM is a must. Organizations are under a lot of pressure to create ecological sustainable product in terms of manufacturing, production, transport and consumption. Organizations will engage extensively in network development, collaborative cooperation, acquisition, purchasing, package switching, and new ways in the next years, with a focus on lowering carbon footprint at all phases of sourcing. As additional sectors move closer to production site, implementing a green SCM will become increasingly important. Th expense of technology and the complexity of the processes are regarded key impediments to implementing Green SCM, bringing attention to the cost-effective and simple-to-use solution.

Efforts have led to companies become less efficient and more efficient. As the idea is still very low in India the information on raw SCM is not apparent. A framework needs to be established to create awareness and dissemination of information regarding GSCM practices that reflect the cost and benefits of companies. The chain consists of partners and the great and transparent collaboration between them will lead to the successful and sustainable use of GSCM. Although the obstacles may change, the foundation of doing good business will remain the same. Leaders should see green purchasing management as a key part of a business that can create cost competition and price creation in the long run

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"An Empirical Study on Perception of Students Towards Digital Mode Used by Faculties in Teaching with Reference to Anand City"

*Mayur Rao**

ABSTRACT

Education is such a segment where the resources to teach matters a lot, the quality of lectures depends upon the ultimate knowledge and explanation power of lecturers and the resources used by faculty. Traditional approach of teaching calls out the usage of chalk and talk, while as and when technology has widespread its wings, resources like projectors, online test, online webinars etc. has become part of modern teaching resources. Today is the age of digitization, where every traditional approach is getting converted into digital approach, every industry is recognizing the digital need and making its way out on digital platforms, why not education field lags behind. The present paper is about students views on the usage of digital resources by faculties in teaching. It focuses on the types of digital resources, most effective one and issues in usage of digital resources.

Keywords: *Education; Chalk and talk; Digitization; Digital resources.*

1.0 Introduction

The Education Industry assumes paramount importance as it prepares the candidates which are going to be accommodated in the Industry / Corporate. In today's age of the digitalization, teaching and learning both are integrated with digital resources. Biggest source of learning has been GOOGLE today, where you can learn and share information related to current market, sports, politics, history, space, science, commerce etc. The information available is simply on one click for resource person and even for students.

Students who used to submit the assignments handwritten, are now submitting the same in soft copies with the use of computers. This has made huge difference in approach, ultimately it saves time and the resources stand more effective for either of them for learning or teaching.

1.1. Objectives of the study

- To know the major purpose behind using digital modes.
- To analyse the preference of students about the most effective digital mode
- To identify the problems faced by students for usage of digital resources

To study the perception of students about the use of digital modesty faculties in teaching

2.0 Literature Review

In the area of Digital Resources, many research study is done and that has become a base for the present paper.

Thanuskodi and Ravi (2010) analyzed the usage of digital resources in university located at Tirunelveli. They found that majority of resources persons were aware about the digital resources to be used and they are learning by self-study to explore more about the skills needed for their usage of various digital resources.

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Asemi and Reyahiniya (2011) focused on the awareness and use of digital resources in the libraries of Isfahan University of Medical Science, Iran. They found that the majority of the students is aware of digital databases and resources of library.

Maher et.*al* (2012) focused on the Australian primary school teachers to identify the usage of digital resources. It was found that, flipchart software is used in lesson delivery, even the multimedia resources are used. It also covered the factors affecting them for selection of resources. Interactive white boards were found to be increasing in primary classrooms.

Majula and Padmamma (2016) focused on conceptual fundamental of digital resource and explained the information and practice for the usage of digital resources, majorly used digital resources, the determination of using digital resources and level of satisfaction about the library digital resources. They found half of the respondents were aware about the digital resources and they were satisfied with library digital resources.

Alamelu et.*al* (2018) discovers various university students 'perception and attitude towards digital learning and how digital information improves students 'knowledge. The study was conducted in a private university having faculty of engineering, law and management courses. It was determined that the private academic universities are well equipped with ICT tools and inspire students to learn through various resources. it was concluded that the with updated syllabus and proper usage of digital content, it helps for far better evaluation and learning among the millennial digital learners as they were positively correlated.

3.0 Research Methodology

The Paper is about the education segment, where in the students' views are taken about the digital modes used by faculties. The study was conducted in Anand city with sample size 100. The sampling element were all the UG and PG students. The data collection was done through survey method under descriptive research design with the non-probability convenient sampling method. The structured questionnaire was used which covered the nominal and likert scales questions about perception towards digital modes in the section I, while it covered demographic variables in section II

4.0. Analysis and Discussion

Table 1: Frequency Analysis

a.	**Nominal Variables**	**Yes**	**No**
1	Digital Resources can replace the Print form of Resources	49	51

Source: Computed by author

Table 2: Kinds of Digital modes used by Faculties

Graphic Images	**25**
Audio clips	**15**
Video clips	**43**
Animations	**5**
Online Tests	**60**
E- Books	**20**
Power Point Presentations	**82**
Projectors	**70**
Others	**2**
No use of Digital Resources	**0**

Source: Computed by author

Table 3: Purpose of using Digital modes

Research	**42**
Articles	**22**
Current updates	**30**
Information Sharing	**55**
Others	**14**

Source: Computed by author

Table 4: Problems faced in use of Digital modes

Lack of Awareness	5
Slow pace of Internet	65
Complexities in downloading files	38
Uncomfortable	25
Unable to find relevant information	10
Others	3

Source: Computed by author

Table 5: Faculty should prefer

Chalk & Talk	35
Use of Digital Resources	55
Both	10

Source: Computed by author

Mean Age – 22.5 Years

Table 6: Education Back ground

Graduate	Post Graduate		
48	52		
	Finance	**HR**	**Marketing**
	15	18	17

Source: Computed by author

Table 7: Analysis of Perception towards use of modes by faculties

View on use of Digital modes by faculties	N	Mean
I frequently use digital resources for learning concepts	100	4.3
Digital Resources are very costly to use	100	2.9
Print version is better than Digital version	100	2.6
Use of digital resources saves lots of time	100	4.6
I am able to learn/ understand more effectively when digital resources are used by faculties	100	3.2
Use of digital resources can be considered need of an hour	100	3.9

Source: Computed by author

From the above Table, it may be observed that majority mean values are more than 3, that shows the agreement towards statements.

Table 8: Ranking of Digital Resources as per their effectiveness

		Rank
1.	Video Clips	2
2.	Power Point Presentations	1
3.	E- Books	4
4.	Audio Clips	5
5.	Images & Animations	3

Source: Computed by author

From the above Table, it was found that, students find Power Point Presentation to be the most effective digital mode used by faculties, followed by video clips and least effective is Audio Clips

Table 9: Hypothesis Testing

Sr. No.	Hypothesis	Test	Sign. Value	Result
H_1	There is no significant difference between Perception towards use of Digital modes Educational Background of students	Independent t Test	0.67	Not Rejected
H_2	There is no significant difference between Perception towards use of Digital Resources in teaching & learning and Specialization of students	ANOVA	0.509	Not Rejected

Source: Computed by author

From the above Table, it can be interpreted from Independent Test, that the significant value is more than 0.05, so hypothesis is not rejected and hence proved that there is no significant difference between Perception towards use of Digital modes and Educational Background of students

From the above Table, it can be interpreted from ANOVA, that the significant value is more than 0.05, so hypothesis is not rejected and hence proved that there is no significant difference between Perception towards use of Digital modes and Specialization of students.

5.0 Findings

- Mean Age of students was 22.5 Years
- 48 were post Graduate and 52 were under Graduate students
- Out of PG students, 13 were from finance, 18 were from HR and 17 were from Marketing.
- Majority of students i. e51disagrees Digital Resources can replace the Print form of Resources
- Considering the kinds of Digital Resources used by faculties it is found that the Power Point Presentations (82) is highest in usage followed by Projectors (70) and online test (60)
- Purpose of using digital resources covers the highest information sharing (55), followed by Research (42)
- Majority of students believe that, they are facing slow pace of internet (65), followed by complexities in downloading files (38) and least was for Lack of awareness (5), under the problems in usage of modes
- Highest 55 students want their faculties to use digital modes and 35 for chalk & talk approach both.
- Students find Power Point Presentation to be the most effective digital mode in teaching, followed by Video Clip and least effective is Audio clip as per the rank given by respondents.

- There is no significant difference between Perception towards use of Digital modes and Educational Background of students
- There is no significant difference between Perception towards use of Digital modes and Specialization of students.

6.0 Conclusion

Digital resources assume paramount importance in education industry. It can be concluded that, students believe the usage of digital modes should be preferred by faculties, while it cannot replace the print mode. The most effective digital resource is use of PPT. Majority of students agrees use of digital modes saves time The views of students with different education as well as specialization towards usage of digital mode does not differ significantly. Overall, the study concludes with assuming students want the faculty to use digital modes but also believe chalk and talk can't be replaced considering the views.

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Covid-19 Pandemic: Need for Businesses to Incorporate Human Resource Information System (HRIS)

Moneswari Boro, and L. S. Sharma***

ABSTRACT

The most critical goal for businesses is to strike a balance between office productivity and employee morale. The Covid-19 issue has disturbed the professional community, worsening the complexities of human resource management. Faced with this, technical advancements are speeding up, and a plenty of apps and HRISs are being developed to make Human Resource (HR) teams and workers' lives simpler and easier. In an age of emergency digital transformation, the goal for businesses is to keep the modern job organisation and its operations alive and well through digitalization. As a result, organisations of all sizes are raising their budgets for restructuring and adopting HRIS in order to comply with the covid-19. This is a theoretical paper that discusses about the various benefits of HRIS based on secondary data. An effort is made to broaden awareness about HRIS capabilities throughout Covid-19 pandemic. The article gives an insight about HR departments short-term and long-term objectives throughout Covid-19.

Keywords: *Human resource information system (HRIS); Human resource (HR); Digitalization; Covid-19 pandemic.*

1.0 Introduction

With the advent of mass teleworking in industries, human resources played an important part in what has been known as the "new-norm." For them, it's about allowing workers to work from home while also promoting their well-being and maintaining a positive connection with the firm. Many businesses have been required to unlock work in order to make it more flexible as a result of their confinement. The definition of "work from home" has shifted dramatically. Teams who have had to quickly adjust to new digital technologies now have access to new digital tools (Talentia solutions, 2021). Businesses have been compelled to alter their business models. However, the true meaning of flexible employment lies not in the place or tools, but in the transformation of labor productivity.

Managing an office floor of hundreds of thousands of workers at a time when social distancing and employee wellbeing issues are outpacing the fundamentals of conventional Human Resource concerns including efficiency and human relationships (Sharon, 2020). Human Resource Information System (HRIS) technologies and systems, which have already seen a global digital revolution as a result of millennials' rising demands and digital technology, are now experiencing a much greater disruption. The sector is now on the lookout for new ways to strike a balance between rapidly shifting workplaces and planned job outcomes (Talentia solutions, 2021). Changing times necessitate a significant change in job policies and procedures. Managing workers is one of the most difficult obstacles that businesses face. When an employee's job, productivity metrics, and position become unpredictable as a result of health preferences, economic uncertainty, and shifting social expectations, this problem can become increasingly more complex (HR & HRMS Tech press release, 2020).

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It all started on March, 2020 when the covid-19 pandemic outbreak dismantles the final remaining impediments to digital transformation. The pandemic's impact on organisations throughout the world was huge; affecting the most valuable resource i.e., human beings in every organisation, which was the virus's primary target (Talentia solutions, 2021). Human resources have been raised to the most crucial operational department in any organisation; people are what matter most, and safeguarding them while continuing to trade was the top concern of any organisation (Amodeo, 2021).

1.1 Objectives

To explore the need for businesses to incorporate human resource information system (HRIS) during and post COVID-19

1.2 Methodology

The use of an information system from the user's point of view does not work in itself; rather it provides the user with a beneficial tool to work. The study is carried out based on the survey reports published by various online sources. The study also attempts to explore the need of HRIS in businesses in the new-norm era. This paper is exploratory in nature with theoretical evidences based on secondary data. Secondary data was obtained from a number of research papers, survey reports, news articles, e-papers, industry news and blogs searched through internet.

2.0 HRIS: A Key Tool for Human Resource Department

As a result of COVID-19, HR administrators are continually forced to take the next move in order to keep workers comfortable and keep their organisations running smoothly (Sharon, 2020). Some basic information like what percentage of our employees can function remotely if necessary? What percentage of employees had already switched to operating remotely as a result of COVID-19? What's the general theme when we develop this capability? What is the total length of time that workers are out due to COVID-19 - sickness or otherwise? (Strategic solutions, 2020). This is when things get complicated, and HR need to gather more data in addition to what they already have. This would almost certainly include input from managers, with HR serving as the core hub. This information can ideally be collected and stored inside HRIS, but it's possible that HR have to start with a spreadsheet because HRIS does not have the requisite fields for everything that need to be track outside conventional absence and availability data (Butler, 2020). Organisations today are looking for solutions to improve employee productivity, tax filling problems, timely payment of wages, optimizing labor cost and to achieve these, organisations has been collaborating HRIS software companies and in the process some key areas of study has been identified viz., access to multiple devices, customization issues, excess deployment time, cross border issues relating to wages and technological integration according to a white paper on "**HRIS software market- critical pain points overview.**"

2.1 Features of HRIS

HR professionals face a major headache when it comes to feature customization. Several HR professionals are looking for specific features in a platform that will be beneficial to them. However, they usually end up paying for the entire platform, including features that they don't need (ATR report, 2020). Organizations must take steps to minimize business interruption and safeguard personnel. Now is the time to assess existing technological capabilities (Robberts, 2020).

Table 3.1 Features of HRIS

Sl. No.	Feature	Assist with
1.	Organisational charts	Organizational charts based on direct and indirect reporting, as well as the total number of positions at each organisational level, are available.
2.	Chatting in real time	By connecting to WhatsApp, organisation can reduce the communication costs.
3.	Maker checker facility	All employees can keep updating their information as needed, decreasing the HRD's data entry workload and ensuring a clean and validated database.
4.	Gallery	Assignment, poll, suggestion box, contacts, and home page message, among other things can be handled from the portal's main page.
5.	Automatic allocation	HRIS allows to auto-assign all workers based on several hierarchies such as company, department, designation, location, and so on. Manual assignment is also possible, as well as the import of assignment data.
6.	Inter-company transfers with the same employee code	The HRIS procedure is made extremely simple. When an employee is transferred from one organisation to another, data such as leave, attendance, claims, wages, and investments are automatically transferred. Options to preserve the previous employee code or to give the employee a new employee code are also available after which an employee is immediately assigned with all new position's regulations.
7.	Employee networking features	Employees, a private and public photograph gallery, and an address group are all available in HRIS (to be used for calling or sending emails),
8.	Reporting Chart for Employee Positions	It features a terrific technique of showing employee reporting charts by expanding or collapsing them according to preferred perspective, which includes the employee's photo, classification, and a brief bio. It creates a tree structure as well. Dual reporting is also an option. If a CEO has both a manager and a driver reporting to him, the driver will be significantly lower in the organisation than the manager.
9.	Employee code pattern	Any permutation combination based on hierarchy may be used to build an employee pattern.
10.	Personal data	At any moment, one can make changes to his/her personal information, which must be approved by the individual involved.
11.	Search Buddy facility	One can simply search employees in the organisation and know their data like department, designations, location, cell number, email id so that they may immediately get in contact with them for certain problems
12.	Provision to manage the list	It has a feature that allows keeping track of all the paperwork that need to be filed by all the workers. Facility to preserve a systematic list of all academic, past employment experience, and other papers.
13.	Standard forms	It has the ability to upload standard forms such as Form 16 so that when an employee signs in, he can see his Form 16 filled out with his own information and download it anytime he wants.
14.	Visibility of documents	Only personnel to whom it is relevant can read policy papers such as travel, leave regulations, and so on.
15.	Survey or poll	A client may construct any type of survey or poll with graphical results using the ability to build many surveys in categories and subcategories.

Source: Adapted from HR Mantra (2021) and Employee Connect (2021)

2.2 Principles of future HRIS

A company that is unprepared for future upheavals may discover that its whole HR Management spirals out of control and becomes a nightmare in the event of an unforeseen and unanticipated tragedy. When these mounting worries are combined with the current pandemic-related disruptions, a more complete image of the HR industry's future trajectory emerges, arising some issues that have the potential to become global focal areas for the HR business in the future years. Therefore, there are three main changes in current HRMS practices that will increase in the next months and years, requiring HR professionals to adjust their policies and attitudes (HR & HRMS Tech press release, 2020).

Three main principles have the ability to transform HRIS in the future.

Health First HR | Distributed Decentralized HR | HR-2-Home

Source: HR & HRMS Tech press release

I. The corona virus pandemic has brought the importance of health monitoring to light. HR administrators have begun anticipating this need and are preparing to meet it with the assistance of cutting-edge HRIS technologies that priorities employee wellbeing as one of the most critical data points to monitor. Employee health monitoring has the power to alter the way HR practices are structured in the workplace. HR clinicians will priorities short-term health screening such as temperature, general health criteria, psychometrics, and health precautionary steps as a result of Covid-19. This condition has now been bolstered by federal regulatory enforcement and an organization's general corporate continuity criteria. As a result, a Health First HR solution will emerge, which will become a key component of the HR policy process. Mental hygiene, a satisfaction quotient monitor, physical fitness dashboards, and other concepts that offer a cognitive insight into workers can act as a critical barometer to help assess an organization's human resource management capability. Employers are searching for digital HR features that can better facilitate social distancing and contactless employee scheduling to help with the back-to-work process. Global HRIS pioneers such as Sage HRMS, Bamboo HR, Orange HRMS, and others have also implemented numerous automated methods of handling workers, focusing on touchless staff attendance control and social distancing (Sharon, 2020). In India, the industry has grown in a similar manner. Startup HRtoolkit (2021) Pocket HRMS, one of the country's most well-known HRMS providers, has introduced Selfie Attendance with Facial Recognition as a modern and creative way to accomplish this. This gives workers the biometric protection of facial recognition while also allowing staff to use contactless mechanisms. Being able to monitor employee wellbeing in real time, promote workforce fitness, and analyse employee Health First HR efficiency indicators on a regular basis would become critical in driving every company to a healthy workplace atmosphere and, eventually, even higher productivity rate.

II. The year 2020 was expected to be the pinnacle of the tremendous digital advances that have made in the previous decade, ushering in the four corners of technology (social, mobile, analytics, and cloud (SMAC) through numerous sectors and organisations. That was going to be the start of a new decade, which will have brought in significant changes in operating methodologies and how businesses interacted with their human capital. Nobody might have predicted, though, that the year would be remembered for enforcing limits on organisations' otherwise usual operations in order to impose social distancing and other government policies. The implementation of work-from-home policies is the most significant development that has accelerated as a result of this. Despite the fact that this idea is not recent, its success has skyrocketed, and it is now practiced religiously all over the world. It has caught the private sector off guard, as nearly all workers are no longer required to work in the workplace. Fortunately, the introduction of numerous cloud-based HRIS technologies has simplified and simplified the management of a company's employees (Employee Connect, 2021). This has placed HR professionals in an unusual, albeit intriguing, role. They don't need to manage their employees from their headquarters, branch, or even a separate agency. Managing staff outside of the office appeared impractical, optimistic, and modern a decade ago. However, the year 2020 has ushered in an HR revolution, permanently changing the way HR professionals work. The flexibility of cloud-based HRIS has opened up new avenues for becoming platform and location agnostic. As a result, a new paradigm known as Distributed Decentralized HR is emerging. HR & HRMS press (2020) HR administrators in different regions in tier II cities, or even HR executives in distant areas, will be able to oversee staff and answer requests flawlessly in the future. The need for a centralized human resource management system is slowly diminishing, opening the way for a more decentralized HR department to emerge.

III. While employee health management and HR decentralization are two ideas that have the ability to change the HR space, a third trend, HR-2-Home, emerges from the two. Employees and managers alike have benefited from the increasing popularity of working from home, with many businesses now changing job practices to make them more adaptable to working from home. Employees are no longer restricted by their residential locations or their distance from the workplace. As a result of the extended scope and diversification that this transition provides, HR practitioners' horizons have been broadened. Today, more and more workers are heading to a home-based setup, and conventional office work is losing ground in the business world. Despite the fact that this way of working has been around for a long time, it has seen a dramatic increase in popularity as a result of COVID-19, and the results are getting clearer by the day. Employees are becoming more capable of managing their job requests thanks to the emergence of new human resource management technologies such as self-service portals, HR chatbots, alerts, internal social networks, and sharing, to name a few. Apps that allow project management, time tracking, and much more through web portals and smartphones make team planning much easier. However, if such items go unnoticed, they may become a source of worry. Working from everywhere has never been easier thanks to this innovative method of working. However, it allows for human error, mismanagement, and violence. As a result, need for better technologies that will overcome barriers to job performance management and subject them to adaptable productivity indicators are required. For optimum work output outcomes, these metrics may be established, correctly described, and implemented consistently. With the assistance of HRIS apps, businesses can flawlessly communicate with their workers and bring their HR to the employee's new workplace i.e., home. HR experts would need to be technologically synchronized with the future with the HR-2-Home solution. This will allow for the efficient implementation of resources such as answering questions about appraisals, goal-setting, self-help, team development, preparation, and career advancement. Employees could receive HR counselling at their homes or at their favorite workplace site (HR & HRMS press, 2020).

These three main ideas have the ability to transform HRIS in the future. While the future remains uncertain, foreseeable developments could usher in the most significant shift in HR since the advent of cloud services, with new frontiers opening up as a result of the implementation of mobility, artificial intelligence, bots, and machine learning (HRPS blogs, 2020). The real struggle is recognizing the magnitude of these challenges as well as the possibilities they offer. These principles' innovative and dynamic strategies have the potential to do more than just push HR management to the next level. It has the potential to achieve a previously unheard-of equilibrium between employee well-being, organisational performance, and global scope.

3.0 Benefits of HRIS During and Post Covid-19

HRIS has many advantages including HR data centralization for improved corporate performance and HR activity monitoring. HRIS is available 24 hours a day, 7 days a week, and it's accessible from any online browser (Talentia software, 2021).

Table 4.1 Benefits of HRIS

Sl. No.	Benefits	Uses
1.	Employee Applications	Employees can apply for leave, On Duty, Over Time, attendance regularization, and reimbursements and employers can authorize or deny such requests.
2.	Send a text message or make a phone call	Employees may use their mobile phones to contact or send SMS to someone without having to store that information on their phones or memory cards.
3.	Programs of Instruction	Employees may register for training programmes via the company's website.
4.	Obtaining Tickets	Employees can generate request tickets for any IT, ride, or administrative helpdesk and receive SMS notifications when they are closed.
5.	Survey	Employee self-service can allow employees to access and update their personal details, request time off, connect with coworkers and HR professionals, and display their schedule information. Employees and administrators benefit from self-service websites because they are always available from any mobile device.
6.	Creating Employee Codes	One of the most critical aspects of HRIS module is dynamic employee code generation, which generates a code pattern automatically based on a combination of alphabets or serial numbers.
7.	Official Information Page	The official information page of the human resource system shows hierarchies such as the organisation and place he refers to, as well as the date of confirmation and retirement.
8.	Personal Management	Employees can change their personal information, such as their marital status, interests, athletics, extracurricular events, and honours they have won.
9.	Academic Information	Apart from that, the work history, academic, and qualification-related information of the employee may be processed.
10.	Disciplinary Procedures	Disciplinary actions such as bans, pay reductions, and terminations may also be maintained in HRIS.
11.	Reports on Human Resources Management	It is very simple to find employees based on criteria such as age and experience in the company and to generate HRM reports for them. By making models, one can deliver email and SMS to their employees.
12.	Structure of the Organization	It includes a robust org chart maker that displays the number of locations where the organisation is located, as well as a list of divisions and designations.
13.	Reporting in Great Detail	A comprehensive reporting map is also available, which shows employee identities, designations, and snaps, as well as their reporting relationships.
14.	Exit Form	When an employee exits the organisation, perform an exit interview after filling out the exit form, which requires to list the reasons for the departure, the date of dismissal, and the date of separation, as well as if someone wish to preclude from logging into HRIS from this point forward.
15.	Checker Facility for Makers	Employees can go online and edit their personal information, such as mobile phone numbers or addresses, or when they get a new certification, using HRIS. This detail is then escalated to HR, who must then authenticate the modified data before it can be updated in the data bank.
16.	HR Analytics Software	A powerful HR analytics tool is included in the HRIS to aid in employee data management.

Source: Adapted from HR Mantra, 2021

3.1 HRIS for remote and onsite workforce

Amodeo (2020) in the article HR Transformation mentioned following COVID-19 suggests that HRIS can be heavily used to ensure that the remote workforce is successfully handled. Organizations would effectively determine whether or not to continue working from home, work in the workplace, or work from home and the office after COVID-19, with the majority of organisations opting for a hybrid of remote and in-office work. This may become a major challenge for HR management, which must figure out how to ensure their staffs are cared for in this modern and sometimes perplexing work climate. HR teams could depend on HRIS to reduce the burden of managing daily HR duties in order to effectively handle this new climate. This is accomplished by ensuring that HR administration will use an integrated electronic workflow system to streamline heavy HR operations to ensure that HR tasks are performed quickly and easily regardless of where an employee is located.

One way that HRIS may be used efficiently for the remote workers after COVID-19 is to create contracts or provide essential details that management needs to send to employees. Simply by using an all-online system, a manager may choose which employees they choose to receive respective details from and then send them. During the workflow process, HR departments can receive an automated notification to approve this, during which it may continue to be sent to employees (KPMG survey report, 2020). Finally, the employee can read and sign the documents, triggering an automated notification to the respective inbox. This is all achieved remotely in a paperless scheme, ensuring that the distributed workforce is easily looked after in the post-COVID-19 HRIS system.

Some of the major HR functions that are practiced within an organisation to ensure employees work productivity and their satisfaction are given in the below table.

Table 4.2 HR functions

Sl. No.	HR Functions	
1.	Employee Engagement	After COVID-19, HRIS can be used successfully to involve staff even more effectively than before. Employee retention rates are becoming particularly important to HR agencies, and it can be seen that workers are more likely to leave in a typical market setting (post COVID-19) than during a global pandemic where workplace insecurity and risk are evident. In order to better involve workers, HR teams should use HRIS to analyse primary employee indicators such as productivity levels to ensure that employees are satisfied at all points of their careers within an organisation after COVID-19. These metrics can be identified by effective HRIS by interaction surveys, such as a pulse test, which is sent to workers on a weekly or monthly basis to determine their current level of happiness. The HRIS will also include detailed data that HR teams will use to determine existing levels of employee retention and, as a result, make recommendations that can ensure employee loyalty and satisfaction remain strong in order to keep an employee on board.
2.	Employee Communication	Throughout the post-COVID-19 era, HRIS ensures that employee contact is a top priority. Employee contact from HR offices to staff is critical after COVID-19, when workers are mentally uncertain about the future. HR departments should use HRIS to effectively rally information from one person to another in order to effectively reduce the psychological fears that employees may have following COVID-19 and ensure that employees remain positive. This can be accomplished by an appropriate HRIS, which could have a notice board that shows critical information for a group of workers to learn and read. Furthermore, HR offices may use HRIS to deliver direct updates to staff and supervisors about something that needs to be answered or said. Specifically, the HRIS feedback mechanism will be successfully used such that once HR teams analyse key indicators for workers, they are able to efficiently relay their issues to the appropriate people, who can then take steps to either address the current problem or actively improve employees.

3.	Learning and Development	Post COVID-19, HRIS can be used more widely to ensure that workers are effectively trained by learning opportunities delivered within a transparent HRIS framework. Following COVID-19, businesses must specifically identify all new practises or acts that worker must recognise and carry out. Furthermore, employee aspirations for career advancement are likely to have risen after COVID-19. HR divisions should use HRIS mechanisms to actively involve staff in learning and growth activities within the organisation to comply with this situation. This can be accomplished by using a highly efficient HRIS offer a forum for HR organisations to provide staff with learning and training courses to complete, which can then be analysed by HR teams to see how effective the activities were. Furthermore, effective HRIS post COVID-19 will effectively provide a platform for employees to identify development points that they want to achieve in order to advance not only their knowledge and skills, but also their careers, to which HR departments can effectively outline the steps the employee needs to take in order to develop by providing training and motivation along each step within the organisation.
4.	Recognition and Rewards	HRIS may be used to streamline automated celebrations for workers, such as anniversaries of work within the organisation, or even to recognize and honour best performers in order to recognise and compensate them. HRIS can be used to strategically incorporate a compensation scheme focused on performance management by implementing incentives for the best earners in a sales team to motivate workers.

Source: Adapted from HR Transformation by Jake Amodeo

4.0 Conclusion

The current COVID-19 scenario is transforming the way we live and work. The importance of technology and remote working has never been greater. An HRIS is made up of numerous modules that are deployed according to the company's individual needs. It has a high level of versatility and grows with the organisation. Because of the interoperability of unified platforms, businesses can schedule, monitor, and optimize global people operations using a single data base. Using HRIS can personalize employee interactions and use an engaging tool such as chatbots to help workers find fast answers to HR queries, all with highly configurable workflows that provide scalability and localization. Since every organisation has established the technology and infrastructure to manage employees working remotely, is the reason why a greater number of employees will continue to work remotely (HRPS Blog, 2020).

The study finds that HRIS has a wide range of applications (Talentia solutions, 2021). The HRIS database can be used as a central repository for all records since it allows for efficient knowledge sharing between HR processes and the HRIS information technology (IT) platform, such an interconnected platform for singular optimization. It can direct users and increase usability by using chatbots and voice activation. Many employees including those with disabilities, those who require flexible scheduling, those who have long travel times, and others, can benefit from working remotely. It's also great news for businesses. The lower the office overhead expenses, the more employees who can work remotely.

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Fundamental Analysis of Equity Stock: An Equity Research

Narendra Ningthoujam and Sapna Chauhan***

ABSTRACT

Fundamental Analysis is a process of finding intrinsic value or worth of a share of a company by analysing various parameters like economics factor, industry or sector in which the company engages and company analysis including non-financial factors and financial factors. It is commonly used by investors for analysing long term investment. This study is done in attempt 1) to find out whether there is a relationship between financial ratios such P/E ratio, ROE, ROA, PB ratio and stock price, 2) to explain the popular methods of stock valuation, 3) to investigate reliability of Fundamental analysis in making investment decision. This study is an exploratory research design based on the secondary data. Financial data from top 480 companies listed on NSE and BSE are collected for this study. These data are mostly available in the website of NSE, BSE and some fintech companies. Data analytic tool like multiple regression are used in this study and hypotheses are framed to measure relationship between independent variables P/E ratio, ROE, ROA, PB ratio and dependent variable Stock price. The results of the study suggest that there is relationship P/E ratio, ROE, ROA, PB ratio and stock price. However, they don't have significant effect on stock price except ROA.

Keywords: *Fundamental analysis; P/E ratio; ROE; ROA; P/B ratio.*

1.0 Introduction

Fundamental Analysis is a process of finding intrinsic value or worth of a share of a company by analysing various parameters like economics factor, industry or sector in which the company engages and company analysis including non-financial factors and financial factors. Fundamental analysist tries to find stocks that are currently trading in the market at the higher or lower price than the real value. If the market price is greater than the intrinsic value, the stock is considered to be overvalued and it suggests that it is not right time to buy the stock. Likewise, stock is deemed to be undervalued if the market price is less than its intrinsic value and a buy recommendation is given. Fundamental analysis is knowledge of the rules and steps access to its objectives of determining the intrinsic value of shares in the stock markets, through a general framework to study the expected economic forecasts, leading to sectors which generate an increase in sales and profit, therefore measure strength financial companies, efficiency of management and business opportunities based historical financial statements and current conditions (Wafi, Hassan, & Mabrouk, 2015). Company Analysis consists of two parts (Roy, 2013):

1) Non-financial analysis: It includes analysis of leadership, top management, corporate governance, vision and mission of the company, corporate policies and relationship with various stakeholders and competitive advantages and disadvantages.

2) Financial Analysis: It means analysis of financial statements using the accounting ratios like P/E ratio, ROE, ROA etc.

There are different stock valuation methods such as Dividend Discounted Models (DDM), Discounted Cash flow models (DCFM), Residual Income Valuation Model (RI).

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In short Fundamental Analysis is the technique that gives investors conviction to invest for a long term by helping in identifying the attributes of wealth creating companies.

1.1 Objectives of the study

- To examine whether there is a significant relationship between the profitability ratios (ROE&ROA) and stock price
- To examine whether there is a significant relationship between the valuation ratios (P/E ratio &P/B ratio) and stock price

2.0 Literature Review

The extensive literature of the study suggested that measures of relative value such as book to market ratios, P/E ratios, dividend yields and cash flow to price ratios predict future stock returns (Swapna & Subbalakshmi, 2020). The result of the study proved that ROA hasn't significant effect on the stock prices while EPS, P/E ratio and Debt to Equity ratio have positive association and significant effect on the stock prices. This study is beneficial to both International and domestic investors to predict the prices of stock in manufacturing companies by using fundamental factors like EPS, P/E ratio and DER (Luckieta, Amran, & Alamsyah, 2020). ROA affects stocks prices more positively after the publication of financial statements than before the publication of financial statements. This result indicates that the company management should improve its performance so that investors are interested to buy the stock and increase the price. The effect of NPM on the prices of stock is weak before the publication of financial statements than after the publication of statements (Tarmidi, Pramukty, & Akbar, 2020).

The analysis through the Vector Error Correction Model revealed that there is causality relationship between the macroeconomic factors like Index of Industrial Production (IIP), inflation, interest rates, gold prices, exchange rate, foreign institutional investment, money supply and BSE Sensex. The result of the study also suggested that BSE Sensex causes the changes in money supply, exchange rate, FII[1], gold prices and IIP[2] (Misra, 2018). The both Fundamental analysis and technical analysis can be used to generate positive return, but fundamental analysis is more preferable as it outperforms the technical analysis in the manufacture industry in Bursa Malaysia (Jakpar, Tinggi, Tak, & Yi, 2018)

The results from the investment strategy study indicate that fundamental analysis can be used to separate winner stocks from loser stocks. The usefulness of fundamental analysis opposes an efficient market in the semi-strong efficiency form. The strongest benefit for the investment strategy is found in small followed by medium sized companies (Bülow, 2017).

The model of the study suggested that valuation of a stocks should take into account of factors such as the conditions of industry, company, supply and demand of the products or services, domestic and global market, the productivity of achieved by the current financial activities, technology, and company's life, new product pricing, competitive status and risking taking of the company. The value of the stock increases if government spending, political system, institutional investors, financial health of managers, bonus share are announced (Sharafoddina & Emsiaa, 2016). The study revealed that only exchange rate, inflation and oil price have significant impact over the stock prices. The exchange rate and oil price have inversely related to stock price while oil prices are positively related to the stock price (Bhargava, Bhargava, & Jain, 2016). Fundamental analysis can't be applied in the Efficient Market Theory which states that if all information is known to the public and stocks price reflect that knowledge, then the stocks can be neither overvalued nor undervalued (Petrusheva & Jordanoski, 2016).

Distributions Discounted models (DDM) is found to be more useful than Discounted Cash Flow Models (DCFM) in developed financial market. When predicting the future stock value, DDM and Residual Income Model (RIM) proved to be more credible than DCFM. In the emerging financial market, RIM is the suitable model which rely on the historical data: the book value and earning per share (Wafi, Hassan, & Mabrouk, 2015).

The results of the empirical analysis revealed that the variables earning per share, book value per share, price earnings ratio size are significant determinants of share prices and investors should theses accounting ratios before making any investment decision (Almumani, 2014). The study revealed that the most important factors that influence investment decision of investors are reputation of the firm, status of the firm in the industry, expected earnings of the firm, profit conditions of financial statement, past performance of firm's stock, price per share, feeling on the economy and expected divided by the investors (Jagongo & Mutswenje, 2014).

Fundamental analysis is the process of determining the intrinsic worth or value of a share. It is analysing information that is fundamental to the certain company with aim of creating a portrait of the company, identifying the worth of it, buying or selling based on the information (Roy, 2013). Fundamental analysis examines the economic condition, industry performance, and company performance pertaining to the industry before making an investment decision. At company level, it involves study of financial data, management competency, business concept and competition. At industry level, supply and demand forces of products or services are examined. At the national economy level, it focuses on economic data to access present and future growth of the economy (A.S, 2013). The aim of the fundamental analysis is not only to find company that has successful business but also to find the worth of company is more than what investors estimate (Suzana, Sinisa, & Zoran, 2013). The results of the study indicated that book value, P/E ratio, EPS have positive association with the firm's stock price and dividend yield have negative association with the market price of the stock (Tandon, 2013).

The findings of the study suggested that fundamental factors are the better indicators of profitable investment (Hou, Karolyi, & Kho, 2011). Both groups of investors professional and non-professional use fundamental tools more than technical tools when they make investment decisions i.e., buy or sell of stocks. The result also indicate that fundamental analysis is relatively suitable for the long-term investment horizon and technical is needed for the short-term investment preferences (Cohen, Kudryavtsev, & Hon-Snir, 2011).

3.0 Research Methodology

The study is based on descriptive research design. The objects or data used in the study is secondary data. These data comprise of financial information of top 480 companies listed on the NSE and BSE exchange. Data are collected as on 30th June 2021.

Research Design: Descriptive Research

Data type: Secondary data

Data sources: Data are collected from fintech companies' websites Tickertape, Money control, Trading view, NSE and BSE website.

Sample size: 480

Analytic tool: Multiple Regression

3.1 Data analysis techniques and hypothesis.

Data analysis tool used in this study is Linear Regression which takes variables X_1 (P/E ratio), X_2 (ROA), X_3 (Return on Equity), X_4 (P/B ratio) and stock price Y. The study tries to establish whether is a significant relationship between P/E ratio, ROA, ROE, P/B ratio and stock price.

H0: there is no significant relationship between X_1, X_2, X_3, X_4 and stock price.
H1: P/E ratio effects on stock price
H2: ROA effects on stock price
H3: ROE effects on stock price
H4: P/B ratio effects on stock price
Independent variables: X_1 (P/E ratio), X_2 (ROA), X_3 (Return on Equity) and X_4 (P/B ratio)
Dependent variable: stock price

4.0 Results and Data Interpretation

Multiple Regression analysis is carried out by using excel and result of the test is given as follow:

Table 1: Regression Statistics

Multiple R	0.169733745
R Square	0.028809544
Adjusted R Square	0.020579117
Standard Error	5010.185146
Observations	477

Table 2: ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	4	351464553.1	87866138.28	3.500370293	0.007868313
Residual	472	11848122853	25101955.2		
Total	476	12199587406			

Table 3

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	1236.469	289.998	4.264	0.000	666.623	1806.315
PE Ratio	1.316	1.651	0.797	0.426	-1.928	4.560
Return on Equity	1.820	10.342	0.176	0.860	-18.502	22.141
Return on Assets	63.152	32.338	1.953	0.050	-0.392	126.696
P/B Ratio	12.256	14.341	0.855	0.393	-15.924	40.436

We can establish the multiple regression equation based the data given in the table 3 as follow:
Stock price = 1236.468587 + 1.315984706 P/E ratio + 1.819841079 ROE + 63.15155895 ROA + 12.25592018 P/B ratio.

4.1 Coefficient of determination

From the results of regression analysis, we find that the value of Adjusted R square is merely 0.020579117 which means that there is relationship between P/E ratio, ROA, ROE, P/B ratio and stock price. Hence, we can reject Null hypothesis. However, they are not strong predictors. The stock price is influenced by P/E ratio, ROA, ROE, P/B ratio only 2%, 98% of stock price is influenced by other factors. We can conclude that overall, the model is the significant.

4.2 Hypothesis testing

The effects of P/E ratio on stock price

P/E ratio tell us how expensive a specific stock is. Higher P/E ratio means stock is priced relatively high. It is observed that P/E ratio have positive relationship with stock price but the relationship is not significant as P value has greater than value of 0.05, the value of α. It is concluded that P/E ratio doesn't have significant effect on the stock price. Hence H1 is rejected.

The effects of ROA on stock price

Positive ROA shows that the company is able to generate profit using total assets and Negative ROA means the company is not able use capital employed to earn profit. It is seen in the table 3 that ROA has positive relationship with stock price and it has significant effect on the stock price as P value shown in the table 3 is equal to the value of α. Hence H2 is accepted.

The effects of ROE on stock price

ROE measures the company's ability to generate profits from the shareholder's investments. In other words, ROE shows the efficiency of the company in terms of generating profits to its shareholders. The higher the ROE, the better it is for the shareholders. The result of test shows that ROE is slightly positive relationship with stock price but it is not significant because P value is greater than value of α =0.05. Hence H3 is rejected.

The effects of P/B ratio on stock price

The "Book Value" of a firm is simply the amount of money left for the equity investors after the company pays off its obligations. In other word it is the amount left after deducting total liabilities from the total assets. A high P/B ratio could indicate that the firm is overvalued relative to the company's equity/ book value. A low P/B ratio could indicate the company is undervalued relative to the equity/ book value. P/B ratio is not significantly related to stock price. Hence H4 is rejected.

5.0 Summary and Conclusion

5.1 The results of the study

- Through the data analysis using Multiple Regression tool, it is found that there is a relationship between P/E ratio, ROA, ROE, P/B ratio and stock price. However, the value of R square given in the table 2 is weak and they are not strong predictors of stock price.
- The study finds that there is positive association between P/E ratio, ROA, ROE, P/B ratio and stock price. But they don't have significant effect on the stock price except ROA.

5.2 Recommendation

Suggestion or recommendation that I want to give for future study is that it is better to analyses financial data of the companies in the same sector. I have selected top 480 company listed on NSE and BSE for this study. These companies are engaged in different industry or sector and the companies in different sector have different parameters or different financial ratios. These differences have impact on the result regression test.

5.3 Conclusion

Fundamental analysis is a technique of determining intrinsic or fair value of a share by considering various factors which are potential effect the stock. These factors are economic, industrial, financial and non-financial factors. It is a reliable technique used for the analysis of the stock. There are two approaches in this technique i.e., top to bottom approach and bottom to top approach. The valuation methods or model used in fundamental analysis include Dividend Discounted model, Discount free cash model and Residual Income model etc. The results of study reveal that there is a relationship between P/E ratio, ROA, ROE, P/B ratio and stock price. ROA has significant effect on the stock price. The results also indicate that fundamental analysis is a reliable technique used for making long investment decision.

Endnotes

1. Foreign Institutional Investment
2. Index of Industrial Production

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Impact of Usage and Investment in Banking Technology on its Profitability

P. K. Priyan and Tejal Shah***

ABSTRACT

Banking industry had witnessed a huge amount of investment in technology since the Banking liberalization. The banking industry claimed that the use of technology like ATM, online banking, mobile payments, etc. improved the efficiency of banking operations. But this improved efficiency comes with an added cost. During this period, the banking sector spent a higher amount on technology as compared to their financial service industry counterparts. For instance, the banking sector spent on an average 4.7 to 9.4 %of operating income on technology during last decade whereas Insurance Companies and Airline companies spent 3.3 % and 2.6% of operating income in the last decade. ("2019 Banking Industry Outlook." ,2019) In this paper, we explored whether large IT budgets could generate higher revenue and improved operational efficiency or not. We examined the performance of selected Public Sector and Private sector banks through Data Envelope Method (DEA). Results of the DEA model suggested an increasing trend inefficiency in most of the banks during the last decade.

Keywords: *Banking; IT budget; Profitability: Technology.*

1.0 Introduction

The liberalization and globalization have brought many changes in business practices and economic systems in the world. The banking sector has undergone a huge transformation during this period. It embraced modern technology to improve the operational performance with speed and accuracy. (Yurcan, 2018) A Forbes report said that globally banks are going to spend around $ 100 billion in technology in coming years which is a large investment. ("How Much Do Banks Spend on Technology? n.d.) Globally, adoption of technology-enabled innovations in financial services also known as FinTech had been increasing rapidly in the recent years. Driving forces behind FinTech revolutions are; I) consumer preference for ease, speed, cost effectiveness in financial interactions; and (ii) technological improvements related to internet, big data, mobile telephony, and computing power. The emergence of FinTech is also attributed to the high cost of financial intermediation by existing system despite significant developments in information technology (IT)signifying inefficiency prevailing in the system. ("Tech Trends 2018",2017).

Previously the impact of electronic investment of banks on their profitability was assessed using Synthesized Approach, Cluster Analysis, Agglomerative-Hierarchical Method, etc. Data Envelopment Analysis (DEA) was also one of the approaches to conduct such type of analysis. (Rashedul &Israt, 2012) & (Sherman & Gold, 1985). The present study used Data Envelopment Analysis (DEA) to assess the impact of IT investment on Banks profitability. We selected as many as 23 banks (before the recent merger) which included major public sector and private sector banks for this study.

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2.0 Literature Review

In order to be competitive, cost effective, customer oriented and customer friendly, banking industry across globe had spent huge amount on banking technology. This inflow of investment in technology may continue in next decade as well, as innovative technology enters into market every now and then. To understand whether such a huge inflow in technology by banking sector would result into increasing profitability or not was the main objective of the study.

Different researchers had different view to measure efficiency or profitability of the banks in general. For example, Norman (2011) had established Enterprise Performance Management ('EPM') framework which could help banks to measure their performance. He suggested that ROA - Return on Assets, RAROA - Risk Adjusted Return on Assets, ROE - Return on Equity, RAROE - Risk Adjusted Return on Equity, RAROC - Risk Adjusted Return on Capital and EVA - Economic Value Added could be part of the EPM. And hence the same could be used for analysing banks' profitability and performance. He concluded that profitability-based performance management framework would be important tool to translate organisational strategy into appropriate transactional goals. This would help banks to track and monitor at the right levels and frequency which might lead to deliver expected enhancement in metrics like ROA and thereby increase in valuation.

Another question was when to measure impact of IT investment on profitability. Brynjolfsson & Saunders (2009) examined the measures of impact of Information Technology on economy. They further said that although many researchers questioned contribution of IT on growth of economy, many other researchers specifically after 2000, started believing that increase in the productivity after 2000 were due to heavy investment made in Information Technology in late 90s. With the help of source of growth model (originally developed by Robort Solow), they tried to measure the role of Information Technology in growth of economy. Further they said that if you invest today in Information Technology, you would experience the growth in productivity after the gap of 3to 4 years.

Apart from banking industry, other industries also redressed themselves with new technology. Hence, Mahmood and Mann (1993) explored the organization impact of Information Technology investment, which can apply to any industry. They found significant relationship between them. However, they also suggested that the relation between them was also affected by many other factors such as economic circumstances, competitive situation and managerial judgements. Organization impact was measured through sales by employees, sales by total assets, market value to book value, return on investment, return on sales, etc. They measured IT investment as number of PCs and terminals as a percentage of total employees, IT budget spent as percentage of revenue, IT budget spent on training, etc.

Other researchers across the world developed various specific tools to find out the whether the investment on Fintech by Banking Industry was profitable or not. As this revolution of banking industry started mainly in developed countries, researchers of these countries were pioneers in establishing such tools. For example, Beccalli (2003) explored 737 banks for the period 1993-2000 to study the impact of technological investments on profitability of banks in United Kingdom, France, Germany, Italy and Spain. He used software cost, hardware cost and service cost as investment variables and ROA and ROE as performance variables. He concluded that there is no significant relationship between information technology expenditure and improvement in profitability.

Parsons et al. (1993) studied the impact of Information Technology on banking industry for Canada. They took data for the period 1974-1987 and measured the impact with the help of production function. They concluded that banking industry witnessed productivity growth associated with the enhanced investment in Information Technology. However, they also noted that benefits mostly got credited to customers and not to banks.

Many technologies giant made entry into financial market of USA using their technology such as Amazon, PayPal, Apple, Facebook, etc. Hence, it was estimated that banking sector of USA would continue to observe technology influx to grow in this decade as well to be competitive. So many researchers developed different tools to measure the impact of such huge investment on profitability. For example, Shirley and Mallick (2005) explored and tested a differential model which was extension of production model to examine the effects of information technology in the US banking industry. They developed the model based on two beliefs: IT could reduce operational cost (cost effect) and could facilitate transactions among customers within the same network (network effect). They studied panel data of 68 US banks over 20 years and found that the bank profits declined due to adoption and diffusion of IT investment, reflecting negative network effects in this industry.

While the above researchers could not establish positive relationship between IT investment and profitability of USA banking sector; another researchers team, Alpar and Kim (1990) also analysed the impact of IT on economic performance 759 US banks during 1979-1986. They applied cost function approach and concluded that IT was able to save personnel costs, hence overall operating costs and increase capital expenditures of banks (as IT expenditure was part of capital expenditure) led shrinking demand deposits, and boosting time deposits.

Another researcher Sullivan (2000) had come out with similar findings. He argued that Internet Banking also performed well as compared to brick-and-mortar banks despite of huge additional investment in IT. He also said that these Internet Banks generate comparatively more non-interest income, which might have helped them to overcome additional expenses.

There were few researchers whose research showed neutral impact of IT investment on profitability of USA banking sector. DeYoung (2005) studied and compared the US **traditional brick and mortar banks and Internet only banks**. His investigation was based on the performances on the US economy. He observed that majority of the newly start-up Internet-only banks underperformed the well-known banks at first. Also, he said that bank profitability was lower for internet-only banks and remarked that the said performance of this bank diminishes over time as these fresh banks grow older, larger and stronger; and recommended in his study that the Internet-only banking model could possibly be feasible as far as it performed efficiently.

Furst et al. (2002) also tried to establish a link between offering electronic banking and bank's profitability. They concluded that federally chartered US banks had higher Return on Equity (ROE) by adopting the Click and Mortar Business Model and they also observed that more profitable banks adopted internet banking after 1998 but yet they were not the first movers. These researchers concluded that e-banking was too small a factor to have affected bank profitability at that time.

So, basically researchers of the USA had the mixed opinion about the relationship between the IT investment and profitability of the banks.

Another developed country- Spain’s banking industry was ahead in accepting technological challenges and incorporated technological innovations to increase competitiveness of their banks and Fintech as compare to their counterparts across the world. Hernado and Nieto (2007) studied Internet banking scenario in Spain and argued that Internet banking was perceived as an additional channel to complement traditional banking. They studied the effect of adopting of a transactional website on over 70 Spanish banks between 1994 and 2002 and found a **steady decline in staff expenses** and overhead and as a result of the adoption of Internet **Banking**, which they in turn associated with improved bank profits. These researchers predicted that larger Spanish banks would adopt Internet banking.

Russia – non developed country could represent Asia as well as European culture being transcontinental country. Kiselev et al. (2016) developed “methodical approaches to assess the impact of electronic banking service on the economic parameters of the Bank activity” using Russian Banks’ data. To develop this model, they used factor analysis, pair correlation, multiple correlation analysis, matrix models, and mathematical modelling. They suggested through a proposed mathematical model that when information technologies which were embedded in the organizational system of the banking organizations have systemic effects. And these systemic effects were expressed in the boosting of processes of consolidation, innovation activity, which influence significantly the economic and functional parameters of the banking organization's activity in the whole.

India is a developing country and we compare Indian banks' outcome with their counterparts from developed countries, it would be unfair towards them. So, the similar kind of research performed in few developing countries like Mexico, Brazil, Russia as well as India was taken into consideration. Ivatury and Mas (2008) noted in their paper that **branchless banking** could reduce the transaction cost and hence could be beneficial to the poor and unbanked people. Also in this regard, they observed that few poor and unbanked people started using branchless banking of financial services specifically they were operating mobile banking. Yet, another observation made by them that branchless banking facilities adopted by customers generally for payment purpose not for savings and credit.

1991 year was also remarkable in Indian banking history as it paved the way for private banks to enter in Indian financial market. Although, India's first ATM was installed in 1980, Indian banks started embracing technology wholeheartedly only after IT sector boom in India. So, the Indian researchers started talking about Banking Technology and Fintech then after.

Gopalan et al. (2012) studied the IT investment weightage in banking industry and bifurcated banks into different categories realizing all Indian banks had different approach towards Information Technology. Four categories were i) Heavy IT transformer ii) High IT spenders iii) Effective Business Enablers iv) IT executors. "Heavy IT transformer" whose spending in IT was high as compared to other categories. "Effective Business Enablers" were those banks whose spending in IT was high and but at the same time they experienced the highest revenue growth as compared to "Heavy IT transformer". Effective Business Enablers could experience high growth because of stringent demand management process to govern Project Section and funding. Top management often formulate IT strategy and IT road map and make deliverables aligned business strategies.

Sujeesh Kumar (2013) and Dhingra (2014) had used different tools to measure the profitability. Sujeesh Kumar (2013) found the impact of Information Technology on Total Factor Productivity (TFP). He applied non parametric Data Envelopment Analysis (DEA) for public sector, private and foreign banks operating in India. He used multiple regression models and concluded that increased electronic transactions in the banking channel had resulted in the increase in productivity.

Dhingra (2014) measured the efficiency of IT deployment using Data envelopment Analysis (DEA). He applied non parametric Data Envelopment Analysis (DEA) for 26 public sector Banks for the period 2003 till 2009 and made an observation that overall efficiency had improved due to improvement in scale efficiency. He concluded that banks improved their efficiency in terms of finding proper locations of ATMs where they could be maximally utilized and ensuring the minimum downtime of the IT systems.

Narwal and Pathneja (2015) also measured profitability and productivity using DEA analysis. They performed the analysis on private and public sector banks and found that private sector banks were more productive and profitable.

Parameswar et al. (2017) analysed the IT investment in one specific Indian bank - ICICI bank. They concluded that if the investment in IT could be done through detail product study, its application and usability; then technology could be used to broaden boundary. Banks would be able to reach under-served consumers in rural communities with innovative products, financial literacy outreach, and efficient modes of product delivery.

So various literatures whether they were from developed countries or developing countries had diverse opinion. Similar type of suggestion was made by Ahmed et al. (2010) as they reviewed many literatures to analyse the view of researchers on "Impact of Internet Banking on banks performance". They found mixed opinion of researchers on Banks performance. Although it was concluded that indeed Internet banking had raised cost significantly, still several benefits were also experienced by Banking Industry. One of the benefits was - Banks were able to offer additional financial services to their customers through Internet.

Alpar and Kim (1990), Mahmood and Mann (1993), Kiselev et al. (2016), Sullivan (2000), Sujeesh Kumar (2013) and Hernado and Nieto (2007) found positive impact on profitability by IT investment. Parsons et al. (1993) also found positive impact but they said that benefits of increased IT investment were being credited to customers' account not to the banks. While Sullivan (2000) suggested that the positive correlation was because of generation of higher non- interest income. And Dhingra (2014) attributed improved scale efficiency as the factor to the positive correlation.

On the other hand, a few researchers did not find positive impact between increased IT investment and its impact on profitability. Noteworthy among them were Beccalli (2003), DeYoung (2005) and Parameswar et al. (2017) who could not establish any positive correlation between increased IT investment and its impact on profitability. Whereas, Furst et al. (2002) concluded that increased IT investment was very small factor to decide profitability of the banks.

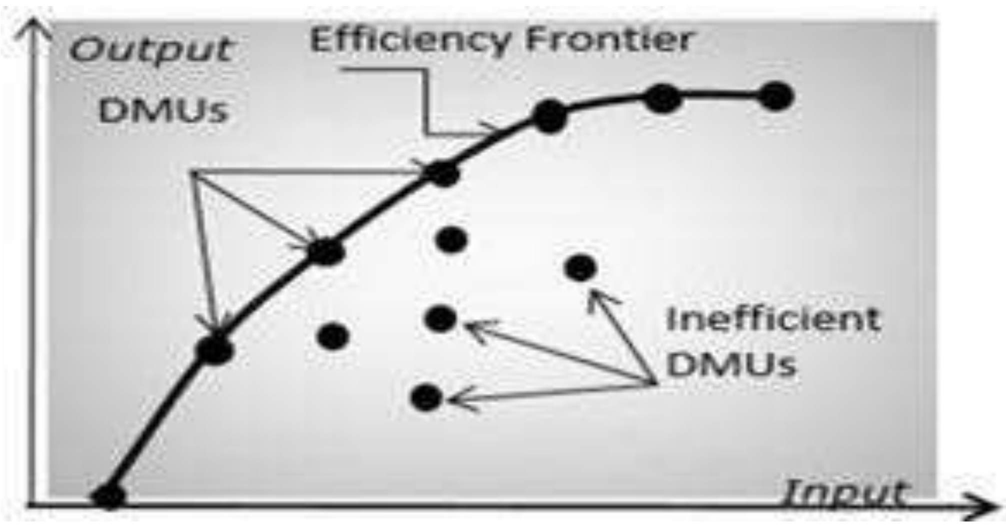
In contrast to above researchers, Shirley and Mallick (2005) suggested that banks profits declined due to adoption and diffusion of IT.

3.0 Research Methodology

Data Envelopment Analysis (DEA), developed by Charnes et al. (1978) had emerged as an important tool to evaluate the efficiency of a set of "Decision Making Units" (DMUs) using multiple inputs to product multiple outputs. DEA is a non-parametric method of operation research. DEA extensively applied in performance evaluation and benchmarking in a wide variety of contexts including educational departments in public schools and universities, health care units, prisons, agricultural production, and banks.

DEA evaluates the inputs consumed and outputs produced by DMUs and identify those units that comprise an efficient frontier and those that lie below this frontier as shown in Figure 1. (Tlig et al.,

Figure 1: Efficient Frontier of DEA



2009) DEA determines a set of weights such that the efficiency of DMU_0 (target DMU) relative to the other DMUs is maximised. For an inefficient DMU, it identifies the source and the amount of inefficiency in each input relative to each output. DEA models can be either constant or variable returns to scale (Banker et al., 1984). DEA model can be used with very small data precisely because it is a non-parametric approach.

In other words, to perform DEA model in evaluating multiple DMU'swith multiple inputs and outputs, the following are required:

- Input and output for each DMU is to be specified;
- Define efficiency for each DMU as a weighted sum of outputs [total output] divided by a weighted sum of inputs [total input]; where all efficiencies are restricted to lie between zero and one (i.e., between 0% and 100%).

In calculating the numerical value for the efficiency of a particular DMU weights are chosen so as maximise its efficiency, thereby presenting the DMU in the best possible light

The CCR Model of DEA

CCR model, which was initially proposed by Charnes et al. (1978), can be represented as a fractional linear programming problem.

4.0 DEA Mathematical Model

Objective Function:

Maximize

$$Eo = \frac{u_1 y_{1o} + u_2 y_{2o} + \cdots + u_s y_{so}}{v_1 x_{1o} + v_2 x_{2o} + \cdots + v_m x_{mo}}$$

(Maximize the efficiency rating ¢ for service unit 0.)

This is subject to the constraint that when the same set of u and v coefficients is applied to all other service units that are being compared, no service unit (SU) will be more than 100% efficient as follows:

Subject to

$$\frac{u_1 y_{1j} + u_2 y_{2j} + \cdots + u_s y_{sj}}{v_1 x_{1j} + v_2 x_{2j} + \cdots + v_m x_{mj}} \leq 1$$

$v_1, v_2, \ldots\ldots, v_m \geq 0$

$u_1, u_2, \ldots\ldots, u_s \geq 0$

Where E_0 = *the efficiency of the 0th DMU,*

y_{so} = *sth output of 0th DMU*

u_s = *weight of sth output*

x_{mo} = *mth input of the 0th DMU*

v_m = *weight of mth input*

Here the DMU_j to be evaluated on any trial be designed as DMU_o where j ranges over 1, 2, n.

The constraints meant that the ratio of “virtual output” to “virtual input” should not exceed ‘1’ for every DMU.

4.1 Input /Output variable

To measure the efficiency of IT deployment, input variables need to be decided (Dhingra, 2014). The input variables included in the present study were;

i) Computerization expenditure to operating expenditure

ii) Number of ATMs,

iii) Electronic transaction volume to total transaction volume

The following variables were used as output variables in the present study

i) Business per employee,

ii) Business per branch

iii) Operating profits per employee to measure the efficiency of IT deployment

DEA technique as discussed earlier was used to find out profitability of IT investment. Brynjolfsson& Saunders (2009) suggested that if Banks invest today in Information Technology, they would experience the growth in productivity after the gap of 3to 4 years. Hence, the DEA model used for the study took into consideration input for last four financial years and calculated their efficiency or productivity. For example, input variable values considered for 2009-10, 2010-11, 2011-12 and 2012-13financial years, then output variable values used for the financial year 2012-13 and efficiency was calculated using DEA model for the financial year 2012-13. We selected 23 banks from private sector and public sector based on convenient sampling and availability of the data. Each bank in DEA calculations considered as separate DMU. Out of the 23 studied banks, 11 are public sector banks whereas 12 banks are private banks. We calculated efficiency separately for private and public sector banks as both the sector worked on different scale. To calculate efficiency, Data was taken from last decade i.e., from 2008-09 till 2018-19, from Prowess database, a corporate database developed by Centre for Monitoring of Indian Economy (CMIE); MoneyControl.com and RBI trend and progress reports and various other RBI reports from 2008-09 till 2018-19.

Most of the existing empirical studies adopted the production function approach, describing business profits (outputs) as a specific function (i.e., Cobb-Douglous) of inputs. The production approach considers the efficiency, with which inputs (physical variables such as e-transactions, ATMs, IT expenditure, etc) are converted into business outputs. So, in the same line, in the proposed study, we adopted DEA model and all output variables and input variables was converted to objective function and constraints to solve linear programming. Objective function in the study was to maximize the efficiency of IT investments.

Microsoft Excel and DEA frontier software were used for computation purpose. And DEA analysis was performed using 'Solver' add-in in Microsoft Excel i.e., a customized program was written to solve DEA mathematical model. As DEA analysis was supposed to perform for 243times (23 banks multiplied by 11 years), analysis was done though automated process. For that VBA program code was developed and executed to get the result (efficiency). Efficiency scores between 0 and 1 was obtained for every bank, for each year. The average efficiency of all the public sector and private sector banks for each year was computed. On each year of data, CCR model and BCC model was applied.

5.0 Results & Finding

The technical efficiency for all 23 banks was calculated for the period from 2012-13 to 2018-19. DEA used all the banks as separate DMUs. For example, for the year 2012-13, while calculating technical efficiency of Allahabad bank, DEA model would consider it as DMU_0. DEA model would then compare DMU_0's efficiency with all other DMUs (i.e., with all other banks). If the DMU_0 is part of efficient frontier (refer Figure 1), its technical efficiency would be 1.00 i.e., 100%. So, by referring the Table -1, it was observed that Allahabad bank -DMU_0 was on efficient frontier for the year 2012-13. Apart from the Allahabad Bank - Bank of India, Bank of Maharashtra, Central Bank of India, Dena Bank and State Bank of India from public sector banks could achieve100% efficiency for the year 2012-13 i.e., the whole amount of input could generate the desired output. In other words, we could say that input variables such as e-transactions, ATMs, IT expenditure led to growth in ratios such as Business per employee, Business per branch operating profits per employee. On the other hand, Andhra Bank, Canara Bank, Bank of Baroda, Corporation Bank and IDBI Bank Limited from public sector banks were below the efficient frontier line i.e., could not attain 100% efficiency as compare to their counterparts.

Table 1: Technical Efficiency of 23 select banks for the period from 2012-13 to 2018-19

Bank Name	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
Public Sector Bank							
Allahabad Bank	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Andhra Bank	0.75	0.83	0.91	0.93	0.94	0.92	0.99
Bank Of Baroda	0.90	0.72	0.72	1.00	0.93	0.91	0.72
Bank Of India	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Bank Of Maharashtra	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Canara Bank	0.64	0.77	0.77	1.00	0.95	1.00	0.76
Central Bank of India	1.00	1.00	1.00	0.90	0.97	1.00	1.00
Corporation Bank	0.51	0.63	0.63	0.94	0.70	1.00	0.63
Dena Bank	1.00	1.00	1.00	1.00	1.00	1.00	1.00
IDBI Bank Limited	0.60	0.51	0.51	0.75	0.72	0.85	0.51
State Bank of India	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Private Sector Banks							
Axis Bank Ltd.	0.78	0.89	0.89	0.98	1.00	0.70	0.95
Catholic Syrian Bank Ltd	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Federal Bank Ltd	0.41	1.00	1.00	0.23	0.60	0.40	1.00
HDFC Bank Ltd.	0.61	0.40	0.40	0.47	1.00	0.76	0.40
ICICI Bank Ltd.	0.59	0.77	0.77	0.92	1.00	0.82	0.77
Karry's Bank	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Indusind Bank	0.40	0.53	0.53	0.59	0.91	0.58	0.50
Jammu & Kashmir Bank Ltd	0.99	1.00	1.00	1.00	1.00	0.93	1.00
Karnataka Bank Ltd	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Kotak Mahindra Bank Ltd.	0.54	0.46	0.46	0.50	0.84	0.61	0.45
Lakshmi Vilas Bank Ltd	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Yes Bank Ltd.	0.49	0.42	0.54	0.71	0.98	0.58	0.63

From the Table I, it was noted that among all Public Sector Banks, Allahabad Bank, Bank of India, Bank of Maharashtra, Central Bank of India, Dena Bank and State Bank of India achieved 100% efficiency for the years of select period. For these banks expenditure made for Banking Technology led to profitability for the period 2008-09 to 2018-19.

Similar kind of observations made for few of the Private Sector Banks such as Catholic Syrian Bank Ltd., Karur Vysya Bank, Karnataka Bank Ltd. and Laxmi Vilas Bank; as they could achieve 100% efficiency for the entire period. Banks such as Jammu & Kashmir Bank could achieve 100% efficiency except one year. For all other banks, we could say they had scope to improve the efficiency in terms of investment in IT. All this could be partly due to the factors such as demand for innovative customer services through mobile banking and social media, major changes in regulatory environment, inflexibility of banking technology to cope up with service requirement.

To take a comprehensive view of the public sector and private sector banks, we derived and calculated from Table -I 'Average Efficiency' for all the select public sector and private sector banks. Table -2 shows sector wise the Average Efficiency, which makes comparison of two sectors more visible.

Table 2: Average Efficiency of 23 select banks for the period from 2012-13 to 2018-19

Bank Name	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
Public Sector Banks	0.854	0.859	0.866	0.956	0.929	0.971	0.872
Private Sector Banks	0.734	0.788	0.798	0.783	0.944	0.782	0.808
Overall Average Efficiency	0.794	0.824	0.832	0.870	0.937	0.876	0.840

From Table II, it was observed that Average Efficiency of Public sector banks outruns the average efficiency of Private sector banks for the entire period except financial year 2016-17. In 2018-19 year, all the banks achieved highest efficiency all together as compared to other years.

CCR model of DEA which was used to calculate efficiency, had limitation. The result of CCR Model was purely based on technical efficiency and it does not take into consideration scale. Return to scale Model of DEA or BCC Model proposed by Banker et al., 1984 can be applied to remove the effect of scale in finding out efficiency. So, the BCC Model of DEA also was applied to the above data. For all the select public sector and private sector banks, BCC model calculated efficiency exactly as 1.00 for the entire period.

There is a concept called scale efficiency. Scale efficiency can be calculated by dividing CCR model efficiency with BCC model score efficiency. Then the scale inefficiency can be calculated by subtracting scale efficiency from 1. (Banker et al., 1984) Percentage scale inefficiency could be obtained by multiplying it with 100. The Table III showed the composite scale inefficiency of public and private sector bank. It was observed from the table that public sector banks' scale inefficiency was reduced marginally from 14.6% to 12.8%, while Private sector banks' scale inefficiency was reduced from 26.6% to 19.2% for the select period. So, we could say that because of more investment and usage of IT, Public and Private sector banks could shrink their scale inefficiency.

Table 3: Average inefficiency in percentage of 23 select banks for the period from 2012-13 to 2018-19

Bank Name	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
Public Sector Banks	14.6%	14.1%	13.4%	4.4%	7.1%	2.9%	12.8%
Private Sector Banks	26.6%	21.2%	20.2%	21.7%	5.6%	21.8%	19.2%

Apart from just calculating efficiency (€), DEA also identifies Banks' inefficiency directly against another Bank. (Cooper et al., 2000) This efficiency reference set (ERS) includes the group of Banks against which each inefficient Bank was found to be most directly inefficient. The presentation in Table 4 summarizes the magnitude of the identified inefficiencies by comparing the inefficient Bank with its efficiency reference set for the year 2018-19 for private banks.

Table - 4: Efficiency Reference Set for the year 2018-19

			Catholic Syrian Bank Ltd	Jammu & Kashmir Bank Ltd	KarurVysya Bank	Yes Bank Ltd.
DMU No.	DMU Name	Efficiency	Optimal Lambdas			
1	Axis Bank Ltd.	0.95	0.0010	0.0062	0.0032	
2	Catholic Syrian Bank Ltd	1.00				
3	Federal Bank Ltd	1.00				
4	HDFC Bank Ltd.	0.40	0.0001	0.0505		0.3448
5	ICICI Bank Ltd.	0.77				
6	Karur Vysya Bank	1.00				
7	Indusind Bank	0.50		0.0348		0.4684
8	Jammu & Kashmir Bank Ltd	1.00	0.4758	0.4758		0.5752
9	Karnataka Bank Ltd	1.00				
10	Kotak Mahindra Bank Ltd.	0.45		0.0355		0.4174
11	Lakshmi Vilas Bank Ltd	1.00	0.5674			0.6610
12	Yes Bank Ltd.	0.63		0.0512	0.0012	

DEA calculates ERS for all inefficient banks. As shown in Table -IV, HDFC Bank 's efficiency is 0.40 i.e., it had scope to improve its efficiency. ERS showed that HDFC Bank found to have operating inefficiencies in direct comparison with Catholic Syrian Bank Ltd. (0.001), Jammu & Kashmir Bank Ltd. (0.0505) and Yes Bank Ltd. (0.3448). The value in parentheses in Table IV represents the relative weight assigned to each efficiency reference set (ERS) member to calculate the efficiency rating (0). For example, one way for HDFC bank to become efficient was to reduce its inputs to 40%of its current level. This would move HDFC Bank into the relatively efficient production segment.

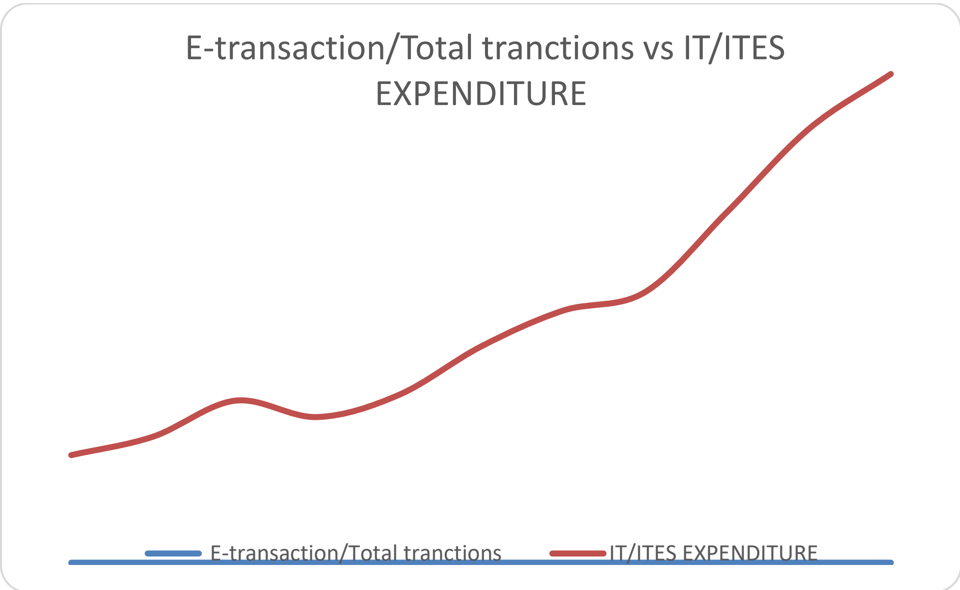
The inputs and outputs of the Catholic Syrian Bank Ltd., Jammu & Kashmir Bank Ltd. and Yes Bank Ltd. were multiplied by the weights derived by ERS noted in Table III, 0.001, 0.0505 and 0.3448, respectively. These are then added together to create a composite unit that provides as much or more services as the inefficient Bank- HDFC Bank, while also using less inputs than HDFC Bank.

Similarly, Lakshmi Vilas Bank Ltd. found to have operating inefficiencies in direct comparison with Catholic Syrian Bank Ltd. (0.5674) and Yes Bank Ltd. (0.6610).

6.0 Discussion on Findings

It is generally assumed that when E-transactions increases; to accommodate, save and process this increased traffic of transactions, IT expenditure also increases as bankers will have to spend more on servers, data storage, network, etc. Figure 2 shows increasing trend in ratio of E-transactions with respect to total transactions along with increasing trend of IT investment of the select banks for the period of 2008-09 to 2018-19.

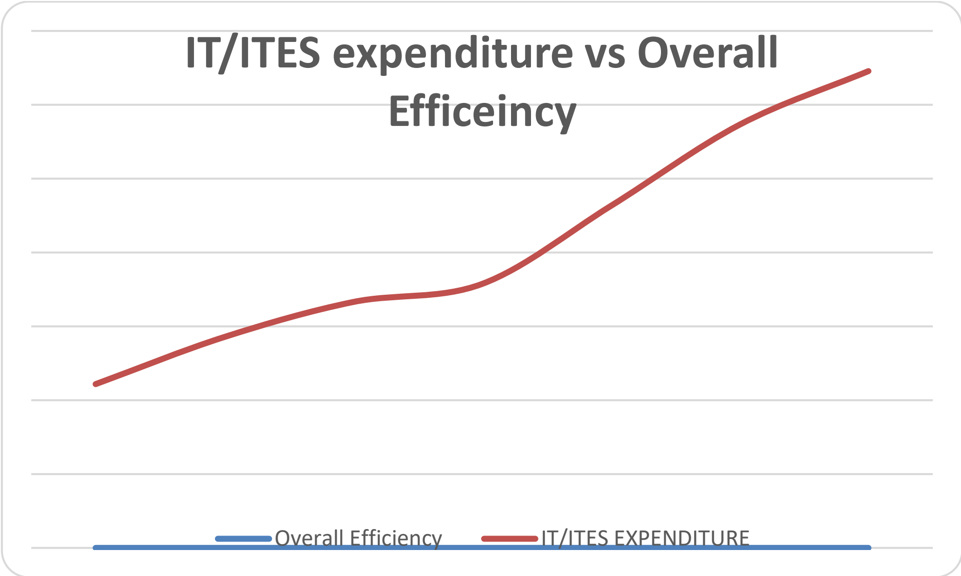
Figure 2: E-transaction vsIT/ITES expenditure,



Source: RBI

Next is IT/ITES expenditure and overall efficiency graph was captured for the select banks for the period of 2012-13 to 2018-19, which showed increasing trend in expenditure which matched with the trend of overall efficiency of select banks till 2016-17, then overall efficiency showed downward trend.

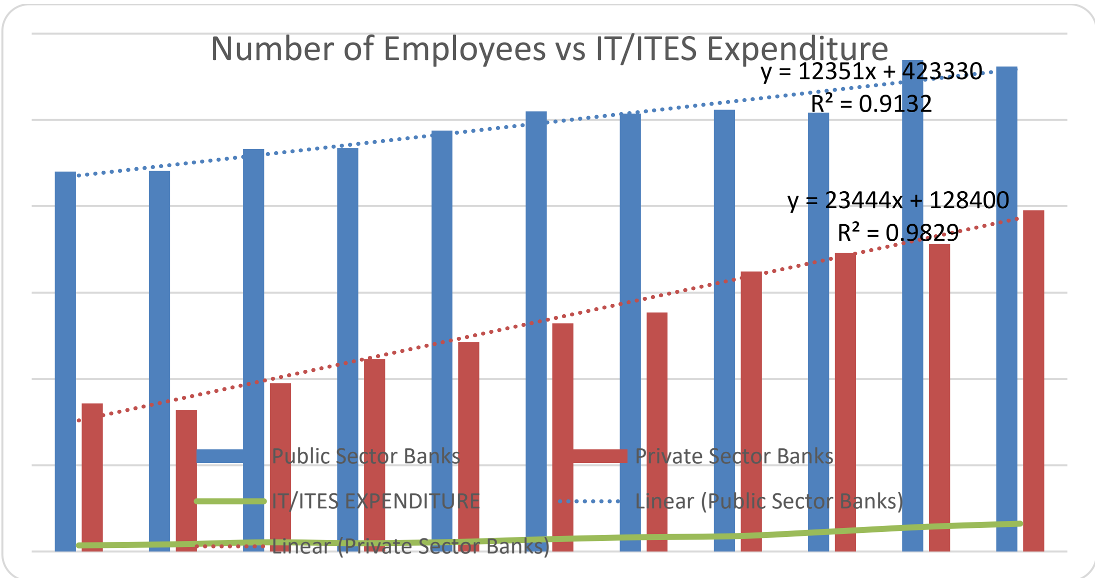
Figure 3:IT/IT Expenditure Trend



Source: Prowess database by CMIE

Sujeesh Kumar (2013) & Sullivan (2000) observed that Banks were investing in technology by acquiring innovative technology or replacing legacy system; to improve customer satisfaction, to survive in competition, to improve operating efficiency, etc. However, if we observe the collected data from Table II and figure 3 for the select banks, it was evident that although IT/ITES expenditure was increasing year on year but efficiency was not moving at the same pace for the entire select period. So, as pointed out by Parsons et al. (1993), we could say that increase in expenditure might have resulted in increased customer satisfaction but may not have contributed in increasing efficiency.

Figure 4: Number of Employees Overall Efficiency



Source: RBI Annual Data & Prowess database by CMIE

Number of employees had also experienced increasing trend for the select banks and so would be IT/ITES expenditure (Refer Figure 4). But trend line slopes were different for expenditure and number of employees. Select public sector banks had experienced mere 27.7% growth in number of employees for the period 2008-09 to 2018-19 while select private sector banks had experienced 130.4% growth in number of employees for the period 2008-09 to 2018-19. Whereas IT/ITES expenditure witnessed huge 354.4% growth for the same period.

Hence, as Alpar and Kim (1990) concluded that IT expenditure would be able to shrink personnel cost, this could be evident specifically for the select public sector banks.

One another observation was, average efficiency was higher for public sector banks as compared to private sector banks (Refer Table II). However, Agrawal et al. (2017) derived from their study that private sector banks were performing better than public sector banks. The difference in efficiency may be due to the technology or production process used, how well that process is managed. Another reason attributed to lower efficiency of private sector banks was due to increase in number of branches in small towns and rural setups, wherein the banks had to spend on the infrastructure. And in the initial gestation period the revenue of such banks would be lower as compared to PSUs.

In another finding, Efficiency Reference Set was calculated and revealed their operating inefficiencies in direct comparison other efficient banks. Banks can improve their efficiency by taking lessons from successful strategies, technology and operations adopted by their peer banks.

7.0 Limitations

1. Due to limited time and unavailability of data, DEA analysis was performed on select 23 banks only.
2. For one of the selected input variables 'electronic transaction volume to total transaction volume' overall banks volume was considered as bank wise transaction volume was not available easily.

8.0 Conclusions

Indian banks have adopted innovative &modern banking technology at a fast pace. Both public sector and private sector banks have already implemented e-banking facilities and hence made huge investments. These technology-driven services are going to make jobs easier for bankers as well as customers. Ahmed et al. (2010) concluded in their paper that banks could offer more innovative services to customers. This has raised customer satisfaction in terms of availability of services 24 *7, services available at the tip of the fingers; need not to stand long queue, etc.

Data collected for total number of e-transactions as compared to total number transactions showed increasing trend since 2008-09 till 2018-19; despite of the security threats, payment challenges. Similar trend was observed for the investment in Technology. This scenario suggested increasing popularity of banking technology among bankers as well as customers over the period of time. As shown in Table II, average efficiency of the public sector banks was higher than private banks for the period from 2012-13 till 2018-19that means they were utilizing resources more efficiently than private sector banks. Also, DEA calculations indicated that in 2016-17-year, overall efficiency of all the banks was highest as compared to other years. Still, only some of the banks could achieve 100% efficiency which signals that the other banks still have a scope to improve their efficiency. Ultimately, Banks' victory in digital transformation will depend on how strategy, technology and operations work together across domains. (Egland et al, 1998) To achieve this, banks should improve their skills at data management, modernizing core infrastructure, embracing Artificial Intelligence ('AI') and migrating to the public in the coming years.

To achieve the desired efficiency out of IT Technology, bankers should have to make wise decision as they might face challenges like which systems should be replaced first? Systems that process high volumes of transactions like core deposits and credit card platforms, will likely take significant effort to transform versus some lending platforms that might be easier to migrate. Another challenge could be choice between Robotics Process Automation ('RPA') and AI. RPA increases productivity whereas AI gives intelligent insights on clients, compliance and operations. Therefore, if banks could resolve their above issues, they would definitely be able to increase their revenue and in turn can pass the benefits to their stakeholders.

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The Perceived Importance of Spirituality Amongst Employees in the Workplace A Qualitative Study Based on Manufacturing Industries

Param Saraswat and Sapna Chauhan***

ABSTRACT

This paper attempts to explore the perceived importance of spirituality in the workplace in different generational groups, in the general workforce of the manufacturing Industries in Vadodara. This exploration carried out a clearly under-explored area of research in the workplace.
Therefore, this study is the first of its kind. To make this research possible, we conducted an extensive literary study and conducted 10 semi-structured interviews with people from three different age groups: – 18-30, 30-45, and 45-65. The resulting product revealed the perceptions of the phenomenon of spirituality in the workplace, and the variations in these perceptions across different generations; differences and similarities interpreted between spirituality and religion in the workplace; relevance of spirituality in the workplace; and its impacts on the individuals' organizational commitment. In addition, the research paves the way for future research, including a broader perspective that may be useful for industrial management.

Keywords: *Spirituality; Age diversity; Religion; Workplace spirituality; Organizational commitment.*

1.0 Introduction

> ***'Something spiritual is creeping into the workplace, and it seems to be gearing up to be morethan a trend.' (Laabs, 1995:62)***

The significance that works holds in a person's life shapes the central part of an adult's identity, as it absorbs effects from the intellectual, physical, psychological, emotional, and social conditions surrounding them (Fairholm, 1996 & Fourie, 2014). Since these elements are constantly changing; the work and job of a specialist can't be portrayed as static. Despite the fact that, cash is a great spark for some functioning people, for a few, work additionally establishes of giving seriousness; an edge of life. As Mitroff and Denton (1999) put it, after a specific limit, pay stops to be the prime motivator for work, and higher needs begin prevailing.

In any case, aside from the material achievement, this pervasive arrangement of thought has delivered the world, and work, significantly lacking in depth (Mohan and Uys, 2006). People have begun detecting this absence of profundity, particularly at the work environment, where they spend larger part of their dynamic days, and have begun scrutinizing their genuine situations inside these organizations and what it means for their personal satisfaction.)

As Cavanaugh (1999) has put forth an emerging need that is necessary to be acknowledged as:

'The needs that business people often feel are a separation from other people, alienation from their work, a lack of meaning in their lives. They often experience their work, family life, and their faith to be in separate compartments . . . This separation leaves one feeling dry, unfulfilled and unhappy, and its often experienced as a profound absence or vacuum in one's life.' (p.186)

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Researchers have followed back the historical backdrop of authoritative sciences and management theories, including Fredrick Taylor's designing methodology in the mid twentieth century. This methodology put an incredible accentuation on actual viability and effectiveness, while at the same time depicting humans at work as a physical extension of machinery. This view additionally stretched out by Henry Portage who had communicated his dissatisfactions citing why do I always get stuck with the whole person rather a pair of hands – hands were what I hired, but troublesome bodies and querulous minds were what I often get…' (Clegg, Kornberger and Pitsis. 2011: p.43). Hawthorne's examinations in the 1930-40s featured the significance of emotional and social needs along with physical efficiency and high standard performances. Continuing on to 1970s, and onwards into the 1990s, where people at work were not just considered physical and emotional beings but also thinking beings' (Marques, Dhiman & King, 2007: iii). Be that as it may, another measurement has been entering the condition. It mirrors a longing for a more profound significance, association, purpose, and simplicity. Working environments that were formerly running on achievements of judicious objectives are currently observed to be possessed by people who are now also seeking spiritual fulfillment.

1.1 Purpose of the study

The motivation behind this study is to uncover this new phenomenon arising in the working environment. The manufacturing firms in Vadodara, India, chosen to conduct this study. Vadodara is a colossally pluralistic city as far as language, nationality, religion, and culture. This study will focus on the apparent significance of spirituality inside the work environment. Moreover, it was likewise of interest how spiritual relevance means impacts the employee's commitment to the workplace. The data gathered for this study is of both primary and secondary nature. The secondary data is collected through a literary research. The primary data has been conducted through a thorough process of semi-structured interviewing.

2.0 Literature Review

This literature review is divided into four main portions for the sake of clarity and understanding i.e.

- **i) The significance of spirituality and spirituality in the workplace.**
- **ii) The definition and meanings of spirituality in the workplace.**
- **iii) The differences between religion and spirituality in the workplace.**
- **iv) The effects of spirituality in the workplace on organizational commitment.**

2.1 The significance of Spirituality and Spirituality in the Workplace:

People look forward to experience spirituality not only in their personal lives but also at work, where they spend a significant active portion of their active days (Neck & Krishankumar, 2002). Ashmos & Duchon (2000) referred to this sudden upsurge as the spirituality movement, and advocated it as an attempt to enhance the employee experience by allowing interactions with their spiritual dimensions.

These dimensions have less to do with rational systems of rules and order, but more with meaning, purpose, and community. Sheep (2006) noted the importance of spirituality in the workplace by relating it not only to individual levels, but also on organisational and societal levels. Various scholars (Cavanagh, 1999; Pawar, 2009; Mohan & Uys, 2006; Marques, Dhiman & King, 2007; Van Tonder & Ramdass, 2009; Gaicalone & Jurkiewicz, 2010; Cash & Gray, 2000; Milliman, Czaplewski & Ferguson, 2003; Benefiel, Giegle & Fry, 2014) have indicated towards the increased attention to the phenomenon. This is demonstrated by the growing number of books and articles being authored and published on spirituality in business, including the Journal of Management, Spirituality and

Religion. Marques, Dhiman & King (2007) mentioned organizations, referred to as incubators of spirits, which are actively attending to their employees' needs by helping them find a balance between personal and professional lives, whilst helping them reach their full potential.

Fourie (2014) and Giacalone & Jurkiewicz (2010) hold the changes that are occurring at societal, economical, technological, historical, political, and cultural levels responsible for having a deep effect on the fundamental nature of work. In the recent scenario, various events have emerged that led to an insecure economy and an existential anxiety as individuals, also at work, find themselves unable to develop a sense of identity (Frankl cited in Mohan & Uys, 2006). Van Tonder & Ramdass (2009) have also voiced similar opinions by rendering spirituality a requisite of a need-driven and anxious society. A review of these events and scenarios, conducted by Marques, Dhiman & King (2007), Ashmos & Duchon (2000), Leigh (1997), Dehler & Welsh (2010), Cash & Gray (2000), and Harrington (2001) revealed the sources of the anxiety that has plagued the modern workplace. These are:

- The stunning occasions of eleventh September 2000, the market decline, fall of Enron that passed on the world unsteady and drove its occupants to frantically long for soundness.
- The downsizing, layoffs, and reengineering bringing about debilitate and cynical workers.
- Decrease in access to the neighborhoods, temples, and families as a source of connection
- A greater access to information has made organisational hierarchies' flatter as compared to the traditionally pyramidal hierarchy. The employees, now, are the knowledge workers, who must not only exert their skills and intelligence at work but also emotional labour.

Besides, the prevailing culture of individualism and cut throat competition in the work place has been a danger to the agreeable outlook and climate. Something that spirituality in the work environment firmly promotes, and tries to build up. This pandemonium and lack of definition, that has immersed the cutting-edge working environment, prodded the requirement for manageable and unique methods of getting sorted out and dealing with the work environments ((Harman, Ray & Rinzler as cited in Freshman, 1999).

Gozdz (2000) holds the culture of positivism, reductionism, and empiricism responsible for having stripped the workplace, and individuals in these workplaces, of their spirits. However, there is an increment in the recognition of the need of connecting spiritually to one's work in order to bring meaning, joy, happiness, and purpose at work. The lack of depth, as a result of the Cartesian-Newtonian system of orientation, pertaining in these organizations is obvious in their vision and mission statements. They are focused on achieving the material targets, such as a dominant position in the market or industry, maximizing their shareholders' wealth, and achieving more and more profits. Moreover, the recent scandals emerging in the major corporations have also induced the need of spiritually and ethically orientated management (Gull & Doh, 2004). Similarly, Sheep (2006) pointed, as a consequence, towards the unfulfilling relationship between the employer and the employee which, he suggested, could be improved through three relevant areas of study; business ethics, corporate social responsibility, and workplace spirituality. He further commented that workplace spirituality contained the elements that could be useful to satisfy the employees' inner yearnings.

Karakas (2010) agreed with Ashmos & Duchon's (2000) stance of the spirituality movement and emphasised on the need of working environments that provided, along with financial rewards, experiences that enhanced the spirit, fulfilled the heart, and translated into personal and professional growth. He further mentioned large corporations like Coca Cola, Sears, Boeing, Intel, who have actively pursued the incorporation of spirituality into their cultures, strategies and practices. Nevertheless, Lips-Wiersma & Mills (2002) argued that spirituality is not something that needs to be introduced in the workplace, but it is something that is an inherent part of the individuals when they report to the workplace.

Scholars (Bandsuch & Cavanagh, 2005; Petchsawang & Duchon, 2009) pointed towards the personal and professional benefits that can be realized through the inclusion of spirituality in the workplace, such as improved ethics and increased productivity. Van Tonder & Ramdass (2009) indicated the overall transformation of the organisational practices that are a result of the individuals' transformation, as they undergo better, fuller, richer experiences and improvements in cultures, translating to productivity and performances. Band such & Cavanagh (1999) brought forth the advantages such as peace, serenity, job satisfaction, meaningful work on individual levels and loyalty, organisational commitment, reduced absenteeism and turnover on organisational levels.

A thorough analysis conducted by Marques, King & Dhiman (2007) and Leigh (1997) revealed enhanced connections and contributions, increased tolerance, advocacy of democratic leadership, organisational citizenship behavior, and ethicality. They found that spiritual mind-sets were more attuned to working hard towards the right directions, for the right reasons. According to Thompson (2001), an effort towards spirituality will also curb the sources that lead to unspiritual workplaces which are mainly driven by human vulnerability. This vulnerability further leads to fear, envy, possessiveness, and conflicts which results in low morale, high turnover, burnout, stress related illnesses, rising absenteeism, and an obey- or-exit work environments.

(In any case, reactions have likewise been voiced against spirituality in the working environment asking for its careful execution. Cavanagh (1999) delivered the dread of pressure and partiality that could be practiced in the working environment, under the umbrella of spirituality. Additionally, Fenwick and Lange (1998) contended that it is, actually, a secretive endeavor to uncover the weak spirits towards additional double-dealings to accomplish corporate objectives. Hence, the significance of moral and all-inclusive reconciliation of otherworldliness in the working environment has been underscored to catch its genuine benefits; trust and dependable opportunity. Dehler and Welsh (2010) demonstrated the risk of representatives being genuinely taken advantage of at work through the affectation of accepting their spiritual identities, just to additional add to the corporate objectives. Bandsuch and Cavangh (2005) further concluded the threats of spirituality in the workplace, if not managed properly, leading to divisiveness, discrimination, misuses, favouritism and superficiality).

2.2 Definition and Meaning of Spirituality in the workplace

Different endeavors to arrive at an all-inclusive definition of spirituality, and spirituality in the working environment, have recognized that no commonly accepted definition of the phenomenon exists. This is on the grounds that there is a wide uniqueness thinking about what spirituality in the work environment truly implies (Marques, Dhiman and Lord, 2007; Neck and Krishankumar, 2002; Van Tonder and Ramdass, 2009; Delher and Welsh, 2010; Kinjerski and Skrypnek, 2004; Heaton, Schmidt-Wilk and Travis, 2004; Harrington, Preziosi and Gooden, 2001; Driver, 2007). Garcia-Zamor (2003: 355) reflected to it as a ' definitional muss'. This absence of a functioning meaning (Lord and Crowther, 2009) has demonstrated to be a bottleneck for the progression in the examination of the conditions and attributes that sway the spirit at work (Kinjerski and Skrypnek, 2004. Konz and Ryan (1999) and Neck and Krinshankumar (2002) remarked that such obstacles in characterizing the spirituality, and spirituality at work, are obvious considering the personal nature of the phenomenon.

Neal asserted that defining spirituality is difficult in light of the fact that individuals are attempting to generalize and classify an experience and method of being that is the center of exceptionally emotional and past arranging' (Heaton, Schmidt-Wilk and Travis, 2004: 123). Moreover, Dehler and Welsh (2010) considered individual decisions and social inclinations liable for people's relationship with spirituality. Marques, Dhiman and Lord (2005) guaranteed that these numerous viewpoints of the importance of spirituality in the work environment delivers this wonder however convincing as it seems to be. In any case, Van Tonder and Ramdass (2009) contended that while this inconstancy demonstrated the significance of the marvel in the work environment, these clashing assessments additionally showed its delicate and questionable nature. Yet this variety of suppositions, Dehler and Welsh (2010) asserted that it is as yet conceivable to give normal and generalizable dimensions of spirituality that can be employed across individuals in the workplace.

Marques, Dhiman & King (2005:82) concluded an inclusive definition of spirituality in the workplace and outlined it as,

'An experience of interconnectedness, shared by all those involved in a work process, initially triggered by the awareness that each person is individually driven by an inner power, which raises and maintains his or her sense of honesty, creativeness, proactivity, kindness, dependability, confidence, and courage; consequently leading to the collective creating an aesthetically motivational environment characterized by a sense of purpose, high ethical standards, acceptance, peace, respect, understanding, appreciation, care, involvement, helpfulness, encouragement, achievement, and perspective, thus establishing an atmosphere of enhanced team performance and overall harmony, and ultimately guiding organisation to become a leader in its industry and community, through its exudation of fairness, cooperativeness, vision, responsibility, charity, creativity, high productivity and accomplishment.''

2.3 The Differences between Religion and Spirituality in the Workplace

The writing so far has kept a sharp spotlight on the distinction among religion and spirituality, and the assortment of viewpoints with which spirituality in the work environment is drawn nearer concerning the relatedness between these two develops (Van Tonder and Ramdass, 2009). The disarray among religion and spirituality is relied upon because of the nearby likenesses between them, in any case, the two builds are as yet observed to be very unmistakable (Harrington, Preziosi and Travis, 2002). While to a few, the contrasts among strict and otherworldliness are garbled, to others the two builds are only unique (Lord and Crowther, 2004). As indicated by Van Tonder and Ramdass (2009), this definitional indefinite quality between the two develops inside a work environment emerges from the absence of comprehension and mindfulness on the people's part. Their investigation tracked down that the people who knew about the build of working environment spirituality were less inclined to get religion and spirituality befuddled together. (Mitroff and Denton's examination (1999) tracked down a solid separation among religion and spirituality in the work environment where religion was considered as an exceptionally unacceptable, though spirituality was viewed as a profoundly relevant topic of conversations. Slope and Smith (2010) affirmed that the qualification among religion and spirituality has accomplished a consent somewhat inside the researchers and people in general too. Notwithstanding, Marques, Dhiman and Lord (2007) have referred to researchers who accept that language of spirituality in the working environment in grounded in the traditions of religious imagery.

Religion, to some, is seen as an organised, structured, and formal system of beliefs, rites, rituals, values, ethics, doctrines and principles (Marques, Dhiman & King, 2005; King 2007, King & Crowther, 2009) established in the past (Harrington, Preziosi, & Gooden, 2001, Van Tonder & Ramdass, 2009) that provides framework of ethicality and morality for individuals, and motivates their behaviour. Whereas spirituality, in contrast to religion, is seen as a non-dogmatic, non-hierarchical, non-exclusive and non-patriarchal phenomenon (Marques, Dhiman & King, 2005) which is neither formal nor structured, and is something that is accessible to all individuals regardless of their religious inclinations (Mohan & Uys, 2006).

Hill and Smith (2010: 174), concluded these differences in the words,

'Religion is more community focused while spirituality tends to be more individualistic; religion is more observable, measurable, and objective while spirituality is less visible and

quantifiable and more subjective; religion is more formal orthodox and organised while spirituality is less formal, less orthodox, and less systematic; religion tends to be behaviour oriented with an emphasis on outward practices while spirituality tends to be more emotionally oriented and inwardly directed; religion is more authoritarian, especially in terms of behaviours, while spirituality is less authoritarian and has little external accountability; and religion is more oriented toward doctrine, specially that which distinguishes good from evil, while spirituality stresses harmony and unity and is less concerned with doctrine.'

King (2007) and Mohan & Uys (2006) explained that despite God, or a higher power, being a main theme in spirituality, it is evident that spirituality is a notion that exceeds the boundaries of religion. They referred to religion as the narrower subset of spirituality.

Twigg et al. (2001) identified three approaches to spirituality in the workplace under the lens of religion. They viewed them as; religious spirituality, which is based on a person's connection with God, or a higher power. Metaphysical spirituality, which is based on one's belief in a force greater than oneself. And lastly, humanist spirituality, also referred to as secular spirituality, based on the search for meaning and purpose in life but outside the circles of religion. Similar typology has been discussed by Neck & Krishankumar (2002) who named these dimensions as religious spirituality, intrinsic spirituality, and existentialist spirituality.

2.4 Spirituality in the Workplace and Organisational Commitment:

Studies carried on spirituality in the working environment affect different work perspectives relating to the employees. Milliman et al. (2002) considered the impact of the three elements of spirituality in the work environment; Firstly, meaningful work. Secondly, a sense of community, and lastly an alignment of spiritual values. These dimensions impact work perspectives like organisational commitment, intention to quit, intrinsic work satisfaction, job involvement and organisation based self-esteem. They found a significant relationship between the components of spirituality and employees ' work perspectives.

Literature has found that spirituality in the work environment is decidedly related with organisational commitment (Fry, 2003; Pawar, 2009; Rego and Cunha, 2008; White, 2010). This is on the grounds that these individuals felt a sense of community inside their work space, and experienced growth on a spiritual level inside the work environment. Garcia Zamor (2003) remarked that the inclusion of spirituality in the work environment delivers new organisational culture that creates bliss and joy, and results in better performances and commitment.

3.0 Research Methodology

This study planned to inspect the phenomenon of spirituality, and its appearance in the working environment, to decipher its apparent importance through the eyes of the members in question. Thus, a qualitative inquiry was considered suitable. As indicated by Meyers (2013)

'Qualitative researchers argue that if you want to understand peoples' motivations, their reasons, their actions, and the context for their beliefs and actions in an in-depth way, qualitative research is the best.' (p.5)

Rather than the definitive approaches, the study required a sensitizing approach (Bryman, 2012). This methodology helped with giving overall sense of direction that could be attempted to uncover the different structures that the marvel of spirituality inside the working environment could embrace inside various generational accomplices. Therefore, this drove the authors to adopt the interpretive viewpoint.

(As per Meyers (2013), an interpretive viewpoint permits an inquirer to achieve thoughtfulness to reality through the social builds of language, consciousness, and shared meanings.

The primary spotlight lied on the setting that illustrated the apparent circumstance through the participants' social lives. The predefinitions of the construct of religion and spirituality were not given to the participants. All things considered, there was a dependence on how the participants gave significance to the perceived phenomenon, and how they related it to their professional lives.)

A reflexive position was embraced where, rather than achieving a separated situation from the external glancing in, the author put himself inside the setting to uncover the social and social components influencing the phenomenon of spirituality in the work environment (Roulston, 2010). This was found advantageous, as the author had comparative social positions and individual encounters with the members; which permitted him to have the option to react, comprehend, decipher and decipher of what was being passed on effectively (Meyers, 2013).

4.0 Participants

General working population of manufacturing industries in Vadodara was considered for the study due to the author's participant access. The access was based on personal contacts in various organizations.

These participants were required to indicate their familiarity with the phenomenon of spirituality within the workplace, their knowledge about the differences between religion and spirituality, and their daily encounters with the phenomenon. The point of intervention of the study is the difference of perceptions between different generational cohorts. The participants were recruited in the form of three age groups; cohort one 18-30, cohort two 30-45, and cohort three 45-65. The participants were from various manufacturing Industries operating in Vadodara. They were petroleum, chemical, mechanical, and civil engineers, hence, covering a general working population.

4.1 Process of data collection

The author utilized semi-structured interviews as the tool of data collection, which are claimed as the most important data collecting technique (Meyers, 2012), in order to enable rich data collection from people of different ages in varied roles and circumstances. The author travelled within city limit to be able to personally conduct these interviews in order to have a better connection with the participant cohorts. These interviews were in-depth and semi structured, containing various pre-defined parameters. Yet, it was ensured that the conversations were not adhering strictly to these parameters, and were allowed a natural flow of dialogue to extract maximum insight and information without putting the interviewee in an uncomfortable position. The interviews were conducted face-to-face on the participant's working premises.

4.2 Measures taken to obtain information

An interview protocol was designed to facilitate the interview procedure. Alongside the interview protocol, an interviewees' demographic factsheet became developed as a way to gain the individuals' demographic perception. The factsheet contained records approximately individuals' gender, religion, age, and year of birth, academic historical past, and level of education, their occupational role, and the length in their career, income degrees, and ethnic backgrounds.

The interview protocol was divided into three segments of questions, each segment tended to a different aspect of the study. These segments were:

- Career and behaviour questions: The career questions intended to investigate the career progress of the participants, and how they aimed to manage their careers in the foreseeable future. The behavior questions intended to investigate the behavior these participants exerted in their daily working lives, and the motivations behind their behavior.

- Knowledge questions: These questions aimed to investigate the knowledge the participants had, and the meanings that they ascribed to constructs involved in the study i.e., spirituality and religion. Additionally, these questions further inquired participants' opinions on the topic. Whether they perceived a difference between the two constructs, and whether they thought spirituality was relevant in the workplace.
- Attitude questions: This set of questions aimed at the attitudes and beliefs that the participants brought to the workplace. This included their values, and their ability to practice these values in their daily working lives. This segment also focused on the organisational commitment of the participants, and how their commitment was impacted by the alignment or non-alignment of their personal values (spiritual or religious) with the organisational values.

4.3 Framework of analysis

The collected data was analysed thoroughly through a thematic analysis to gain an insight into the perceptions of the participants regarding the phenomenon of spirituality in the workplace (Meyers, 2013). The interview transcripts were extensively read, and then were manually coded. The coding consisted of color highlighting the data, breaking it down into small and manageable clusters which were then compared and contrasted against each other.

4.4 Ethical considerations

Due to the sensitive nature of the study, the participants were provided with an informed consent form which acquainted the participants of the nature of the study, as well as the medium of recording. It further ensured the participants that their information would remain confidential and anonymous. The participants were explicitly told that they were able to withdraw out of the study at any time they felt uncomfortable, and the information relating to them would be destroyed immediately. The participants were allotted pseudonyms that ensured their opinions and positions remained anonymous. To uphold the confidentiality of the participants, the transcripts were not added to the final report and were destroyed post- submission.

5.0 Limitations

As the study progressed, several limitations were recognized that were noted for improvements in future attempts. Firstly, inclusion of a more religiously diverse population would gain a better insight on the perspectives of the participants who not only belonged to different religions, but also to different sects within the Pakistani Muslim population. This would highlight the issues of religious diversity within the Pakistani workplace, and how the perspectives of the religiously diverse participants relate to the phenomenon of spirituality within the workplace.

Secondly, it was realized that due to the personal and sensitive nature of the topic, despite their consented and voluntary participations, the participants were somewhat reluctant to express their opinions with comfort. Even though these interviews proved to be extremely beneficial, future research could include observations, in conjunction with the interviews, to gain deeper and richer insights through behaviors and interactions of the participants with each and situations at the workplace.

Whilst the author was able to achieve 45 interviews, each spanning to a substantial average of 30 minutes, providing rich insights. A larger population, including the religiously diverse individuals as mentioned above, would enable the phenomenon to be studied in more depth and breadth in the future researches, inclusive of broader horizon of opinions and backgrounds.

Lastly, a limitation came forth in regards to literature inclusion. To not transgress into the fields of sociological research, it was decided to exclude the works of Max Weber (1958) from the thesis research. However, Weber's work is proven significant regarding the individualization of society and the regression of faith. Therefore, it is highly recommended for further research to include Weber within the source of literature to enhance further insights on the demise of collective faith, and the desensitized experiences of morality within an individualized society.

6.0 Findings: Descriptions, Interpretations & Synthesis

The responses of the participants, generated through in-depth semi structured interviews, led to compelling insights. Apart from the basic inquiry on the perceived meanings of spirituality within the workplace, the differences they perceived between religion and spirituality, its relevance and impacts on organisational commitment, it was discovered that these responses further led to avenues of future research on the phenomenon. Upon an extensive thematic analysis, facilitated by a careful coding process, four main themes emerged that will be described, interpreted and discussed below.

Theme # 1: Perceived Meaning of Spirituality in the Workplace amongst Different Generational Cohorts:

The examination of the interviews revealed that the perceptions of spirituality in the workplace mainly revolved around similar conceptions amongst the participants, regardless of their age. When initially asked about their opinion on spirituality and how they translated it in their working lives, the majority of participants related it to religion and their religious beliefs. Whilst the concept of spirituality in combination with religion was found to be visibly stronger amongst the participants belonging to the age groups 30-45 and 45-60, to some extent the age group 18-30 also based their spirituality in their religious backgrounds.

Perceived meaning of spirituality in the workplace:

When questioned about the meaning of spirituality, it became apparent that there was indeed a lack of a universal definition of the phenomenon as pointed out in the literature. Despite the fact that most of the participants immediately brought up religion as soon as they were confronted with the 'S' word, it was visible that the participants saw the construct as very personal. Due to this personal nature, there appeared to be a definitional incongruence, as suggested by the scholars (Nick & Krishankumar 2002, Konz & Ryan 1999).

A) 18-30

A 25-year-old participant clearly indicated that his religion mainly provided him with spirituality. He stated that he 'lost his peace' when he felt that he had deviated away from the teachings of his religion However, he also asserted that everyone, as spiritual beings, has their own personal borders of right and wrong, which they use as guiding principles for their lives.

Meanwhile a 23-year-old participant, defined spirituality as the code that governs his behaviors in dealing with situations and people in life and at work. He defined spirituality as his own 'thought process' and as 'individuality', as he explained how spirituality was an extremely personal experience driven from the social phenomenon of religion.

Another 27-year-old participant did not mention religion at all when providing a definition of spirituality. He regarded it as his framework of life and a desire within himself to be responsible for his actions in a personal and professional spectrum. He further elaborated that spirituality was the balance between the extremes that brought peace and stability in his life.

B) 30-45

A 39-year-old participant, described his perception of spirituality as, 'Whenever I do something according to my religion, spirituality comes to my mind. Whenever I help someone, whenever I make someone smile… This is the thing that my religion tells and that is why I am doing it. It provides me with peace.'

A 30-year-old participant, described spirituality as his link with God and his anticipation of life after death. He indicated that his strong belief in life after death allowed him to be fair and kind at the workplace. He further indicated that his dedication towards religion as his spiritual guide motivates him to justly act without discriminating on the basis of personal liking, race, religion, sex and orientation.

An interesting description was brought forth by a 43-year-old participant, who claimed, 'Spirituality is more like the software of religion, it guides you, it helps you to live and strive for the better. 'He further asserted that spirituality provides individuals with a reason to live and work. In the workplace, he explained that spirituality can be a source of justification for working hard for a better life.

C) 45-65

A 54-year-old participant claimed that his spirituality allowed him to be humble at the workplace, forego anger and maintain healthy relationships with colleagues.

Similarly, a strong perception of spirituality arising from the religious imagery came from a 57-year-old participant, who explained how the spirituality that he derives from his constant connection with God has provided him with strength and confidence in difficult times at work.

It became apparent through the participants' responses that their perceptions of spirituality lie within the spectrum of religious/traditional spirituality and humanistic spirituality, as laid down by Twigg & Parayitam (2006), and fluctuated across the spectrum as the age range varied.

Respondents from the age group 45-65 were more inclined towards the religious/ traditional spirituality, which Twigg & Parayitam explained as having a strong connotation of religion in individual's minds. The authors further claimed that this religious spirituality provided people with the common grounds to share experiences in the form of rituals and doctrines. Whereas they explained humanistic spirituality as the concept of religion that is expanded beyond the idea of God, rituals and dogmas, and is differentiated on the basis of search for a meaning to reality of life. Whilst the age group 18-30 was found mainly on the humanistic end of the spirituality spectrum, the age group 30-45 exhibited strong inclinations towards both ends of the spectrum.

It was also noted that while providing their perceptions of spirituality in the workplace, the participants failed to mention any of the five themes appearing in the literature. However, when confronted specifically with these notions, the participants not only acknowledged the presence, but also the importance of three of these themes in their daily working lives. These were interconnectedness, presence of a higher power, and a sense of wholeness in the workplace.

Interconnectedness: The participants regarded interconnectedness and a sense of community as a very important part of their personal and professional lives. They revealed that a strong sense of community in the workplace allowed them to cope easily with pressured situations.

Similarly, outcome reinforced the views of the various scholars mentioned above (Johnson, 2007; Marques, Dhiman & King, 2007; Kinjerski & Skrypnek, 2004); by expressing that the workplace could be a domain of building connections to develop a strong sense of community.

'I have a very strong bonding with my colleagues, they are more than just colleagues…they are friends and family. I enjoy their company and intellect; I feel that we all help each other a lot personally and professionally,' *Presence of a higher power:* There was a very strong acknowledgement and appreciation of the presence of a higher power or a supreme being in most of the responses that supported the ideas put forth by the scholars (Mitroff & Denton, 1999; King, 2007). This can also be related to their perception of spirituality, which is largely based on their religious views.

Within the age group of 18-30, a divided opinion was found. Whilst few of the participants indicated that they not only made frequent connections with a higher power in their hearts (which they referred to as God), they also often offered the physical prayers during office hours. On the other hand, the other few claimed that they did not make connections with a higher power or offered physical prayers during their day, but they did believe in the presence and derived their hopes and aspirations from Him (referring to God), especially in tough situations.

One of them said, ‘I believe that what a belief in a higher power does is that it gives you **hope. I do get my hopes from there’**

The remaining participants, from the older cohorts, made assertive statements about their connections with a higher power, both in heart and by offering mandatory prayers. They all indicated that they start their days with morning prayers and carry on their connection with the Higher Power throughout the day, counting on the blessings derived from this connection.

One participant, on the other hand, stated that his belief in the connection with the Higher Power is so strong that when he forgets to make his supplications before starting his work, he feels that he is more prone towards making mistakes at work. This coincided with Bandsuch & Cavanaugh’s (2005) concepts, who asserted that employees’ beliefs, behaviours, and attitudes at are reflected in their relationship with an ultimate source.

The participants indicated that they actively pursued their ambitions in their work life and left the rest in God’s hands. This played a regulating factor in their lives and they readily accepted their fate as God’s will (UWF, 2010).

Sense of wholeness in the workplace: All the participants acknowledged the ability to bring their complete whole selves to the workplace, which reinforced Dehler & Welsh’s (2010) findings indicating towards the importance of the individual’s ability to integrate their whole selves in their working lives. Some of the participants even explained how this ability allowed them to be more efficient in the workplace (Fairholm, 1996; Van Tonder & Ramdass, 2009). One participant, endorsing the ideas of Mitroff & Denton (1999), said that the ability to bring his complete self to the workplace enabled him and his co-workers to cope with the tensions at work. He mentioned using his sense of humor to diffuse stress in his juniors in order to help them get through a difficult situation, ‘They tend to panic so I crack jokes with them so they can calm down and also know that there is someone backing them up.’

Subjects were also pointed out their humble nature and good listening abilities, which allows them to be more accessible and tackle issues effectively in the workplace. Similarly, a 52-year-old participant, emphasized the importance of bringing one’s complete energized self to work, as it plays a very significant role in delivering excellence.

Theme # 2: Perceived Differences between Religion and Spirituality:

Upon the investigation of the perceived differences between religion and spirituality amongst the participants, it was found that a significant majority of the participants did not perceive any differences between the two constructs. This was in exception to the age group 18-30, who held divided opinions. It was noticed that this division was reflected in the differences in their educational backgrounds within this group.

A) 18-30

The division of opinion in this regard became apparent in the differences in the educational backgrounds of the participants. The most prominent educational systems running in Vadodara are; the government boards affiliated systems (referred to as Gujarat Board system of education), and CBSE affiliated systems (referred to as Central Board systems of education). The impressions of these educational systems in the attitudes and mind-sets of the graduating students are significant. It was evident in their research that systems of education are predominantly based on rote learning and cramming, which leaves the students bereft of creative thinking, independent outlook, and deeper insights. These findings were apparent in the participants' responses.

A 20-year-old participant, who passed from the State system of education, indicated that she believed spirituality could not be compared to religion. She further added that to her, religion was a set of practices, a social norm that was guided the behaviors of the individuals in their daily personal and professional lives. Whereas spirituality, was a pure and conscious state of mind that can be achieved only by a few, as humans are prone to committing unconscious mistakes. However, she further indicated the perceptions of religion were merely utilized as a set of assigned rituals for the people around her. When asked to differentiate between religion and spirituality, she commented, **'It is a tough question, I never thought of it that way…but, I guess for me, both are the same thing because I find myself spiritual if I am following the religion.'**

Conversely, a participant who has graduated from a Central education system, clearly stated that he considered himself a spiritual person but not religious. He hinted aversion from religious dogma. On further probing, he revealed that following the common 'values' of religion in personal and professional lives meant spirituality for him. However, he further referred to 'mechanical religion', which is characterized as imposed dogma. This was found to be congruent with the views of the scholars in the literature that deemed religion to be an organized and a formal structure of rituals, dogma, doctrines and principles.

He considered spirituality as an individual's individuality while religion as the thread that connected the individuals.

'If a person is following a certain set of values, and the next person is following the same values, and the next too; that religion gives them. They all agree to it not because of its imposition but because they can relate to it, then it is spirituality…right? But if they only follow it because it was said so, then that is mechanical religion, that is dogma and it does not appeal me very much.'

Another participant having similar education background, regarded spirituality as an extremely personal phenomenon that varied from person to person. Meanwhile, he added that religion was a universal phenomenon and a common force where individuals derived their personal spirituality depending on their personal threshold.

B) 30-45

All the participants in this cohort perceived little or no difference between religion and spirituality. They clearly indicated that they viewed religion and spirituality in the same breath.

A participant maintained that, to him, the difference between religion and spirituality only existed for those who did not have an adequate understanding of the religion. He felt that if understood properly, religion will be found to be the ultimate source of an individual's spirituality. This assertion contradicted with Van Tonder & Ramdass (2009) who claimed that the lack of understanding of workplace spirituality led individuals to consider it similar to religion.

A participant asserted that being a good follower of his religion was his spirituality, diminishing the differences between the two constructs. However, he further mentioned that despite spirituality driven by religious values was highly appropriate in the workplace, and the topic of religion was not appropriate within the workplace. This coincided with the ideas of Mitroff & Denton (1999).

C) 45-65

Assertive statements were made by the participants in this cohort as they claimed their spirituality to be equal to their religion.

One Participant stated that, **'Religion can cover my spirituality. But spirituality just alone cannot cover religion'**

Similarly, few more participants asserted that they found it 'difficult to separate the two' and explained how religion is his source of spirituality in the workplace. Similarly, few pointed out that they never experienced the clash between religion and his spirituality, as they extracted their spirituality from their relationship with God. Therefore, following HIS commands in personal and professional life.

It was found that all participants, despite their differences in age and educational background, strongly acknowledged the commonality between religion and spirituality i.e., a sacred core, sense of meaning in life, sense of community and interconnectedness (Hill & Smith, 2010; Van Tonder & Ramdass, 2009; Kinjerski & Skrypnek, 2004).

Theme # 3: Religiously Religious versus Culturally Religious:

Another interesting theme that surfaced from the inspection of the interviews was the emergence of the religiously religious and the culturally religious gulf amongst the generational cohorts. This development was related to the source, and the extent, of the ethics extracted from religion which these individuals implemented in their daily working lives. Whilst the young cohort, 18-30, was inclined towards beings culturally religious, the older cohorts expressed themselves to be religiously religious.

A) 18-30

Cultural Hinduism is a term that refers to individuals, who identified themselves as Hindu because they were born to Hindu father, but did not consider themselves as practicing religious individuals. Despite acknowledging the traditions of Hindu, these individuals were diverse and autonomous in terms of norms, values and religious views.

Few indicated towards the lack of religious practices in their life. They revealed that religion did not have any space in his life except that it provided them with spirituality. In terms of their behavior and dealings in the workplace, with people and situations, they referred to the teachings of their parents, which were, in fact, the teachings of Hinduism. When asked if they differentiated between the both, he said, 'For me as a person, I have been taught by my parents well…So I can take it as the teaching of religion *or* of my parents.'

Furthermore, they revealed that they appreciated the values of Hindu in their personal and professional life, because they were in concurrent with his personal values. They said,

'If they were not following Hinduism, they believe they would still be the same persons. We can go ahead and denounce it [Hinduism] altogether but we will be the same person. So, the things that we follow are the good things that every person should follow. It is not harmful, right? It all about peace, love, and harmony.'

Similarly, few others also claimed that they believed in the teachings of religion conveyed by his parents, because they were in line with the universal moral and ethical values common to all humans.

These statements related with the concept of religious socialization. Krauss et al. (2010) explained it as the parental influences on their children's religiosity. However, the authors further claimed that parental influences tend to decline in the modern era, due to social influences that the off-springs are exposed to because of educational settings, mass media, availability of information, and peers.

Few participants mentioned that they attempted to offer the mandatory prayers during their working hours if nothing critical was in their way. They felt that despite trying their best, they felt that their religious obligations tended to get ignored in their daily life. They said,

'Sometimes…we miss our prayers at work. If we do not feel like praying, we do not pray at all. But…in reality we should go and pray…it should be important in our life but it is not important at the moment.'

However, they strongly emphasized that they extracted their values driven by Hinduism in almost all walks of their life, including the way they dealt with colleagues and individuals at work. They stated that they were helpful and humble towards people at work, even to the office peons because her religious values taught them to treat everyone with equality and respect.

B) Age Groups - 30-45 & 45-60

All the participants assertively expressed that they were religiously religious. They not only claimed to whole heartedly believe in their religion values, but reported to be highly regular with their religious practices. They indicated a great dedication with their God and deemed them as their role model. They further stated that their actions in their personal and professional lives were highly inspired by the teachings of their religious books.

Few asserted, 'In my view, religion is everything that you are doing. It has some advice, instructions for all walks of life. The God is our leader, the role model. Each and everything that I do in my life, how I behave, how I act or react, is inspired by HIM'.

Richardson et al. (2014) described three dimensions; unity, justice and benevolence. These three dimensions also became evident in the responses of participants in the cohorts 30- 45 and 45-65.

Few mentioned their efforts to maintain relationships in the workplace and forego anger for the sake of their God. They further mentioned that their belief in religious values allowed them to be emotionally intelligent towards their co-workers, and be accessible to all members at the workplace; from the security guard to the president of the company. Similar notions were recorded by Richardson et al (2014), who emphasized the importance of collaboration and partnership in management.

Few mentioned that they strong belief in religious values and after life inspired them to be consciously aware of their actions at the workplace. They indicated that they maintained a fair attitude in their professional life and tried their utmost best not to discriminate on the bases of sex, religion, race, ethnicity, or orientation. This coincided with the justice dimension of Work Ethics. When asked about the source that drove these practices at the workplace, they replied,

'First source of values would be religion because our religion tells us to do our jobs with honesty with our masters, and in our case our masters are our clients.'

They mentioned that one of the most important factors that navigated their practices and actions in the workplace was the need to earn legitimate earnings in God's eyes.

The dimension of benevolence is related to the displaying of kindness at the workplace for the love of God. It includes helpfulness, honesty, forgiveness, responsibility, and loyalty. All of these values were mentioned by the participants, when questioned about their basic values in life.

One of the participants gave an interesting example of how coming to work and earning legitimate earning for his family, was of critical importance in his life. He said, 'I have a spiritual connection with my family, of course I want to support them. I want to provide for them with the best of my abilities. Sometimes I am tired and I don't feel like working but I still go and fulfill my job. And this comes from the teachings of my religion. Religion is always number one.'

Overall, all the participants pointed towards the applications of religious values holistically within and outside the workplace and in all walks of their lives.

Therefore, the analysis of the responses from the participants indicated a clear distinction between culturally religious and religiously religious participants on the basis of their ages and their presences within a typical workplace.

This distinction could also be related to Hill and Smith's (2010) connotations of dwellers and seekers in the workplace. Their assertion of spiritual dwellers included individuals who tended to their spiritual needs at work from a theological perspective i.e., earning legitimate money in the eyes of God, bring fair in their dealings at work, fulfilling the needs of their families as taught by their faith and tradition. On the other hand, they claimed that spiritual seekers at work consisted of individuals who prized freedom and individuality. They had a strong tendency of rejecting the institutionalized religion and had a strong urge to follow their own individual spiritual exploration.

Theme # 4: Relevance of Spirituality in the Workplace, and its Impact on Organisational Commitment.

Whilst inquiring the participants about their views concerning the relevance of spirituality in the workplace, another theme emerged regarding the impact on the participants' organisational commitment, and if it was deemed appropriate for spirituality to be accommodated in the workplace. The responses, indeed, indicated the relevance of spirituality in the workplace, its positive impact on the organisational commitment, and supported its accommodation the workplace. The participants provided with intriguing points of views in order to elaborate their opinions.

i. ***Relevance***

A) 18-30

The opinions on the relevance of spirituality in the workplace depended on the participant's perception of spirituality itself. To them, the concept of spirituality was something that might be more applicable in individuals' personal lives, rather than within professional settings. However, they did mention that religious values were deemed relevant in the workplace as individuals highly related to them and expected their appreciation and fulfillment.

Few, despite supporting the relevance of spirituality in the workplace, were critical about the relevance of spirituality and voiced caution. They asserted that spirituality was relevant in the workplace as long as it enhanced the cause of the workplace i.e., productivity and profitability, employees' engagement and motivation. Similar views were observed in the literature by Ashmos & Duchon (2000) and Fry (2005), who supported the notion of spirituality positively affecting the productivity and profitability within the organization. They commented, **'If it helps in the cause of the workplace, why not? If it makes the people more productive, why not? If it stops them from being productive, then it is a problem** 'Few further related to, and cautioned against, the impediments that improperly managed spirituality can bring about in the effective performances in the workplace. They said, **'Like, only yesterday I was with a colleague of mine and she was telling me that there are people in the workplace who are really shy of interacting with women because of their religious values that have also become their spiritual values. They would not look at them, they would not talk to them, and they would walk out of the room when they found themselves alone with a woman…Not very helpful for the cause of the workplace.'**

Similarly, few others clearly expressed the importance of spirituality in the workplace in order to achieve satisfaction and the peace of mind to function effectively.

B) 30-45

Insightful viewpoints regarding the relevance of spirituality in the workplace surfaced in this age cohort as well. They felt that spirituality, which was driven from their religious beliefs, was highly relevant in the workplace. However, they also felt that discussion of the sensitive topic of religion in the workplace was inappropriate as it might lead to frictions and offended feelings, which were not considered to be productive in the work environment.

They mentioned that spirituality was highly relevant in the workplace as it provided the individuals with a reason to live and work hard for, and provided them with meaning and purpose in the workplace. This was found to be consistent with the literature as scholars found a correlation between meaningful work and spirituality. Garcia-Zamor (2003) acknowledged it as a source of joy, happiness and better results amongst the employees in the workplace.

C) 45-65

They strongly asserted the relevance of spirituality in the workplace, as they claimed that it could provide a source of responsible freedom amongst the co-workers. They revealed that lack of spirituality can lead to disastrous effects on individuals, and its inclusion could lead to individuals to be aware of the impacts of their actions on others. They said, **'It is not only relevant but also very important in the workplace because you can spoil someone's career if you are not spiritual…if you don't have the fear of God, if you are just thinking about yourself. You have responsibilities and being spiritual will make you responsible. If someone, for example, is declining in his career and you are the boss or you are the colleague…if you guide him as a good person and you help him out, he can be a good employee again and make his life better.'**

Few participants in a petroleum refinery signified the relevance of spirituality in the workplace as he referred to the risky work environment, he operated in. He added that the utmost faith in God and the strong connection with the Lord helps them and also their co-workers cope steadily in the times of crisis.

ii. Impact on organisational commitment

All the participants, regardless of age, agreed that spirituality positively impacted their commitment to their organization. This strongly coincided with the ideas of the scholars in the literature (Fry, 2003; Pawar, 2009; Rego & Cunha, 2008). The participants further pointed out that they would leave or shift to another organization if they felt that their spiritual values were being compromised upon.

Few claimed that they would not continue working in the same organization if they felt that their spiritual values were not appreciated and respected. They hinted at the major proportion of a day a working individual spends at the workplace necessitates the alignment of the spiritual values and organisational values. Non-alignment of these values would not only affect the productivity but also the wellbeing of the individuals.

Few brought forward examples of incidents of leaving their employers because they felt that the employers were disrespectful towards their spiritual values. One further went on to say, **'I remember once I was given the permanent residency in Saudi but I felt at that time that I wouldn't be able practice my religious views there so I quit and came back to so I could practice my values more freely here in India** 'Similarly, strong assertions were made by few others, who felt that they would not stay in an organization if their spiritual values clashed on a large scale with the organisational values. One commented, **'Yes absolutely, it is a big factor in my commitment to the work and the organisation. In case there is a conflict in my values and organisational values, I will never be at peace and hence won't be able to work to the best of my ability. I will be left with no option but to look for a workplace that has similar values to mine.** 'Barrett (2010) placed a similar emphasis on the alignment of personal values prevalent in the culture of the organizations in order to harness high quality organisational performances.

Whether organizations should accommodate spirituality in the workplace:

Whilst most of the participants indicated that their organizations already tended to their religious and spiritual needs, none of the participants negated the idea of further accommodation of spirituality in their workplaces. One participant established the need of further accommodation of spirituality. He said, **'They have KPI's and other things and what they are saying is that if you have more friendships and bonds at the workplace, you are less likely to leave. So, they are already accommodating the religious values that are also spiritual values and now they are also trying to accommodate things like bonds and sense of community'**

Interestingly, participants from 18-30 age groups, who viewed spirituality as a personal phenomenon, voiced caution towards consciously fostering spirituality in the workplace. They said, **'Spirituality is something personal and varies from person to person hence it would be difficult for an organization to actively accommodate spirituality in the workplace.'**

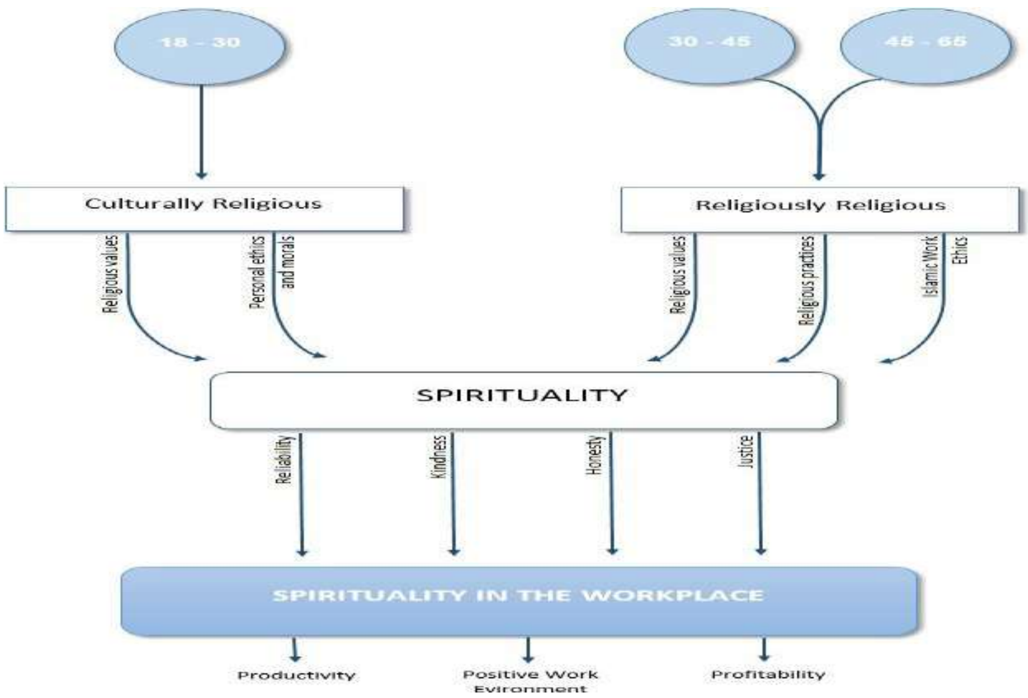
Similarly, few participants indicated that it would ineffective to include spirituality in the workplace without taking on-board individuals who, in effect, would be impacted by this inclusion of spirituality in their workplaces. They believed it would function like religion all over again, if simply imposed rather than managed effectively. They suggested the need of proper management programs in attempting to actively accommodating spirituality in the workplace.

Nevertheless, participants from all of age cohorts pointed towards the religious diversity that exists in their workplaces, and suggested the utilization of spirituality in order to unify individuals coming from different religious backgrounds towards commonality.

Few further commented, **'However, considering the religious diversity in the workplaces, it could be helpful to bring these differences towards a common point through fostering the common values through spirituality…yes, in that perspective we do feel that spirituality could be accommodated to remove these tensions arising'**.

Few participants acknowledging the religious diversity in the workplace. They commented that despite the religious pluralism, there had been no conflicts in terms of religious aspirations and practices. However, further unity could be promoted through extracting the common values within this diversity.

Fig. 1: A model representation of spirituality in workplace



An Overall Sense:

Reviewing the analysis, an overall sense can be formulated to explain the phenomenon of spirituality in the workplace. Despite, the noted variations in the conceptions of spirituality amongst the generational cohorts, it was found that the basic values that these individuals

brought to the workplace were similar. The most cited values were honesty, kindness, reliability, and justice. These values were apparent through all the age groups albeit their religious backgrounds. A diagram has been constructed to represent the conceptualization of the process that leads to the spirituality evident in workplace.

7.0 Discussion and Conclusion

This study aimed to uncover the perceptions and meanings individuals, belonging to different age cohorts, attributed to the phenomenon of spirituality within the workplaces in manufacturing industries in Vadodara.

It became evident through the careful and extensive analysis of data, gathered through interviews, that significant differences existed in the perceptions of the phenomenon of spirituality amongst the individuals hailing from different generational cohorts. This difference could easily be attributed to the social, cultural, political and technological changes that impacted the thought process of these individuals. However, it was also visible that the main theme of the participants did actually revolve around religion, *despite the significant intergenerational differences regarding their ideas of spirituality*, religion, differences and similarities between the two constructs, relevance of the constructs within the workplace, and their resultant impacts on their organisational commitment. Therefore, the main point of difference proves to be the **importance** they assigned to spirituality and religion in their personal and, hence, professional lives. This is evident in the commonality between these individuals, as they brought the common values of **kindness, justice, honesty** and **reliability** into the workplace.

It was uncovered that the most of the younger generation, who were further divided because of the effects of educational differences upon them, ascribed little importance to religion as compared to the older generations whom regarded religion as a central force in their lives. On an overall standpoint, religion was indeed the provider of spirituality to these individuals in their working lives. The older generation fuelled their spirituality not only through the values of their religion but also through its practices, strongly ascribing to the Work Ethics – rendering them as the religiously religious or the spiritual dwellers within the workplace. They disregarded the difference between religion and spirituality. It should however be taken into account that this religiosity does not necessarily guarantee interpersonal or professional righteousness. This was also put forth by one of the participants, who pointed towards religion as the guiding principle and provider of spirituality, however acknowledging the personal thresholds of their behaviours at the workplace. In other words, one's behavior could be considered intolerable within a work environment, despite having religious validity.

On the other hand, the younger generation claimed the extraction, and application, of their work values from the teachings of their religion because of the *congruence* with their personal values. They indicated a lack of practices or 'mechanics of their religion in their lives – rendering them to be the culturally religious or the spiritual seekers in the workplace. They further acknowledged their spirituality in the workplace as their own individuality and considered it to be a personal aspect of their lives. They were, again, divided on their opinions on the differences between religion and spirituality owing to their different educational backgrounds.

This contrast within the generations coexisting within the workplace highlights concerns for employers regarding the accommodation of the spiritual dwellers and the seekers within the workplace. It becomes incumbent upon them, for their success, to honour the strongly religious values of the dwellers while recognizing the seeker's needs for experiential and spiritual freedom. A failure to do so in both the spectrums may lead to high turnovers, absenteeism, burnout, and resignations. The significance of this accommodation was also signaled in the participant's responses when they asserted that they would depart from their organisations if they felt that their spiritual values, which were also their personal values, were not acknowledged nor accepted.

Another stream was uncovered alongside the religiously religious, the dwellers, and the culturally religious, the seekers. This stream was the religiously diverse groups that existed within the researched workplaces. This diversity was not only between the different religions that existed within organization , but also within the various sects that existed in the community. Incongruence was discovered between the participants' perceptions and the previously discovered research which informed the severe frictions that existed between these religiously diverse groups within the workplace. It was further uncovered that spirituality, being used as the tool of commonality, could prove to be useful to accommodate the common values of these religiously diverse groups to foster trust, respect and harmony within the workplace.

However, whether this accommodation of spirituality within the workplace should occur on an organisational level or an individual level is an area of concern. As the scholars in the West promoted accommodation of spirituality on an individual level, allowing individuals to express their spirituality in the workplace independently. It should be noted that enforcing this in a country, which has a high level of religious intolerance and simultaneously a strong sense of collectivism, could potentially lead to disastrous outcomes in the workplace. Organisations will have to strike a balance between promoting responsible spiritual freedom and exercising restraints in order to facilitate a well-balanced accommodation of spirituality to bridge the differences emerging due to religious- and age diversity within the workplace.

In conclusion, spirituality is a phenomenon that exists on a prominent level in individuals' lives and impacts all spheres of their lives, including their workplaces. An effective management of this phenomenon within the workplace can result in a working solution for the various issues that are arising in the workplace due to social, generational and religious differences.

Recommendations

The study highlighted intergenerational differences, along with the presence of highly religious- and age diverse workforce. It was concluded that spirituality, upheld by the common values hailing from these differences, could be used as an effective tool to diminish these differences and bridge the gaps within the workplace. By doing so, it could lead the organizations to a win-win situation, where they could benefit from a diversified talent base. Likewise, the individuals could benefit from their ability to build connections, learn from one another, and being tolerant towards each other.

Fostering spirituality within the workplace could inspire these organizations to do the right things, instead of the easiest. Organizations, instead of hiring and promoting individuals based on their similarities in backgrounds, could diminish the strongly prevalent discrimination by supporting an organisational culture where all individuals could be provided fair opportunities ... This would, undoubtedly, gain the organizations a competitive edge as it would inculcate innovativeness, productivity, and bring on-board creativity by these diverse individuals. By allowing people to expand their horizons, the organisations will be able to promote tolerance through acceptance towards one another, encourage positive working environments, accept alternative insights delivered by these individuals, and facilitate better problem-solving abilities. This, of course, would require a longer time frame to implement, as it compels a change of organisational culture. However, it would also lead to longer lasting impacts. To achieve this, organisations will have to remove the sources that might cause hindrances towards the accommodation of spirituality in the workplace; this might include a change of leadership, or at its very least, a change of attitude regarding cultural and religious pluralism.

Moreover, spirituality in the workplace could be effectively used to add to the bottom line of the organisations. An overall change in the attitudes, behaviours, and mind-sets of the employed individuals could lead to remarkable performances, as well as to increased profits, stronger market positions, and goodwill. This would enable the organisations to increase their visibility and allow them to attract better quality of human capital and skills, reduce employee turnover, and increase employee satisfaction.

The organisations are already physically tending to the spiritual needs of the employees by providing them space and opportunities to perform their religious obligations. However, they could further utilize spirituality to enhance their culture, by accommodating accepting mind- sets that allow individuals to express themselves, and be tolerant towards the differences they perceive within one another by harnessing trust, respect and loyalties. The organisations can achieve these changes by investing in training programs, and by creating opportunities for employees to come together on a regular basis, creating group cohesion and incorporation of group incentives to achieve organisational goals.

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A Study on Buying behavior of Millennials by Instagram Marketing for Clothing Brands

Raj Vyas and Nilima Chauhan***

ABSTRACT

Social media has emerged into the most prominent and vital virtual arena, where the platform is leveraged not only for social networking but also as a powerful tool for digitally promoting your brand and products. One may use social media to determine what business visitors are mostly fascinated with. The goal of creating persuasive and positive traits that instantly connect your audience is to have a strong social media presence. Instagram is an excellent model for engaging a huge audience, with over 1 billion monthly active users. Instagram users spend an average of 53 minutes per day on the platform, making it the second most popular social network after Facebook. In the mentioned research article, we have focused on different clothing brands and how consumers are influenced by online Instagram marketing. The main objective is to identify how Instagram can influence the buying behavior of millennials. Further, using qualitative and quantitative research methodologies, we sampled 150 responses using a simple random sampling method and developed hypotheses about them, allowing us to analyze the data using Chi square and ANOVA to arrive at the results and suggestions.

Keywords: *Buying behavior; Instagram marketing; Millennial; Influence; Shopping online application.*

1.0 Introduction

As we have entered the digital era and by looking at the current pandemic situation it seems that the future of marketing is digital. The most influential industry on online platforms or to be precise social media platforms like Insta, Facebook, Twitter, etc.… is the fashion industry. Which gives a huge impact on the platform users as well as affect their buying behavior for particular fashion clothes. The fashion industry completely took a 360-degree turn after social media platforms came into existence and most of the users get influenced or we can say affect their buying behavior for the particular fashion or trendy clothes.

We can see that most millennials are now mostly active on the social media platform called Instagram which launched on 6 October 2010 and it is available on android as well as on IOS. In the initial days, the Instagram platform was just a photo-sharing social media but eventually, new updates took place where users can write, comment and chat with users on the platform which was not there earlier, simultaneously Instagram also launched the feature of videos till 1 minute.

And now Instagram provides several features for its users such as instant live, Reels, IG tv and stories and many more. which helps the fashion industry to grow and reach a wider audience for their particular brand of clothes as well as there are such paid advertising features that show the brands clothes to the potential buyer/users on that platform.

Hence, we are focusing on the buying behaviour of millennials. So first understand who the millennials are. **Baby Boomers**: Baby boomers were born between 1946 and 1964. They're currently

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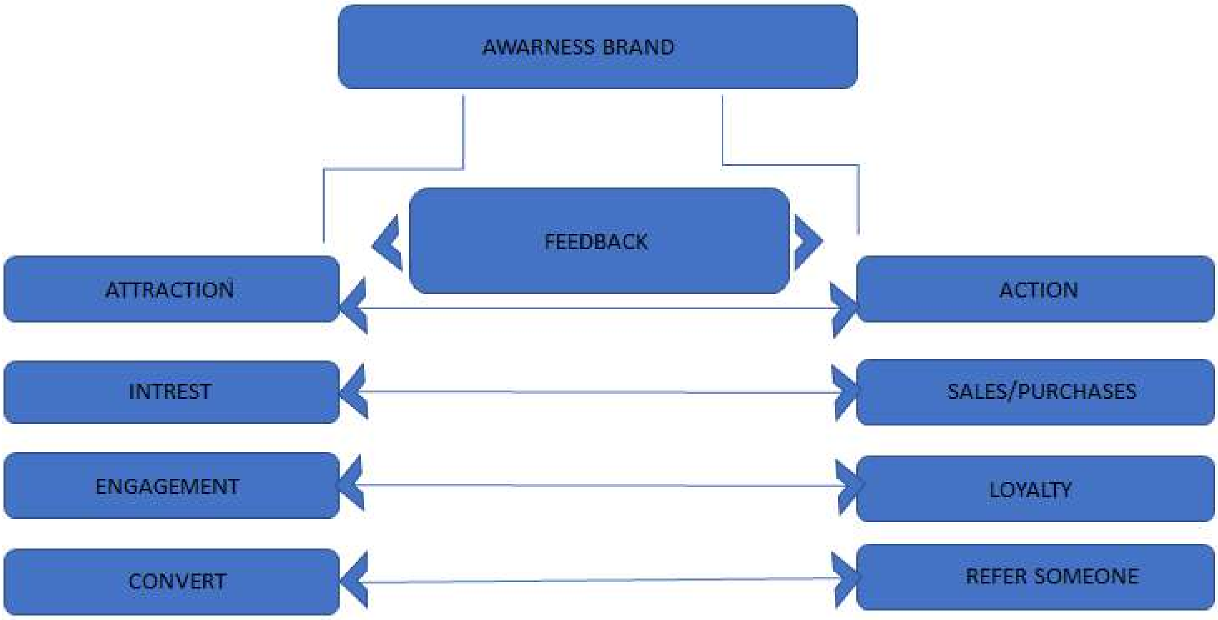
between 56-74 years old **Gen X:** Gen X was born between 1965 and 1980 and are currently between 40-55 years old **Gen Y:** Gen Y, or Millennials, were born between 1980 and 1994. They are currently between 24-39 years old **Gen Y.1** = 25-29 years old **Gen Y.2** = 29-39 **Gen Z:** Gen Z is the newest generation to be named and were born between 1996 and 2015. They are currently between 5-24 years old. The **term "Millennial"** has become the popular way to reference both segments of **Gen Y.**

Most of the millennial are now hyperactive on Instagram rather than any other social media platforms so fashion companies utilise the Instagram advertisement tools to take leverage of the situation and due to that the choice of clothes or we can say the buying behaviour pattern of millennials are changing and making a huge effect on the users of the platforms to purchase particular brands clothes and here are numbers of brands which are generating a huge amount of revenues through the Instagram marketing. Moreover, to some extent, many brands also have their particular online clothing buying application which makes buying experience very easy for their users or we can say, potential buyers.

Model: -



As we can see in a model that a brand awareness model applies to an individual for any type of product as well as service.

At the initial stage, the potential buyer becomes aware of the brand through various sorts of advertisements which are done by the particular company to tap the individuals. Firstly, the stimuli are as such that trigger them and attract them towards the product/services which eventually generate interest in one for the particular product. secondly, when a potential buyer is interested in that particular thing he starts developing engagement with it and one will try to know more about the product/services which are provided by the company in that particular phase he will try to find details as much as he can about the company and its services he also compares products with other company as well as compare the values and price for the same products, once he will get satisfied with the information he gathered he will make the purchase of that particular product.

we can also say that in that particular time he is converted into a buyer from the potential buyer because of proper advertisement through various offline and online advertisement activities which was done by the company.

If the product/service satisfied the consumer and add value to his life he will again buy the product of that particular company and if it gives the same results to him he will eventually become loyal to the brand and then after he will definitely suggest or refer to others to buy that particular product/services of the company through word of mouth as well as electronic word of mouth(e-wom), we can also say he will put the feedback about the product on the various platform so others can also get knowledge about the same.

In the beginning, stage awareness leads to the actions of an individual which develops the interest in the product. If the interest is high then there are high chances that the product gets sold. If the interest is low then the chances of the product getting sold is low. In the engagement phase, how much one is engaged with the company's product motivates him to purchase that product and once he buys the product and he likes that product he will definitely refer someone to buy that product of the company and give his feedback to others. Once he becomes loyal to the company, he will always buy the same product over and over again for himself.

2.0 Literature Review

S. N	AUTHOR NAME AND JOURNAL	YEAR OF RESEARCH PAPER	TITTLE OF PAPER	DESCRIPTION
1.	Ankur Kumar Rastogi, International Research Journal	2010	A Study of Indian Online Consumers & their Buying Behaviour.	In this research the author said, attempts to analyse the features related to the buying behaviour of online shoppers. Consumer buying behaviour in respect of online shopping was studied using different socio-economic variables.
2.	Riana Satrianaa, Indira Rachmawatib, Farah Alfanurc, Journal of Corporate Governance, Insurance, and Risk Management (JCGIRM)	2014	Factor Analysis of online clothes fashion purchase on social media Instagram.	Here the author said that one of social media being used for buying and selling products in society is Instagram. Factors in influencing online purchasing need to be considered by online shops in order to meet the needs and desires of customers. The factors that influence the online clothes fashion product purchasing on Instagram and other social media to find out the most dominant variables of each factor. The variables identified in this study are the impulse purchase orientation, attitude to online shopping, service quality, perceived risk, informativeness, online trust, specific holdup cost, perceived ease of use, and purchase intention.
3.	Zulkifli Abd. Latiffa and Nur Ayuni Safira Safieeb, Elsevier -	2015	Business Set Up for Branding Strategies on social media – Instagram.	The author wants to say that Instagram as a Social Networking Site has been gaining popularity and the medium of choice for aspiring business owners and planning branding strategies according to its business. They talked about how Instagram can help a business to position their business in the market. Three types of businesses were chosen with current followers of more than 10,000 and as that research was done, all three business owners had already made plans for offline expansion. This proves that as a Social Networking Site, Instagram plays an important role in shaping the business strategies for an individual's business.
4.	Henrik Virtanen,	2017	marketing of a	Here the author says that Instagram marketing

	Peter Björk and Elin Sjöström, Journal of Small Business and Enterprise Development		start-up company on Instagram.	has useful practical implications for marketers in SMEs who want to tap into the huge potential of Instagram as a marketing tool for creating and increasing global awareness of a new business. It offers insight into the active role of social media marketing in today's marketplace.
5.	Iman Veissi, Haaga-helia university of applied science	2017	Influencer Marketing on Instagram.	Here the author states that influencer marketing has a mixed perception by the audience (users). Insta-gram has outgrown its phase as a photo-sharing app and has become a platform that serves multiple functions and implications, but still has sharing at its core. When it comes to purchase decisions, posts by Instagram influencers are perceived to be trustworthy than traditional ads, even though the audience may suspect that an influencer may not be authentically promoting products that they themselves use or believe in as products. Here, an influencer marketer is defined as the opinion leader.
6.	Desak Made Febri Purnama Sari a, Ni Made Dhian Rani Yulianti B, International Journal of Social Sciences and Humanities, Celebrity Endorsement	2018	Electronic Word of Mouth and Brand Trust on Buying Habits: Fashion Women Online Shop Products in Instagram.	Here the author states that the development of fashion products is currently growing rapidly along with technological advancements. Many companies compete to increase buying habits. With good buying habits, it can affect sales. There are several things that can increase buying habits including celebrity endorsement, electronic word of mouth, brand trust. it resulted as celebrity endorsement, e-WOM and brand trust together (simultaneous) have a positive and significant effect on buying habits.
7.	Hael Hael, S. Khan, Int. J. Manag. Bus. Res.	2018	Instagram as a Marketing Tool for Luxury Brands.	Here the author says that Instagram is one of the fastest-growing online photo social web services where users share their life images with other users, however the academic research related to this media is limited. He measured the relationships between Instagram marketing, brand equity, and customer behaviour towards brands. Here the result shows that Instagram marketing should not only be thought of as a means of raising brand awareness and reaching new customers, but also as an increasingly important and serious brand image building tool. Investments in brand equity (online as well as offline) would strengthen Instagram marketing effects on customer responses.
8.	Somdech Rungsrisawata, Watcharin Joemsittiprasertb, Kittisak Jermsittiparsert, International Journal of Innovation	2019	Factors Determining Consumer Buying Behaviour in Online Shopping.	In this research the author said, encourage and influence the online buying behaviour amongst consumers. In a world where everything is available on the internet and everything is becoming digitised, developing and emerging markets are still behind the developed markets and need to measure up to them in order to stand out.
9.	Chusminah SM, Sugiyah, R. Ati Haryati, Rina	2020	RSF Press, Factors Influencing Online Buying Behaviour	In this research author said, the internet become breathe of all aspect of human life, from instructional, political, security, social, cultural

	Lestari, Research Synergy Foundation DOI		of Millennial Generation.	and economic aspects. The web has a really crucial role within the economic sector through e-commerce (electronic commerce) whether or not organized through business to business, consumer to shopper, or may be business to shopper.
10.	Sajjad Shokouhyar, Sina Shokoohyar, Niloufar Raja, Vipul Gupta, Int.	2021	. J. Applied Decision Sciences, promoting fashion customer relationship management dimensions based on customer tendency to outfit matching: mining customer orientation and buying behaviour.	In this study the author said, the purpose of this study is to mine dimensions of customer relationship management (CRM) based on consumer tendency to outfit matching. Consumers are clustered into groups based on descriptive variables, consumer desire to outfit matching and customer relationship dimensions.

3.0 Research Methodology

The quantitative technique was used to generate insights and develop a clearer understanding of the problem. It uncovered the underlying motivations and reasons for a particular activity. It helps to uncovered deeper insights and attributed a particular response to a specific respondent. In order to receive the response, a Goggle form was circulated among the individuals to fulfil the objectives of the research. The questionnaire was circulated among the individuals who are using social media for the for the various purpose as well as we have used qualitative technique and we have chosen convince sampling method.

This was because the objective was to study the role of Instagram marketing among the millennials for the fashion industry. We have gone through various sort of blogs and articles as well as research paper to gather the data of buying behaviour of millennials for the purchasing of fashionable clothes among the millennials. We have also used the primary method of data collection for the paper and stats the finding from the paper.

4.0 Research Objective

1-To Study the online buying behaviour of millennials.
2-To study the effectiveness of Instagram marketing for millennials.
3- To study how Instagram can influence the buying behaviour of millennial.

5.0 Findings and Data Analysis

As we have observed that to promote various clothes on Instagram there are few tools available which help them to advertise as well as schedule the post for the brands account such as Grum, Awario, Buffer, Hashtags for likes, Iconosquare, Canva, Shortstack, Soldsie, Social Rank, Plann, Social Insights, Instagram Ads by Mailchimp, Unfold – Story Creator, Picodash and many more.

Form our primary research we have received in total **233 responses** in which **66.5% were mail and 33.5% were female.** As we are focusing on millennials the **highest number of**

respondents are from 20 to 25 age group which is **90.1%** and rest **9.9%** include age group between **20to30, 31to35,36to40.**

From total of 233 respondents as occupation wise **79.4%** were **students** and **15%** were **working** and only **0.9%** were **house wife.** The respondent's income level was most of them were having pocket money of less than **5,000 Indian rupees** total **117** respondents are having that pocket money and **18** were having salary and **8** respondents were having salary between **35,001 to 45,000** Rs. And **only 6** people were there who are having **more than 45,000** salaries. From total 233 respondents **54.9%** prefer **offline shopping** where as **45.1%** people prefer **online shopping.**

Most of the products purchased by millennials are **clothes** which is **53.2%** people prefer while **online shopping**, **35.6%** prefer **electronic products**, **7.3%** prefer **grocery** and **3.9%** prefer **home decor**. We have observed that most of the time millennial spend on internet is on social media which is **73 people** spend their time on **social media 66** respondents spend time on **OTT platform** and **shopping app** and then after **goggle surfing. 61.8%** were following their favourite **clothing brands social media channel**.

72.1% research on online social media platform **before purchasing** any kind of clothing brands product **27.9% not** worried much about the research on social media.**70.8%** prefer buying clothes from **online store**. The usage of Instagram are as follows **81.5%** prefer for **entertainment**, **49.8%** prefer for **new updates**, **15%** prefer for **shopping** and **11.6%** prefer for **live stream**. Everyday **44.6%** millennial spend **1 to 2 hours** on **Instagram** and **27.9%** spend **less then hour** on Instagram as well as **8.2%** spends **more than 4 hours** on Instagram.**55.8%** respondents **follow fashion influencer** on Instagram. **31.3%** respondents' neutral behaviour that **Instagram is effective to influence individual/users for the particular clothing brand** where as **28.8% strongly agree** with that and only **2.6%** were **strongly disagree** with that.

33% respondents **agree** that Instagram can **influence their selection process** where **24.5% strongly agree** with that and only **7.3% strongly disagree** with that. The most **important factors** respondents consider **while buying** particular type of clothing brand is **price, design, fashion, discounts. 48.1%** respondents **buy the clothing product** online by watching **Instagram advertisement**. **32.6% agree** that Instagram help you to give better idea about any clothing brand and **28.8%** strongly agree with that. **37.8%** respondents **strongly agree** that **Instagram marketing is effective** and **33.5%** people also **agree** with that only **2.6%** are **disagree** with that. **39.1% strongly agree** that **great tool of marketing for fashion and clothing brands** and **30.9%** are **agree** with that **only 2.1%** are **disagree** with that.

6.0 Suggestion

However, Instagram is much more influential social media platform But Facebook is more powerful in terms of high numbers of reach as well as users but the most important thing is that as most of the millennials are on Instagram so fashion company focus on Instagram rather than focusing on Facebook but if fashion brands are focusing on generation X than they company can use the Facebook as the platform for the advertisement of the fashion products.

7.0 Conclusion

From my primary research and secondary research, we can see that the millennial become very heavy users of social media app as well as they are spending most of the time on social media platforms compare to the any other platforms. As they are spending most of the time on social media platform call Instagram most of fashion companies also spending huge of amount of money on advertisement of their fashion products. Moreover, most of the millennials are following fashion influencer on Instagram so we can also see that they are also making huge impact on the buying behaviour of millennials.

As the platform is having most of the millennials as their users on Instagram and the impact of advertisement is also powerful and more impactful than offline advertisement. we can see that the preference for choosing certain fashion product gets influence by the Instagram advertising or marketing. We also observe that Instagram marketing can be use as the best tool for advertising and more effective and efficient way than any other way of advertisement.

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A Research on Effect of Digitalization on Consumer Behavior in Pharmaceutical Sector

Rajesh Kumar, Akash Parmar** and Bijal Zaveri****

ABSTRACT

India is considered as one of the top 5 Pharma-emerging country. India is also the largest supplier of generic medicines in the world. In OTC sector India has 11th rank in world OTC market. Consumer behavior has a huge impact on OTC sector rather than the Prescription medicines. Consumer analyzes various factors before the purchasing of OTC medicines. Covid-19 Pandemic affects perception of each & every individual. Perception regarding various products has been changed due to Covid-19 pandemic. Digitalization also has huge impact on behavior of consumers. This research paper highlights the entire possible factors which have impact on consumer behavior. This research paper helps to understand the impact of digitalization on consumer behavior in pharmaceutical sector. This paper helps to understand that how the psychology of consumer has changed after using the digital tools & techniques. Consumer perception or their behavior also has huge impact on marketing of OTC or Pharmaceutical products. This research paper also highlights that how the consumer behavior affects the marketing of various OTC pharmaceutical products. This paper includes various suggestions to improve & formulate marketing strategies in pharmaceutical sectors. This research paper includes 200 respondents from all over the India to understand the impact of Digitalization on buying behavior of consumers in pharmaceutical sector & their preferences.

Keywords: *OTC market; Digitalization; Consumer behavior; OTC drugs; Indian pharmaceutical market; Covid-19 pandemic; Marketing; Prescription drugs etc.*

1.0 Introduction

According to report published Department of Pharmaceuticals, (Government of India, 2020-21) Indian Pharmaceutical Market ranks 3rd in word in terms of volume& 14th in terms of revenue (value). According to UNICEF, India also the largest supplier of the generic drugs in world. As we all know every sector have been adopted various digital tools & techniques to boost their operations and increase their market effectiveness. Pharmaceutical industry is gradually shifting towards the digitalization and adopted various digital techniques in their operations including marketing. On 11 March 2020 WHO declared COVID-19 as a pandemic. Covid-19 pandemic impels every sector to use digital technologies in their business operations to enhance their effectiveness. Digitalization helps every sector to boost their marketing & other operations. Pharmaceutical industry is currently focusing on digital technologies to increase market share, sales & to attract the customers.

1.1 Drivers for digital transformation:

Here are following drivers for digital transformation.

1. **Reducing time:** Continuous improvements, reducing time in manufacturing, and reducing time in marketing activities.

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2. **Increase flexibility:** digitalization helps industries to developed & delivered personalized medicines. Helps in data integration from the various labs & clinical trials.
3. **Improving efficiency:** helps to achieve operational excellence. Helps in global collaboration. Helps in utilization resources effectively.
4. **Ensuring quality & compliance:** Data integration, data consistency. Helps in collecting data from various patients & customers.
5. **Marketing:** Digitalization helps companies to boost their marketing activities. Helps in targeting customers & deliver the high-performance pharmaceutical products to the customers in very effective ways.
6. **Effective CRM:** Digital technologies enable companies to manage customer effectively. Easy to manage large customer data is the main advantages of digital technology.

1.2 Digitalization in Pharmaceutical Sales & Marketing

Pharmaceutical industry has fairly recently, operated in high walled garden of patient protection, growing demand for high value prescription drugs. Director to Consumer advertisement is more effective in OTC sector. Using various digital technologies in pharmaceutical sales & marketing not relate with cost saving but also give a wide range of opportunities via various methods of internet representation. For a pharmaceutical company, the entry of digital technologies into daily practices is an effective way to use various new channels for interacting with target physicians, healthcare professionals and building relationship.

E-Detailing: Term detailing used to representation drug information, free samples, information packs & gifts to doctors & other customers (pharmacists, nurses, healthcare professional) by the medical or sales representatives. E- Detailing is a method where sales representative gives information about products & discussion via internet, video conferencing, to the physicians.

1.3 Customer Relationship management (CRM):

Customer in pharmaceutical sector means physicians, doctors, pharmacists & other healthcare professionals. Effective CRM helps companies to formulate the various strategies to managed & attract the customers. Digital technologies help various companies to effectively managed customers. This enables:

1. Collect & clean customer data
2. To store securely & warehouse the customer data
3. To access & analyzed the customer data.
4. To analyzed various report
5. To understand the interest the customers
6. Formulate various strategies to attract the customers.

1.4 Patient relationship management

PRM is new technique used by various pharmaceutical companies in which they store patient data as per their needs with proper segmentation so that they can better serve and offers various pharmaceutical products based on their needs.

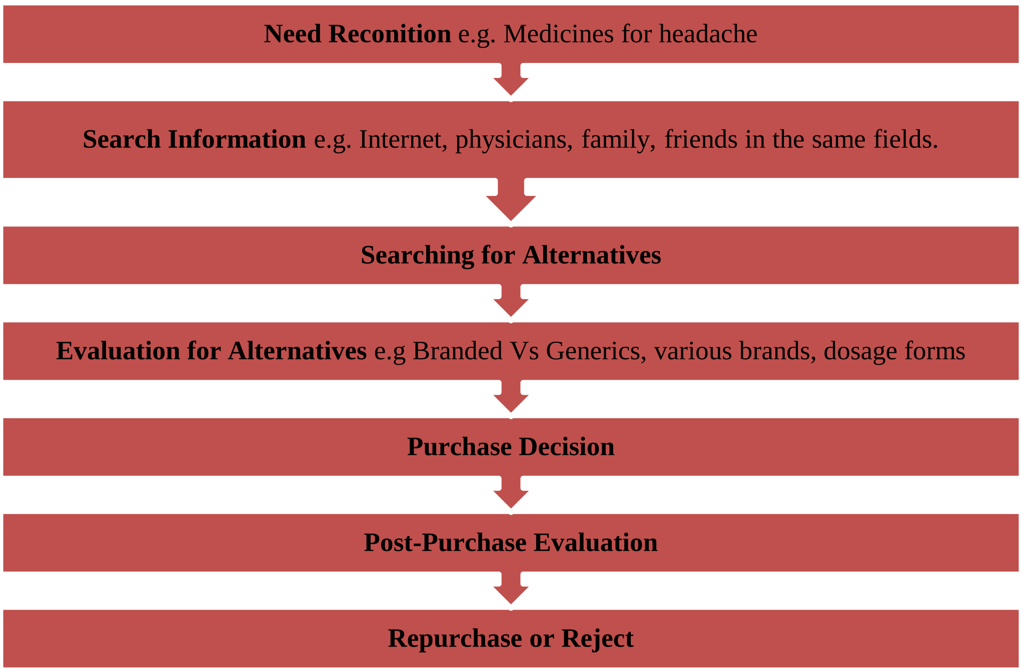
- PRM allows a company to offer innovative & differentiate products from existing offerings.
- PRM helps companies to serve better to its competitors.
- PRM enables consumer to identify their needs and designed according to them.
- Monitoring various patients’ data for continuous improvement.

1.5 Consumer decision making model in pharmaceutical market

Consumer decision making model concern with the how consumers taking decision before purchasing OTC products. Because in case of prescription drugs it's totally depend on physicians' prescription. Consumer decision refers to the process of which consumer decide what to purchase to satisfying their needs. Applying consumer decision making model as following:

1. **Need Recognition:** Identifying needs such as medicines for headache, fever or cold.
2. **Information Search:** Searching information related to your needs. Information can be collected from various ways such as internet, print media, family, physicians & friends in the same fields.

Figure No.1 Consumer Decision Making Model in Pharmaceutical Sector



3. **Searching for Alternatives:** Searching various alternatives related to the needs. E. g Route of administration (oral, parental, topical), dosage forms (tablets, injection, syrups), Branded & Generics etc.
4. **Evaluation for Alternatives:** Evaluations of various alternatives on the basis of various criteria such as Duration of action (long term vs. short term), Branded vs. Generics etc.
5. **Purchase Decision:** On the basis of various evaluations consumers screen out others alternatives and finalized one product for purchase.
6. **Post-Purchase Evaluations:** After purchasing & consume the product analyzed their price vs. quality. Quality in term of effects.
7. **Repurchase or Reject:** If the perceived performance greater than expected performance than it creates brand loyalty & customer satisfaction. And consumer definitely repurchases the pharmaceutical product. If the perceived performance is less than expected than it will create customer dissatisfaction and customer reject the product for future.

2.0 Literature Review

Alsya Utami Rahayu et al (2018) analyzed that digital transformation enhances consumer experience & enhances marketing activities.

Azoev G. et al (2019) suggested use of digital technologies to transform companies & marketing tools allowed companies to increase their effectiveness & revenue.
Lad P et al (2017) found that various digital techniques such as e detailing, social media used by medical representative have huge impact on physicians.
Mahfuzur Rahman khan (2021) analyzed those various digital techniques used in pharmaceutical industry increase brand awareness & consumer engagement and increase profitability.
Simona Vinerean et al (2013) analyzed social media techniques used in consumer awareness leads to change the consumer perception.
Arman Hj. Ahmad et al (2021) analyzed that digitalization & access of various digital technologies & smart phones, smart gadgets by the consumers' leads to change the behavior.
Dr. Sourabh Jain et al (2020) studied that various digital marketing techniques enhance the quick & economic sells of products & services and various promotional activities have high impact on consumer behaviors.
Mayank Kumar Rai et al (2018) analyzed those digital techniques have huge impact on advertisement on products. Various digital techniques along with TV/radio has huge impact on consumer behaviors.
Sudipta Nayan Bhardwaj et al (2020) analyzed that digital tools & techniques are the cost effectiveness and have impact on consumer buying behavior.
John Quigley (2012) analyzed that various online platform maximum use by ages of 18-30 yearsand has maximum impact on their behavior including purchasing and views about different brands.
Girshwyn Reddy (2016) studied that Digital marketing & other tools have high impact of consumer decision making process. Digital technologies also help companies to run their operations effectively.

3.0 Objectives of the Study

- To understand the various factors affecting the consumer buying behaviors.
- To understand the impact of pharmacists/chemists or chemist on pharmaceutical consumer behaviors.
- To understand the various digital platforms on consumer buying behaviors in pharmaceutical sectors.
- To understand the various ways to collect the information about various pharmaceutical products.
- To understand which method of purchasing mostly preferred by the consumer.
- To understand which online pharmacy platform mostly preferred by the consumers.
- To understand the impact of advertisement on consumer behavior in pharmaceutical sector.
- To understand the use of health supplements after the covid-19 pandemic.

4.0 Research Methodology

Research Design: Primary research design, Descriptive research (Quantitative Research).
Area of the Study: The entire consumer those are associated with purchasing or consuming the pharmaceutical products.
Sample Size: 200 Respondents.
Sampling Method: Non-probability sample: convenience method.
Data Types: Primary & Secondary data
Data Collection method: online survey through Google forms & Emails
Data Collection Tools: Questionnaires
Types of Questions: Structured, close ended.

5.0 Data Analysis & Findings

Table 1: Gender

Gender	Male	Female
Respondents	123	77
%	61.5	38.5

Table 2: Age Group

Age Group	No. of Respondents	Percentage
20-30 years	129	64.5
31-40 years	55	27.5
41-50 years	11	5.5
51 years &above	5	2.5

Table 3: Occupation

Occupation	No. of Respondents	%
Students	104	52
Others	42	21
Government Sector	17	8.5
Businessman	12	6
Doctor	10	5
Professionals	9	4.5
Agriculture	6	3

Table 4: Consulting Doctor before Purchasing Medicines/Pharmaceutical Products in Minor Illness (cough, cold, Fever)

Responses	No of Respondents	%
Yes	57	28.5
No	143	71.5

Findings: Maximum Respondents not consult doctor before purchasing medicines in minor illness such as cough, cold, fever, pain.

Table 5: Searching Information before Purchasing Medicines/Pharmaceutical Products

Responses	No of Respondents	%
Yes	174	87
No	26	13

Findings: Maximum people often search information by various medium about the pharmaceutical products before purchasing

Table 6: Maximum Method used for getting Information about Pharmaceutical Products

Mode	No of Respondents	%
Internet	138	69
Family	21	10.5
Friends	15	7.5
YouTube	13	6.5
Others	13	6.5

Findings: Maximum respondents prefer internet for getting information.
Strategy: Make a strong presence on internet of your product & focused on digital marketing.

Table 7: Preferred Mode of Purchasing Pharmaceutical Products

Mode	No of Respondents	%
Offline	151	75.5
Online	49	24.5

Findings: Maximum People prefer offline mode for purchasing the medicines & other pharmaceutical products

Table 8: Trying Online Platform for Purchasing Pharmaceutical Products

Responses	No of Respondents	%
Yes	165	82.5
No	35	17.5

Findings: Maximum respondents had purchased online medicines or pharmaceutical products once.

Table 9: Prefer Online Platform

Platform	No of Respondents	%
1 MG	64	32
Net Meds	41	20.5
Apollo	26	13
Pharm Easy	17	8.5
Med life	8	4
Practo	9	4.5
Not Purchased online yet	35	17.5

Findings: Maximum respondent have tried 1 MG followed by net meds.

Table 10: Factors Consider during Purchasing of Pharmaceutical Products

Factors		No of Respondents	%
Price	Always	165	
	Sometimes	20	
	Rarely	6	
	Never	9	
Brand	Always	136	
	Sometimes	48	
	Rarely	14	
	Never	2	
Quality (Effect)	Always	168	
	Sometimes	22	
	Rarely	8	
	Never	2	
Availability	Always	134	
	Sometimes	48	
	Rarely	15	
	Never	3	
Packaging	Always	50	
	Sometimes	49	
	Rarely	85	
	Never	16	

Findings: Price has huge impact on purchasing behavior of consumers. Brand, Quality & availability also have huge impact than packaging.

Table 11: Purchasing Same Brand Prescribed by Doctor/Physicians

Responses	No of Respondents	%
Yes	78	39
Sometimes	104	52
No	18	9

Findings: Maximum respondents sometimes prefer alternative brands prescribed by doctor which is cheaper in cost While 78 respondents purchased same brand as prescribed by doctors.

Table 12: Change Pharmaceutical Products after Suggestions of Pharmacists/Chemists & Retailers

Responses	No of Respondents	%
Yes	157	78.5
No	43	21.5

Findings: Pharmacists/Chemists have huge impact on buying behavior of consumers.

Table 13: Purchasing other Products if Particular Brand is not Available

Responses	No of Respondents	%
Yes	164	82
No	36	18

Findings: Maximum respondents change the brand if particular brand/product is not available.
Strategy: Make sure your pharmaceutical product must available in pharmacy stores.

Table 14: Prefer Drug Types

Branded/Generics	No of Respondents	%
Branded	70	35
Generics	130	65

Findings: People more prefer generics instead of branded but in certain cases they need branded drugs.

Table 15: Purchasing Pharmaceutical Products after Seeing Advertisement on TV/other Media

Responses	No of Respondents	%
Yes	152	76
No	48	24

Finding: Advertisement stimulates the consumer for purchasing the pharmaceutical products.

Table 16: Suggest Pharmaceutical Products Affect seeing Advertisement

Responses	No of Respondents	%
Yes	144	72
No	56	28

Findings: Advertisement also plays an important role in word-of-mouth marketing.

Table 17: Using Products for Immunity

Responses	No of Respondents	%
Yes	111	55.5
No	89	44.5

Findings: People more prefer immunity booster products after the Coivd-19 pandemic.

Table 18: Test/ Checkup before Purchasing Medicines

Responses	No of Respondents	%
Yes	51	25.5
No	118	59
Sometimes	31	15.5

Finding: Maximum people take medicines before proper health checkup. But no. of respondents increases after pandemic those go for checkup before purchasing the medicines.

Table 19: Change Doctors those Prescribed Costly Medicines

Responses	No of Respondents	%
Yes	118	59
No	82	41

Finding: It is another parameter that people change their doctors if he/she continuously prescribed costly medicines and has little effects.

6.0 Future Implementation

- Companies must be depending on multiple supply chain.
- Ensure that availability of your products in market as per demanded by your customers.
- Analyzes communication gap between organizations & customer/consumers
- Focused on generic market to increase the profit.
- Must focus on the advertisement of your OTC/Pharmaceutical products because it also has huge impact in brand creation.
- Focusing the digital marketing
- Focused on Customer relationship Management.
- Create a strong image on digital platform.
- Build customer responsibility and enhance your social image by serving your customers in profitable way.
- Analyzed various parameters & factors that affect the consumer behavior before formulation of marketing strategies.

7.0 Conclusion

The Study reveals that the effect of the various factors on the consumer behavior. We also observed that what are the sources of information from which consumer get information about the pharmaceutical products. Internet is the main source of information that changes the consumer perception about various pharmaceutical products. On the digital platforms & internet consumer can easily compare the price of the different products. Price is also one of the major factors in changing the perception of the consumers. Covid pandemic boost the digitalization in pharmaceutical sector and that have impact on consumer behavior. After using various tools & modes, consumer power slightly increases than before the pandemic. This study reveals the how the consumer taking decision and analyzed various factors before purchasing the pharmaceutical products.

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A Brief Study on Solid Waste Management

Rishi Dadhaniya and Nakul Rajgor***

ABSTRACT

Solid waste is useless, gratuitous and waste materials generated by the daily activities of the community. Solid waste management are made public as a discipline related to the management of generation, storage, collection, transfer, method and disposal of solid waste. Why property solid waste management is important currently a day and also the method we tend to tend to work along to mitigate this instance. Also, the role of the government. and non-governmental organizations. The body together permits of us to grasp the types of waste and their blessings and disadvantages. However, 4Rs can play a vital role in making republic of Republic of India and rural areas inexperienced. This thesis is expected on a search applied on solid waste management. This analysis together aims to examine the composition of urban solid waste.

Keywords: *Awareness; Management; Solid waste; Disposal; India; Waste management.*

1.0 Introduction

"Keep Our City Clean" Over the last few years, India's rapid population growth, rapid urbanization and industrialization have caused serious problems in managing solid waste in cities. The increasing consumption characteristics of the urban population square measure accountable for the generation of an oversized quantity of solid waste. The effects of this pollution can be felt in areas far from the source of pollution. Domestic and industrial emissions follow air pollution, eutrophication of nutrients and toxic substances, which in turn induce waiting and land degradation, with serious implications for flora and fauna. Since ancient times, urban institutions have been responsible for keeping roads clean, collecting municipal waste and safely disposing of it. Most institutions elected in Indian cities hire the majority of employees to clean the city, but except for the tendency for employees to be absent, only 5070% of employees collect garbage. At this stage, solid waste production has a significant impact on the land and methane emissions required for waste treatment. Many of these solid wastes require well-managed collection, transportation and treatment systems.

2.0 Problem Statement

People are not that much aware about how to use it or throw it properly. They use it and throw it improperly. That is the main thing that they would have done it in proper way so that would have been a different impact on environment and also people around them. Urban solid waste assortment schemes in cities in developing countries usually serve a restricted further as a restricted portion of the city's population. Those left while not waste assortment services square measure the low-income population, usually living in urban areas.

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3.0 Research Methodology

The research followed a qualitative approach. conducted a comprehensive study of the literature on inventory management functions. used conference papers, technical papers and online resources to identify various jobs covered in RFID to improve inventory management. Currently, the industry produces a huge amount of solid waste that has very negative environmental effects.

4.0 Literature Review

There are few studies related to automated solid waste management.

[1] SHWETA A. MISHRA, ASHISH R. MISHRA, ANURAG V. TIWARI (JANUARY 2014) solid waste management are often outlined as a discipline associated with the management of the generation, storage, collection, transfer, process and disposal of solid waste. This work is based on the research carried out by the municipal company Yavatmal on solid waste management practices. The data collected by shows that the largest proportion of waste caused by food and garden waste is. The proportion of reuse caused by food and garden waste is paper, and the third highest is inert materials. Since the solid waste manual separation plate is in the disposal site of Sawargad Village, is the most active way to realize the recovery and reuse of materials such as metal, plastic, glass and rubber.

[2] DIWAKAR KUMAR, AMRESH PRAKASH, RAVI DATTA SHARMA (AUGUST 2021) The alarming growth rate of the population of Urban System (Delhi) and solid waste requires immediate action to dilute the situation before it gets out of control. So, if we do not take appropriate actions immediately, the damage caused to our ecosystem will be irreparable. This document also explains why sustainable solid waste management is so important today and how we can alleviate it together.

[3] Ebikapade Amasuomo1 & Jim Baird1 (NOVEMBER 2016) A number of studies and investigations are conducted on the sources and characteristics of waste, in addition as doable adverse effects from improper handling and international best practices. this text aims to check these vital queries so as to supply answers to previous analysis. This document uses the desktop methodology to supply answers to the analysis goal. However, many researchers united that waste is material that the owner not desires. now is clearly seen from the subsequent facts. is Associate in Nursing understanding of the particular composition and kinds of waste, that determines however handles or manages waste. Waste management involves the method of assembling, transporting and disposing waste within the best thanks to limit or eliminate the harmful effects of waste. This facet of environmental management is as vital as different public facilities or infrastructures, while not them, the lives of latest individuals are very troublesome. this is often as a result of studies have shown that there's an instantaneous link between air, water and soil pollution and diseases like carcinoma, cardiopathy, Asiatic cholera and liver disease.

[4] White et al. (1995) added that MSW is troublesome to handle as a result of its ingredients, together with metals, paper, glass, and different mixed organic compounds. Similarly, a study (Berkun et al., 2011) showed that the characteristics of MSW square measure extremely hooked in to the supply, however in some countries, like Turkey; nearly quite 1/2 MSW may be a biodegradable material, and reclaimable parts as an example, cardboard, paper, glass and plastic account for an outsized proportion of the overall municipal solid waste.

[5] Dixon &Jones (2005) reported that the elements of urban solids embody materials like soil, orchard, and garbage, wood, paper, ash, plastics, textiles, and rubber. They over that urban solid waste is four, 4 444 styles of waste, principally of domestic and industrial origin.

[6] Bua et al. (2007) added that MSW primarily includes food and garden waste, textiles, paper or cardboard, plastic, glass and metal. They believe that thanks to the composition of MSW, waste is simply used for energy recovery or fuel production.

[7] White et al. (1995) Believes that, in contrast to alternative waste streams that square measure a lot of undiversified and have the next proportion of every material, municipal solid waste contains a kind of compositions. typically, is straightforward to travel from one town to a different town and from one town to a different. town changes. Country to a different.

[8] Ahmed Hassan Ibrahim Abdo 'solid waste management' This paper draws the light on the improvement of the lifestyle and the increase in industrial construction, 4,444 people have joined to increase the generation of solid waste in various regions of our country. is lack of garbage everywhere, and the municipal method of garbage collection is neither systematic nor scientific, which affects our lives. Use separate appropriate garbage cans to dispose of waste, and protect people and children from viral illnesses in areas where toilets are needed. Solid waste reduction is a difficulty that has got to be properly managed to shield human health, the setting and therefore the protection of natural resources. Few folks understand that solid waste encompasses an important impact on global climate change. it's time to avoid wasting our generation and our world generation, to create the setting clean and world. to shield the setting and therefore the health of voters.

[9] Sanjiban Chakraborty, Aniket Mehta, Shaheed Sheikh, Ashmita Kumari Jha, Dr. CR Manjunath solid waste management the intelligent waste management system can modify the atomic number 1 and solid waste review method through internet applications and mobile phones, moreover because the management system of the complete assortment method during this demonstration. This method helps customers understand the responsibilities behind their work, such as solid waste management and inspection systems, and communication technologies that integrate GPS and other truck control systems. performed an analysis and the results showed that municipal solid waste includes mainly biodegradable and non-biodegradable materials. Furthermore, it has been determined that this waste management scenario could deteriorate because of the speedy urban conditions in Asian nation, the surprising increase of slums and residential buildings and also the lack of property waste management technologies in Asian nation.

[10] Muhlisozdemir 'waste management for municipalities in turkey' this paper, the coordinates of the waste recycling centre are proposed for local authorities based on the seven areas in Turkey. The 81 provinces of Turkey are divided into 7 regions. According to the latitude and longitude coordinates of the city, the cities that should be located in these territories are determined through means cluster analysis. In addition, -kilometre cluster analysis and particle swarm optimization methods were used to specify the coordinates of waste recycling centres. Through cluster analysis of k-means and the results of particle swarm optimization, the distance from the coordinates of the garbage collection centre to the regional city is compared. According to our findings, the optimization of particle swarm is more successful than means cluster analysis.

5.0 Research Methodology

The research followed a qualitative approach. conducted a comprehensive study of the literature on inventory management functions. used conference papers, technical papers and online resources to identify various jobs covered in RFID to improve inventory management. Currently, the industry produces a huge amount of solid waste that has very negative environmental effects.

6.0 Suggestions

The waste management of a metro/big town is completely different from that of a little city and four,444 encompassing villages. In metropolitan areas/big cities, waste assortment and sorting will be wiped out completely different places in line with sectionalisation supported socioeconomic, residential industrial, industrial areas, etc. and different services (United Nations setting Program, 2009). Integrated municipal solid waste management ought to be enforced to make sure safe and environmentally friendly disposal waste [41] In developing countries like India, wherever seventy-one of the population lives in small-scale cities and villages (census, 2011) the interface between small-scale cities and encompassing villages ought to be created for higher MSWM. Villages generate terribly little amounts of waste, that is tough as a result of it is and isn't financially property to manage in individual villages. additionally, most of the waste generated by these villages is perishable. Therefore, the number of single-use waste is reduced by. Therefore, it's counselled to explore the integrated MSWM strategy that has been developed solely for this state of affairs Overall, the dearth of MSWM is especially thanks to the apathy of town government, lack of community involvement, lack of technical data and inadequate money resources. Kumar and Pandit, conjointly noted that the on top of factors square measure the most challenges facing authorities in rising the waste management system in. conjointly the attention publicly are the most factor. conjointly we are able to have little machine from which waste ought to be convertible therefore individuals place it in their house and compact and reasonable so are simple for all individuals.

7.0 Conclusions

Despite the very fact that solid waste management practices have been up in recent years, the pace of improvement must be accelerated measures mentioned in MSW rules must be enforced time has come back to encourage technology-based entrepreneurship to attain effective solid management. NGOs ought to be concerned in numerous elements of waste is of significant importance. Authorities should shield elementary right of votes by implementing best practices and voters should perform elementary duties by their contribution to those practices.

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A Study of Online Customer Engagement by Amazon

Rohan R. Chopra and Axita Thakkar***

ABSTRACT

Customer engagement is all about getting customers to interact with you through various communication channels and share the experiences you provide them with. It isn't just about customer service, but about creating a name in the mind of consumers. Understanding how to develop and retain customer engagement is more critical than ever, with 54 percent of consumers stating most companies need to modify the way they engage with customers, and that becomes the research gap for us to study in the article here. The main purpose of this research paper is to define and measure online customer engagement by gathering data from customers who are active internet users. Also, we have developed an online customer engagement and communication mix model to validate the conceptual theories. It was found that customer engagement could be explained with different dimensions like trust, dedication and reputation. We have selected this area being so trending.

Keywords: *Online customer engagement; Amazon; Virtual communities; Online branding.*

1.0 Introduction

Involvement is an online motive that transforms trust in customers, customers into loyal customers, and loyal customers to oral brand attorneys. A colleague once described the involvement as, "Gravity keeps the audience around the sign." Thus, it has become a new competitive environment for retailers. Just ask CMO what their top ten marketing issues are. Involvement will usually arise from the top three. Also, it is challenging as engagement can be a domestic product, becoming more and more difficult when trying to deal with cultural and linguistic issues. Engaging online can take many forms, from liking Twitter to creating a video on YouTube. However, the reasons why people engage with products remain unchanged. Simply put, people engage with products that they care about and associate with and love. Those are products they understand, value, relate to, and trust. How effective is your product in these methods? If you are not satisfied with the level of involvement of your product you find online, then there is a good chance that online visitors find the product offer vague, unmatched by competitors, indifferent to their needs, unreliable, or all of the above. These are the problems you have to deal with if you want to solve the problem of engaging in a source.

People often try to come to the conclusion, or we can say that they often get the gist from the conversation. The concept of Einstein's relationship has given us a sense of perspective with new understanding and the study of communication often tells us in context. Many concepts connect us to the past. By looking for the same in the marketing sector, we can say that value is a concept in the midst of many situations. In terms of concept, this too has many categories, and the two main ones are the customer revenue and the value that the business receives. Another concept learned in conjunction with value is customer engagement. Customer engagement helps the customer write down their feelings, help improve the product and at the same time Brand can also influence their behavior. Customer perception will not only help the current customer, but it can also help potential and non-customers. Value building is the future and future of the business, and the key to creating a successful value for the customer.

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Customer support can be done in a variety of ways such as reviewing communication posts. For the most part of the perceived benefits, consumers have seen online consumer reviews as helping to gather information about product features, functions, price ranges, quality and popularity. Reading consumer reviews online seems to help them save time and money and get the best deals. This result is consistent with previous studies that have identified positive online consumer review rates.

In an ever-increasing business environment, companies recognize the power and importance of the internet to attract customer attention. The Internet is an effective communication tool for building the number of customers and companies. If a company wants to develop genuine relationships with its customers, it should keep its customers involved. Online platforms allow businesses to engage a much larger number of customers without much compromise. Organizations also need to be able to identify and measure attributes and priorities for customers. This offers quality products and services, can be obtained by sample testing, opinion polls, or by soliciting individual customer feedback on your preferred product quality and service size. Also, successful organizational projects are based on meeting customer expectations, understanding their status, their needs and requirements.

Companies now see that engagement is also a strategic way to look at customer-stakeholder relationships.

There has been an interest in collaborative and educational thinking and customer engagement. The term customer engagement has been gaining increasing popularity especially in the digital environment where website providers find it very difficult to hold on to their site visitors, in an attempt to sell or communicate with them. This paper provides a comprehensive customer description of engagement and explains the magnitude of this concept. For this purpose, definitions of customer engagement and engagement will be provided and the scope of customer engagement will be reviewed.

Because the nature of a consumer's interactions with a brand, firm, and other customers differs on the internet, online customer engagement is qualitatively different from offline customer engagement. For example, discussion forums and blogs are places where individuals may communicate and socialise in ways that no other offline interactive medium can match. Online customer interaction is a social phenomenon that gained traction in the late 1990s with the widespread adoption of the internet, which accelerated technological advancements in broadband speed, connectivity, and social media. Consumer empowerment and the possibility for businesses to engage with their target customers online have both been facilitated by this online engagement. According to a 2011 market study, 80 percent of online buyer’s report contemplating alternate purchasing options after reading bad online reviews, while 87 percent of customers say a positive review has reaffirmed their decision to proceed with a purchase.

2.0 Objectives

1)To study factors influencing customer through online customer engagement.
2)To study consumer perception through online customer engagement towards Amazon.
3)To study value contribution by consumer towards Amazon based an online customer engagement.

3.0 Literature Review

1) **Jochen Wirtz B. Ramaseshan Joris van de Klundert Zeynep GurhanCanli Jay Kandampully, Journal of Service Management, 2013, Brand management and customer engagement in online product communities**

Researchers and analysts alike are interested in learning more about the emergence and implications of online brand communities, given the rapid rate of technological change in the market (OBCs). This paper outlines the integration of existing OBC documents to improve our understanding of OBCs, as well as future research objectives for OBCs. We have been provided with a conceptual framework that expands our understanding of OBCs and customer communication. Three conflicting aspects of consumer engagement with OBC are highlighted, and the key dimensions of OBC (product standing, online use, funding, and governance) are highlighted (product related, social and performance) This is the first lesson to look at differently. but the linked views of clients and organizations involved with OBCs.

2) **Goetz Greve, (2014), A Balanced Result of Customer Involvement in Product Type, Social and Behavioral Sciences**

Customer engagement is a psychological process that contributes to improving customer loyalty, and is one of the most important research issues today. Second, motivational factors influence customer purchases from a product or company; third, a state of mind characterized by pride, devotion, absorption, and communication. Customer communication is possible both offline and offline, where online customer engagement has become more common as social networking sites are gaining popularity. In view of the lack of robust research on customer behaviour on social media sites, the following are research contributions: The first step is to create a conceptual model for calculating the causes and effects of consumer engagement. Second, the set of indicators is designed for conflicting capture, the level of customer communication, and results. The findings of this study, which analyses consumer behaviour in social media, are as follows: The first step is to introduce a conceptual model to explore the causes and effects of customer communication. Companies can use social networking sites, such as Facebook, to engage their current and potential customers in many interactions. The following are research contributions, given the lack of robust research on customer behaviour on social media sites: The first step is to develop a conceptual model for calculating the causes and effects of consumer engagement. Second, a set of opposing capture measures, the level of customer communication, and results are being developed. Thirdly, the role of consumer engagement in the evaluation of product type - the product loyalty relationship is investigated. The following are the findings of this study, which is a rare case study of customer behaviour in social media: The first step is to introduce a conceptual model to explore the causes and effects of consumer engagement. Second, the set of indicators is designed for conflicting photography, the level of customer communication, and results. Third, studying the impact of customer engagement in the relationship between image and product loyalty. Because dynamic research on consumer communication behaviour on social media sites is still relatively rare, the following is found in this study: The first step involves introducing a conceptual model for identifying the causes and effects of consumer communication. Second, the set of indicators is designed for conflicting photography, the level of customer communication, and results. Finally, the impact of consumer engagement on the relationship between image and product loyalty is being investigated. Large results are estimated using small squares, and hypotheses are tested using partially squared squares. The study sheds light on two topics: First, a model is developed to describe customer behaviour on a Facebook fan page. Second, according to the study, customer communication has a significant impact on the relationship in the image relationship - product loyalty relationships.

3) **Anita Pansari& V. Kumar, Center for Product and Customer Management Outstanding, 2016, Customer Involvement: Construction, Opposition, and Outcomes**

We review marketing literature and analyze popular news items in this study to highlight the need for customer engagement (CE) and propose its framework. We create a sense of engagement by exploring the growth of customer management. We say that when relationships are satisfying and stick to the soul, partners are involved in their care. As a result, direct and indirect CE contributions have been incorporated into customer engagement components. Our proposed concept elaborates on the elements of CE, as well as the contradictions (pleasures and feelings) and the effects (visible and intangible) effects of CE, based on theoretical evidence. We also look at how easy usability, robust type (B2B vs. B2C), industry type (service versus product), product value (high compared to low), and level of engagement (high compared to low) affect the relationship between satisfaction and direct CE Offering, and feelings and indirect contribution of CE. By introducing effective strategies, we also explain how we can gain consumer engagement and increase corporate performance.

4) **Assessing consumer product engagement: definition and themes Linda Hollebeek, Strategic Marketing Journal 2011**

Customers are becoming more and more interested in participating and engaging in products. Although employee interest is widespread, scientific research in the sense of “consumer product engagement” (CBE) has recently emerged in literature, leaving workers with limited understanding of the term to date. Data were collected from 14 informants in the focus group and in-depth interviews to assess quality. Relationship marketing (RM) and log-service (S-D) logic are used to evaluate CBE, as well as an integrated link with social exchange theory (SET). CBE is defined as “the magnitude of customer engagement in understanding, emotionally and ethically in a particular product partnership,” according to the study. In addition, three major CBE components have been identified: 'immersion,' 'liking,' and 'activation.' The report concludes with a summary of the most important research findings and results.

5) **Shiri D. Vivek, Sharon E. Beatty, and Robert M. Morgan, Year of the Journal of Marketing Theory and Practice, Consumer Engagement: Examining Customer Relationships Without Purchase, 2012**

This study analyses the scope and scope of customer engagement (CE), which is the most important part of marketing relationships, using relevant quiz questions with managers and customers. CE is defined as the level at which a person is involved in and communicating with company contributions and / or organizational activities initiated by a customer or company. According to us, it is built on understanding, emotionally, morally and socially. Finally, we present a CE model where current or engaged customer engagement and engagement are CE objections, in terms of value, trust, effective commitment, word of mouth, honesty, and product community involvement as potential outcomes.

6) **Peter C. Verhoef, Werner J. Reinartz, and Manfred Krafft, Customer Involvement as a New Customer Management Perspective, Journal of Service Research, 2010**

Customer management research (CM) has developed significantly since 2000, with a significant commercial impact. The authors argue that customer engagement is a critical new development in CM in a communicative culture, where customers are able to easily communicate with other customers and businesses through social networks and other new media. Customer engagement is defined as the behaviour of a product or company that transcends non-transactions. The authors present a model of the concept of anti-customer engagement, barriers, and business impacts, and link this model with seven articles in a special customer engagement magazine.

7) **Jenny van Doorn, Katherine N. Lemon, Vikas Mittal, Stephan Nass, Doree'nn Pick, Peter Pirner, and Peter C. Verhoef, 2010, Customer Behaviour: Theoretical Foundations and Research Indicators Journal of Service Research**

This document defines and explores the concept of consumer engagement behaviour (CEB), which we define as an indication of consumer or non-consumer behaviour that is motivated by motivation. CEBs include activities such as word-of-mouth (WOM), recommendations, helping other clients, blogging, writing reviews, and legal action. Companies can manage CEBs, according to the authors, by adopting an integrated and comprehensive strategy that recognizes their emergence and influence over time.

8) Johanna Gummerus and Veronica Liljander, Emil Weman, Minna Pihlströ̈m Management Research Review, 2012 Customer engagement in the Facebook product community

Consumers today are very sensitive to the price, due to the availability of unlimited information. If an organization has a large base of highly efficient and loyal customers, it can withstand this situation of high price sensitivity. Customers are happy with the services and have an emotional attachment to the product associated with the company. A poll of gamers in the Facebook product community provided 276 helpful answers. "Barriers to Public Participation" (CEB) and "Transactional Engagement Behaviours" (TEB) have been used to differentiate customer engagement (TEB). In addition, three types of relationship benefits are identified: social, recreational and economic. The benefits gained are strongly influenced by engagement practices. In addition, the findings of the mediation study suggest that social and recreational benefits affect the CEB effect on satisfaction, but that similar benefits fully address the effect of TEB on satisfaction. CEB influences honesty mediated by the benefits of entertainment. Research is limited to a single product community. The findings could lead to further customer engagement research. The findings of this article provide suggestions on how businesses can use Facebook communities to increase happiness and loyalty by providing appropriate types of relationship benefits. Managers should do research on customer engagement practices and ideas on all channels and use that knowledge to develop social media strategies. Customer engagement is a recently introduced term with limited technical research and little evidence of its impact on customer relationships. This is the first lesson to link customer engagement with relationship structures to the Facebook product group.

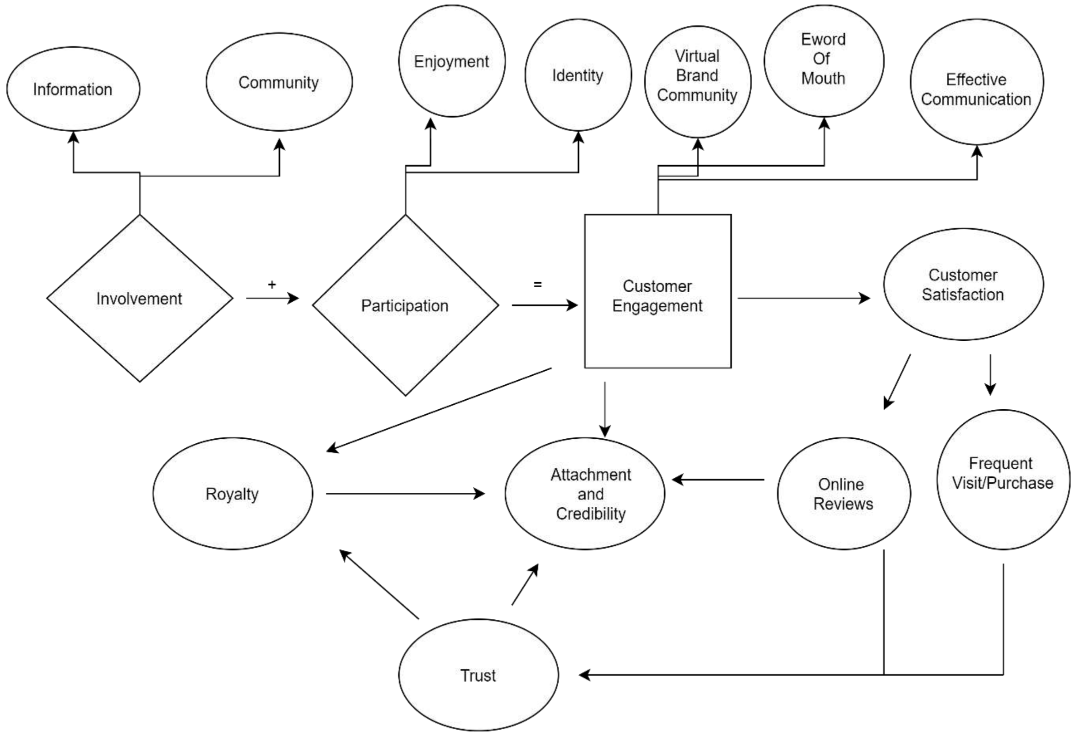
9) Jana Lay-Hwa Bowden, Journal of Marketing and Performing Theory, 2017, Customer Engagement Process: Framework

Traditional customer satisfaction indicators have been penalized for failing to find a wide range of customer responses at the service level. The purpose of this study is to re-examine customer satisfaction surveys on the importance of commitment, participation, and confidence in building effective and reliable customers. The authors provide a conceptual framework to differentiate customer relationships with product type depending on new or emerging customers for a particular type of service. This approach provides a more complete and in-depth understanding of the type of customer product connection, as well as strategies for building and maintaining engagement between different client segments.

10) Customer engagement program, Journal of Marketing Management, EwaMaslowska, Edward C. Malthouse and Tom Collinger, 2016

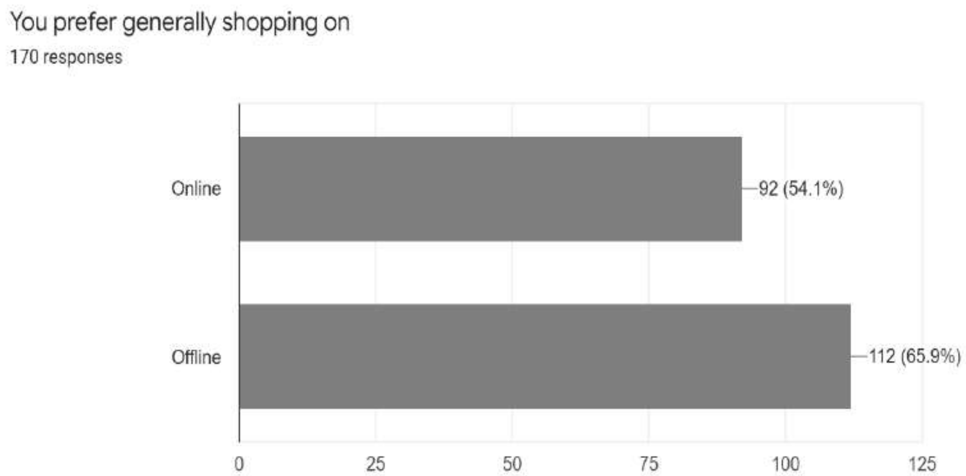
While academic and operational engagement documents are very powerful, there is no consensus on what they are, what behaviours reflect involvement, or what your objections and implications are. For this reason, we recommend that the word engagement be avoided and that more accurate words be used for a variety of purposes. We define a customer engagement program, a conceptual model that includes product actions, other characters, consumer product information, store ethics, product usage, and debate behaviour, based on current documentation. The interaction between these elements, according to this view, is inconsistent and effective, suggesting that each action affects not only the recipient of the intended message, but also the whole environment. As a result, the model reflects the nature associated with the modern commercial environment. It also recognizes the growing importance of empowered customers by distinguishing between several types of product debate behaviours that reflect customer behaviour that does not focus on purchases.

Model- 1



4.0 Data Analysis

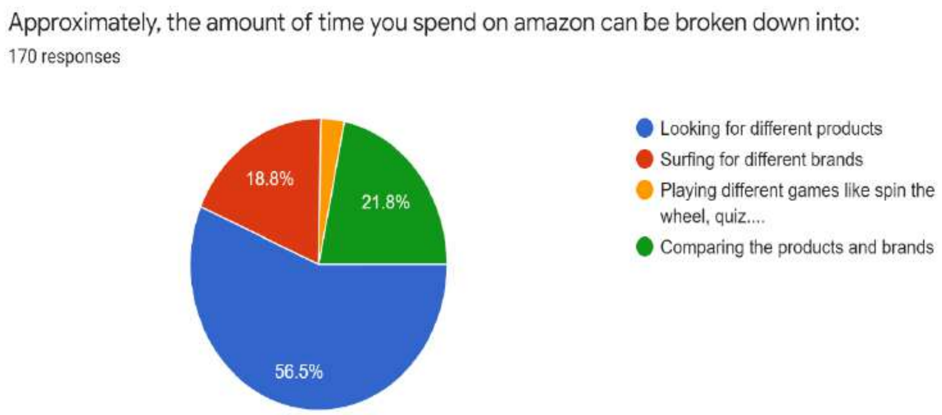
 # Chart 1: The Charts are being Formed by different Data Collection through Questionnaire.



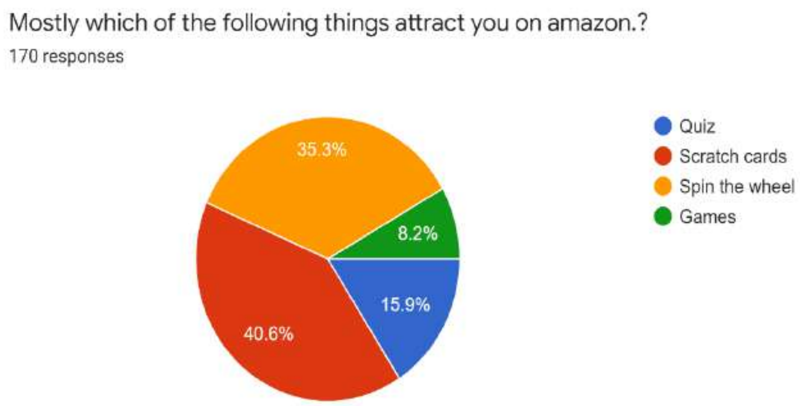
 ISBN: 978-81-950136-5-4

 # Chart 2: The Charts are being Formed by different Data Collection through Questionnaire.

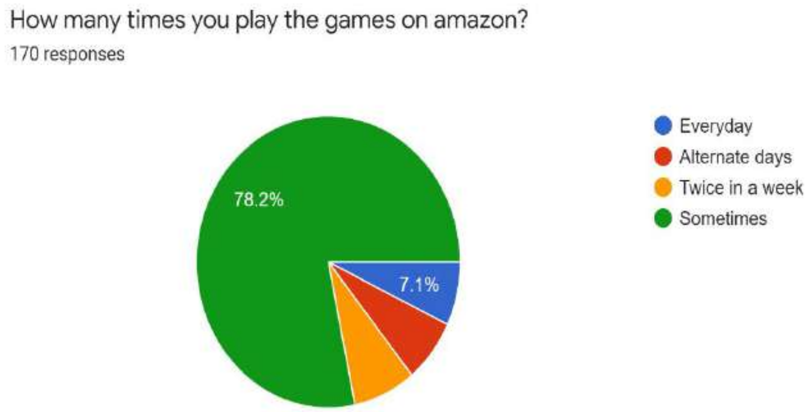
 # Chart 3: The Charts are being Formed by different Data Collection through Questionnaire.



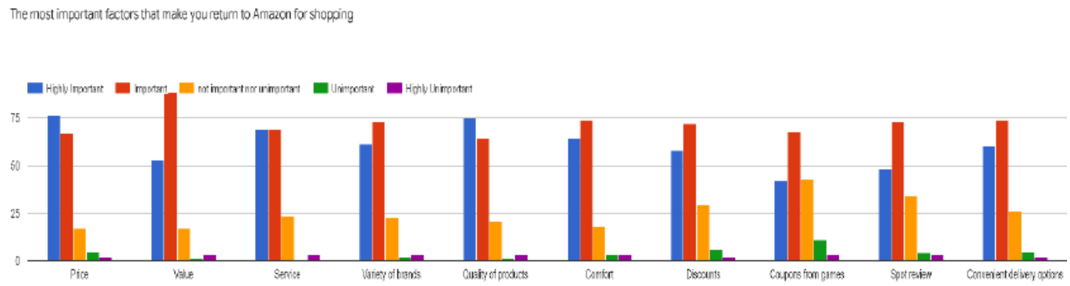
 # Chart 4: The Charts are being Formed by different Data Collection through Questionnaire.



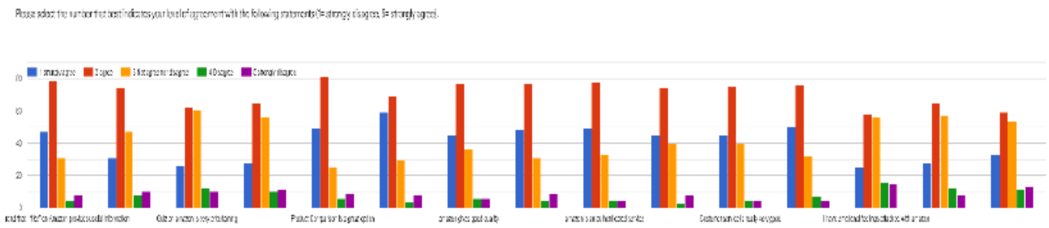
 # Chart 5: The Charts are being Formed by different Data Collection through Questionnaire.



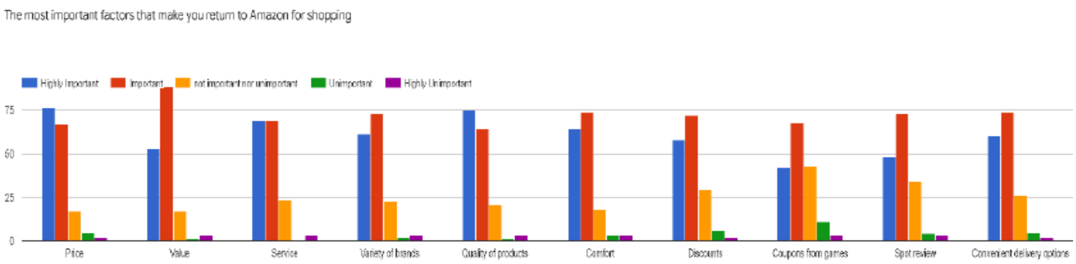
 # Chart 6: The Charts are being Formed by different Data Collection through Questionnaire.



 # Chart 7: The Charts are Being Formed by different Data Collection through Questionnaire.



 # Chart 8: The Charts are Being Formed by different Data Collection through Questionnaire.



5.0 Conclusion

The literature on the notion of customer involvement was reviewed in this paper. According to the exploratory interviews, the study focuses on personality qualities as an antecedent and customer-perceived value as a result of customer interaction in social media brand communities. As a result of a debate concerning research propositions, a conceptual framework was developed, which was backed by the outcomes of the exploratory interviews conducted.

These findings help us better understand online customer engagement by experimentally analysing personality factors as antecedents and consumer perceived value as a result of online customer involvement. This study fills a gap in the existing literature on customer engagement; there has been little research to date on consumer-perceived value as a result of online customer engagement.

Further research limitations include a small sample size; future research is advised to use a quantitative research approach to further investigate the topic, as some respondents may not be able to express directly which attributes drive their online participation. Future research might see if the concept holds true for a company-hosted online brand community.

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Lean Implementation in Sme's

Rushi Pandya, Darshan Rathod**, Dhwani Bhavsar****

ABSTRACT

Lean manufacturing is the systematic method of reducing wastages from every aspect of an organizational activities. Where wastages are defined as all loss of resources and facilities in organization which does not add any value in product or service which is delivered to customer. In most of the industries, this non-value-added activities cover more than 90% of total activities. In India, great number of manufacturing and service sector industries with different size has started the implementation of lean manufacturing. Moreover, the adoption of this method in every organization is increasing day by day. Companies mainly implement lean manufacturing for several reasons such as, to obtain optimum use of resources, to reduce cost of process, to reduce cost of product, to increase the product quality, to increase the customer satisfaction and many more. This paper aims to reduce the lead time of manufacturing process to reduce the cost of production, improve the quality of production and to reduce the error during manufacturing by the systematic approach of lean.

Keywords: *Lean manufacturing; Elimination of waste; non-value-added activities; Optimum use of resources.*

1.0 Introduction

A way to eliminate waste and improve efficiency in a manufacturing environment or a systematic approach to identifying and eliminating waste through continuous improvement is known as lean production. Another way of looking at Lean Manufacturing is that it aims to achieve the same output with fewer inputs – less time, less space, less human effort, less machinery, fewer materials, and fewer costs.

Nowadays, companies understand that if they want to stand in a market, they have to increase their competitive advantage by reducing non-value-added activities and by utilizing optimum resources. Because of this, they are started to implementing lean manufacturing to achieve company's long-term goal and to provide value of product to the customer.

Main focus of lean manufacturing is to eliminate waste and simultaneously focusing on the customer's demand. Next to this, differentiating the companies in two types i.e., Large Industries and SMEs, we get to see that the understanding and implementation of lean in SMEs is poor in contrast to that of large-scale industries.

However, with the given information it is clear that lean is for all the companies that want to improve their productivity and profit irrespective of their size and types. Previously lean was only subjected to large scale industries especially automobile industry. Anyways, the scenario has changed now and even the SMEs can take advantage of lean according to their requirements.

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1.2 Objective of lean manufacturing

1. . Reducing defects.
2. Reduce production cycle time.
3. Minimize inventory levels.
4. Improve labour productivity.
5. Effective utilization of equipment and space.
6. Flexibility in production
7. Increasing output.

1.3 Types of waste

1. Waste of overproducing
2. Waste of waiting
3. Waste of transport
4. Waste of processing
5. Waste of inventory
6. Waste of motion
7. Waste of defects and spoilage

These all 7 types of waste are present with varying magnitude in every industry and the main aim of lean is to overcome this waste in systematic way. That is why every industry has fallen behind the implementation of lean. So that, they can also reduce this waste in their industries and be able to increase efficiency, productivity and profit.

2.0 Literature Review

2.1 Strengths and weaknesses of small and medium sized enterprises regarding the implementation of lean manufacturing By: A. Moeuf*,S. Tamayo*,S. Lamouri*,R. Pellerin *,A. Lelievre*

Through this article we understood the difficulties that are faced while implementing lean manufacturing in SMEs. The whole process is conducted in two steps i.e., firstly, focusing on key characteristics of SMEs and further on the management principles of lean manufacturing. Analysing the scientific literature, there are number of contrasts among characteristics identified for SMEs and lean manufacturing. Functional organization, methodology and formal procedures being absent mainly are the cause of difficulties experienced by SMEs during the implementation of lean practices. According to literature, presence of leadership, expertise and decision making are crucial while implementation of lean manufacturing. While in the framework of the SME it can be seen that all these responsibilities are under the head of enterprise which leads to its own pros and cons.

The objective of this article is to highlight the conflicts between implementation of Lean manufacturing and characteristics of SME. Lack of resources, expertise and procedures mainly prevent the implementation of Lean manufacturing.

The biggest concern is the decision-making power that is under the head of enterprise which plays an important role during the implementation phase.

It is observed that the decision is usually based on the past experience and during such leadership often rising of new leader is not possible. This paradox often leads to strength and weakness, for guiding change within the enterprise.

2.2 Kaizen philosophy by: Jagdeep Singh and Harwinder Singh.

The implementation of lean is objected to increase the productivity through simplification of system by using modern techniques like kizen. Every industry is facing a strong competition to serve its customer's demands so it has become important to make necessary changes in system. Techniques like kizen refers to improve performance, cost and quality continuously. Kizen focuses on creating pride towards work by increasing work satisfaction. All this points together makes a difference by reducing the waste and makes the process leaner and fitter.

There is a vast literature available for the kizen's theory. But it is believed that as kizen is widely accepted theory, it requires more research. Success stories reveal that huge effort is required to make every employee understand about lean's implementation of system. But, kizen's theory also focuses on the strategies that creates awareness among employees regarding Implementation of lean.

2.3 5S implementation methodologies by: Jugraj Singh Randhawa

The goal of this paper is to examine the course of 5s execution across every one of the degrees of associations and feature the critical commitments of 5s to the associations. The paper depends on a deliberate writing audit that examines how the execution of 5s method essentially contributed the advancement of various associations in the term of value, usefulness, successful usage of room, security and worker's assurance esteems. The original copy presents the precise 5s execution approaches recommended by different analyst and experts. The achievement factors that enhance 5s execution in the association are likewise distinguished and talked about dynamically. The examination likewise features, the assembling accomplishments through effective 5s drives and deterrents that make block in the way of executing 5s strategy. The paper gives complete standpoint of 5s, way to deal with the administration for executing it as method of achieving viable execution for their associations.

To keep up with the seriousness of associations, the top administration needs to ceaselessly endeavour to soak up inventive instruments and methods. 5s drives offer huge advantages to assembling and administration associations to accomplish uncommon upgrades at working environment, in this manner spurring the association to learn more information around 5s procedure for its compelling execution in their associations. The paper features the achievement components and obstructions of 5s execution for the associations in the help of information who are intrigued to run the program. A knowledge into 5s execution systems will be altogether useful for scientists and experts to comprehend 5s program from its significance to the furthest limit of its fruitful execution and supportability.

2.4 Total productive maintenance (TPM) implementation practice. By: Abhishek Jain and Rajbir Singh Bhatti.

The reason for this paper is to audit the writing on complete useful support (TPM) execution practice to introduce an outline of TPM execution rehearses took on by different assembling associations and propose potential holes from specialists and professional's perspective. This review attempts to distinguish the best technique for further developing seriousness of little and medium undertakings (SMEs) in globalized market.

In this review, specialists have inspected significant issues in the field of TPM execution in assembling associations. Specialists have arranged every one of the 148 articles distributed from 1988 to 2014 year insightful. Specialists dissected these characterised articles. The near report shows that SMEs are missing to take on progress ways of thinking like TPM, particularly in India, in any case supported endurance of these businesses in future will be truly challenging in this serious climate.

2.5 Literature review of JIT-KANBAN system. By: C. Sendil Kumar & R. Panneerselvam

In this paper, JIT (In the nick of time)- KANBAN writing study was conveyed out and introduced. The basic segment manages the way of thinking of JIT, and the idea engaged with the push and pull framework. The hindering instruments in the Kanban framework are additionally examined intricately. Other than these areas, the significance of proportion of execution (MOP) and the use of something very similar regarding JIT-KANBAN are introduced. The new patterns in the JIT-KANBAN are talked about under the heading "Extraordinary cases". In this audit, 100 condition of-workmanship research papers have been studied. The headings for the future works are additionally introduced.

The developing worldwide rivalry powers, many organizations to lessen the expenses of their bits of feedbacks so that the organizations can have more prominent overall revenue. There are impressive headways in innovation and arrangement strategies as a general rule, to accomplish the objective of limiting the expenses of inputs. JIT-KANBAN is a significant framework, which is utilized underway lines of numerous enterprises to limit work-in-cycle and through put time, and amplify line effectiveness. In this paper, the writers have made an endeavour to audit the condition of-specialty of the examination articles nearby "JIT - KANBAN framework". After a brief prologue to push and pull frameworks, various sorts of Kanban and their working standards, impeding components, the creators have characterized the exploration articles under JIT-KANBAN framework into five significant headings which are observational hypothesis, demonstrating approach, inconstancy and its impact, CONWIP and JIT-SCM. This paper would assist the specialists with refreshing themselves about the current bearings and unique issues under JIT-KANBAN framework, which would additionally direct them for their future investigates.

2.6 Lean implementation frameworks: the challenges for SMEs by: Mohammed AlManei, Konstantinos Salonitis, Yuchun Xu

Execution of lean assembling in an associations can bring many advantages, for example, decreasing waste and further developing working effectiveness. Notwithstanding, lean execution is definitely not a clear interaction. Though, various systems have been introduced, still many organizations think that it is hard to execute lean. Moreover, the vast majority of these guides are for huge assembling organizations, and not for little and medium undertakings. Sadly, there isn't a formula that whenever utilized can ensure a fruitful execution. Moreover, ineffective execution can have an extraordinary effectiveness on association's assets, yet significantly more critically, influence representatives and their trust in lean way of thinking. In the current paper, the most unmistakable lean execution structures will be examined, under the crystal of the requirements of SMEs. The difficulties for the SMEs in their lean excursion are talked about.

In the current review, the difficulties that SMEs face when they start their lean excursion have been examined through an organized writing audit. Different lean execution systems were assessed, also a few examinations zeroed in on the execution of incline toward SMEs in different nations all throughout the planet. The article centres on guide based lean execution draws near. There are many lean execution systems based more on the lean standards as opposed to on a progression of steps. Instances of such methodologies have been introduced by Villalba-Diez and Fujimoto Drivers and hindrances to the execution were recognized and introduced as a power field investigation. The key end drawn is that is no remarkable guide to "leanness"; this should be custom-made for each unique association.

2.7 Lean implementation in small and medium enterprises. By Abdullah Alkhoraif, Hamad Rashid, Patrick Mc Laughlin

There have been numerous writing audits completed on Lean execution (LI) in bigger associations with explicit spotlight on the auto business. Lean execution among little and Medium Ventures (SMEs) has not been so widely investigated. This paper endeavours to overcome this issue by auditing the writing that talked about Lean execution in SMEs with a viewpoint of recognizing the fundamental difficulties confronted. We applied the Precise Survey Approach proposed by Tran field et al. (2003). This approach takes into consideration more far reaching and profounder examination along three phases: arranging, directing, and revealing. For this review, 403 papers were used, with their titles, digests and catchphrases independently learned at beginning phases of the audit. The point of this review is to set up the current situation of worldwide comprehension of Lean execution in SME's, counting inspecting the primary classifications of Lean execution with regards to SMEs. Then, a comprehensive conversation of related Basic Achievement Variables (CSFs) for Lean execution inside SME's is set up that can be utilized as guide for SME's proprietors and chiefs.

There is an agreement that SMEs are a critical part for a solid, fruitful economy. Lean is a grounded strategy for hierarchical way of thinking that empowers organizations to further develop tasks and exchange all the more adequately with more noteworthy worth and less waste. Taking both into account, it is no big surprise that the subject of Lean execution in SMEs is such a significant issue and a question of worry that there is such helpless take up of Incline among SMEs. This examination has exhibited the absence of data and information worried about the execution of Incline in SMEs, in correlation with execution among LEs. The point of this exploration is to overcome this issue through finishing a comprehensive exhaustive assessment of scholastic examination compositions alluding to the execution of Incline in SMEs. Tranfield et al's. Strategy for grouping the writing was the technique utilized here after considered generally suitable as it does as such through logical and classification lines. This is a significant benefit of the current review over the past surveys done on the point; being more orderly, more extensive, and more profound. The introduction of the gathered data in a definite plain plan adds greater convenience of the current survey.

2.8 Practical implications and future research agenda of lean manufacturing: a systematic literature review. By Jiju Antony, Evangelos Psomas, Jose Arturo Garza-Reyes and Peter Hines

Scholarly writing on Lean Assembling (LM) is generally accessible. Nevertheless, because of its fracture, the commitment of LM from viable and scholastic viewpoints is dubious. This paper sets up the common-sense ramifications of LM considers done worldwide and distinguishes novel examination streams. A Precise Writing Audit (SLR) of friend assessed diary articles was led. An aggregate of 403 articles distributed in 62 diaries during 2010–2019 were gathered from four significant administration science distributers. A 'proclivity outline' was applied to arrange the information into regular and consistent topics. Reasonable systems concerning LM down to earth suggestions and future examination plan were planned. Significant subjects of LM viable ramifications and future examination ideas were uncovered and ordered into two classes. In class one relating to the inner nature of LM, subjects identified with the pre-execution, execution and post-execution periods of LM were recognized. In class two relating to the outside nature of LM, subjects identified with the country wherein the organizations work, the different administrative frameworks accessible, and the methodological exploration approach were distinguished. The principal topics upheld in the writing by most not really settled. At last, particular proclamations concerning the reasonable ramifications of LM and the future examination plan are scientifically introduced.

Various creators and specialists in the field of Lean help the view that there is a lack of careful SLR concentrates on which underscore its viable ramifications and future examination plan. In this way, we were unequivocally persuaded to efficiently audit the writing, setting targets which were significantly not quite the same as those of past writing survey examines on LM. Moving above and beyond than basically introducing the enormous number of the viable ramifications of the current LM contemplates and the future examination ideas, a "liking graph" was applied and particular organized reasonable structures were detailed. Along these lines, a significant and summed up image of functional ramifications and future examination ideas is given.

2.9 Lean manufacturing: literature review and research issues By Jaiprakash Bhamu and Kuldip Singh Sangwan

The coming of downturn toward the start of twenty-first century constrained numerous associations worldwide to diminish cost and to be more receptive to client requests. Lean Assembling (LM) has been generally seen by industry as a reply to these prerequisites since LM lessens squander without extra prerequisites of assets. This prompted a spray in LM research across the globe generally through observational and exploratory examinations which brought about a plenty of LM definitions with disparate degrees, targets, execution markets, apparatuses/procedures/philosophies, and ideas/components. The motivation behind this paper is to survey LM writing and report these dissimilar definitions, degrees, destinations, and apparatuses/strategies/techniques.

This paper assembles different detailed meanings of LM mirroring the evolving objectives, standards, and extent of LM. This paper likewise presents a survey of 209 exploration papers on LM/lean creation during 1988-2012. The audit focusses on research commitment, research procedures, kind of industry, and creator profile.

2.10 A literature review on lean implementations – a comprehensive summary Sundareshan S D, Dr Swamy D R, Dr T S Nanjundeswara Swamy

The accessible exploration papers in space of Lean are contemplated to know the execution level of various lean apparatuses, obstruction and advantages of execution are additionally viewed as in the audit. The normally utilized lean instruments in the different association, most normal obstructions and advantages have been recognized and recorded in this paper. Most normal obstruction are additionally parts of nature of work life.

Lean is pertinent for all the sort of the association regardless of their size, parcel of work has been completed in assembling area that to in various useful regions, the degree of execution changes across the areas and their size. It is clear from the examination paper concentrated on that Kanban, consistent stream and TPS are the most regularly utilized lean devices in the association. The Decrease of waste, Stock decrease and Efficiency improvement are usually referred to benefits across the lean executed firms. Aside from this administration of representative inclusion are the most normally referred to obstructions across the carried-out association. These boundaries are likewise part of the nature of work life, so it very well may be presumed that Quality of Work Life (QWL) should be examined across the lean executed firms to get higher light on the issue likewise to uncover the linkage between QWL measurements with the lean execution.

3.0 Overview of the Project

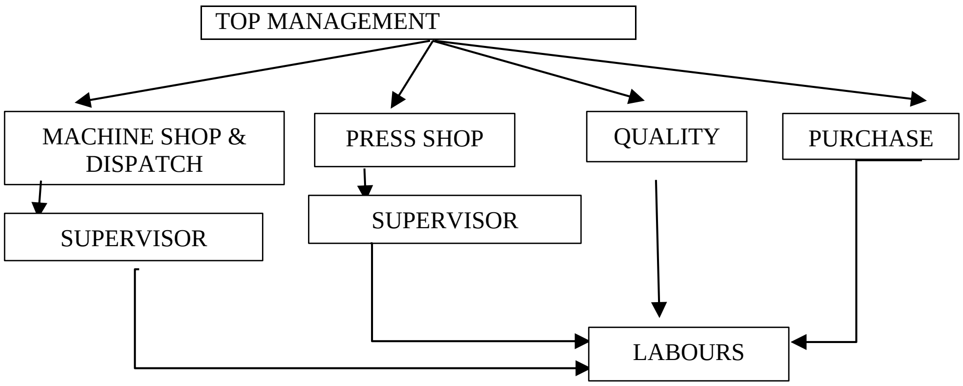
In this project, we selected one SMEs company which name is Synergy Infratech Pvt. Ltd. Which is located at Jarod-Samlaya Road, Gujarat. First of all, we visit the company and grasp the knowledge regarding the company and product which is produced there. Then, selected one particular product for a study which is C-Clamp manufacturing plant. Where we noted all the activities which are carrying on there, then we realized that a lot of time is wasted during manufacturing process of C-Clamp. Secondly, we started of taking primary data of time consumption between two simultaneous activities. Also tried to reduce wastage of time which occurred during manufacturing of C-Clamp.

Company's structure is shown below for better understanding of company and how project is going on.

Company Biography:
NAME: SYNERGY INFRATECH PRIVATE LIMITED.
OWNER: Mr Goldy Tiwari.
CATEGORY OF UNIT: MICRO.
YEAR OF ESTABLISHMENT: 1996
ADDRESS: Jarod-Samlaya Road, Vadodara, Taluka: Savli.
BUSINESS ACTIVITY: MFG. Clamps, flanges, Lock nuts, Clutch Plates etc.

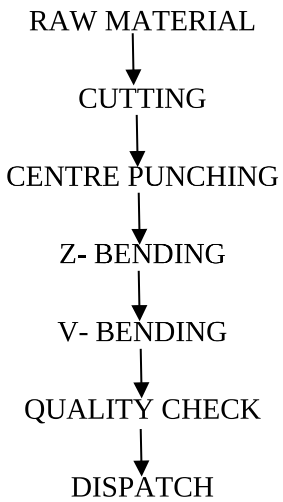
Company Structure:

(Tab. 1.1, Company Structure, made by own)



(Fig. 1.1, Production layout of C-Clamp mfg., made by own)

Production layout of C-Clamp Manufacturing:



Firstly, Raw material goes to cutting machine for cutting operation. Then after it supplied to punching machine, Z-bending machine, V-bending machine for various operations given in fig. After completing all the activities, it goes for a checking and then it is ready for a dispatch.

4.0 Research Methodology

The main aim of the project is to reduce the lead time of manufacturing process to reduce the cost of production, improve the quality of production and to reduce the error during manufacturing by the systematic approach of lean. This is done by analysing all the manufacturing processes of certain product in detail. By performing the analysis, we can find out the problems associated within those processes and the reasons for the errors in the processes and the total amount of no values added time that is present in the processes i.e.: the lead time present in the process.

We have selected a major problem in C-Clamp manufacturing and tried to solve & analysis the problem deeply. The problem we selected for our project is to reduce the non-value-added time in the manufacturing of the C- Clamp, by doing through analysis of the C- Clamp manufacturing processes. For this, we collected primary data of time taken for every activity which is performed in our selected area by the use of time measurement method. Also made some charts for easy understand such as, Observation Chart, Flow Process chart, Operation Chart, Pareto Chart and many more.

Observation Charts of the manufacturing processes of C-Clamp (Before)

• Process 1: Cutting Operation:

Tab. 1.2, Cutting Operation

SR.NO	ACTIVITY	TIME (sec)	REMARK
1.	Pick up of raw material (for one long metal strip) **Average Time-**	9.58 16.33 16.01 7.90 4.19 (optimum) 8.81 **10.47**	-Delay time due to tangle of metal rods. -Unnecessary movement of worker.
2.	Setup time Average Time-	6.34 9.10 2.31(optimum) 8.21 5.95 2.65 5.76	-Unnecessary workers movement during initial setup. -Setup time increases as the worker has to lift long and heavy strip and then set it up on the machine.
3.	Cutting Time Average Time-	1.63 2.51 6.18 1.16(optimum) 1.48 1.40 2.39	-Due to speedy work of the Labour sometimes idea stroke occurs. -Unnecessary movement of the worker.
4.	Non-Value-added time. (For approx. 100 piece)	1min 31sec	After completion of one batch the material is needed to be shifted to another machine for machining due to which both the workers start to collect those plates and machining is stopped

Source: - made by own

- **Process 2: Centre Punching:**

Tab. 1.3, Centre Punching

SR.NO	ACTIVITY	TIME (sec)	REMARK
1.	Pickup time (for approx. 12 piece) **Average Time-**	10.31 6.52 10.60 4.21 1.99(optimum) 3.05 **9.94**	-Operation sequence is not maintained properly. - Worker first picks approx. 12 piece and place it on the machine bed and then pick single piece for machining.
2.	Setup Time **Average Time-**	4.75 3.25 3.12 2.71(optimum) 3.27 4.65 **3.63**	-Can use tapper cross section at the entrance of the die so that the strips could go inside the die with ease.
3.	Operation Time **Average Time-**	2.05 1.19 0.62(optimum) 0.85 0.91 0.75 **1.27**	- Sometimes misalignment occurs as the stopper setting shifts from position due to heavy vibration.
4.	Non-Value-added Time (for approx. 100 strips)	**1min 30sec**	After completion of one batch the material is needed to be shifted to another machine for machining due to which both the workers start to collect those plates and machining is stopped

Source: - made by own

- **Process 3: Z- Bending:**

Tab. 1.4, Z-Bending

SR.NO	ACTIVITY	TIME (sec)	REMARK
1.	Pickup time (for approx. 12 piece) **Average Time-**	10.31 6.52 10.60 4.21 1.99(optimum) 3.05 **6.11**	-Operation sequence is not maintained properly. - Worker first picks approx. 12 piece and place it on the machine bed and then pick single piece for machining.
2.	Setup Time **Average Time-**	0.75(optimum) 1.06 1.25 0.90 1.31 1.19 **1.05**	-Human error due to speedy work. -Improper setting due to which error occurs in the product.

3.	Operation Time Average Time-	2.90 1.34 2.34 1.93 0.90 0.81(optimum) 1.70	-Due to speedy work of the Labour, sometimes ideal stroke occurs.
4.	Non-Value-added Time (for approx. 100 strips)	2 min 40sec	After completion of one batch the material is needed to be shifted to another machine for machining due to which both the workers start to collect those plates and machining is stopped

Source: - made by own

- **Process 4: V- Bending:**

Tab. 1.5, V-Bending

SR.NO	ACTIVITY	TIME (sec)	REMARK
1.	Pickup time (for approx. 12 piece) **Average Time-**	7.02 7.51 6.01 3.98(optimum) 4.17 7.21 **5.98**	-Operation sequence is not maintained properly. - Worker first picks approx. 12 piece and place it on the machine bed and then pick single piece for machining.
2.	Setup Time Average Time-	2.13 0.50(optimum) 0.93 1.53 0.59 1.15 1.14	-Human error due to speedy work. -Improper setting due to which error occurs in the product.
3.	Operation Time Average Time-	3.14 2.03 3.06 2.40 1.90 0.81(optimum) 2.22	-Due to speedy work of the Labour, sometimes ideal stroke occurs.
4.	Product completed & ready for dispatch.	17min 20 sec (For approx. 1300 piece)	-Worker Shift Management improper. -Ideal worker when he completes pickup work.

Source: - made by own

- **Pareto analysis graphs (Before):**(all Graphs and its tables made by using Minitab)

Fig.1.2 Cutting operation average time graph

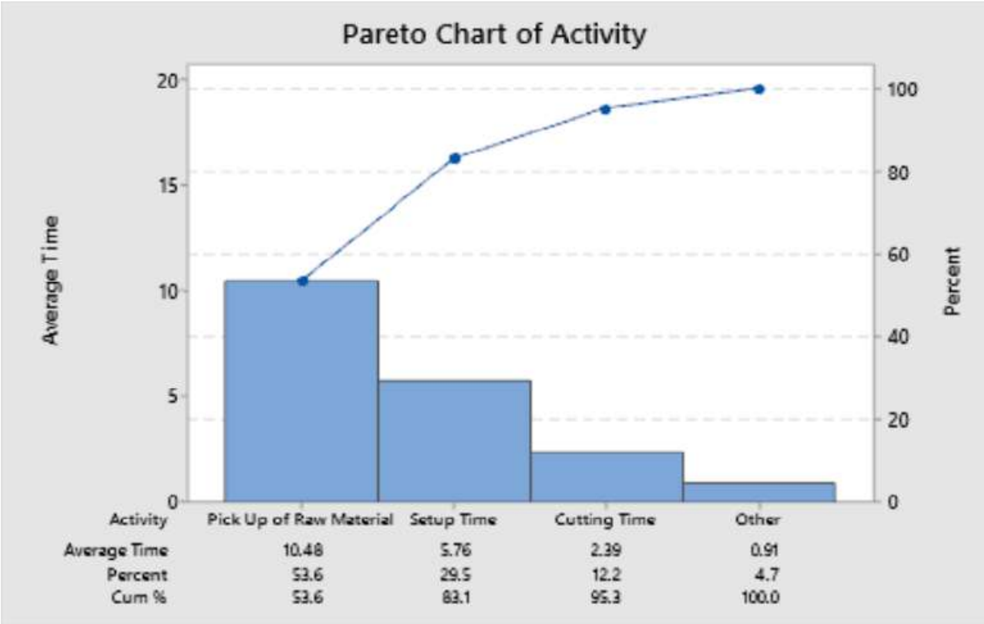
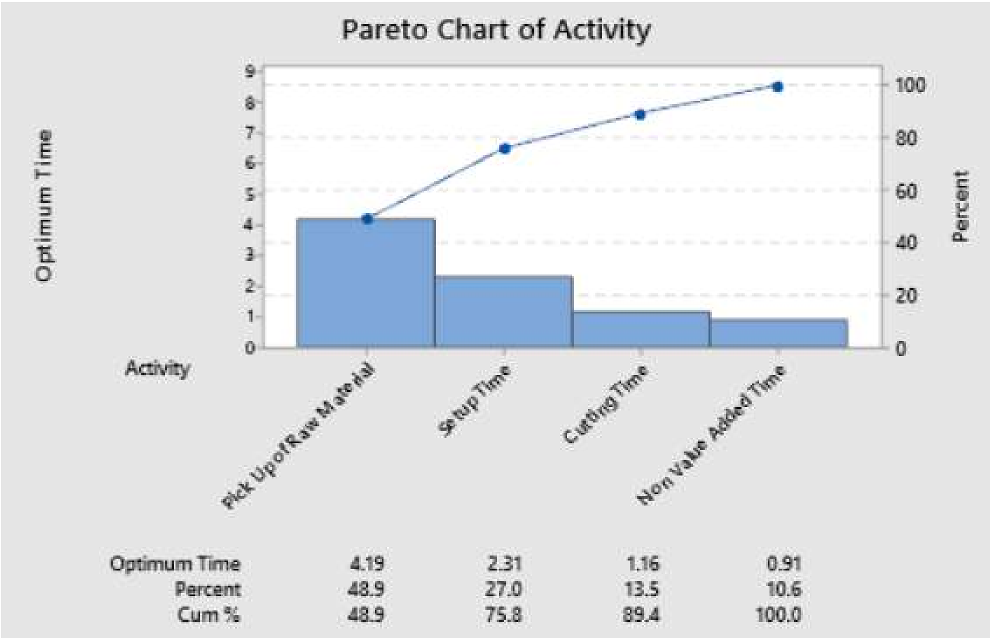


Fig.1.3 Cutting operation optimum time graph



Tab. 1.6, Cutting operation

	Activity	Average Time	Optimum Time
1	Pick Up of Raw Material	10.48	4.19
2	Setup Time	5.76	2.31
3	Cutting Time	2.39	1.16
4	Non Value Added Time	0.91	0.91

Fig. 1.4, Punching operation average time graph

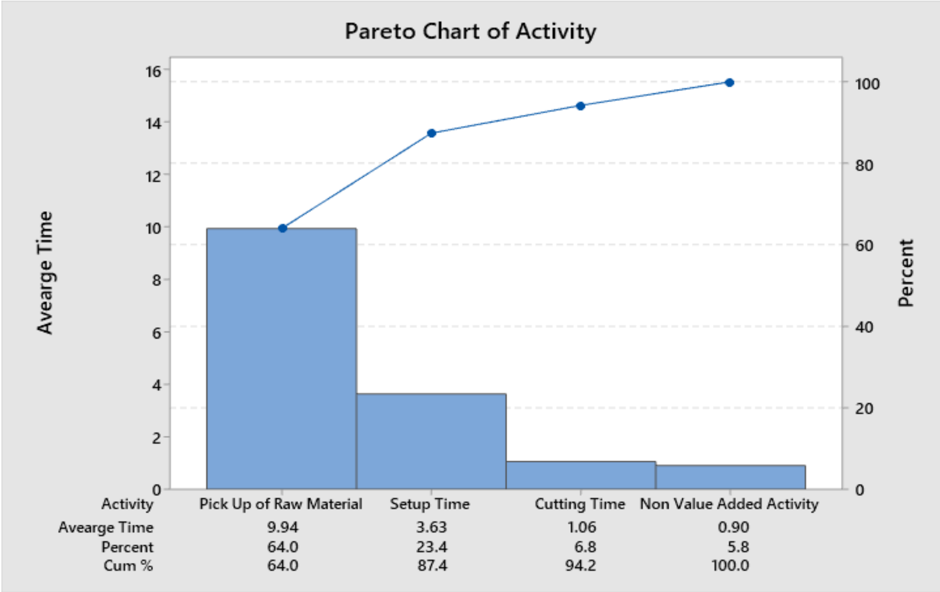
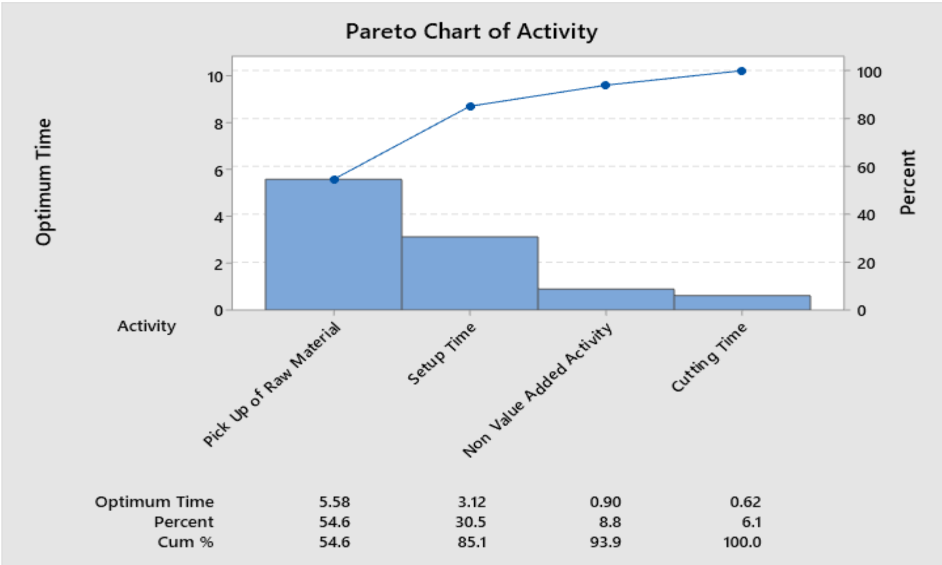


Fig. 1.5, Punching operation optimum time graph



Tab. 1.7, Punching operation

Activity	Avearge Time	Optimum Time
Pick Up of Raw Material	9.94	5.58
Setup Time	3.63	3.12
Cutting Time	1.06	0.62
Non Value Added Activity	0.90	0.90

Fig. 1.6, Z- Bending operation average time graph

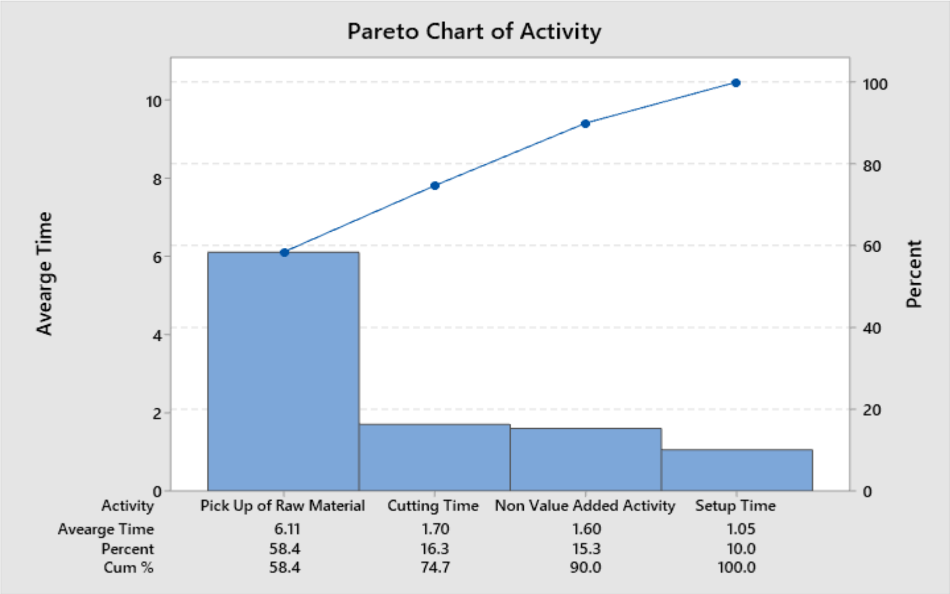
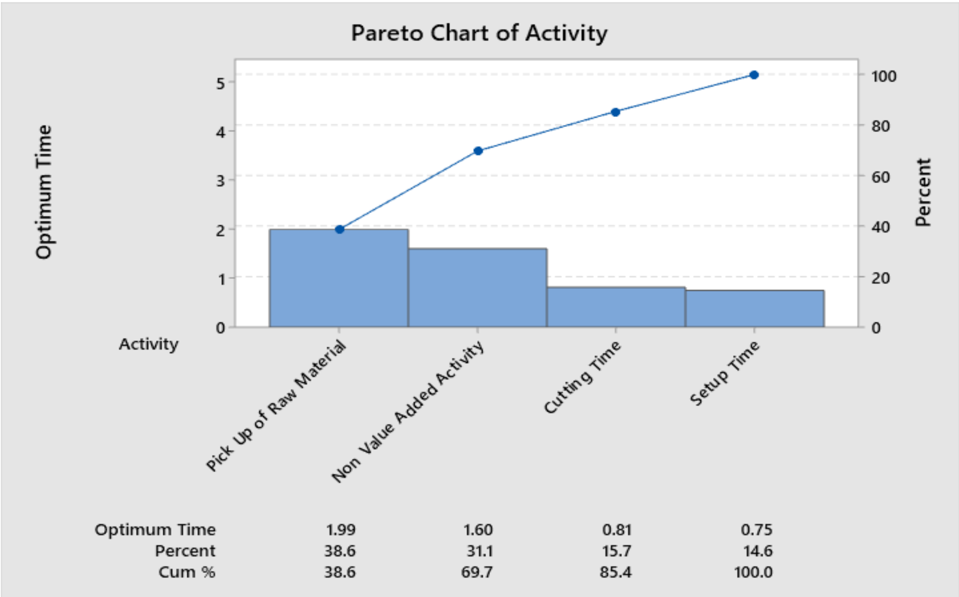


Fig. 1.7, Z- Bending operation optimum time graph



Tab. 1.8, Z- Bending operation

Activity	Avearge Time	Optimum Time
Pick Up of Raw Material	6.11	1.99
Setup Time	1.05	0.75
Cutting Time	1.70	0.81
Non Value Added Activity	1.60	1.60

Fig. 1.8, V- Bending operation average time graph

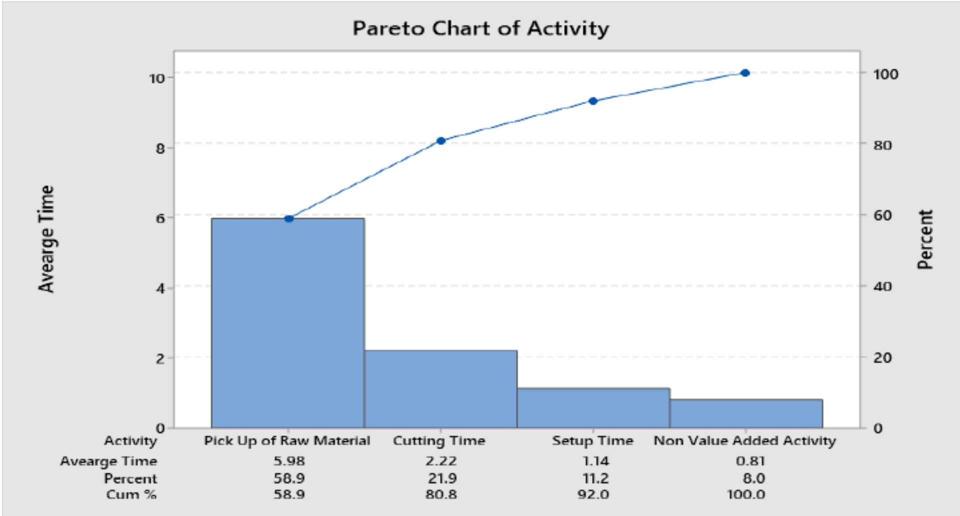
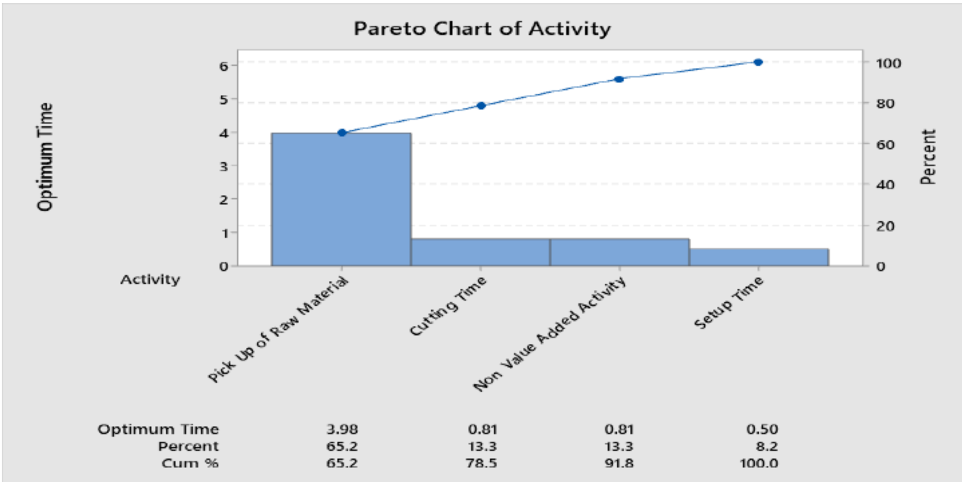


Fig.1.9, V- Bending operation optimum time graph



Tab. 1.9, V-Bending operation

Activity	Avearge Time	Optimum Time
Pick Up of Raw Material	5.98	3.98
Setup Time	1.14	0.50
Cutting Time	2.22	0.81
Non Value Added Activity	0.81	0.81

Above graphs 1.2,1.3,1.4,1.5,1.6,1.7,1.8 and 1.9 are made from the table 1.6,1.7,1.8 and 1.9 which shows average time and optimum time of given 4 activities which are pick up of raw material time, set up time, cutting time and non-value-added time. All data is taken before improvement.

First of all, in fig.1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8 and 1.9, pick up time is highest among all. Then, set up time is at 2nd position and cutting time is at 3rd. In the last, there is non-value-added activity is also present at 4th position. Moreover, from this graph we could understand that we have to reduce time difference between avg. time and optimum time of every activity and also required to reduce non-value-added time which is not needful for our activities.

From the graph, we can also able to know that first, we have to give priority on reducing the pick-up time than other.

Observation Charts of the manufacturing processes of C-Clamp (After):

- **Process 1: Cutting Operation:**

Tab. 1.10, Cutting operation

SR.NO	ACTIVITY	TIME (sec)	REMARK
1.	Pick up of raw material (for one long metal strip) **Average Time-**	2.19 4.26 1.18(opt) 2.70 3.84 2.15 **2.38**	-Reduction in pickup time due to H-Stand
2.	Setup time **Average Time-**	4.24 3.15 6.83 2.72 2.07(opt) 4.14 **3.85**	-Time is taken into consideration by providing workers allowance
3.	Cutting Time **Average Time-**	1.42 1.16(opt) 1.49 2.01 1.63 2.63 **1.72**	
4.	Non-Value-added time. (For approx. 100 piece) -NOTE: Considering ideal conditions	0	After introduction of collection box

- **Process 2: Centre Punching:**

Tab. 1.11, Centre Punching operation

SR.NO	ACTIVITY	TIME (sec)	REMARK
1.	Pickup time (for approx. 12 piece) **Average Time-**	4.03 3.26 5.19 4.28 3.12(opt) 3.98 **3.97**	-Reduced pickup time after introduction of collection box.

2.	Setup Time **Average Time-**	2.14 3.26 3.48 1.98(opt) 2.86 3.13 **2.80**	
3.	Operation Time **Average Time-**	1.12 0.94 0.84(opt) 0.99 1.38 1.42 **1.115**	
4.	Non-Value-added Time (for approx. 100 strips) -NOTE: Considering ideal conditions	0	

- **Process 3: Z- Bending:**

Tab. 1.12, Z-Bending operation

SR.NO	ACTIVITY	TIME (sec)	REMARK
1.	Pickup time (for approx. 12 piece) **Average Time-**	3.08 3.64 2.42 2.14 2.02(opt) 3.42 **2.78**	-Reduced pickup time after introduction of collection box.
2.	Setup Time **Average Time-**	1.24 1.08 1.63 1.28 0.94(opt) 1.12 **1.215**	
3.	Operation Time **Average Time-**	1.23 1.28 0.94(opt) 1.36 0.96 1.47 **1.20**	
4.	Non-Value-added Time (for approx. 100 strips) -NOTE: Considering ideal conditions	0	

- **Process 4: V- Bending:**

Tab. 1.13, V-Bending operation

SR.NO	ACTIVITY	TIME (sec)	REMARK
1.	Pickup time (for approx. 12 piece) **Average Time-**	4.62 3.24(opt) 4.98 4.12 3.42 3.33 **3.95**	-Reduced pickup time after introduction of collection box.
2.	Setup Time **Average Time-**	1.22 0.64(opt) 0.93 1.10 1.42 0.83 **1.023**	-Human error due to speedy work. -Improper setting due to which error occurs in the product.
3.	Operation Time **Average Time-**	1.18 1.26 0.94(opt) 1.12 1.64 1.11 **1.20**	
4.	Non-Value-added Time (for approx. 100 strips) -NOTE: Considering ideal conditions	**0**	

- **Pareto Chart Analysis (After):**

Fig. 1.10, Cutting operation average time graph

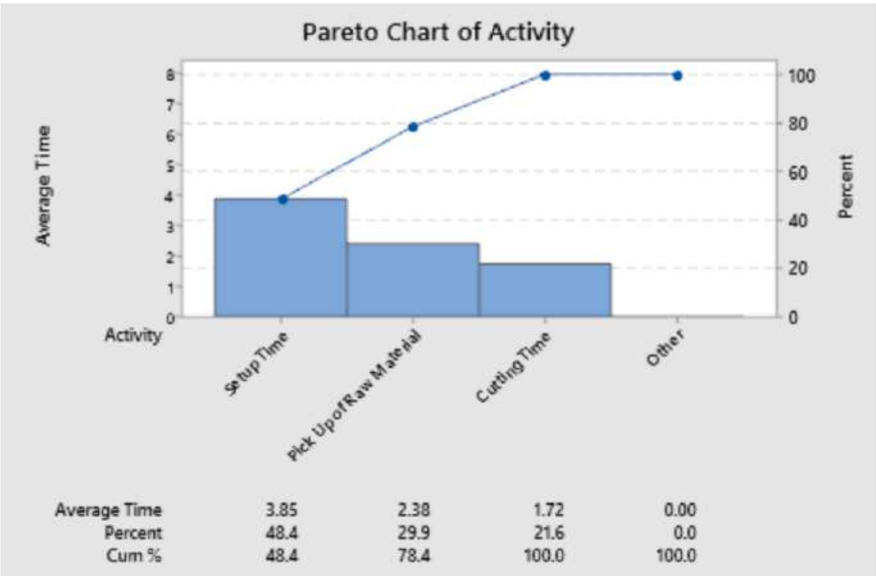
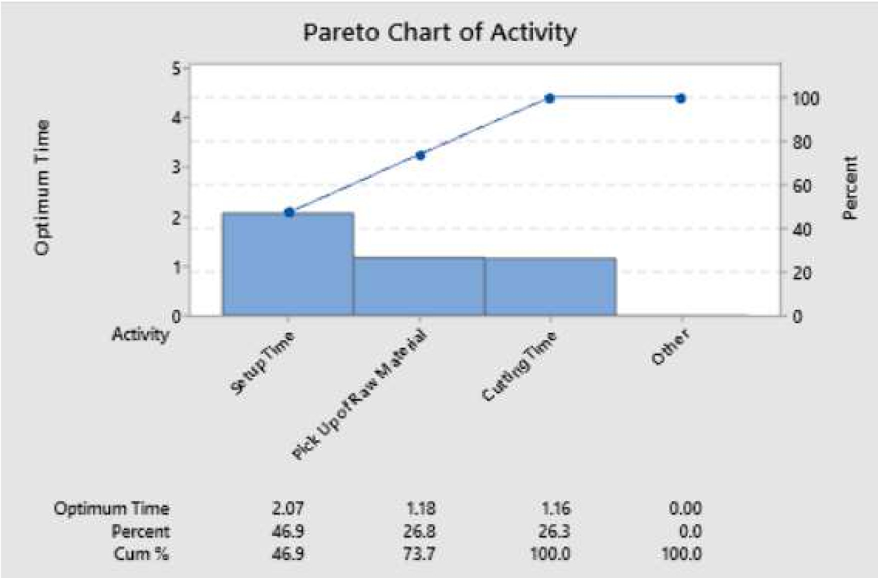


Fig. 1.11, Cutting operation optimum time graph



Tab. 1.13, Cutting operation

	Activity	Average Time	Optimum Time
1	Pick Up of Raw Material	2.38	1.18
2	Setup Time	3.85	2.07
3	Cutting Time	1.72	1.16
4	Non Value Added Time	0.00	0.00

Fig. 1.12, Punching operation average time graph

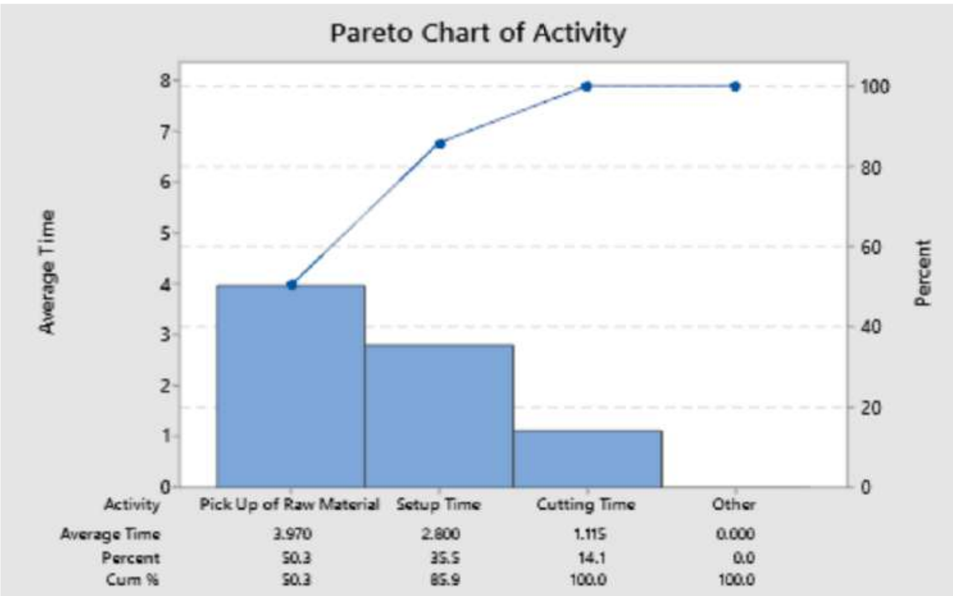
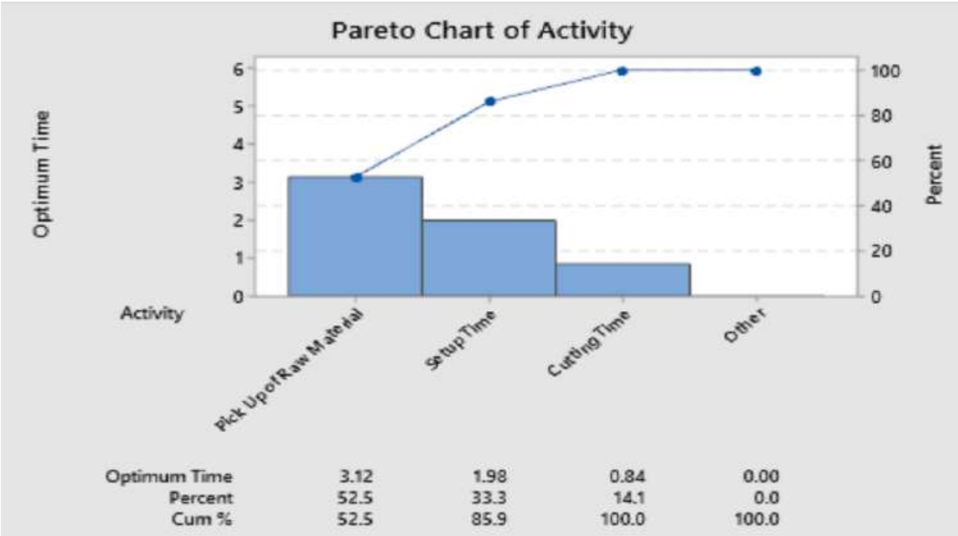


Fig. 1.13, Punching operation optimum time graph



Tab. 1.14, Punching operation

	Activity	Average Time	Optimum Time
1	Pick Up of Raw Material	3.970	3.12
2	Setup Time	2.800	1.98
3	Cutting Time	1.115	0.84
4	Non Value Added Time	0.000	0.00

Fig. 1.14, Z-Bending operation average time graph

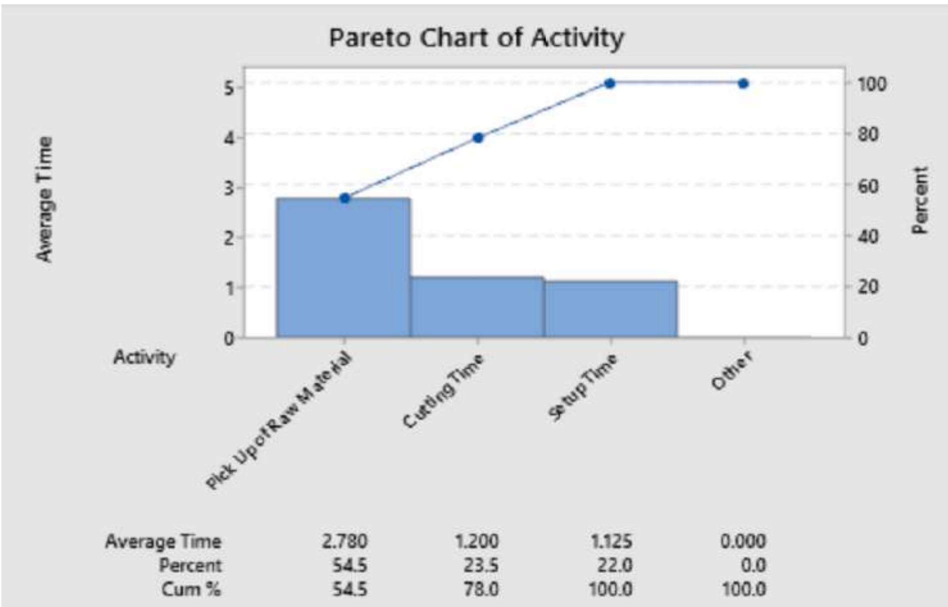
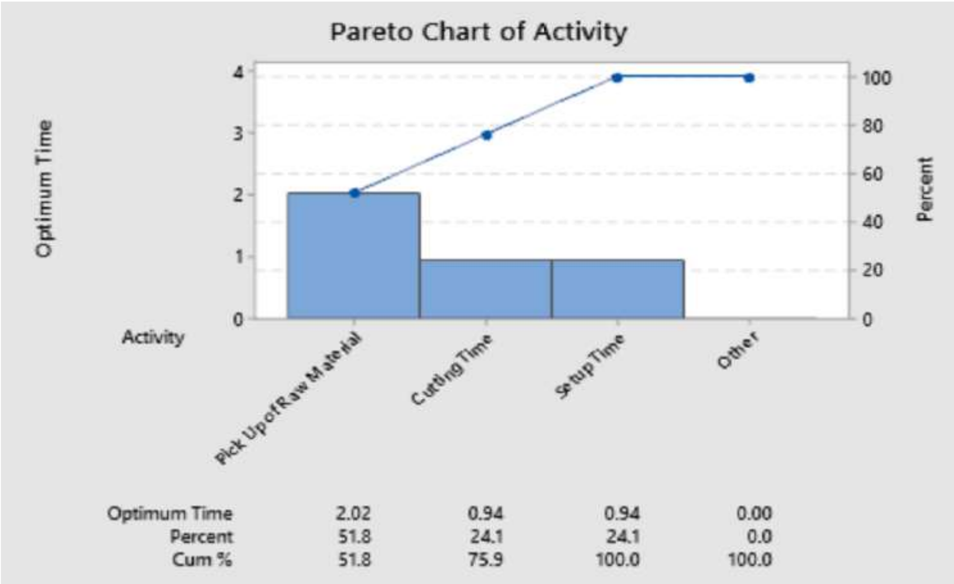


Fig. 1.15, Z-Bending operation optimum time graph



Tab. 1.15, Z- Bending operation

	Activity	Average Time	Optimum Time
1	Pick Up of Raw Material	2.780	2.02
2	Setup Time	1.215	0.94
3	Cutting Time	1.200	0.94
4	Non Value Added Time	0.000	0.00

Fig. 1.16, V-Bending operation average time graph

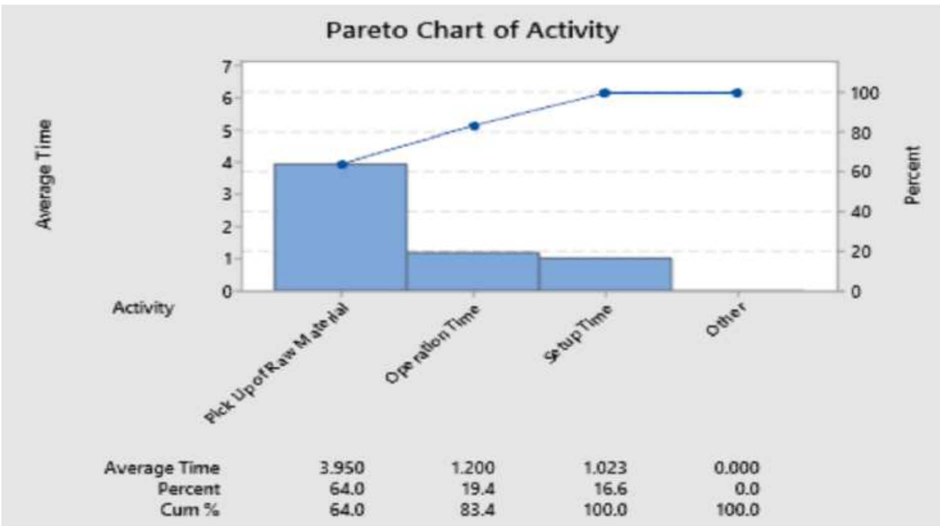
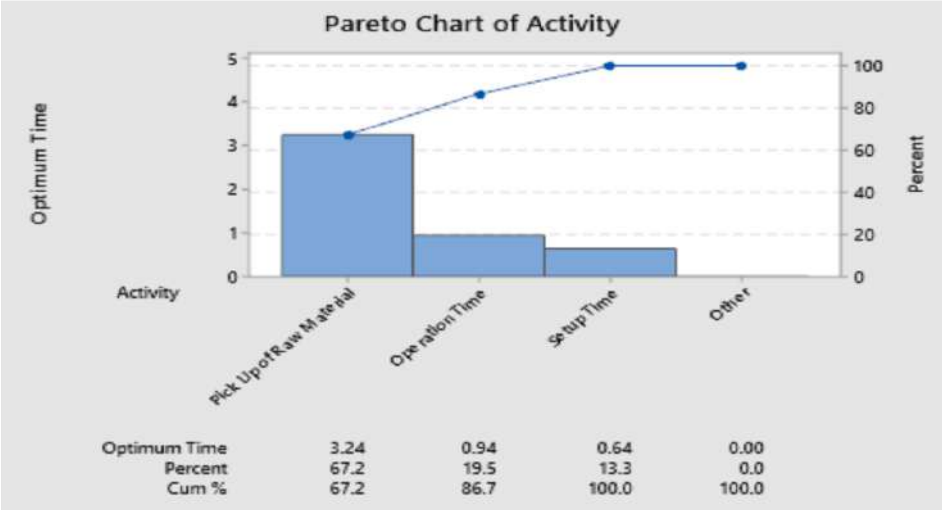


Fig. 1.17, V-Bending operation optimum time graph



Tab. 1.16, V-Bending operation

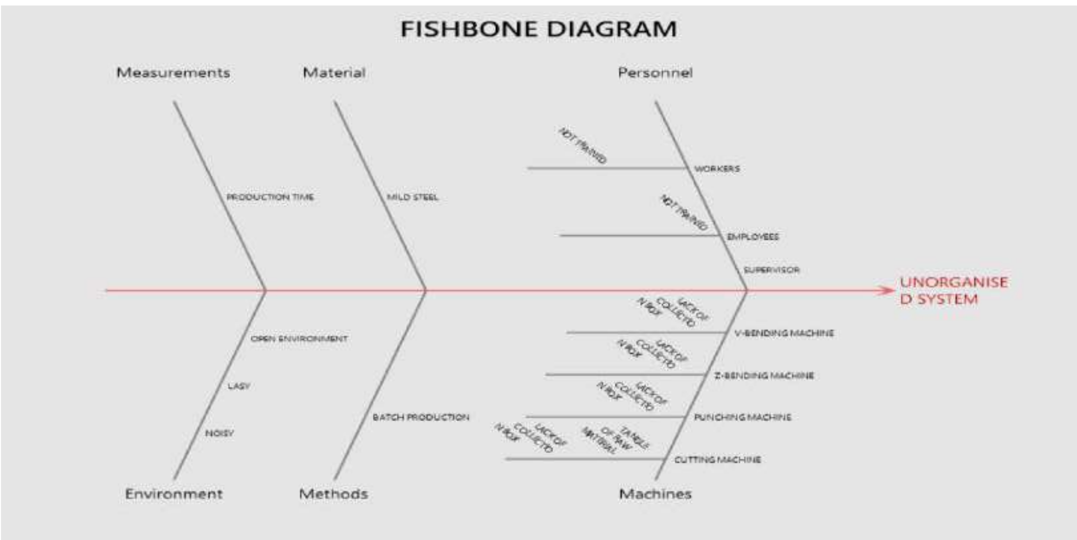
	Activity	Average Time	Optimum Time
1	Pick Up of Raw Material	3.950	3.24
2	Setup Time	1.023	0.64
3	Operation Time	1.200	0.94
4	Non Value Added Time	0.000	0.00

By improving such things which given in remarks of table no. 1.10, 1.11, 1.12, 1.13, we could be able to reduce a lot of time. Here, we draw graphs with observation of given 4 activities which is done after implementing various required things such as, collection box, H-stand.

Next to this, from the fig. 1.10 to 1.17 there is pickup time is still high but it is reduced and avg. time reached nearer to optimum time. Moreover, we can also neglect the non-value-added time because of the improvement which we done in the industry.

- **Fishbone Diagram:**

Fig. 1.18, Fishbone Diagram



The fig. shows fishbone diagram which is also known as root-cause dia. as per its name it is useful to find out the main reason of any problem. So that, we can overthrow the problem permanently. To study of over project, we also made it and found main reasons behind non-value-added time which is shown in fig 1.18.

- **Flow Process Chart of the manufacturing processes of C-Clamp:**

Charted By: Rushi Pandya & Darshan Rathod
Type: Man-Machine-Material

Tab. 1.17, Flow Process Chart

Sr.No.	Element	Symbols ○	⇨	□	D	▽	Distance (m)	Time (sec)
1.	Raw material transfer to cutting machine.		●				1m	10.47
2.	Material setup time.				●			5.76
3.	Cutting operation.	●						2.39
4.	Transferring material to the table near punching machine		●				3m	1 min 31 sec.
5.	Transferring approx. 12 strips to the machine bed		●				1m (approx.)	9.94
6.	Material setup time.				●			3.63
7.	Centre punching Operation.	●						1.06
Sr.No.	Element	Symbols ○	⇨	□	D	▽	Distance (m)	Time (sec)
8.	Transferring material near to the machine table (approx.100 strips).		●				2m	1min 30sec
9.	Transferring approx...12 strips to the machine bed.		●				1m	6.11
10.	Material setup time.				●			1.05
11.	Z Bending operation	●						1.70
12.	Transferring material near to the machine table (approx.100 strips).		●				2m	2min 40sec
13.	Transferring approx. 12 strips to the machine bed.		●				1m	5.98
14.	Material setup time.				●			1.14

Sr.No.	Element	Symbols					Distance (m)	Time (sec)
		○	⇨	□	D	▽		
15.	V-Bending operation	●						2.22
16.	Inspection			●				1min 20sec
17.	Packing (approx.100 strips)				●			17min 20sec
18.	Store.					●		

Symbol Activity

○ : - Operation

⇨ : - Transportation

□ : - Inspection

D : - Delay

▽ : -Storage

Flow Process Chart gives the information regarding all the activities which are carried out one by one simultaneously with the help of five symbols which are operation, transportation, inspection, delay and storage. It also indicates distance in terms of transportation and timerequired for various activities.

5.0 Limitation and Future Scope

5.1 Limitation

- According to my experience, without an Innovative and Creativeness, Lean is not so effective.
- Lean is too vast so it is very difficult to utilize it in practical scenario.
- Lean is too complicated.
- There is more resistance from Employee as well as Management side.
- Because of lack of training, lack of moral and lack of support from employee side, it is very difficult to implement Lean in any industry.
- More experience is required to implement Lean manufacturing.

5.2 Future Scope: -

- Ground is Empty, so there is a lot scope for Lean in SMEs.
- Every Industry wants to improve their productivity and according to current scenario the sun of Lean is started to rise everywhere.
- Lean can be applicable for every industry without consideration of its size and types.

- Lean can also applicable for food industry.
- More than this, as per application of Lean manufacturing, it can be applicable for home as well.
- Also, it is very much required and important tool for Government to developed the nation.

6.0 Conclusion

The study highlights the use of lean techniques for small and medium scale enterprises. It shows us how the productivity and efficiency of the production processes can be significantly improved by the use of lean techniques. We have come across various analysis and observation that has been made by us that shows, by implementation of lean techniques, how we can significantly improve the productivity of the industry by reducing the lead time and non-value-added activities just by critically observing and examining the small aspects of the production process and by making small changes in the production environment. Lean has various other merits also which includes proper work place management, reduction in the production cost, reduce of wastage in all the aspects of production. So, by this study we can conclude that by implementation of lean in small and medium scale enterprises, we can see a lot of improvement in the production processes of the industry and can improve the overall productivity and efficiency of the industry to some greater extent.

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Effect of Amber Box Trade Policies on India and China: Supply & Demand Analysis

*Saikrishna Vaidya**

ABSTRACT

In July2017, India and China jointly appealed to the World Trade Organization (WTO) to reduce trade distortions between the developed and developing countries in trade of specific and non-specific commodities. According to Agreement of Agriculture (AoA) of WTO, Article 6, there are primarily three boxes under which commodities are placed. They are Green Box (no restriction). Amber Box (permitted but restricted I. slow down) and Red Box (forbidden). Also, there is Blue Box tied to programs that limit production. S & D Box is used for developing countries. This study firstly analyses the production of India &China and also taking USA, a developed country for the analysis of rice for a period of 30 years from 1986-2016. Rice comes under "Amber Box "which allows up to 5% and up to 10% subsidies for developed and developing countries respectively keeping in mind the de minimis level. It further explores the export volume and calculates the Aggregate Management of Support (AMS) and Price Support Estimate (PSE) of India and China countries for comparison for a period of five years. Further, a critical approach is taken to understand the reason behind the trade distortion during this time frame and recommendations to compute the trade imbalance.

Keywords: *Amber box; PSE; AMS; WTO; Green box; Rice.*

1.0 Introduction

Rice is one of the most essential commodities along with wheat, cotton and corn. Asia pacific has a production and consumption of rice up to around 90%. The demand of food supplies and to maintain food security is a primary concern for WTO members. However, developed nations tend to build trade policies favoring their exports. What followed then was the Uruguay Round in 1986-88, the Doha Round in 1995 and the Cancum Agreement which was later turned down. Rice consumption and production pattern of India and China are of global importance because these two countries and highest consumers as well as producers. The AMS calculation was a debatable as it favored the developed nations. If AMS is not feasible, then Equivalent Measurement of Support (EMS) which includes the equivalent figures of production.

1.1Objectives

- To understand the global agricultural trade policies impacting these two nations by understanding the opportunities and the limitations of the Amber Box support.
- Explore the impact on rice cultivation and export in the Asian countries.
  Analysis of WTO decisions to eliminate distortion in subsidies.

2.0 Review of Literature

Uruguay Round

The 8th round of multilateral trade negotiations under the framework of General Agreement on Tariffs and Trade (GATT), from 1986 to 1993 had 123 countries as "contracting parties'' led to the birth of WTO.

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The main objectives of this round related to Agriculture was to reduce agricultural subsidies. In 1994, this round formally concluded by the Marrakech Declaration and Agreement on Agriculture (AoA) was developed. In 1995, upon the final agreement and establishment, WTO replaced GATT officially. In this round least developed countries (LDCs) having a GNP per capita less than US $1000 per annum are exempt from prohibition of export subsidy.

Doha Round

In 2000, WTO member countries began rigorous trade negotiations in Agriculture known as Doha Development Agenda. It addressed the liberation of trade keeping in mind the developing countries. The "three pillars" of agricultural trade negotiations during this round were progress on market access, domestic support and export subsidies. During this round, the concerns regarding developing nations honouring their side of bargain and USA and EU failing to do so was strongly expressed. The July Package then called for reduction of domestic prices which is the sum of Amber Box, Blue Box and the de minimis support by20

percent during the first year of implementation period. But this does not specify the achievable level of reduction. The situation became more confusing when a draft in 2003 was issued stating 60 percent reductions for developed countries for period of five years and 40 percent reductions for developing countries for a period of ten years. After the Cancum negotiation breakdown, supposed to happen in 2003, USA proposed an alternative to have bilateral trade agreements favoring the USA trade policies only in the July package.

The Boxes relevant to Agriculture

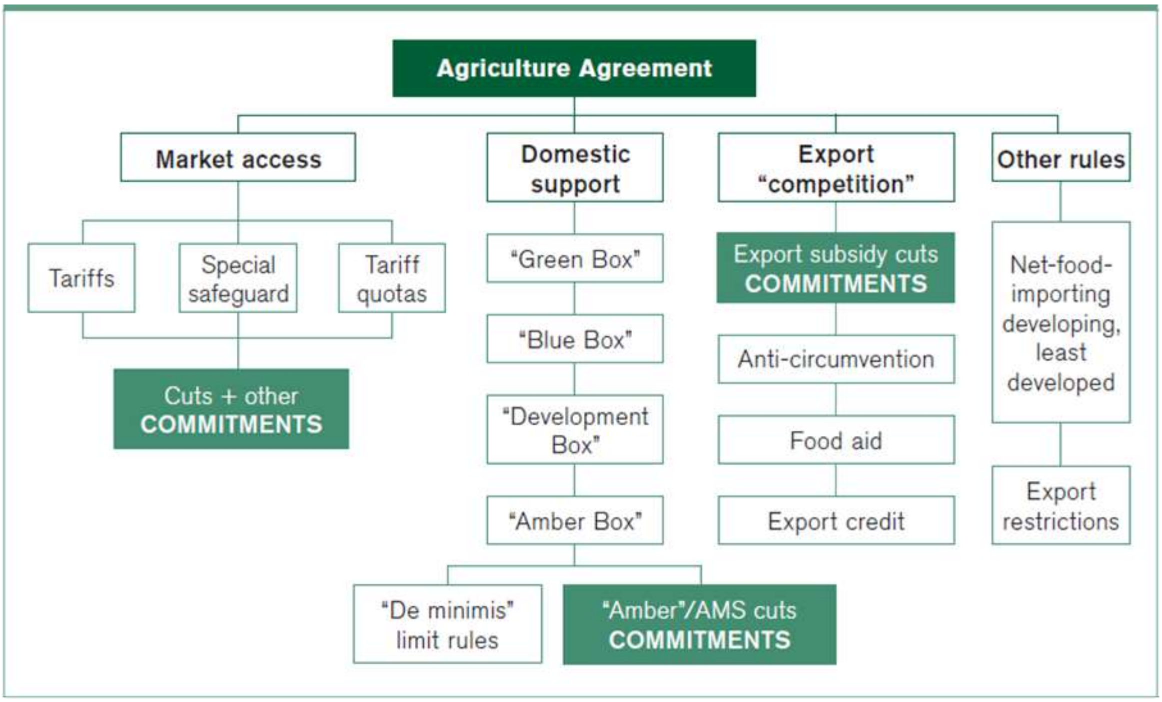
Green Box: For a commodity or service to qualify Green Box, the subsidies must not distort or at most cause minimal distortion, specifies the WTO in the Annexe2 of Article 6. They are required to be funded by the government and must not involve price support. They are not targeted to products and include direct income support to farmers which are decoupled from current level of prices. The subsidies include here are direct payments to producers which are decoupled income support and government financial support for insurance and safety net programs. AoAalso mentions a Development Box applicable to developing countries to provide additional flexibility for domestic support.

Amber Box

Under Article 6.3of AoA, Amber and Blue Box have been discussed in various subsections and it states as "A Member shall be considered to be in compliance with its domestic support reduction commitments in any year in which its domestic support in favor of agricultural producers expressed in terms of Current Total AMS does not exceed the corresponding annual or final bound commitment level specified in Part IV of the Member's Schedule." But the point of having an Amber Box is to reduce or eliminate trade distortions in commodities like rice, wheat, cotton etc which are produced and exported in large numbers by developed and developing countries. The ongoing debate of the paper published jointly by India and China to WTO is regarding the de minimis levels be raised for developing countries which is currently at 10 percent. The opening statement of the submission is as follows," Aggregate Measurement of Support (AMS) is the most trade distorting element in global trade in agriculture." It also gives facts of developed countries with respect to trade distortions of rice, USA (82%), EU and (66%). The Amber Box modalities include reduction halving the rate from 5% to 2.5% and also providing flexibility to developing countries by providing 10% and additional benefits including right to reduce negative support for specific products. There is still a debate on whether to continue with total AMS which allows subsidies to be shifted from products or have AMS limits for specified products.

The USA submitted a report in 2013-14 to WTO stating that India claimed giving 5.45% value of the crop while it gave 76.9% as subsidies. Minimum Support Price (MSP) is basically the price at which a farmer can sell to government and the USA assumed that India's MSP is for 100 % of crop. In US calculation, the budget for AMS came to Rs 2,74,515 cr for rice and wheat combined and the overall MSP of Rs 92,927 cr. This indicates that it is 16-17 % which was previously in the range of 65-77 % range. To suit the argument in favor of USA report, they took MSP as Rs 13,100 and reference price, which is the international market price to be Rs 2346.67. This was not the case, as Rs 2346.67 was not the current price of rice at that time. Instead, it was the price set in Uruguay Round in 1986. USA does it deliberately to arrive at a positive value of AMS while the AMS value for India is always negative for paddy as India can export larger quantities. While MSP remained for India, the developed nations converted the MSP to cash to be given away to farmers without growing the crop. The issue to be addressed is that, the developing economies do not want to change the reference price as it hurts their subsidies calculation.

Figure 1: The Agriculture Agreement in a nutshell



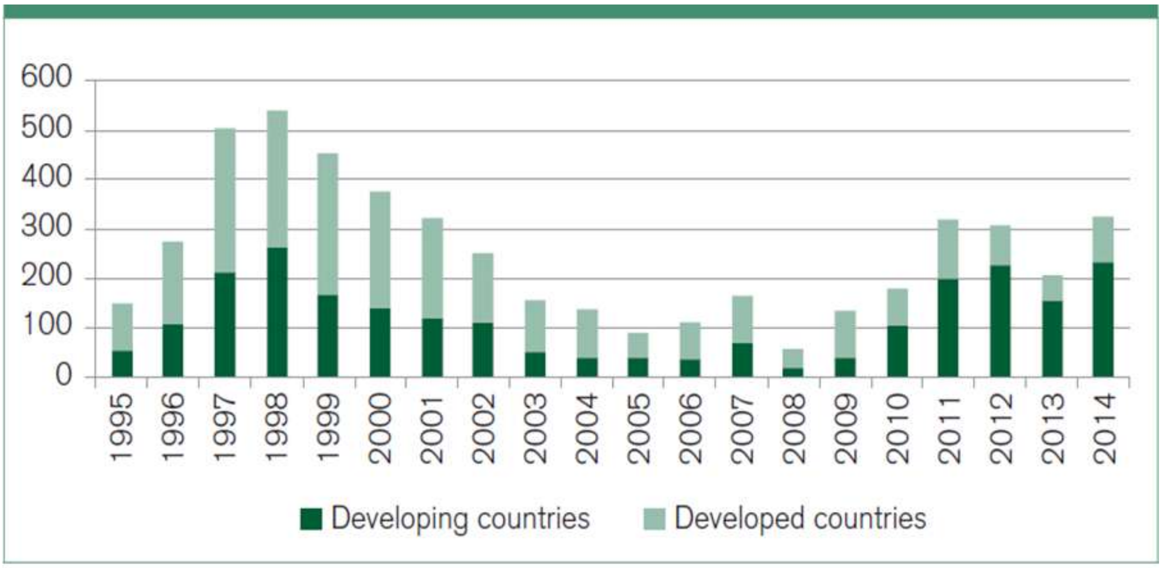
Source: WTO- The WTO Agreements Series Agriculture

Another interesting figure to note is that developing countries are asked far more questions than developed countries during the tenure 199-2014 on market access, domestic support and transparency.

Trade policies

India: India's trade policies have Measurement of Support (MSP), quoted in Article 18.4, which are well below the fixed external reference prices. The National Food Security Ordinance (NFSO) came up with the largest physical distribution of subsidized food grains to 67% of the population in 2013 under the 'Right to Food' ordinance grants. MSP has been beneficial for rice because meaningful purchases have been made by agencies which are not

Figure 2: Developing countries facing more questions



Source:AG-IMS

Table 1: Who asks and who is asked the most question?

	Asking	Questions		Answering	Questions
1	US	1,275	1	EU	707
2	Australia	1,258	2	US	561
3	Canada	997	3	Canada	347
4	New Zealand	960	4	Japan	302
5	EU	612	5	Switzerland	257
6	Japan	325	6	Norway	229
7	Argentina	253	7	India	212
8	Brazil	147	8	Thailand	197
9	Thailand	81	9	Korea	195
10	Korea	65	10	Brazil	188

Source:

Trade policies

India: India's trade policies have Measurement of Support (MSP), quoted in Article 18.4, which are well below the fixed external reference prices. The National Food Security Ordinance (NFSO) came up with the largest physical distribution of subsidized food grains to 67% of the population in 2013 under the 'Right to Food' ordinance grants. MSP has been beneficial for rice because meaningful purchases have been made by agencies which are not temporary. India also has National Agriculture Insurance Scheme (NAIS) where the premium rates are from 1.5 to 3.5 % of total food crops and a 10% subsidy is granted to small and marginal farmers as designed in 2002. The Rashtriya Krishi Vikas Yojana (RKVY) covers the utilization of funds by state levels in agriculture and allied sectors along with a formulation of plans at district and state levels. The basic Custom Duty (BCD) was zero in 2009-12, but in 2012-13 was raised to range of 70-80 for milled rice.

China

China's 12th Five Year Plan from 2011-2015 saw reaffirmation to the commitments by increasing the grain production capacity by 50 million tonnes. The main features of trade policy are border measures and agriculture domestic programs. Under border measures, which is highly import driven, the VAT of essential commodities like cereals was 0-6 %. The state trading enterprises were allocated 50% of quota to rice during this period. Only these enterprises can export rice. Under agriculture domestic programs providing subsidies rather than taxing agriculture was a welcoming move. Since the payments are done at the provincial level, each province can regulate the subsidies. The average subsidy realised was around USD 7.3 per acre. The New Variety Extension Payment Scheme helped to improve the quality of seeds. Under this, the subsidy was anywhere between 10 to 15 Yuan depending upon the quality of rice. The National Development and Reform Commission sets the minimum prices for rice which is generally kept a little lesser than world market price. Agricultural insurance scheme was launched in 2007 which gave farmers subsidized insurance premiums wherein they paid 20-30 % of the balance amount after the central and local governments covered their insurance. During the birth of WTO, China had an AMS level of zero. But now, China has committed to paying de minimis of 8.5% and hence is not required to lower its subsidies. China decided to open trade in 2010 by forming China- ASEAN Free Trade Agreement also known as CAFTA. By being a member of APTA (Asia Pacific trade Agreement), it was able to have 1600 tariff lines below the MFN rates. MFN rate is the lowest possible tariff that can be imposed on another country. So, the APTA members had 8.9 % while the MFN rate was9.5%.

3.0 Research Methodology

Aggregate Measurement of Support: This includes product and non-product specific products like fertilizers, inputs and is defined in Article 1 and Annexes 3 and 4 in AoA.

Double Counting= MPS Official= (Pd Official-Pw base) * Qt AMS official= Double counting + Flashing Amber

Flashing Amber is the trade distorting domestic support not captured in gap between domestic and world market prices.

Flashing Amber: OPS+ IPS= AMS actual

OPS= output price subsidies, IPS= Input price subsidies Pure double counting occurs when MPS actual=MPS official

Over/under counting occurs when MPS actual diverges from MPS official So, the AMS final calculation is done as

AMS=[Qd(Pd-Pb)-Af]/Qd*Pd

Qd=quantity produced of a particular commodity

Pd= Domestic price of the same commodity for which market support / tax is being calculated

Pb= Market price of the same commodity for which market support / tax is being calculated Af= Associated fees or levies charged on that particular commodity

Producer Support Estimate (PSE) PSE = [Qd (Pd-Pb) +D+1]/(Qd*Pd) +D

D= Direct payments, I= Indirect transfers

The difference between PSE and AMS is that AMS includes the subsidy tax provided through price support and direct tax is taken only, whereas PSE takes direct and indirect taxes. Hence PSE is a measure of all transfers arising from agricultural policies. AMS includes payments that are production and trade distorting.

PSE is based on difference between domestic price and current external reference AMS is based on difference between domestic price and fixed external reference. So,

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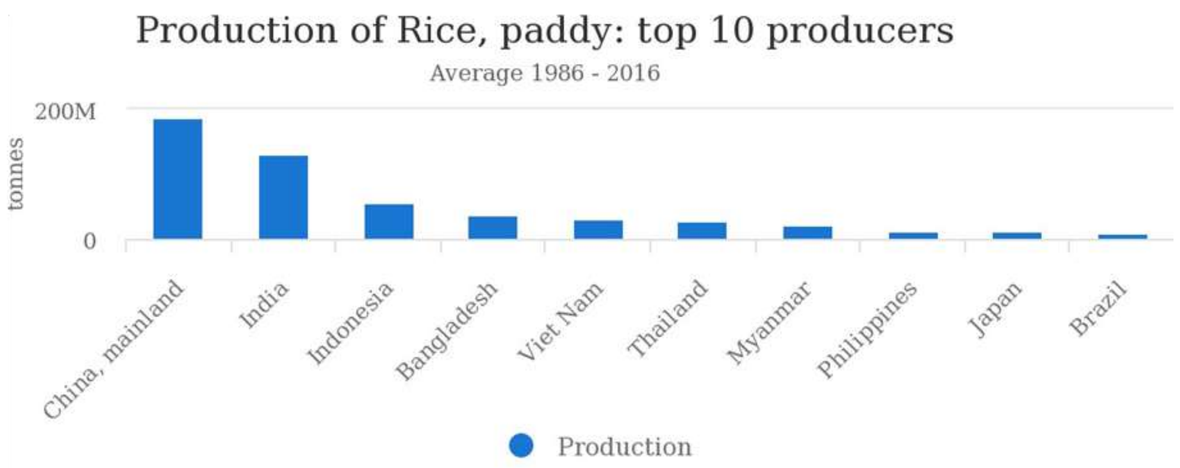
Total AMS=Product Specific AMS+ Non-Product Specific AMS+ Equivalent Measurement of Support
MPS= (Applied Administered- Fixed Reference Price) *(Qty eligible to receive support)- (Associated Fees/ Levies)

Reference price is the per unit price for the net exporting (FOB) and net importing (CIF) country as applicable. Applied Administered price is the actual floor price, while quantity eligible to receive support is the marketable surplus of that product.

4.0. Analysis and Discussion

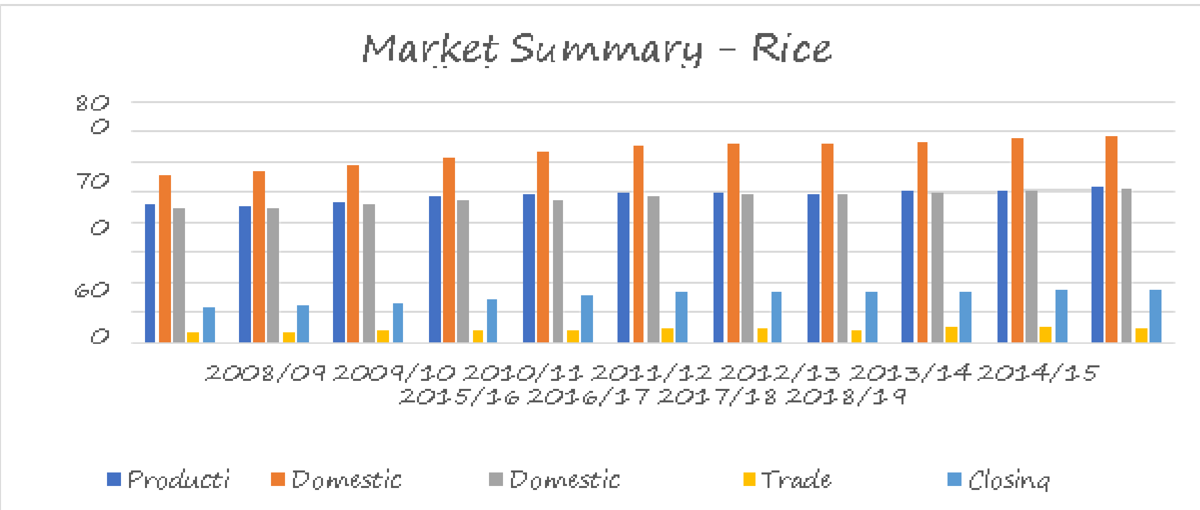
Figure 3: Top 10 producers of Rice



Source: PAOSAT (Jan 21,2019)

Among the top 10 producers of rice, China and India are the top two producers. Also, 9 out of 10 countries are Asian economies excluding Brazil. 9 out of 10 countries, excluding Japan are considered developing economies according to WTO guidelines. So, subsidy distortions are controlled by the developed countries although their productions are far lower than the top producing countries.

Figure 4: Market Summary-Rice Milled



Source: FAO-AMIS

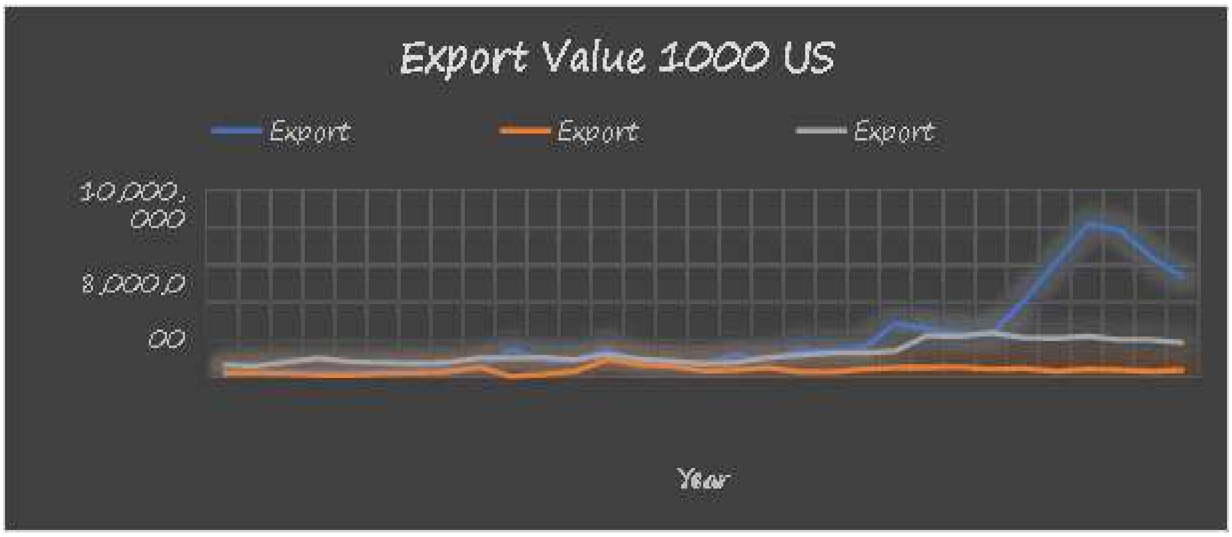
In a span from 2008 to 2018, a period of ten years, production, domestic supply and utilization has increased while trade (exports) and closing stocks have been consistent. This reflects the increase in population and the demand for rice in the world has not reduced the exports in the global markets.

Figure 5: Export Quantity

Source: FAOSTAT

The export quantity of rice saw a rapid increase post 1990 for India as India had become a liberalized economy. The US exports are higher than China because China imports are higher than exports. From the period of 2010 to 2015, the increased exports of India strongly indicate that Indian rice was high in demand in the international markets, but due to the AMS and the de minimis levels of 10%, the exports surged in 2016, as the farmers and exporters did not receive subsidies as per the levels of production. So, period from 1986-2016, a30 year period, gives the indicative export difference between the developing countries India and China and the developed country, USA.

Figure 6: Export Value



Source: FAOSTAT

The export value is the confirmation of the export quantity of rice India exports in the international markets. And a sharp rise and rise of value from 2010 to 2015, is also a confirmation to the fact that while the demand of rice had risen in the global markets, the supply was met by India.

Figure 7: Share of US Agriculture Exported in 2016

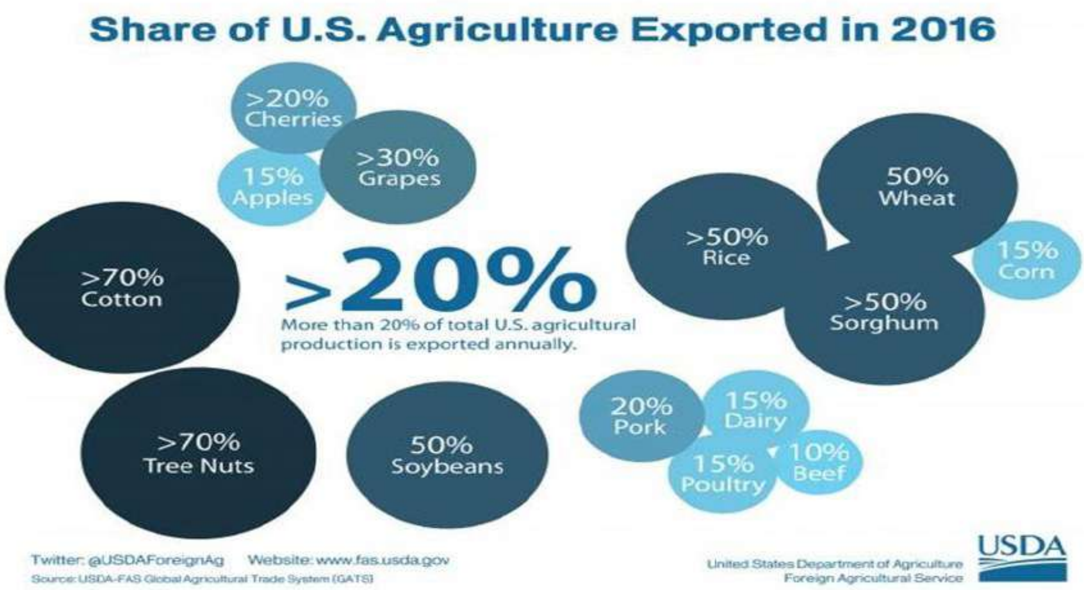
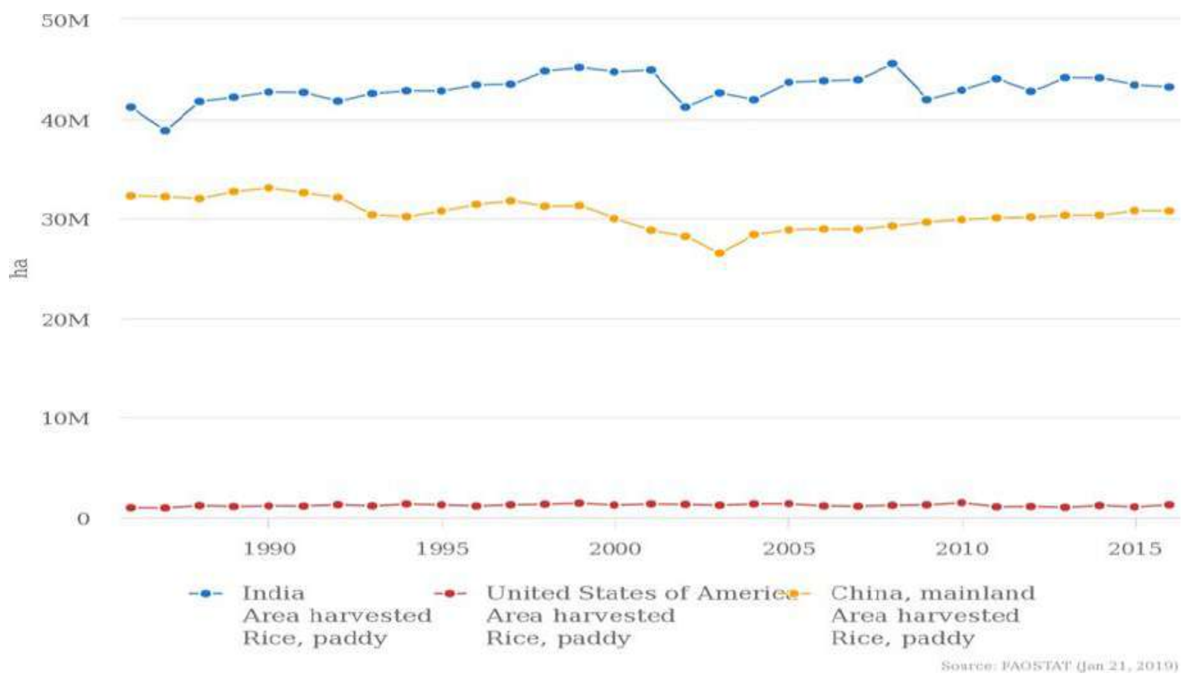
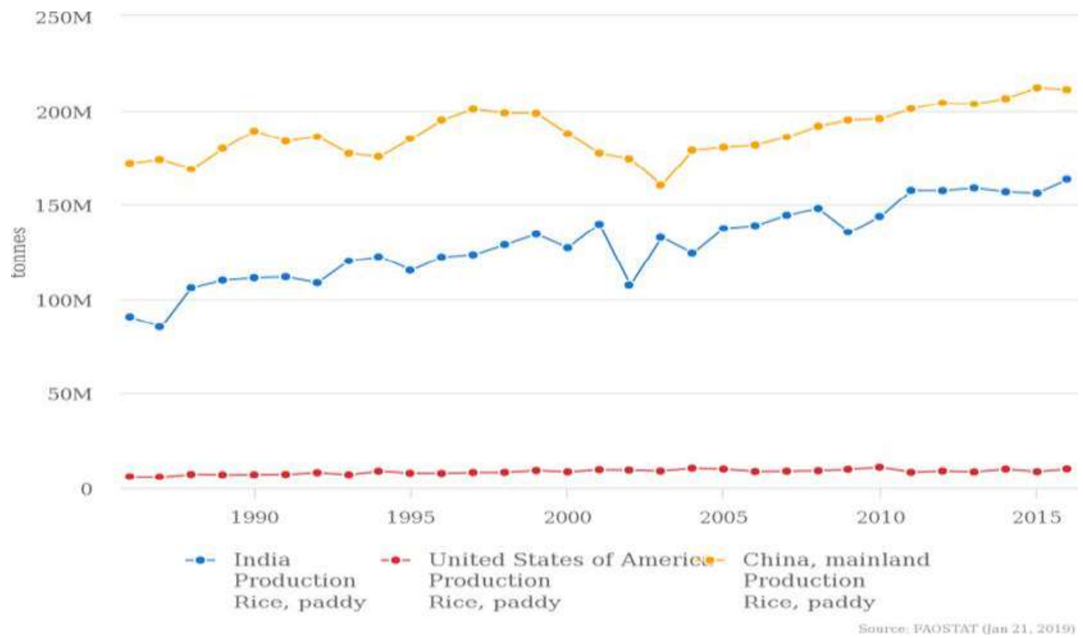


Figure 8: Area harvested in hectare



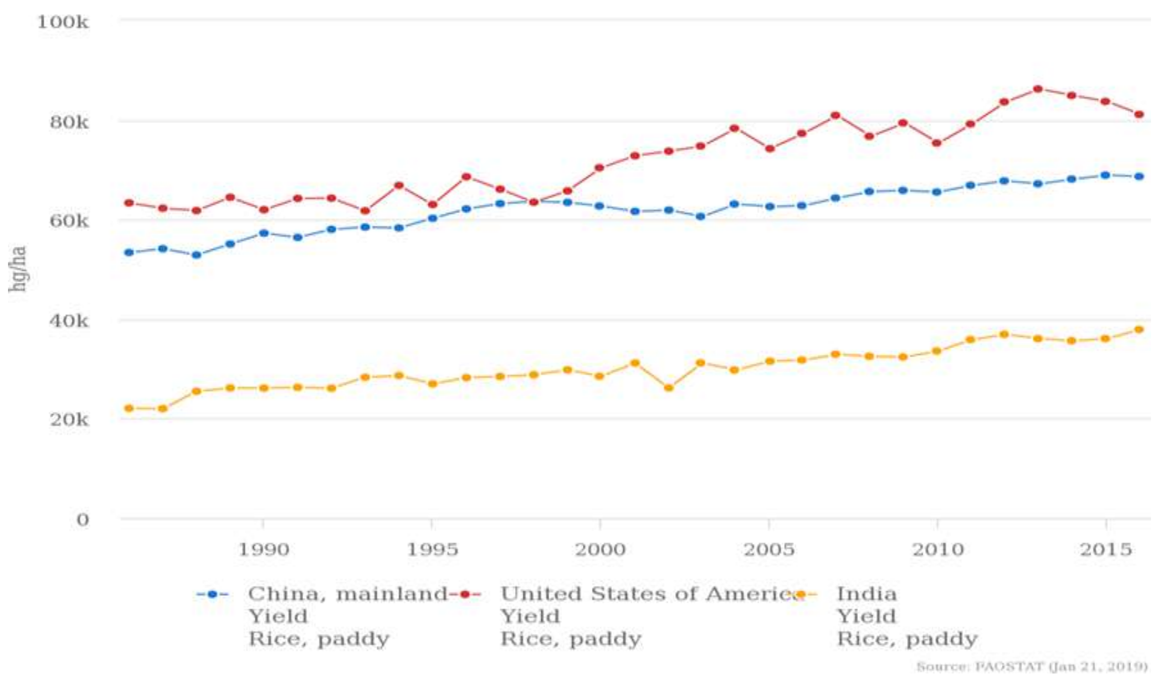
As per FAO data, 2019, the area harvested in hectare is largest for India followed by China. Interestingly, USA and China are larger than India in area. So, keeping a 5% subsidy on USA as per the AoA is considerably high for USA for rice.

Figure 9: Production in tonnes



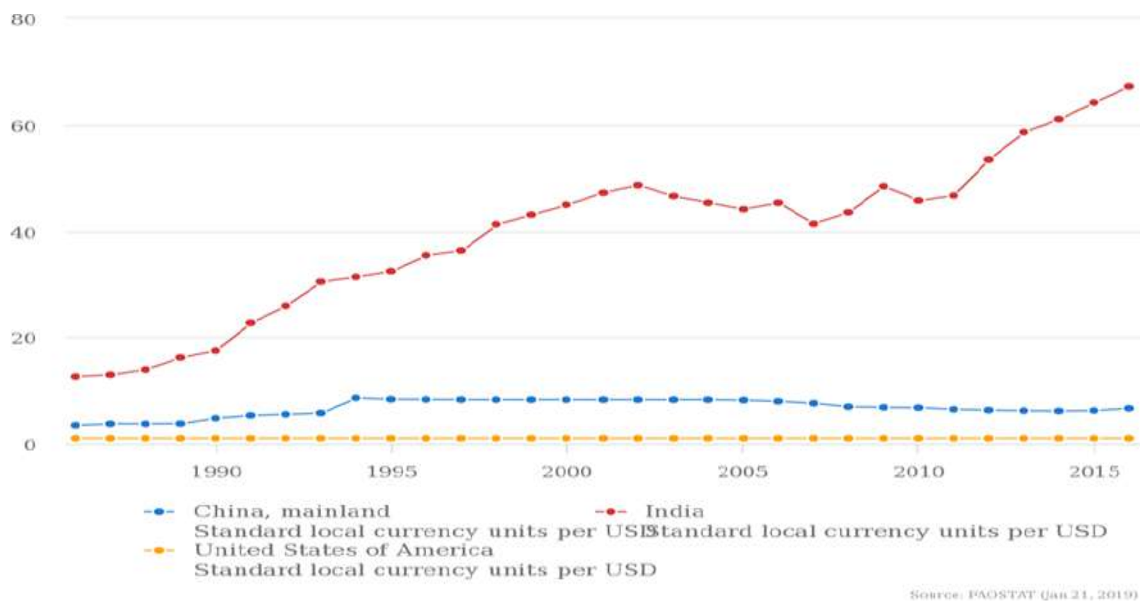
China has greater production in tonnes, although the area harvested per hectare is higher in India. By this graph, it is evident that although China produces more than India, its domestic consumption is so high that exports are lesser than India.

Figure 10: Yield kg/ha comparison



The yield in kg per hectare is in stark contrast to the production and the yield graphs seen above as USA is a strong competitor to India of 80,000 and 70,000 approximately and this where the international prices hurt because if the yield per hectare is greater, it indicates better farming practices which leads to longer storage and higher consumption.

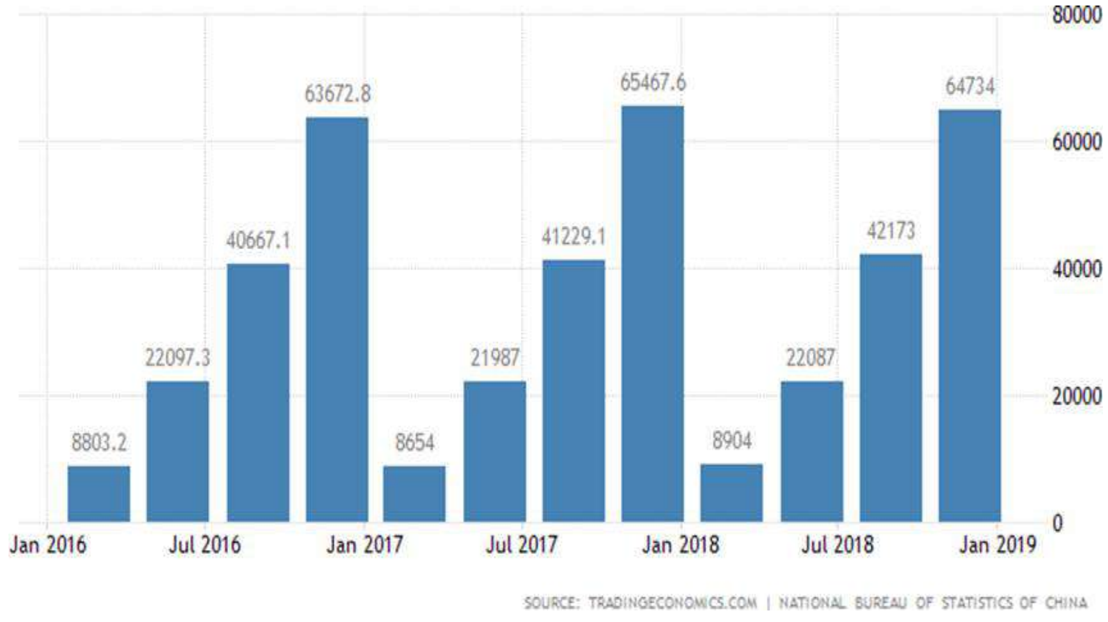
Figure 11: Annual exchange rate -Local currency units per USD



Analysing the annual exchange rates per USD, India is a big gainer in exporting rice. But it is not indicative of the actual subsidies provided to the exporters and farmers per se.

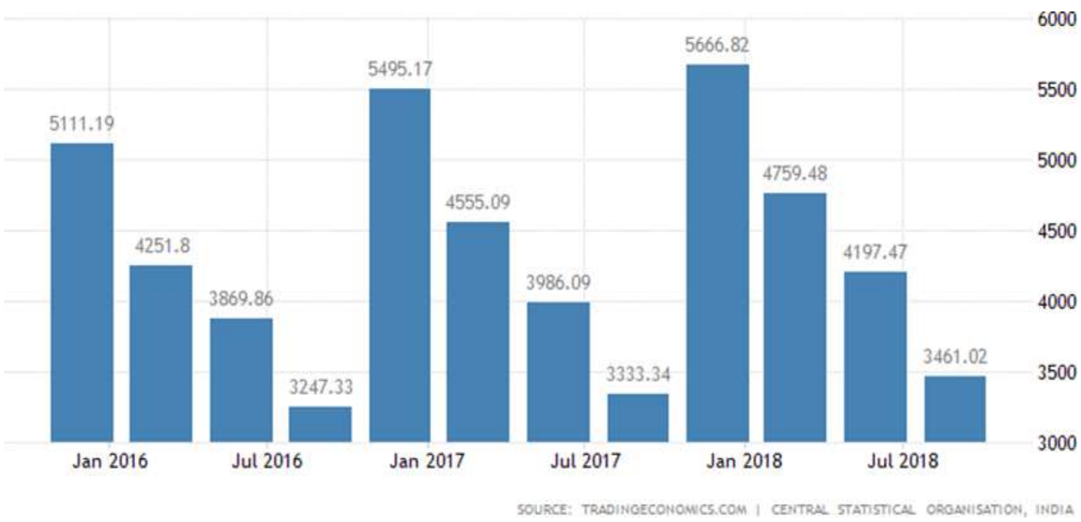
Figure 12: The GDP from Agriculture comparison

China



As per the National Bureau of Statistics of China, China had 63672.8 CNY HML (882.5 USD Billion). GDP from Agriculture in the fourth quarter in 2016. As of 2018, average GDP from agriculture is 15922.04 CNY HML (234.2 USD Billion) from 1992 to 2018.As per World Bank report, the GDP of China was 11190.9 Billion USD in 2016. And as of 2017, China’s GDP is 19.4% of world’s economy.

India



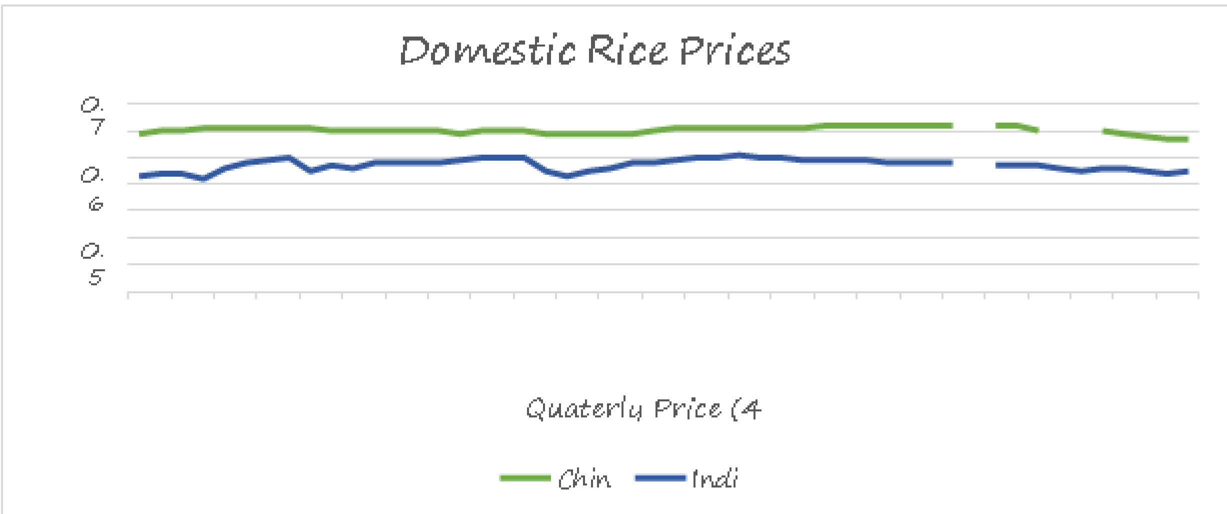
On the contrary, GDP from agriculture in the fourth quarter of 2016 for India was 3247.33 INR Billion (45 USD Billion). As of 2018, average GDP is 4037.84 INR Billion (56 USD Billion) from the period of 2011 to 2018. India's GDP was 2274.2 USD Billion in 2016. As of 2017, India's GDP valuates to 4.19 % of the world economy.

Comparing the two countries' GDP from agriculture as of fourth quarter of 2016 as per current USD conversion rates, China contributes 20 times more to its GDP than India. This confirms that the production and trade policies of China favor the Chinese agriculture than Indian policies made for India. The ratio of GDP from agriculture to GDP for India was 1.42 while that of China was 0.079 in 2016 which indicates that revenues from agriculture are higher in India than China as a country.

AMS calculations

Domestic Food Prices: These are prices of the commodity in the particular country.

Figure 13: Depiction of domestic rice prices in USD/kg in China and India.



Source: Food Security Portal-IFPRI

The figures here are taken from period of Jan 12- to Feb 16, roughly 3 years' time frame. The breaks in the graph are due to unavailability of the prices during that period. To normalize the data, they are expressed USD /kg. For AMS calculation, an average of this is taken and it turns out to be 0.6032 USD /kg for China and 0. 4727 USD/kg for India.

Fixed External Reference Price (FERP): According to WTO and the DS511 Report submitted by USA in September 2017 after India and China jointly proposed to WTO, FERP is taken as the priced calculated in 1986-1988, which is fundamentally absurd way of calculating as the market rates have changed drastically since then. However, for the AMS comparison of India and China, 0.069 (USD/kg) has been taken. The report claims that China has an FERP of

470.83 (RMB/MT). So, the final FERP figure is arrived accordingly as per current conversion rates. Associated Fees and levies include MSP rate of 2.25% average on the domestic production and the remunerative price of average Rs 31.6 /quintal which is USD 4.4 /ton in case of India as per Food Corporation of India.

According to Ministry of Agriculture and rural affairs, PRC, the Minimum Producer Price (MPP) offered for early indica rice, mid & late rice and japonica rice is 102 Yuan, 107 Yuan, 128 Yuan per 50 kg respectively as per 2011.So, the average MPP is 112.34 Yuan/50 kg.

For ease of calculations, all the figures are expressed in USD / million tonnes. Average production is taken for a period of 5 years, from 2012 to 2016. Also, the exchange rates are calculated as per current conversion rates.

Figure 14: Exchange rates & conversion Rates

India

Particulars	Figures	Units
Average Production (qd)	158888000	Tonnes
Average Pd	473	USD/tonnes
Average Pb	69	USD/tonnes
Remuneration Rate	4.4	USD/tonnes
Average MSP	0.0225	Of the average production
Average Af	699107210.6	USD/tonnes
Average AMS	64,19,07,49,918.80	USD/tonnes

Source: As calculated by author

The average AMS of India is 64190749.91 USD/ million tonnes after conversion for ease of comparison.

Figure 15: Exchange rates & conversion Rates

China

Particulars	Value	Units
Average Production Quantity (Qd)	209156.5886	million tonnes
Average Pd	0.674	USD/ milliontonnes
Pb	0.069	USD/ million tonnes
Minimum Produce Price (MPP)	0.33702	USD/ million tonnes
Af	70.48995349	USD/ million tonnes
Average AMS	126539.7356	USD/ million tonnes

Source: As calculated by author

The average AMS for China from the period of 2012-2016 is 126539.7356 USD/ million tonnes. There is a huge gap between the subsidy given by India and China on rice. The Amber Box suggests giving de minimis levels of 10%, whereas the requirement is more than 10% to obtain sustainable production levels in both the countries.

5.0 Conclusion

By the results and analysis, if the USA calculations are to be taken to consideration, then it is utterly baseless as there needs to be a more relevant and recent FERP to be used for calculations. The time frame taken is 1986-88, whereas the current rates are far higher than this time frame. While the average AMS is taken, an effort has been made to evaluate the two nations with respect to Amber box subsidies and the calculations are not accurate as per exchange rates during 2016. Annual AMS is a more accurate methodology to evaluate the AMS. But due to insufficient information regarding the levies and taxes given by the respective nations, an estimate value has been calculated. PSE is another method to arrive at the subsidies to be given, but indirect transfers and tax are beyond the scope of this paper and hence could not be computed.

While both countries have claimed that MSP is way below FERP, due to exchange rates as of 2019, it turns out that China has higher MSP than their FERP. But still, China has managed the 8.5% limit which states that its farmers and producers are compensated better than India.

Interesting conclusions that are noteworthy are that of the ratios of the GDP from agriculture to GDPs of the countries. While production is highest in China and yield is highest in India, yield per hectare turned out to be highest for USA over a span of 30 years.

Analysing the annual FOREX rates, with respect to USA, India generates higher revenues as it is a larger exporter of rice than China.

As new regulations are in discussion in WTO, the calculation of AMS should be based on a single commodity and not on aggregate basis as it distorts the subsidy disbursement.

A production-based calculation on AMS rather than export based would help the stakeholders viz. farmers, exporters and producers which is incidentally working positively in China as it is able to maintain the AMS level to 8.5%

Since support prices cannot be same in all nations, like India has MSP and China has MPP, and many tariff rates, WTO must ensure to remove these support prices and reduce for developed nations to carry forward a positive outcome in obtaining trade balance. The Amber box subsidies are the most fluctuating commodity subsidies in international commodity markets.

The observation regarding the countries answering and asking questions in WTO committee meetings is of importance as the nation producing and exporting highest in a particular commodity must have a higher control over the market prices rather than developed nations such as EU and USA. In this case, rice being high for India and China.

6.0 Limitations of this Study

Data available is insufficient to calculate accurate AMS. The literature quotes different claims by different countries on the same figures and WTO has not released the exact figures.

Since AMS was calculated on an average basis, the further scope of this study can be to calculate on an annual basis with exchange rates during that particular year.

The time frame formulated for 30 years had to be concise to five years due to time constraints and data unavailability.

All the data available on China is mostly by the US government and hence it is subjective in nature.

Appendix

AMIS-Agriculture Management Information System Statistics
AMS- Aggregate Measurement of Support
AoA-Agreement on Agriculture EU- European Union
FCO- Food Corporation of India
MPS: Minimum Price Support
PRC- People's Republic of China PSE – Price Support Estimate USA- United States of America USD- US Dollars
WTO- World trade Organization

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A Study on the Challenges faced by Management Students of GSFC University in English Language Learning through Online Education

Sneha Bajaj and N. V. Bose***

ABSTRACT

This paper focuses on the challenges the students of management face during e-learning especially the subject like the English language. As we all know that Covid-19 has changed the situation of the world from the time it started in December. It became worsen during the March especially in India during the lockdown. That's the time the world of education also changed and initiated full swing online teaching. This study seeks to investigate the problems and challenges on the implementation of e-language learning to the management students of GSFC University. The data was obtained from questionnaires with the sample size of 50 management students of GSFCU. The findings revealed the following results: (1) Students are trying to adapt to online learning; (2) The students agree that e-learning gives them flexibility of time and place; (3) Students' familiarity with the technology; (4) Students' level of comfort with particular tools used by the teacher; (5) Student's abilities to express themselves through an online platform; and (6) Student's difficulties in getting aquatinted to all the four skills of the language. However, it has been perceived that the students are getting accustomed to the New Normal nevertheless the inclination is still towards traditional learning.

Keywords: *E-learning; Language learning; English language learning; Communication tools in new normal.*

1.0 Introduction

The year 2020 will always be in a haunted memory of all the people around the world. At the beginning of 2020, when COVID-19 hit the city of Wuhan, people in the rest of the world could not imagine in their weirdest dream that the virus would travel all over the world and transform the way we live, interrelate, converse, trade, work, teach and learn. COVID-19 is affecting almost every segment of the economy. And, the education sector is no exemption. Schools, colleges, and institutes are closed down and students are at home with the least contact with other fellow students, friends, teachers, and campus life. All thanks to the COVID-19 pandemic simmering over the world. Everything has become virtual, with no physical movement partially or as a whole. The repercussions and effects of the pandemic on education are yet to be known, but they will surely be more challenging, perplexing, and confounding for educators and as well as learners. The implications of the pandemic are more fragile and unstable in these perspectives. Most of the countries of the world experienced for the first time, an unprecedented entire or partial lockdown which headed to the immediate closure of universities and school. As a result, teachers and students had to learn instantaneously and promptly how to adapt to distant teaching.

According to the UNESCO Institute for Statistics, the COVID-19 pandemic has led to the closure of schools in more than 180 countries, affecting more than 1.8 billion students and above 65 million primary and secondary teachers worldwide [UNESCO, 2020]. The interference in the education system due to the continuous COVID-19 is a reminder that there is a need for transformation. This is the right time for the most awaited digital transformation.

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The main idea of revolution is the shift from ‘thinking digital’ to ‘being digital’. The move to digital learning is difficult and taxing as no one was prepared until the COVID-19 clutched the whole world. In short, the COVID-19 pandemic and its impact have influenced our lives in all possible ways and that has elevated the prerequisite to accepting ground-breaking ways of getting education services at all levels. The scenario is changing from the traditional way of learning to virtual learning at a very fast pace and in a very unimaginable manner all over the globe.

The developing countries like India are also facing the same kind of situation which is quite difficult to cope up. Once the corona virus pandemic situation is observed thoroughly, the WHO [World Health Organization, 2020.] advised maintaining social distancing as the first prevention step. Hence, each and every country initiated the action of lockdown to separate the contaminated people [Jena, Pravat, 2020] and [Mohalik, Ramakanta & Sahoo, Sonali. 2020]. According to the authors, the lockdown has enforced the worldwide lockdown creating a very bad effect on the students' life. Around 35 crore learners stopped to move schools/colleges, all educational activities halted in India. The outbreak of COVID-19 has advised us that change is inevitable. All the education sectors including schools, colleges and universities closed down, all the classes suspended, and examinations and entrance tests were postponed for an indefinite period. Hence, the lockdown destroyed the schedules of the academia of every school, university, and institute. Many challenges and suggestions are documented in work of [Yuyun, Ignasia. 2013]. In the work documented in [Kusumo N. S. A. M., et al. 2012], [Aboagye, Emmanuel. 2020] and [Muilenburg LY, Berge ZL, 2005] also discuss the difficulties faced by the students while learning with technologies.

It is to be noted that such a pandemic has created many opportunities to design and implement effective classroom teaching model which suits the current demands in the field of education. The basic objectives of the proposed work are as follows.

2.0 Objectives

The present research paper focused on the following objectives:

- To highlight the various impacts of COVID-19 on education.
- To identify the challenges faced by the students in studying the subject like the English language
- To check the convenience of the students in e-learning

3.0 Methodology

As we wanted to study the impact of Covid-19 on students of management we decided to take a sample group from GSFCU. A questionnaire was designed in a structured manner that contains Personal Information, Perceived Usefulness of E-Learning, Perceived Ease of Use of E-Learning, and Language learning through the online platform.

3.1 About GSFCU

GSFC University[1] is recognized under the Gujarat Private University (Second Amendment) Act, 2014 and is established by the GSFC Education Society - an initiative of Gujarat State Fertilizers and Chemicals Ltd, six decades-old industrial giants to continue the tradition of serving the community in multiple ways.

GSFC University has B Tech program in Chemical Engineering, Mechanical Engineering, Computer Science Engineering and Fire & Environment, Health, Safety. It also has a Bachelor of Science (B.Sc.) (Hons.) program in Chemistry and Biotechnology. GSFCU also has a Bachelor of Business Administration (BBA) in General (HR/Marketing/Finance), Information Technology Management and Accounting and Finance. It also offers Masters in Science (M.Sc.) in Chemistry (Organic Chemistry), Chemistry (Analytical Chemistry) and Bio Technology. It also offers a doctorate program Ph.D. in Chemistry and Bio Technology.

When the first lockdown announced in India, in Gujrat, it was a time of chaos and confusion for all education institutes including GSFC University. The journey of empowering a full-scale digital transformation at short notice was not a cakewalk. GSFCU promptly recognized during the mid-March that sudden closure of the campus might lead to a paralytic situation where students are deprived of their academics when they are on their mid-way to complete the academic year, and teachers are losing the time to finish the curriculum. So, it was decided that it's time to embrace the *New Normal.* As a result, GSFCU started with Online Teaching Initiative (ONTI-2020) and followed by Online Exam Initiative (ONEI-2020) to maintain the academic continuity.

3.2 E-tools used to teach the English language

3.2.1 Google classroom

Google classroom[2] has been created for every subject with the proper title and theme of the subject. Classroom code has been generated for all the students as well as co-teachers and asked them to join the classroom. Every material and presentation have been shared through the classroom. Every assignment has to be generated in the classroom.

3.2.2 Google meet

The proper complete time table has been prepared and followed diligently and persistently in the Google meet[3]. The teacher will create the meet and share the code with the students and students would be present online and join the meet during that particular time. The subject teacher will come and explain the topic, concept, and subject matter through power point presentation, white board, online lecture, discussion, case study, videos, animations, demonstration, quiz, students' activities, jam board, podcast, etc.

3.2.3 Google form

Google forms[4] are used to create assignments and weekly quizzes to assess their development in regular intervals. Google forms are also used to collect feedback on the activities or concepts taught.

3.3 White board and digital pen & Pad

White board is used to write and explain the concept especially mathematics and formulas of other subjects.

3.3.1 Jam board

Google jam board[5] is used to engage students for the smaller quizzes and explaining creative aspects of the language specially to impart the images from online sources and mark it with the sticky notes. It can be shared just like google sheet where anyone can edit and comment.

3.3.2 Podcast & multimedia

Podcast[6] has been used to teach listening skills to the students. The teacher will make them listen to the podcast and ask a couple of questions at the end of the podcast and that's how the students have been judged. Animation, GIFs and videos have been used to make the explanation of the complex theories easy and comfortable.

Along with these, the teachers have also used e-tools like Socrative[7], Infogram[8], Funbrian[9], Weebly[10], Kahoot[11], Quizzes[12], Hot potatoes[13], Prezi[14], Meta MoJi Note[15], OBS Studio[16], Piktochart[17], etc.

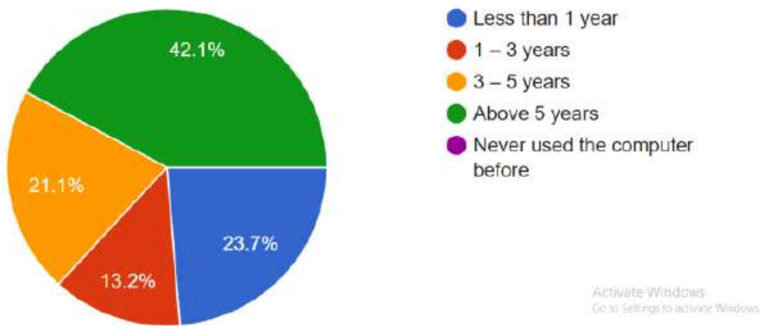
3.2.3 Interpretation of the data collection

The questionnaire has been prepared for the management students who are learning the English language through online education mode in the form of google form. A questionnaire was designed in a structured manner that question no 1 to 9 focuses on Personal Information, question no 10 to 14 concentrates on Perceived Usefulness of E-Learning, question no 15 to 20 Perceived Ease of Use of E-Learning and question no 21 to 31 emphasizes on Language learning through the online platform are covered.

A. Personal information

Out of 50 samples we got from GSFCU management students, 52.6% are the male students and 47.4% are the female students. 18.4% of students are 18 years old, 63.2% are 20 years old, 13.2% are 21 years old and 2.6% are 23 and 24 years each. 94.7% of students are from the fifth semester and 5.3% of students are from the third semester of BBA. 42.1% of students are from HR, 39.5% of students are from marketing and 18.4% of students are from finance specialization. 82.4% of students agreed that they have a personal computer or desktop at home and 15.8% of students said that they do not have a personal computer or desktop at their home. 42.1% of students said that they have been using the computer for more than 5 years, 21.1% of students declared that they have been using the computer for 3 to 5 years, 13.2% of students said that they have been using the computer for 1 to 3 years and 23.7% of students have declared that they started using the computer only in recent times, less than 1 year. This personal information says that the survey has been divided into both genders almost equally. The majority of the students are 20 years old and from the fifth semester of Bachelor in Business Administration who are having the three major specialization – HR, Finance and Marketing. The majority of the students accepted that they have a personal computer or desktop at home so for those familiarity with computer device may not be the problem but 15.8% of students said that they don't have a personal computer or desktop at home so this leads to the logical dilemma whether they are familiar with the device to use it for online learning. Online learning needs basic knowledge of the device and the common software used in the device. If the students are not comfortable with the device, they are using then it will lead to the chaos and complexity in online learning. 63.2% of the students are well versed with the personal computer or desktop as they have been using the computer for more than 3 years that makes the students aware of the usage and makes them familiar about it and the same will lead to comfort level in the e-learning.

Figure 1 – Familiarity with Computer



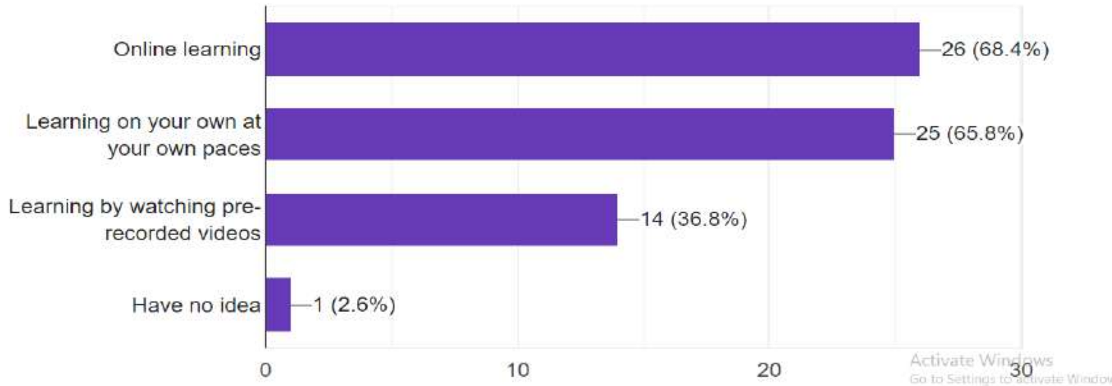
B. Perceived usefulness of E-learning

E-Learning is learning utilizing electronic technologies to access educational curriculum outside of a traditional classroom. In most cases, it refers to a course, program or degree delivered completely online.

There are many terms used to describe learning that is delivered online, via the internet, ranging from Distance Education, to computerized electronic learning, online learning, internet learning and many others. We define eLearning as courses that are specifically delivered via the internet to somewhere other than the classroom where the professor is teaching. It is not a course delivered via a DVD or CD-ROM, videotape, or over a television channel. It is interactive in that you can also communicate with your teachers, professors, or other students in your class. Sometimes it is delivered live, where you can "electronically" raise your hand and interact in real-time and sometimes it is a lecture that has been prerecorded. There is always a teacher or professor interacting /communicating with you and grading your participation, your assignments and your tests[18].

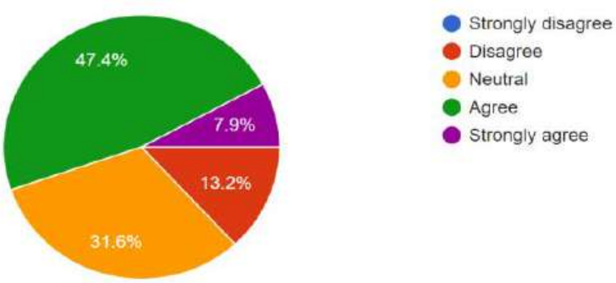
E-learning has many aspects and there should be clarity in the mind of the users about this relative term. When asked what do the students mean by e-learning 68.4% of the students answered that they considered both online learning and learning on your own at your own paces as e-learning, 36.8% also considered the choice of learning through recorded video as e-learning but 2.6% of the students have accepted that they have no idea what e-learning means. Hence, there is an imbalance here regarding the clarity of the concept of e-learning in the mind of the students.

Figure 2 – Concept of E-learning



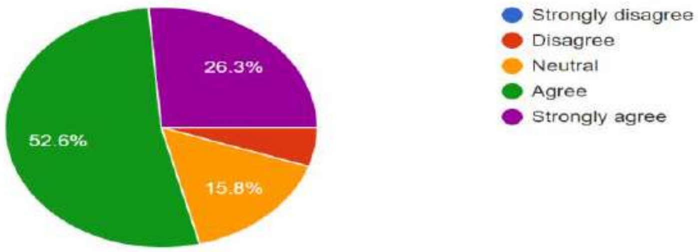
When asked about the flexibility of the learning 47.4% agreed with the flexibility of time, 31.6% remained neutral and 13.2% did not agree that e-learning is flexible. But 7.9% was strongly seeing to the fact that e-learning gives them the freedom of learning at their own convenient time and pace.

Figure 3- Flexibility of Time



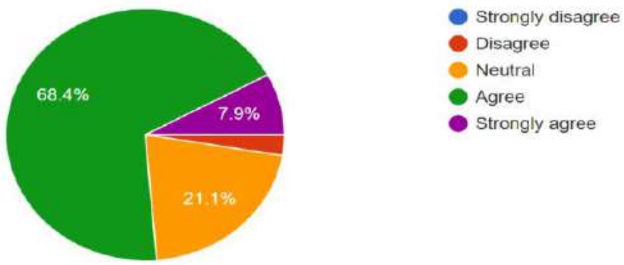
Similarly, when asked about the freedom of flexibility of location 52.6% of students agreed and 26.3% of the students strongly agreed to the point whereas 15.8% of the students were neutral and 5.3% disagreed with the statement. This shows that majority agreed to the point that e-learning enables people to study irrespective of where they are located in the world.

Figure 4 – Flexibility of Location



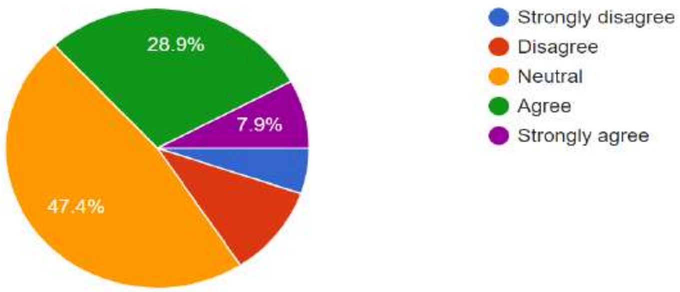
When asked about the technologies that enable one to submit the assignments and take the test by electronic means, 68.4% of students agreed and 7.9% of students strongly agreed to the idea but at the same time 21.1% of students remained neutral and 2.6% of students disagreed with the statements. This shows that the majority found that technology and electrical means enable them to submit the assignment and test either by supporting the statement or by being neutral very few of them had difficulty submitting the test.

Figure 5 – Submitting the Assignments through Electronic Media



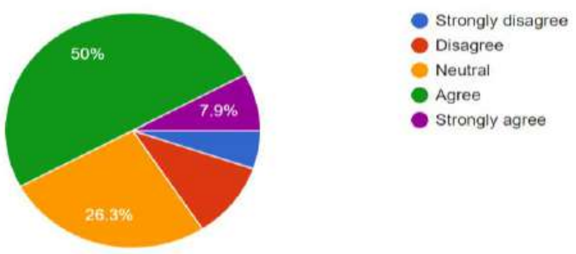
Regarding the communication amongst the students themselves or to the teacher or instructor, 28.9% of the students agreed and 7.9% of students strongly agreed to the statement whereas 47.4% remained neutral and 10.5% of the students disagreed with the statement. The surprise factor was when 5.3% of the students strongly disagree with the statement. This shows that few of the students are not very comfortable with the way communication occurs during online classes but majority of them do not find much difference.

Figure 6 – Ease of Communication



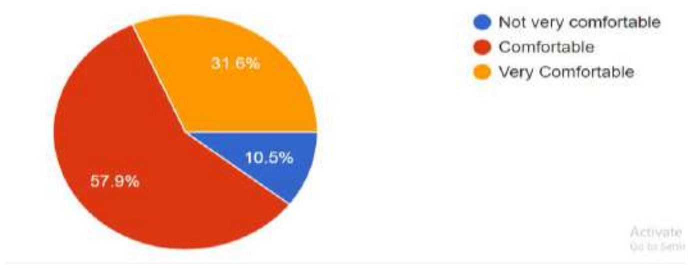
When asked about the user-friendliness of the e-learning platform, 50% of the students agreed and 7.9% of students strongly agreed and on the other hand 26.3% of the students remained neutral and 10.5% of students disagreed and 5.3% of students strongly disagreed with the statement. Again, this shows that a few of them are still not very comfortable with the e-learning platform.

Figure 7 – Convenience of the E-learning Platform



As decided by the system every teacher takes the online classes through Google meet at GSFCU. Hence, to check out how contented the students are with Google meet we asked them how comfortable they are with this platform and 31.6% of the students said they are very comfortable, 57.9% students said they are comfortable and 10.5% of the students said they are not comfortable with the Google Meet platform at all. This shows that the majority of the students are comfortable with the Google meet platform that is used for e-learning.

Figure 8 – Competencies with Google Meet



Google Classroom is the place where the students and teachers share their material, assignments, and comments. When asked about how comfortable they are with Google classroom57.9 % of students said that they are very comfortable, 36.8% said that they are comfortable and 5.3% of students said that they are not at all comfortable with the Google class platform. At the same time for Google form, almost all the students have responded that they are quite comfortable with the platform.

Figure 9 – Conveniences with Google Classroom

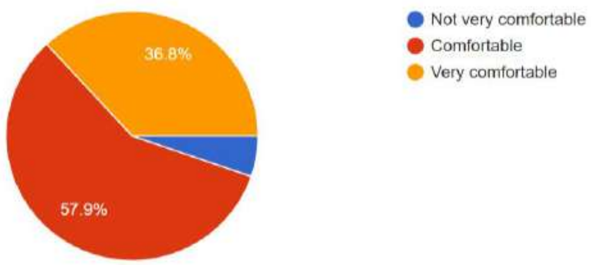
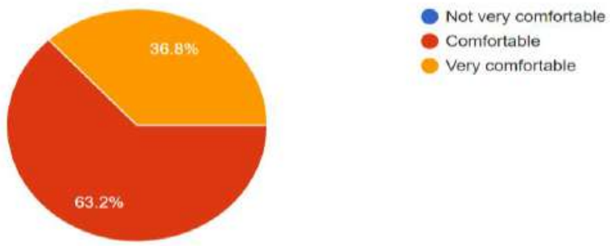


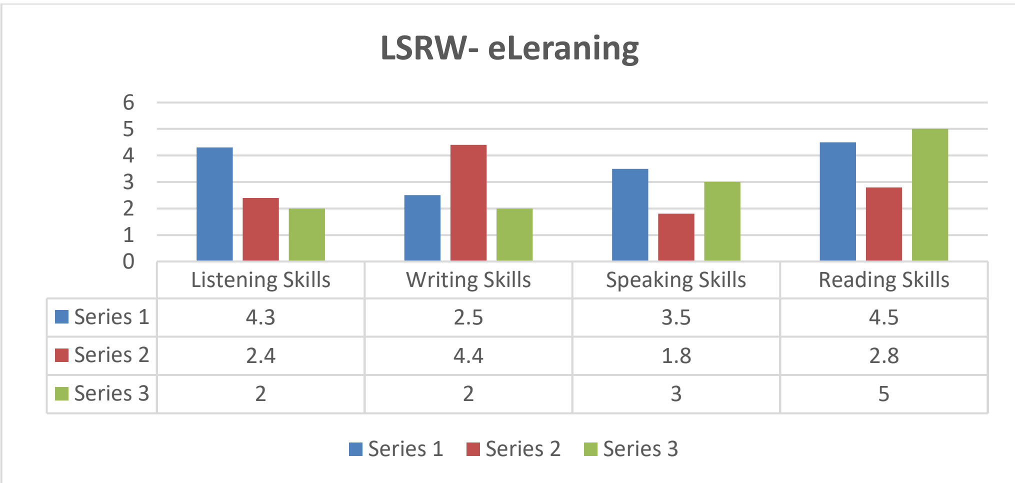
Figure 10 – Conveniences with Google Form



When it comes to learning a language, it's a not an easy task considering the students are not native speakers. To learn any language, one needs to concentrate on 4 aspects of the language – Listening, Speaking, Reading, and Writing. Learning all these aspects of language online is definitely a complex job. When we asked the students regarding how comfortable they are in learning the language concepts 13.2% of the students said they are very comfortable, 60.5% of the students said they are comfortable whereas 26.3% of the students say they are not comfortable. When asked regarding learning grammar also13.2 % of students strongly agree with the statement that they are finding it easy to learn the grammar through an online platform, 36.8% of the students agreed to the statement and 42.1% of the students were neutral and 7.9% of the students disagree with the statement.

While answering the question regarding e-learning is the better platform for practicing the listening skills 15.8% of the students said they strongly agree and 39.5% said they agree with the statement whereas 34.2% of the students were neutral and 10.5% of the students disagreed with the statement. When asked about the writing skills 7.9% of the students said they strongly agree and 15.8% said they agree with the statement whereas 47.4% of the students were neutral and 26.3% of the students disagreed and 2.6% of the students strongly disagreed with the statement. While answering the question regarding e-learning is the better platform for practicing the spoken skills 7.9% of the students said they strongly agree and 31.6% said they agree with the statement whereas 36.8% of the students were neutral and 21.1% of the students disagreed and 2.6% strongly disagreed with the statement. At the same time when we asked the students regarding the reading, comprehending, and summarizing the concepts through online mode 10.5% of students said that they strongly agree that virtual form is an easy way, 31.6% of students agreed, 44.7% of students were neutral and 13.2% of the students disagree with the statement.

Figure 11 – LSRW – E-learning



To the answer to the question like effective communication is possible through an online platform 2.6% of the students said they strongly agree and 39.5% said they agree with the statement whereas 34.2% of the students were neutral and 18.4% of the students disagreed and 5.3% of the students strongly disagreed with the statement. When asked about the interpreting and replying through online mode is easy, 10.5% of the students said they strongly agree and 36.8% said they agree with the statement whereas 31.6% of the students were neutral and 15.8% of the students disagreed and 5.3% of the students strongly disagreed with the statement.

Figure 12 – Efficacy of Communication

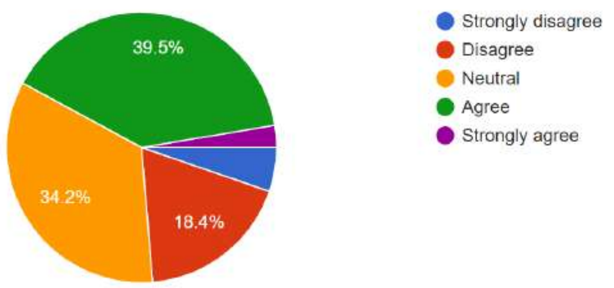
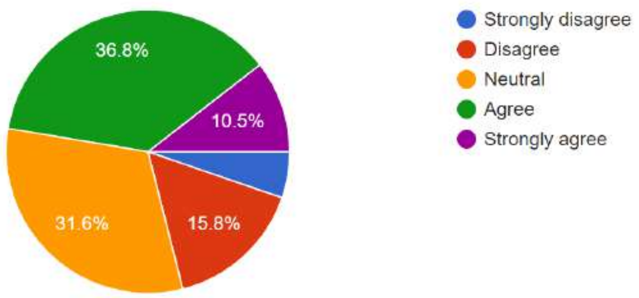
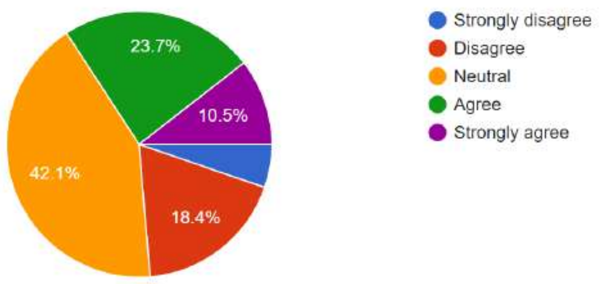


Figure 13 – Convenience in feedback



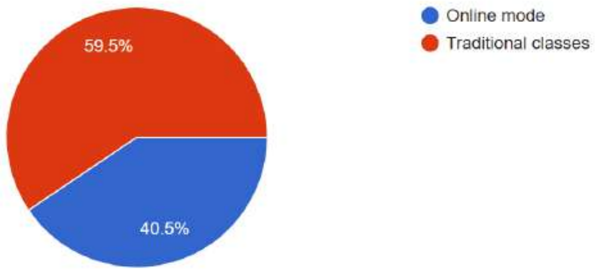
The 10.5% of the students strongly agreed when asked that e-learning makes them a confident speaker and user of language, 23.7% of students agreed to the statements, 42.1% of the students were neutral about the statement whereas 18.4% of the students disagreed and 5.3% of the students were in total disagreement of the statement.

Figure 14 – Confident Speaker through e-learning



Finally, when we checked the preference of the students regarding online teaching and traditional teaching 40.5% of the students opted for online teaching and 59.5% opted for traditional teaching. Therefore, we can conclude that though the students are trying to coop up with the online teaching during the pandemic but given a choice they would prefer to learn a language through traditional classes.

Figure 15 – Final Preferences



4.0 Conclusion

Covid-19 forced us to adapt to the *New Normal* in every aspect of life that also changed the scenario of the traditional education sector. As an advanced and progressive institution, GSFCU always believed in blended education. Yet, going full-fledged virtual was not a piece of cake. A lot of effort from the management, faculties and students as well has been put across to make online learning more effective and convenient, particularly, in the case of language learning where all four skills are required to be learnt in a virtual environment. As perceived by students, although there are some drawbacks, it attempts to emphasize a certain number of advantages, for example, the flexibility of time and place, still the students are facing few challenges to get accustomed to e-learning. Some of them are not familiar with the technology, some of them are not comfortable with particular tools used by the teacher, some are feeling discomfort to express themselves through an online platform and some of them find difficulties in getting aquatinted with all the four skills of the language. Even though it has been observed that the students are trying to adjust to the *New Normal* yet the preference is still the traditional learning or what we would suggest is blended learning.

Endnotes

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Opportunities and Challenges of Digital Education in view of National Education Policy (2020)

*Vazid Khan**

ABSTRACT

Digital education plays a very crucial role in making learning student-centric, self-paced, flexible and world-class. National Education Policy (NEP 2020) is very much concerned about equity issues and quality education for all learners as far as the digitalization of education is concerned. It has also pointed out the issue of evaluation procedures in digital education as the teachers usually ask objective questions in online mode. The present study has discussed the recommendations of NPE (2020) for digital education and highlighted the opportunities and potential challenges in digitalizing education. The study discussed two innovative platforms Miro and Nearpod for digital education that can be used for interactive learning experiences and active participation of learners in learning. The learning assessment must incorporate some thought-provoking, activity-based questions for the comprehensive evaluation of learning outcomes. The study also focused on three innovative platforms Socrative, Slide and Quizzes for evaluating the performance of learners through digital modes.

Keywords: *Online learning; Digital learning; Innovative teaching; Digital India Campaign; Self-paced learning.*

1.0 Introduction

Innovations in any field often emerge in response to challenges, if there is no challenge there will be hardly any innovation. Human beings do not like problems and challenges but they are part of life. We cannot forget the overcrowded Indian banks where the consumers had to go through an exhaustive procedure for depositing and withdrawing money. The ATMs (Automated Teller Machines) made the withdrawal and deposition very and comfortable. We didn't forget the suffering caused due to demonetization in India in 2016 when the 500 and 1000 currency notes were banned. On the bright side of it was the growth in cashless transactions; the government can easily track them to receive tax. A number of digital payment apps like Google pay, Bhim App, Paytm, amazon pay, PhonePe became popular and reached the common people. The Covid-19 pandemic, a natural disaster was the biggest challenge for people all over the world. It put to rest almost all social activities for a long time, but digital technology helped us in this pandemic also. Digital technology helped in avoiding crowds and rush in markets by delivering the goods to their homes. People used Amazon.com, Flipkart for online shopping, and Zomato and Swiggy for ordering foods. The education sector could be the worst hit if digital technology hadn't helped. On the recommendation of the World Health Organization (WHO) for curbing the spread of coronavirus disease, the social distancing policy was accepted globally, educational institutions were closed and the conventional way of teaching and learning was disrupted (Adedoyin & Soykan, 2020). Educational institutions have been using digital platforms for teaching and learning. For the Covid-19 pandemic, the Indian government launched 'Bharat Padhe Online' initiative so that the teachers can develop online learning material, share their innovative ideas through educational blogs, wikis and create more and more open educational resources (OERs) (Bordoloi, Das & Das (2021)). Digital technology has saved the future of our learners because they have been receiving online education in their homes.

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The boom in online technology, the internet, and social media has developed a new kind of social constructivism; now the teacher can interact with each student and the students can also interact with their teacher as well as their colleagues (Bordoloi et al., 2021). This pandemic has made it mandatory to follow the social distancing norms; the educational activities are being digitized, so there is need to properly scrutinize the process of digital education (Mathias Decuypere, Grimaldi & Paolo Landri, 2021). The newly formed National Education Policy (NEP, 2020) has also drawn attention towards equitable use of digital technology in educational processes and highlighted the major issues in the digitalization of education.

2.0 Objectives of the Study

- To discuss the recommendations of NEP (2020) for digital education
- To discuss the opportunities of digital education, highlight its major challenges
- To discuss Digital India Campaign and Innovative platforms for Digital Education

3.0 Recommendations of NEP (2020) for Online and Digital Education

The National Education Policy (2020) which is constituted recently; envisages an Indian education system that may be rooted in Indian values and customs. The aims of NEP (2020) are to provide high-quality education to all learners, create an equitable and vibrant knowledge society and make India a global knowledge superpower. The covid-19 pandemic has drawn the attention of policymakers for adopting alternative approaches to educational activities. No doubt, digital technology is helping educational institutions conducting teaching-learning activities online in this situation of the pandemic. For leveraging the digital technology for teaching and learning at all levels from school education to higher level of education NEP (2020) has recommended the following key measures: (i) Conducting pilot studies for online and digital modes of education (ii) Creating digital infrastructure which can connect all learners with their teachers and learning resources (iii) Online teaching platform and tools (iv) Content creation, digital repository, and dissemination (v) Proper measures to address the digital divide among all sections of population (vi) Virtual Labs for quality practical and experiment-based learning experiences(vii) Training of teachers for developing online learning material and teaching on digital platforms (viii) Engaging the relevant bodies for developing innovative ways of Online assessment and evaluation focused on 21st century skills (ix) Adopting suitable blended models of learning with face-to-face interaction as per the nature of subjects (xi) Laying down standards for content, technology and pedagogy for online and digital education which can guide the central and state boards of education.

3.1 Opportunities in digital education

As per the NEP (2020), the high-speed technological advancement when combined with the high level of creativity of tech-savvy teachers and innovators will impact educational processes in multiple ways, a little of which can be predicted at present. The emerging technologies based on artificial intelligence, machine learning, smart boards, handheld digital devices, and other forms of educational software and hardware are going to change what the students are learning and how they are learning, appropriate researches are necessary for both the technological and educational fields. As per the NEP (2020), there is a bidirectional relationship between technology and educational process. Development in technology will have a significant impact on the educational process and vice versa. Digital devices like smartphones, gadgets, and smart boards will result in smart learning. On the other hand, advancements in educational process will result in the preparation and nurturing smart workforce for the country. Smart education will create engineers, innovators, entrepreneurs, software developers and scientists.

Some of the important benefits of digital learning are as follows:

- Flexibility in learning i.e., learning can be accessed anywhere and anytime
- Self-paced learning i.e., learning can occur at learner's pace
- Enriched learning i.e., digital technology can make learning more comprehensive and easier to grasp and more in-depth
- Best teachers can be hired in online mode as there are no restrictions of location in online mode

3.2 Challenges in digital education

Digital technologies proved to be a gift for the students in this pandemic as they mitigated the loss to learning by conducting educational activities online. As far as the Indian scenario is concerned the online and digital education has some potential challenges. The National Education Policy (2020) has raised the following major concerns regarding online and digital modes of education:

- The digital divide among the learners in India
- Preparedness of teachers in using digital technology
- Assessment and Evaluation of Learners in Digital Mode
- Development of learners' social, emotional and psychomotor domains
- Issue of practical-oriented subjects such as sciences and performing arts

3.3 Digital India campaign and innovative platforms for digital education

One of the major challenges in digitalizing education in India as highlighted by NEP (2020) is the digital divide among various sections of our population. The availability of digital devices, internet facility and awareness about their use in education among teachers and learners have become very critical as far as digital education is concerned. The issue of the digital divide can be addressed with the help of the Digital India Program which was launched in 2015 with a vision to transform India into a digitally empowered society and knowledge economy.

3.4 Digital India campaign and digital education

The Digital India campaign of the Government has opened avenues for digital learning, as mentioned in PRAGYATA Guidelines (Feb. 2021), the Ministry of Human Resource Development (MHRD, Government of India) has initiated PM e-VIDYA on17 May 2021 in order to continue the learning process smoothly in the time of lockdown. PM e-VIDYA will provide multi-mode access to online learning and will integrate all the efforts in digitalizing learning in India and is going to benefit about 250 million school-going children in the country. This effort comprises of:

Diksha: It is a digital infrastructure of India to provide QR coded textbooks for all grades, MOOCs courses, and quality e-content for students and teachers

Swayam Prabha: TV channel to provide high-quality educational programs one channel for each grade from class 1 to class 12 also runs programs for teacher training.

Swayam: It stands for "Study Webs of Active Learning for Young Aspiring Minds". It is a MOOCs initiative in India with an objective to impart excellent teaching and learning to all including the most disadvantaged section. SWAYAM has coordination from top national institutes in India to ensure excellence in learning.

Iitpal: It stands for "IIT Professors Assisted Learning" meant to assist aspirants of IIT JEE entrance examination and can be accessed via the SWAYAM PRABHA channel.

Radio and community Radio: Mukt Vidya Vaani (MVV) is an Open Radio facility meant for providing educative and informative stuff for excellent learning experiences. This web radio has the facility to pause and replay the audio. Another such effort is Radio Vahini. It is a community radio station of NIOS (National Institute of Open Schooling) meant for drop-outs and learners enrolled through ODL (Online Distance Learning).

Assistance for differently abled learners: NIOS provides e-content for differently-abled (visually challenged and hearing impaired) children such as content in Indian sign language and "talking books" for hearing impaired children.

3.5 Innovative platforms for interactive digital learning

The National Education Policy (2020) has also raised concern about the lack of activity on the part of learners in online and digital modes of education. Therefore, we would like to discuss some interactive digital teaching-learning platforms which can provide experiential and activity-based learning experiences to learners.

Miro: It is an online whiteboard that can be used for collaborative interaction in teaching virtually and interactively anytime, anywhere. The salient features of Miro are: (i) Virtual Brainstorming: Miro can be used to for encouraging the learners to 'think out of the box' and develop creative ideas and answer the thought-provoking questions. (ii) Mind Mapping: We can use Miro to connect the central concept to related concepts, topics, or ideas, this is called mind mapping. Our brain thinks of any object or idea in relation to other objects or ideas that are associated with it. Miro can create non-linear mind maps for any concept that's how our memory works. We start with the central idea or concept and add the related sub-ideas or sub-concepts to it and repeat the process and you will get the required. After creating a mind-map on Miro we can share the board with the participants/learners in real-time and can allow them to view, comment, and edit it. (iii) Online Workshops: Online workshop on Miro will give you a chance to explore specific details of any concept or topic more interactively than any traditional online meeting. A large number of participants can work together all at once or in small groups on a specific task by using the Miro platform in real-time. (iv) Collaborative Virtual Meetings: Miro can be used for conducting collaborative virtual meetings and can ensure real-time participation for all participants. Miro provides us the facility to record the meeting and enable the participants to share their screens from their own desks at their places.

Nearpod: Nearpod is a digital platform for interactive teaching and learning in real-time through interactive lessons, interactive videos, and games activities. In Nearpod, the teaching and learning activities are carried out through: (i) Interactive Slides: We can create slides-based interactive lessons and collect the learners' data regarding the understanding of the concept or topic by adding formative assessments or we can choose from thousands of ready-to-teach lessons that can be customized. (ii) Interactive Videos: Similarly, the interactive videos with built-in questions can be created in Nearpod for sharing directly with the learners or we can choose from standards-aligned videos from the Nearpod library. (iii) Gamification and activities: For providing more engaging and deeper learning experiences to learners, Nearpod has the gamification activities like Time to Climb, Matching Pairs, Draw it, etc. We can create our own activities or choose from thousands of activities as per the grade and subject.

3.6 Innovative platforms for evaluating leaners' performance in digital learning

Assessment and evaluation are very essential in teaching and learning that is the reason that NEP (2020) is concerned about examination procedures in the digital mode of education. Most of the time, MCQs are being asked for evaluating learners' performance. Thus, we need some innovative platforms for assessing learners' learning in multiple ways for comprehensive evaluation. We are going to discuss three innovative platforms for instant evaluation of learners' performance.

Socrative: Socrative has been delivering formative assessment tools to teachers around the world since 2010. In Socrative, the teachers can modify their instruction for carrying out students' learning most effectively. The most popular quiz game in Socrative is 'Space Race countdown timer' which has team-based activities in each round. In Socrative, 20 activities can be launched at once such as creating multiple quizzes, conducting classroom polls or mini-competitions for assessing learners' comprehension, and keeping track of students' learning in real-time. Socrative is very much suitable for large classrooms because we can actively engage 50 students per room at one time. Socrative allows us to set up 20 different rooms for different subjects or classes in which students can access their respective subjects or classes by using their codes.

Slido.com: It is a digital platform for questions & answers (Q&A) and polling of the students that can bridge the gap between teacher and learners. In Slide, everyone can ask questions and vote for what he/she likes the most. Live polls make this platform more interactive and help in initiating the communication between teacher and learners, checking knowledge, and getting instant feedback. Slide allows us to create a fun quiz that can be used to 'break the ice', recapitulate the content, and entertain or test our learners. Slide analytics helps us to collect valuable insights about our learners and select the topics resonating with our learners and take appropriate decisions. Slide can also be used for brainstorming the ideas by collecting and curating the best ideas from the participants for making a decision about a team project or summarizing key concepts from a workshop.

Quizzes: It is an Indian software company that creates gamified quizzes and interactive lessons for engaging the learners in learning activities. The interactive lessons and activities can be accessed anytime, anywhere and the deadlines can be given to complete the quizzes. We can share the gamified quizzes via emails or LMS and the participants can join them from any device. For the individualized study, there are options of flashcards and retakes in Quizzes. This platform enables us to review what is working and what is not working and identify instantly the problem areas regarding any participant, class, or question.

4.0 Conclusion

In the present study, we tried to focus on digital education, the opportunities, and challenges in digitalizing the educational processes in the Indian scenario. This study is aligned with recommendations of the National Education Policy (2020) as far as opportunities and challenges in digital education are concerned. The NEP (2020) has referred to Digital India Campaign for removing the barriers and digital divide in India. So, we discussed Digital India Initiatives for online and digital education. For making online learning more interactive, some innovative platforms such as Miro and Nearpod are discussed. NEP (2020) raised concern about the unethical practices and types of questions that can be asked for the assessment and evaluation of learning in online and digital modes. We discussed some innovative platforms such as *Socrative*, *Slide*, and *Quizzes* for evaluation of learning in digital mode. These platforms can help us to a great in making the evaluation process more interactive, fair, and comprehensive.

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Impact of Digitalization on Education System in Surat City

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ABSTRACT

The paper highlights to evaluate the influence of digital teaching learning methods using digital technology. This research paper focuses on the impact of digitalization on teaching methodologies adopted by teachers in various colleges and universities on student learning. From analysis it can be suggested that by keeping open educational resources teachers and students have flexibility to join the session at the time of their convenience and get better understanding about the concepts. The findings of study indicate that digital tools not only increased the level of excellence but could be advanced experience for both teachers & students in upcoming years. Digital modes of teaching such as virtual sessions, educational apps and IOT will help the teachers to share the knowledge on big platform with creative way to clear the concepts. With digital apps it would be possible to transform the content of knowledge among students on larger scale. This study concluded that digital tools improve educational productivity by enhancing teaching learning opportunities through involving students in active learning and explaining the concepts in effective & creative way.

Keywords: *Digitalization; Digital teaching- learning; Digital transformation; Digital technology; Pedagogical model.*

1.0 Introduction

Digitalization refers to convert data, information into digital way. Now a day's digital technology creates influence on teaching learning methods of students & teachers. Various colleges and universities adopted advance digital teaching methods for students. It has both positive and negative impact on education system. Concepts of various theories are much more cleared through digitalization. Different types of digital apps, videoconferencing tools give the pathway towards the use of digital technology. With the help of digitalization, it would be possible to transform information, knowledge among students extensively. On other side, digital technology having negative effects on learning system. There will be lack of face-to-face interaction with students and teachers. Students should be self-motivated & proper time management skills. Pedagogical models are analytical models which derived from learning theory and allow the execution of particular learning strategies. Examples of pedagogical models contain problem-based learning, situational learning and analytical apprenticeship.

2.0 Rationale of Digitalization

Digitalization plays an important role in the field of education. Digital teaching-learning is more effective as compared to traditional teaching-learning methodologies. Digital technologies engage students to understand the complex concept with the help of examples. Digital technologies make students self-oriented.

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Students can select the topic as per their interest and make preparation with the help of advance digital tools. The benefit of digital transformation is that the development of individual student can be tracked which may not be possible in conventional way of teaching. In traditional teaching there is one communication channel in classroom. But in effective virtual classroom multiple channels such as messaging voice chat and video conferencing can be used. This normally allow student to communicate the manner in which they are most comfortable with.

3.0 Objectives of Digitalization

Followings are objectives of digitalization in teaching learning methodologies.

- Digital learning improves student's skills:

Digital tools encourage students to develop self-motivated learning skills. They can identify what they want to learn with the help of digital tools. This will improve the student's skills. Digital learning tools enhanced student's critical thinking skills which are the base of analytical reasoning.

- Digital learning improves self-motivation and accountability of students

Students using digital tools can become more engage in learning process and can improve their knowledge. They can active in digital learning with different methods such as team work, problem solving, concept map, gamification etc.so they even do not realize that they are engaged.

- Improve student's thinking toward technologies: students can improve knowledge and skills to face the challenging problems, grasping of broader concepts and develop new ideas and solutions.
- Sharing knowledge on big platform: with the help of digitalization teachers can share knowledge on big platforms.
- Clarity and understanding of topics: with the help of digitalization concepts can be understood very easily. The concepts can be well understood with different examples and situation with the help of digitalization.

4.0 Review of Literature

Kareena Kakkar (2011) analyzed the education system. It was found from the analysis that education system has become value based and continuously improved with digitalization. Shawn Michael (2010) observed that digitalization has changed forms of distance learning. The electronic tools are spreading and used rapidly in educational institutions. The use of digital tool has changed teacher's way of delivering information through lectures. Uygarer, R, Uzunboylu H. (2017) studied the impact of digital teaching for higher education and concluded that online platform of learning like you tube, zoom, Google meet, Microsoft teams, Go to Meeting etc. are much more effective as compare to traditional teaching in schools and colleges. R. Raja (2018) conducted research on importance of digital technology in education systems in schools in Chennai and concluded that the system equipped with ICT and other digital tools are useful to transform the knowledge which improves the process of teaching – learning. Korableva (2019) summarized on advantages of digital learning courses over traditional teaching methodology. The study was focused on latest online platforms to understand student's convenience to give best solution in terms of knowledge. Jon Altuna (2015) studied about use of various digital technologies in schools for understanding different learning concepts. He suggested much online software to understand the various concepts to students in better way and teachers must be trained well in both theoretically as well as technologically.

5.0 Methodology

5.1 Types of data

Primary data-To study the impact of digitalization on education system in perspective view of students and teachers, a well-prepared questionnaire was formulated for data gathering. The questionnaire was sent to respondents to acquire the opinion about the concerned information.

Secondary data - The secondary data was collected through academic journals, magazines and websites.

5.2 Research method

Method used for this research was quantitative.

5.3 Sample size

The sample size taken for this study was 100 to fulfill the aim of research study.

5.4 Statistical tool used

The data was investigated and hypothesis was tested using SPSS with statistical techniques such as Cronbach alpha and chi-square technique.

5.5 Hypothesis

H1: There is significant relationship between digitalization & student learning.

(a) Digital learning will enhance student performance.
(b) Digital learning will improve clarity and understanding of topics.
(c) Digital learning will help to engage students.
(d) Digital platform is good for sharing knowledge on large scale.

H2: There is significant relationship between digitalization & better way of teaching.

(a) Digital teaching will enhance student performance.
(b) Digital teaching will improve clarity and understanding of topics.
(c) Digital teaching will help to engage students.
(d) Digital platform is good for sharing knowledge on large scale.

6.0 Data Analysis

Reliability analysis (Cronbach analysis)

Value of Cronbach alpha	**Number of items**
0.927	**10**

Cronbach alpha having value 0.927 shows that survey is well constructed, reliable and relevant for research study. High Value of Cronbach alpha shows that there is an internal consistency between all factors of digitalization. Since value of Cronbach alpha is very high all factors were considered for further analysis.

6.1 Data analysis: (Student's perspective)

H1: There is relationship between digital mode of education & performance of students.

Do you like learning through digital mode of education? * Digital learning will enhance student performance. Crosstabulation

Count

		Digital learning will enhance student performance.			Total
		agree	disagree	neutral	
Do you like learning through digital mode of education?	agree	18	14	1	33
	disagree	0	11	0	11
	neutral	0	0	6	6
Total		18	25	7	50

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	54.225[a]	4	.000
Likelihood Ratio	46.140	4	.000
Linear-by-Linear Association	25.863	1	.000
N of Valid Cases	50		

From Chi-square analysis table, Pearson value of .000 indicates that null hypothesis was rejected. This means that there is statistical evidence that digital mode of education improves the performance of students.

H2: There is relationship between digital mode of education & understanding of topics.

Do you like learning through digital mode of education? * Digital learning will improve clarity and understanding of topics. Crosstabulation

Count

		Digital learning will improve clarity and understanding of topics.			Total
		agree	disagree	neutral	
Do you like learning through digital mode of education?	agree	33	0	0	33
	disagree	0	11	0	11
	neutral	0	0	6	6
Total		33	11	6	50

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	100.000[a]	4	.000
Likelihood Ratio	86.178	4	.000
Linear-by-Linear Association	49.000	1	.000
N of Valid Cases	50		

From Chi-square analysis table, Pearson value of .000 shows that null hypothesis was rejected. This means that there is evidence that digital mode of education brings clarity and understanding about topics.

H3: There is relationship between digital mode of education & engagement of students.

Do you like learning through digital mode of education? * Digital learning will help to engage students. Crosstabulation

Count

		Digital learning will help to engage students.			Total
		agree	disagree	neutral	
Do you like learning through digital mode of education?	agree	33	0	0	33
	disagree	0	11	0	11
	neutral	0	0	6	6
Total		33	11	6	50

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	100.000[a]	4	.000
Likelihood Ratio	86.178	4	.000
Linear-by-Linear Association	49.000	1	.000
N of Valid Cases	50		

From Chi-square analysis table, Pearson value of .000 indicates that null hypothesis was rejected. This means that digital mode of education helps to engage students.

H4: There is relationship between digital mode of education & and its relation to explore the knowledge on larger scale.

Do you like learning through digital mode of education? * Digital platform is good for sharing knowledge on large scale. Crosstabulation

Count

		Digital platform is good for sharing knowledge on large scale.			Total
		agree	disagree	neutral	
Do you like learning through digital mode of education?	agree	32	1	0	33
	disagree	0	11	0	11
	neutral	1	0	5	6
Total		33	12	5	50

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	84.894[a]	4	.000
Likelihood Ratio	70.332	4	.000
Linear-by-Linear Association	39.194	1	.000
N of Valid Cases	50		

From analysis of chi-square analysis, it was observed that Pearson chi square value obtained was .000 reveals that null hypothesis was rejected and alternative hypothesis was accepted. This means that digital modes of education have a significant effect to share the knowledge on larger scale.

6.2 Data analysis: (Teacher's perspective)

H1: There is relationship between digital mode of education & performance of students

Digital mode leads to effective way of teaching? * Digital teaching will enhance student performance. Crosstabulation

Count

		Digital teaching will enhance student performance.			Total
		agree	disagree	neutral	
Digital mode leads to effective way of teaching?	agree	19	15	1	35
	disagree	0	9	0	9
	neutral	0	0	6	6
Total		19	24	7	50

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	52.347[a]	4	.000
Likelihood Ratio	43.780	4	.000
Linear-by-Linear Association	25.450	1	.000
N of Valid Cases	50		

From Chi-square analysis table, Pearson value of .000 indicates that null hypothesis was rejected. This means that there is numerical evidence that digital mode of education improves overall performance of students.

H2: There is relationship between digital mode of education & understanding of topics.

Digital mode leads to effective way of teaching? * Digital teaching will improve clarity and understanding of topics. Crosstabulation

Count

		Digital teaching will improve clarity and understanding of topics.			Total
		agree	disagree	neutral	
Digital mode leads to effective way of teaching?	agree	33	2	0	35
	disagree	1	8	0	9
	neutral	0	0	6	6
Total		34	10	6	50

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	82.047[a]	4	.000
Likelihood Ratio	62.246	4	.000
Linear-by-Linear Association	43.164	1	.000
N of Valid Cases	50		

Pearson value of 0.000 shows that null hypothesis was rejected. This means that the digital mode of teaching gives the clarity and proper understanding about topics.

H3: There is relationship between digital mode of education & engagement of students

Digital mode leads to effective way of teaching? * Digital teaching will help to engage students. Crosstabulation

Count

		Digital teaching will help to engage students.			Total
		agree	disagree	neutral	
Digital mode leads to effective way of teaching?	agree	33	2	0	35
	disagree	0	9	0	9
	neutral	5	0	1	6
Total		38	11	1	50

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	46.184[a]	4	.000
Likelihood Ratio	41.253	4	.000
Linear-by-Linear Association	9.915	1	.002
N of Valid Cases	50		

From Chi-square analysis table, Pearson value of .000 indicates that null hypothesis was rejected. This means that digital mode of education helps to engage students.

H4: There is relationship between digital mode of education & and its relation to explore the knowledge on larger scale

Digital mode leads to effective way of teaching? * Digital platform is good for sharing knowledge on large scale. Crosstabulation

Count

		Digital platform is good for sharing knowledge on large scale.			Total
		agree	disagree	neutral	
Digital mode leads to effective way of teaching?	agree	30	3	2	35
	disagree	2	7	0	9
	neutral	1	0	5	6
Total		33	10	7	50

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	48.973[a]	4	.000
Likelihood Ratio	36.759	4	.000
Linear-by-Linear Association	21.909	1	.000
N of Valid Cases	50		

From analysis of chi-square analysis, it was observed that Pearson chi square value of .000 shows that null hypothesis was rejected and alternative hypothesis was accepted. This means that digital modes of education have a noteworthy effect to share the knowledge on larger scale.

7.0 Conclusion

From analysis it can be concluded that digitalization has significant impact on students learning & teachers teaching methodology with respect to conventional methods. There was positive relationship between digital mode of education and student’s performance, understanding of topics & engagement of students. From teacher’s perspective, it can be observed that teaching through digital technology improves clarity & understanding of topics and digital platform create large no of students gathered as per their convenience.

8.0 Recommendation

Digitalization can promote education system globally. Use of advance technology can enhance knowledge of students. Colleges & universities play vital role towards digitalization. Students should be encouraged to use digital tools for acquiring information about various concepts. Teachers should be advised to transform knowledge in effective & creative way by using different educational apps. Learning-teaching methodology can be updated frequently by students & teachers with new and advanced methods of digitalization. However, care should be taken to observe engagement of students as some students sometimes do nothing in online mode of education. Regular evaluation of each student should be done to observe the progress of each student in online mode of education.

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