Dr. VN Brims

Srujan

Vidya Prasarak Mandal's

Dr. V. N. Bedekar Institute of Management Studies, Thane

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The Editorial Board of Srujan assures all contributors of scientific conduct and protection of their intellectual capital against any abuse or misuse to advance the research interest of any other individual or group without the prior written consent of the author.

Aims and Scope

Srujan is an annual multidisciplinary management journal, published with an aim to provide a print and online platform for management researchers, students and academicians to publish their original works and refer for knowledge enrichment. It is the official journal of Dr. V. N. Bedekar Institute of Management Studies. "Srujan" means Creation. This journal was conceptualized to promote research and development in management education and become a medium through which innovative ideas evolve. These ideas can then catalyze the creation of a body of a multi-disciplinary and global management thought, which can be useful to industry, government, teaching fraternity and the student world.

Srujan has adopted a multi-disciplinary approach to highlight the developments, innovations and intellectual research works in the extensive field of traditional and modern management, business theory and business models, intellectual contributions in management excellence and social and economic practices that contribute to business and societal growth.

Srujan considers original research works, surveys, opinions, abstracts, case-studies and essays that deliberate on ideas, suggestions and works that have global, national, or regional perspective.

Substantial research content in the specific verticals include, but not limited to, domains of finance, marketing, operations management, information systems, human resource, organizational theory and behavior, design thinking, project management, quality management, sustainable business management etc. will be considered for publication.

The journal is always open to ideas and suggestions in terms of content and publication. The ultimate goal is to increase knowledge, experience and the outcome and thereby a strong emphasis is laid on the quality and authenticity of the content.

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SRUJAN

Editorial panel

From the Chief Editorial Desk...✍

We are pleased to present the seventh issue of Srujan - February, 2022 on the occasion of the annual conference of DR VN BRIMS on the theme "Management Education: Being relevant through Applying, Analysing, Evaluating, and Creating".

This issue of Srujan has thirteen research papers / articles. The papers are primarily on the theme of the annual conference and they explore the profile of management education from various angles including millennial generation perception regarding online-recruitment channels, digital education platforms and evolution of business education, business practices and behaviours from its simple beginnings to the complex levels, offering a perspective of knowledge creation production dissemination and feedback for further improvements.

Srujan also provides a platform for cases, articles on a wide variety of topics which includes, among other things, hybrid learning, chosen topics from multidisciplinary areas of Finance, Operations, Marketing and Human Resource Management.

Srujan also includes Fundamental and Technical analysis of stock markets and shares of select industries, brand perceptions, analysing the role of Hindi cinema in the disability movements in the county, online apparel purchase behaviour, efficiency and effectiveness formulae to choose the best mode for travel decisions.

This seventh issue of Srujan (2022) is therefore a culmination of research papers, cases and articles on the theme of the annual conference as well as different functional areas of management capturing the state-of-the-art in management.

We congratulate the editors Dr. Smita Jape, Dr. Pallavi Chandwaskar, Dr. Meenakshi Malhotra and all the members of the Advisory Committee of Srujan for their enthusiasm ,interest and unrelenting energy in facilitating the release of yet another issue of Srujan. BRIMS thank all the contributors from different walks of life who have sent their papers, articles. We are also thankful to advisory committee members for sharing their peer review suggestions.

We wish to thank Dr. Vijay V. Bedekar, Chairman, VPM (Thane) for his unstinted support and continuous encouragement in publication of Srujan over the last seven years.

We wish Srujan 2022 all the success and hope that the issues to follow will take Srujan to the next level of achievement motivation. Srujan should become a preferred Journal by scholars to send their well researched papers for publication .BRIMS would welcome the same.

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Dr. Guruprasad Murthy
Director General, DR.VN BRIMS

Dr. Nitin Joshi
Director, DR VN BRIMS

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Editorial...✍

"Management Education: Being Relevant through Applying, Analysing, Evaluating and Creating"

"Education is the most powerful weapon, which you can use to change the world."

- Nelson Mandela

Outlining the flaws in the current education system, Infosys co-founder NR Narayana Murthy said that due to the rote learning culture, nearly 80-85 percent youngsters are not suitably trained for any job.

The way business is passing through impetuous and unrelenting changes, the new business management, new normal norms are created every day, hence management education should follow the same. It's necessary that the business management program must emphasize on developing skills of students, the relevant content and pedagogy, models design to equip students with right knowledge and competencies making them capable to create business value. The national conference addresses the need of shift from contemporary to futuristic approach of management education, thereby helping the learners to shape their careers and to be relevant during their professional journey.

The 7th edition of DR VN BRIMS Srujan is a multi-disciplinary management journal with ISSN 2456-4079. It is compilation of research work, articles, cases and thoughts of various authors, research scholars, industries, business consultants, students and faculty members on the needs and requirements of Management Education for 21st Century.

Business environment is constantly changing with speed, technological disruptions, social expectations and internationalisation which demands productive and innovative talent. The journal emphasizes on important thought of management education that needs to be integrated with business needs. The key questions revolve around teaching pedagogy and learning outcomes. The important missing element in business management education is lack of skill development at the institute level. Few areas can be undertaken to streamline management education in India which include teacher development, designing relevant courses, student's active participation in learning and developing creative ideas and mentoring students to ignite their passion. It is important for students to show their keen interest in acquiring knowledge rather than mere paper qualification. They must understand that knowledge acquired will help them in creating a meaningful contribution to the world of work, society and family at large.

The management professionals need a combination of attitude and skills to grow as global leaders. All stakeholders including educational institutions, industry, faculty members and students must invest their efforts to enhance the momentum for management education where creativity and innovation would be the key leading drivers.

Based on the theme, the first paper of the journal by Prof. Shakti Awasthi, assessed that how the millennial generation perceives companies using different online-recruitment channels and offering distinct workplace communication. Her research shows that workplace communication was found to have a significant positive effect on the employer attractiveness, application intentions, and partly on the employer image. However, there was no difference in students' perception about the online-recruitment channel and, no significant interaction effect between recruitment advertisement website feature and content. Second paper titled "A study on Individual Investor's Perception towards Credit Rating Agencies, from the city of Nashik by Pooja Gholap and Dr. Sanjay Tupe tries to identify the perception of an investor towards the credit ratings given, their awareness about the ratings and the factors involved in taking investment decisions.

The next quantitative research study on Impact of banking non-performing assets on the earnings of shareholders is a case study of state bank of India is an effort to evaluate the quantum of impact of NPAs on the shareholder's earnings. To measure the quantitative impact, market price related profitability ratios, real NPAs and projected NPAs are used.

Kavita S Pandey, through her research paper, analyzed the role of Hindi cinema in the disability movements in the county. The study shows that Hindi cinema has transformed the portrayal of PwDs from sympathy to empathy, mercy to courage, trauma to triumph, and beggar to warrior.

Ashima Mahajan, Kritika Joshi, and Jashandeep Singh, through their case study on Amazon, portray the entire company's position to the readers. They have incorporated the company history and the current situation in valuation, SWOT analysis, and other essential details.

In the paper "A study of factors affecting selection of digital education platforms by students", author Gauri Kadam aim to explore the perception of higher education students in selecting digital education platforms and to recommend

marketing strategies for improving services of industry players which indicates that the flexibility of time and space for accessing the study materials and preloaded-content, audio-video modules of curriculum related topics for better understanding, assistance in query resolving and certification courses are the major factors in opting the digital platforms.

In the paper "Reinforcing the ecosystem of business education, need of era" the author Deepak Agnihotri tries to examine evolution of education, business practices and behaviours from its simple beginnings to the complex level, offering a perspective on concept of knowledge productivity.

The next paper "Analysis of brand perception of a real estate brand and efficacy of services among Bangalore residents" by Shivani Bose explores the relationship between brand perception and customer Satisfaction and to measure the brand perception of a real estate brand, its level of customer satisfaction, and brand perception based on its service offerings. This paper examines the role that brand perception plays in influencing the purchase decisions of property buyers in particular, factors influencing customers buying decisions in Bangalore.

Borole et al. through their research paper titled "Fundamental and Technical Analysis of automobile sector stocks Tata Motors Ltd. and Maruti Suzuki India Ltd." highlighted that Maruti Suzuki India Ltd. is a good stock for investment, and it will give you good returns in the coming future. However, investing in Tata Motors is currently not preferable, but this company is growing the market in EV verticals, so this stock can always be picked in the wish-list. The paper on "Performance of selected pharma stocks During covid-19 pandemic, analyses the impact caused to the Indian pharma sector during COVID-19 period by studying financial statements of these companies. This study also highlights on the performance of pharma stocks with respect to BSE Sensex during the COVID-19. The results indicate that the performance of BSE Sensex and stocks of pharma companies in FY 2020-21, initially declined but later on improved significantly and has posted high returns. The financial performance of selected pharma companies also recorded an overall positive growth.

Fundamental Analysis- A case of MGL studies the fundamental analysis of Mahanagar Gas Ltd. the distributor of Natural Gas in the Mumbai and Thane region supplying compressed natural gas to automobile (CNG) and piped Natural Gas (PNG) to home. The company maintained an equal balance of assets, liabilities and equity share capital and maintained a low level of debt and increased customer satisfaction. The balance sheet shows the assets and liabilities of the company, they are both equal the previous years and the current years. means that the company has a good value of assets and it can pay all the liabilities, the losses. The company profit and loss statement show decline in net profit due to covid pandemic and financial health is low. Keeping total expenditure low and increasing the total income of a company hence the overall performance of the company is positive.

Authors of the paper 'Analysing the online apparel purchase behaviour among youth customers' conducted study to understand the online apparel purchase behaviour among the young generation. For the research study, around 146 respondent were taken and then the data was analysed using PSPP, ANOVA and regression to find significant relationship between the dependent variable (Purchase Intention) and independent variable such as perceived ease of use, perceived usefulness, security/privacy, personalization and convenience.

Travel Decisions -A Caselet, tries to make students understand and think as a manager by profession and use his efficiency and effectiveness formula to choose the best mode of travel to Cuttack so to attend next day's 11am interview. This makes student learn how to make maximum utilisation of time within given constraints of time and resources.

The future of management education will be determined by its capacity to adapt to a changing economic environment through high quality research, an innovative teaching curriculum and deep engagement with businesses, other stakeholders to give more internships, live projects and making curriculum more application based. However, the demands of both employers and students are changing, requiring an increased emphasis on skills that build attributes such as collaboration, communication, leadership, problem-solving and critical thinking.

Wishing you all a happy reading !

Editorial Committee

| **Dr. Smita Jape** | **Dr. Pallavi Chandwaskar** | **Dr. Meenakshi Malhotra** |
| Associate Professor | Assistant Professor | Assistant Professor |

Content

Sustainability Oriented Predictionof Indian Oil and Gas Industry Using Machine Learning Approach

Vikrant Huddar

Research Scholar, University of Mumbai

Abstract : The collection and data processing in the oil and gas industry is fraught with difficulties. A sizable data bank is produced using a variety of methods and procedures. To increase the efficiency of the oil and gas sectors, a rigors technical examination of this database must be conducted. As AI gradually permeates many phases of the sector, including smart drill, intelligent development, smart pipelines, intelligence technology, and so on, it will likely become such a study area, and the application of AI in the oil and gas business is now growing quickly. This study discusses the early construction of a machine learning (ML) algorithm for production rate forecasting in the oil and gas industry that is straightforward and easy to use. The analysis is based on previous real-world data from equipment and process sensors installed on the chosen machinery. To train the model, the sensor readings data are gathered, remove noise, and then pre-processed and sequentially coded. Three potential algorithms—K-Nearest Neighbor, Linear Regression, and Multilayer Perceptron Model (MLP)—were used to test the learning skills of the ML model in terms of of recall, precision, f-score, and prediction accuracy.

Keywords : Oil and Gas industry, Machine Learning, Sustainability Prediction, and Production Rate Analysis

1. Introduction

Additional products, such as pharmaceuticals, detergents, fertilisers, insecticides, and polymers, also use oil and natural gas as a fuel source [1], [2], [3]. In order to boost effectiveness and expand on their current capabilities, fossil fuel businesses will be required to create new technologies and strengthen operations if the price of fossil fuels keeps rising. Nevertheless, due to water front arriving at shore, channelling, coning, or water breakout, the oil resources are now mature and generating greater water than oil [4], [5]. Due to this, it is not feasible to commercially produce petroleum from of the deposit. Additionally, no petroleum or natural gas company is at all interested in pretty expensive engineering or equipment since the price of oil has not yet stabilised. The simplest way to increase cumulative extraction utilising efficient and clever technologies is to use either inflow control devices (ICD) or inflow control valves (ICV), as well as downhole sensor systems [6], [7]. Fast decision-making while taking on-going difficulties is necessary for improved control in significant oilfields. The Intelligent Oilfield will do this by constructing a network-based information exchange system and a complete oilfield technological infrastructure in order to improve the production process [8], [9]. To assess the hydrocarbon potential, many forms of data are gathered in the oil and gas sectors from the surface and subsurface. The sensors are discovered to be the most important for gathering this data in a significant amount. These data must be plotted and examined using technical indicators and intervention. The result is predicted using methods of machine learning which also show relationships between both the input variables. The actual response of the system is not tampered with in machine learning [10]. The amount of data related to the oil and gas sectors is immense, and data correlation is a highly difficult procedure. The use of deep learning in the oil and gas industry enables the rapid and effective resolution of complicated issues. In particular,

case-based reasoning may be performed using machine learning techniques. This implies that huge datasets of documented issues can be swiftly sorted using the algorithms. The algorithms can then find examples that are comparable to those. The programme indicates how well the problem has previously been addressed after a comparable example, or instances, have been located. This may shorten the time it takes to solve an issue while saving money and increasing productivity.
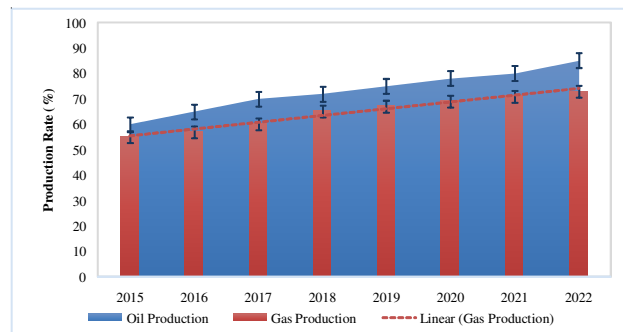
Fig.1. Production of Oil and Gas

1.1 Machine Learning Approach for Oil and Gas Industry

The oil and gas sector is being significantly impacted by machine learning (ML), which is also emerging as a core technologies for industry players. Here are several areas where it currently has an influence, some examples of ML applications, and predictions for the future. Three broad types may be found in ML in the oil and gas sector:

- Effective Knowledge harvesting from data. As was already noted, the oil and gas sector produces a tonne of data. However, storing such information in a diary or computer software is not very useful. This data may be analysed with the use of machine learning to provide the conclusions and choices that can influence the course of an organisation.

- Forecasting and planning using data analytics. The history of oil production from a particular well or a collection of seismic surveys conducted in a particular region are examples of historical data that oil and gas firms might utilise. Businesses may utilise such data to generate predictions with the aid of machine learning. For instance, a business may use machine learning to forecast how much oil will be produced in the future if it has data on how oil output from wells normally changes throughout the year. The oil firm may then utilise this information to design long-term strategies that will increase profitability.

- Using data to optimise productivity. It is crucial to extract fuels from the soil as effectively as possible when oil and gas businesses do so. Businesses may utilise machine learning to find the most effective production setups by using their data. This may include selecting the best location for drilling, choosing the best well spacing, or experimenting with various fracking methods.

- These three areas show how machine learning may use historical data to inform present-day choices and long-term planning for oil and gas organisations. This will become crucial as they struggle to adapt to new technology while also enhancing their productivity.

Machine learning's importance in the oil and gas industry

- Why Companies in the oil and gas industry can accurately forecast their revenues and losses by using AI and machine learning.

- This will make it possible to account for a variety of dynamic elements and optimise manufacturing costs.

- Financial reports and market demand data might be merged with the information obtained via data visualisation.

- As a result, businesses may plan their subsequent drilling operation.

- Companies will be able to change their business models by using AI and machine learning in the oil and gas industry.

- A "produce in context" paradigm will take the place of the conventional "produce at all costs" model.

- Beberness believes that this change will enable businesses to be more adaptable and able to manage with reduced oil prices.

- When used in this manner, machine learning as well as AI algorithms in oil and gas will aid corporations in navigating market ebbs like a consumer move towards electric cars.

Machine learning may be used in a number of ways to enhance the workflows in the oil and gas sector, including real-time drilling; reservoir engineering; natural gas production and procurement; downtime avoidance; well testing; geophysics analysis; and more.Many individuals are still unaware of the advantages of machine learning for workers. The aforementioned application areas include a broad variety of jobs for those working in the oil and gas sector. These workers can make better judgements, work more productively, and deliver higher-quality output with the aid of machine learning.

1.2 Research Challenges of ML in Oil and Gas Industry

Numerous sectors are already benefiting from machine learning. The change, however, won't come quickly. It is critical to be aware of the difficulties that may arise if machine learning is used in the oil and gas sector:

- A growing need for experts. The requirement for the oil and gas sector to employ data scientists able to draw information from industrial data is the first important barrier. Companies that already face a labour scarcity or those located in areas with a dearth of data scientists may find this challenging.

- Ability to process data. The vast volume of data that oil and gas businesses must manage on a daily basis is another difficulty. This implies that very powerful computers will be required to do the analysis in order to process everything in an acceptable length of time.

- Initial time commitment. Finally, it will take a lot of time and effort to train the machine learning algorithms to discover useful data patterns for oil and gas organisations. For oil and gas businesses, the benefits using precise models to make data-backed choices will outweigh the costs.

- The industry as a whole is still coming to the conclusion that machine learning methods can be effectively used for oil and gas enterprises. We will see an upsurge in ML use as more energy corporations look into its use cases. This is just one instance of how data science is altering how we do business, and it will undoubtedly transform how oil and gas businesses operate.

2. Related Work

The intelligent energy usage forecast technique, which can assess energy consumption trends and pinpoint energy-saving goals, has shown to be a successful strategy for energy efficiency in a variety of industrial fields. Additionally, management may plan out the energy use of power generation and shift power consumption to off-peak times thanks to forecast of energy consumption. With the unpredictable and unknown effects of different energy consumption patterns, it still poses a challenge to a certain

extent, and this phenomenon is growing more pronounced in the oil and gas industry. The forecasting of energy use in the oil and gas industry was the main topic of discussion by the authors in [11]. First, the training dataset was used to build four distinct forecasting models, including support vector machines, linear regression, extreme learning machines, and artificial neural networks, which were then tested on the test dataset. Second, the combinations of all four models were investigated with the RMSE value by averaging the outputs of the two models in order to improve the accuracy of energy consumption forecast. The results demonstrate that all four models can reasonably estimate energy usage, but the hybrid model (ANNs as well as extreme learning machine would demonstrate more precision. Additionally, the oil and gas industry's energy management system include a hybrid model to better control energy use in oil fields. The early development of a machine learning (ML) model for early fault prediction of a centrifugal pump in the oil and gas industry is shown in [12] by the authors. The data analysis is based on previous real-world data from equipment and process sensors installed on the chosen machinery. Denoised, pre-processed, and progressively coded sensor data, mostly from temperature, pressure, and vibration sensors, are used to train the model. Two alternative algorithms are proposed Support Vector Machine (SVM) and the Multilayer Perceptron (MLP)—are incorporated in the KNIME platform to verify the learning capabilities of the ML model. These algorithms enable effective identification and classification of probable flaws, resulting in high predictive performance. The preliminary work's findings do in fact demonstrate that the model enables us to accurately detect the trends of scheme deviations from the normal operation behavior and generate defect prediction alerts as a maintenance decision-support tool for operators, aiming to prevent potentially upcoming failures. One of the main factors contributing to the project's budget going over budget is a blocked pipe occurrence, which is a non-productive time (NPT) of drilling activities. This paper primarily focuses on different data-driven ML algorithms for the prediction of stalled pipe occurrences along with a thorough examination of various stuck pipe processes and main critical drilling, well fluid, and formation criteria to enhance the accuracy of prediction models. According to earlier studies, conventional approaches of processing quick, high-dimensional data to forecast stopped pipe occurrences were ineffective. However, new data-driven machine learning algorithms are able to handle such information and extract valuable patterns from it. Additionally, it has been shown that the parameters used for study affect how accurate the prediction models are. Therefore, certain important factors, such as formation type and geomechanically stress values, that were not taken into account by earlier researchers are fully examined in this work. These variables are crucial for preserving wellbore and may aid in the prediction of stopped pipes using ML approaches

[13]. This study provided a thorough analysis of the roles played by data sciences and machine learning (ML) in various petroleum engineering as well as earth sciences sections, with a focus on the recently emerging field of reservoir characterization. These segments included petroleum exploration, reservoir characterization, oil well drilling, manufacturing, and well stimulation. Additionally, the need for ML for improved prediction are highlighted along with the prospects of data science and machine learning in the sector of oil and gas. This research also offers a thorough evaluation of the various ML methods used in the oil and gas sector. We foresee a promising future in the creation of answers to the complicated situations in the oil and gas sector that were heretofore out of the reach of numerical solution or simulation analysis, thanks to the advent of super computers, cutting-edge Ml techniques, and comprehensive data generation from diverse industrial tools. Each feature in the logfiles as well as every connection to the target data may be included by ML technologies. Notwithstanding their shortcomings, they are not restricted by the specific data and/or power processing requirements of numeric simulators or the limiting assumptions of analytical solutions. This in-depth research may be used as the only reference for ML applications in the sector. According to the research, it was discovered that ML approaches have a lot of promise for tackling issues in practically all oil and gas industry sectors that include forecasting, classifying, and grouping. Machine learning as well as big data handling techniques are increasingly essential for a more efficient business as a result of the production of enormous amounts of data in routine oil and gas sector activities [14]. To forecast the future oil and gas output and create the best field development strategies, the majority of oil and gas production businesses employ reservoir modelling software. However, this procedure takes a long time and uses a lot of resources. Tens or hundreds of simulations, each requiring many days or hours to complete, are required for each reservoirs forecast experiment. In this study, we use deep learning and machine learning models to speed up the prediction of oil and gas output in an effort to address these problems. Saudi Aramco, the world's largest oil producer, donated the dataset. Our method lowered the time requirements to, in the worst scenario, a few minutes. Our research, which included eight separate ML and DL trials, outperformed the others with R2 values that are better than the existing approaches [15].

3. Proposed Work

3.1 System Model

The intended system model is thoroughly detailed in this section. We will provide a quick comprehensive description of each strategy as well as the formulae. We will also go over the data as well as the resources we utilized to create the ML model. The output and input parameters first were described.

Input Parameters : The following factors are changed in our research to compute the extra oil production

Table.1. Major Input Parameters for Oil and Gas Industry Production

Input Parameters	Footage Drilled
	GDP Growth Rate
	Annual Depletion
	Gas Prices
	Wells Drilled
	Number of Open Wells
	Open Injection Wells
	Newly Opened Production Wells
	Injection and Production Ratio
	Water Content
	Old Wells with Efficient Treatment
	Number of Open Wells
	Open Injection Wells
	Old Wells with Efficient Treatment
	Newly Opened Production Wells
Output Parameters	Production rate for oil and Gas

3.1 Data Collection

The 3-year collection of 15,000 samples of India's oil output statistics (Mumbai, Maharastra). Training 40%, Validation 20%, and Testing 20% make up the three groups that comprise the whole dataset collection.

Table 1. Dataset Description.

Column Name	Description
Contact	We have an oils, drainage, as well as gas interaction zone. The percentage in each column will indicate how far the well is in touch with each property.
Permeability average	This feature provides information about the average ability of the material underneath the well, such as rooks, to transport liquids in the three different directions of X, Y, and Z.
Volume	The volumes is a numerical representation of the amount of gas, water, and oil are present in the area surrounding the well.

Wellhead pressure	Over through the duration of the three-year simulation time, each of these attributes will have 35 values. Bottom-hole force and wellhead stress refer to the level in the well's top and bottom holes, respectively.
Ratio	We'll need proportions for gas and oil, gas and water, and gas and water and oil (GOR)
Production	For both the oil, groundwater, and gases in each well, there will be 35 columns. For a 3 simulation time, each row will reflect a value for the rate of production of oil, freshwater, and gas.
Well location	Every well will have an identification that indicates where it is on the X and Y axes. I and J are the respective column names for the X and Y axes.

3.2 Data Cleaning

Missing Data : Data preprocessing is a supervised machine learning algorithm used to turn the unprocessed data into a format that is both practical and effective. There may be a lot of useless information and gaps in the data. Data cleansing is done to accommodate this portion. It entails dealing with incorrect data, inconsistent data, etc. This problem occurs when there are gaps in the data. It may be dealt with in a number of ways.

Among them are : Disregard the itemsets: This strategy is only effective when the dataset at hand is large and a tuple has numerous incomplete data.There are numerous methods to complete this work, so fill in the missing data. You may opt to personally complete the missing values, use the characteristic mean, or use the value that is most likely.

Noisy Data : Content that is noisy has no significance and cannot be understood by computers. It may be produced as a result of poor data gathering, incorrect data input, etc.

Binning Method : To smooth data, this procedure applies to sorted data. The whole set of data is separated into equal-sized pieces before the work is finished using a variety of techniques. Each section is dealt with independently. To finish the operation, one may utilize boundary values or replace all the information in a segment with its mean.
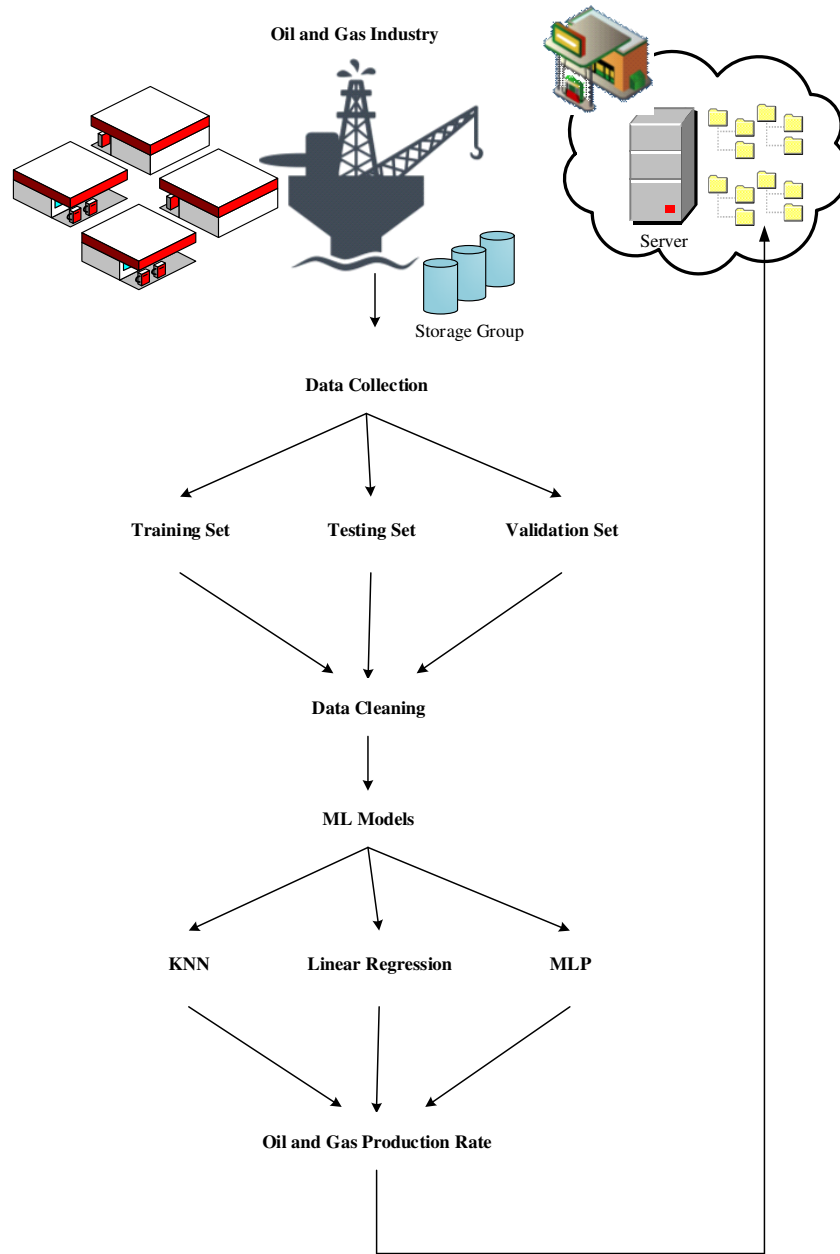
Fig.2. Proposed System Architecture

3.3.1 KNN

The k-nearest neighbours method, sometimes referred to as KNN or k-NN, is a supervised learning classification that employs proximity to produce classification or recommendations about the grouping of a single data point. Although it may be used to classification or regression issues, it is typically utilized as a classification method since it relies on the idea that comparable points can be discovered close to each other. A class label is chosen for classification issues based on a majority vote, meaning that the name that is most commonly expressed around a particular data point

is adopted. Despite the fact that this is officially "plurality voting," literature more often refers to "majority vote." Similar to classification problems, regression issues employ the notion, however in this instance, the average of the k closest neighbors is used to forecast a classification. Here, the primary difference is that classification is employed for discrete data whereas regression is utilized for continuous values. However, defining the distance is necessary before a categorization can be determined. The most popular method is Euclidean distance, which is only available for real-valued vectors. The straight line between the query

location and the other point being measured is calculated by employing the formula

$$D(X,Y) = \sqrt{\sum_{i=1}^{n}(Y_i - X_i)^2} \qquad (1)$$

3.3.2 Linear Regression

We utilize multiple linear regression (MLR) to discover associations between such a predictor variable and a large number of independent or predictive factors since we are aware that regression is a method for predicting the nature of the relationship between several variables. In MLR, the predictor variables may be predicted by a combination of factors. The connection between a large number of distinct factors and the outcome variable is thus examined using MLR. The correlation values at a certain independence sample values may be determined via MLR, and we can utilise this knowledge to determine the value of any predictor variables at any time. In the equation below, the generic for multiple regression is displayed.

$$Y = a + b1(x1) + b2(x2) + b3(x3) + ... + bn(xn) + \in \quad (2)$$

The outcome variable is Y, the independent variables are x1, x2, x3,..., xn, the regression coefficients are b1, b2,...,, bn, the constant is a, and the error is. In this equation, the individual contributions made by each predictor variables to the prediction of the predictor variables are represented by the linear regression. The linear regression represents the most precise prediction of the dependent variable given the independent variables (X) (Y). Since nature is seldom completely predictable, there is often a large variation of the observed points from around regression line. The phrase "residual value" describes how much a particular point deviates from of the linear regression. R square, also known as the coefficient of determination and equal to 1 minus the residue variance ratio, is used to assess the model's fit.

3.3.3 MLP

The classification approach for artificial neural systems (ANNs) known as the multilayer perceptron (MLP) has indeed been employed. Z-score normalisation has been performed before to the execution of the algorithm using a "Normalizer" node since MLP needs normalised data as an input. The test results have then been subjected to the same methodology. A potent type of linear predictive methods known as MLPs consists of layers upon layers of nodes linked to one another in a directed network. Input, hidden, and output layers are indeed the three distinct types of layers. Each node is a neurone (or processing element) with a nonlinear activation function with the exception of the input neurons. Equation may be used to determine the recognition techniques output B with data input Ai I = 1, 2,..., N).

$$Y = F(w^t A) \qquad (3)$$

$$= F\left(\sum_{i=1}^{n} w_i \times A_i + B\right) \qquad (4)$$

where Fis the activation function, N is the number of the neurons, ware the MLP model weights and b is the bias vector.The output of MLP is a number that falls between the values of 0 and 1, which may be interpreted as the likelihood of the target class being positive. The model's hyperparameters have been adjusted using a parameter optimisation loop to optimise accuracy and recall across class "1". By maximising the number of hidden layers and hidden neurones per layer of the MLP, the network selection was carried out. Three hidden layers, each made up of 10 neurones, are used in this study. Using the robust propagation approach, MLP was learned (RPROP). RPROP is an first-order neural network optimisation technique created to quickly and effectively train shallow MLP. Its lack of available hyperparameters, in contrast to other optimisation techniques, significantly lowers the amount of computer resources needed. The "RProp MLP" component has been used to carry out the method implementations.

4. Results & Discussion

4.1 Analysis of Performance

OBoth ML techniques and conventional assessment criteria are ineffective with this kind of data. In this respect, it is crucial to stress that, despite being the most commonly employed performance measure for classification techniques, overall accuracy is a worthless measure of model assessment for this sort of research. False positives (FP) and false negatives (FN) are consequences that were mistakenly categorised by the model, while true positives (TP) and true negatives (TN) are occurrences of the positive class and negative class, accordingly. The overall accuracy (OA) is defined by the Equation:

$$\text{Overall Accuracy} = \frac{(TP + TN)}{(TP + FP + TN + FN)} \qquad (5)$$

The model may attain almost 100% accuracy rate just by forecasting the class distribution since it mediates between both the two groups. The optimal technique to evaluate a model for highly imbalanced datasets is to utilize per-class evaluation measures like precision, recall, and F1 score (weighted average of precision and recall), which are represented as in the following formula:

$$\text{Precision} = \frac{TP}{TP + FP} \qquad (6)$$

$$\text{Recall} = \frac{TP}{(TP + FN)} \qquad (7)$$

$$\text{F1 score} = \frac{2 \cdot (\text{Precision} \cdot \text{Recall})}{\text{Precision} + \text{Recall}} \qquad (8)$$

Area Under the Curve (AUC), and Cohen's Kappa of the ROC (receiver operating characteristic) Curve have also been embraced as relevant metrics. Recall and accuracy over class "1" are the assessment measure selected to be maximised because the study's objective is to forecast whether machine would fail or not in the future.

(a)

(b)
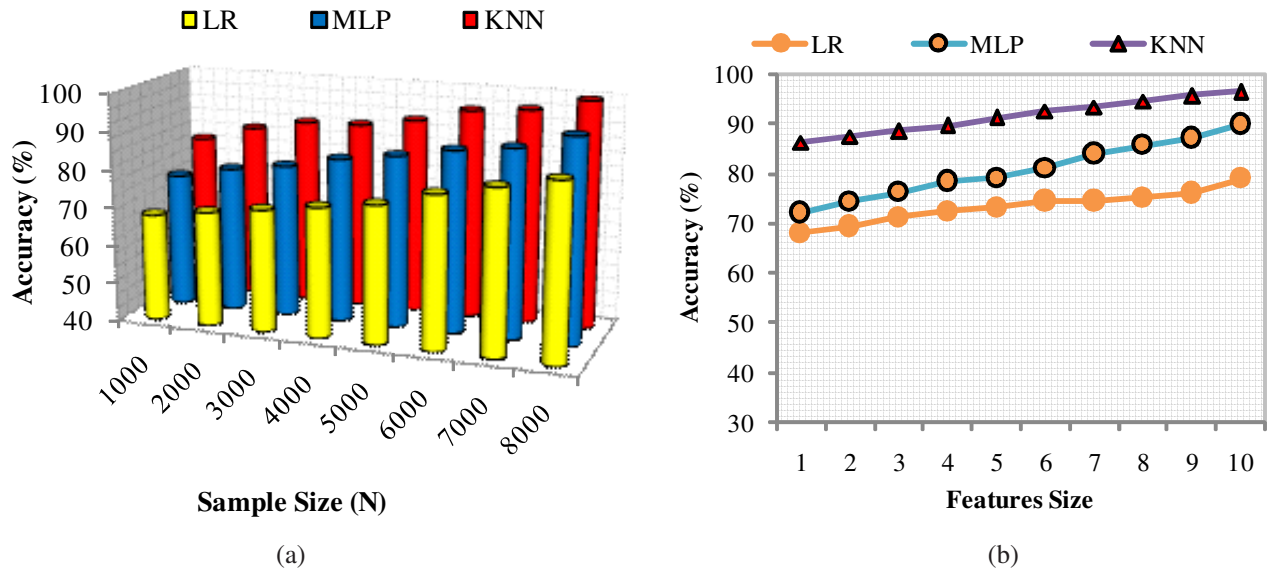
Fig.3. Comparison of Accuracy (a). Number of Samples, and (b). Feature Size

Sample Size (N)
(a)

(b)
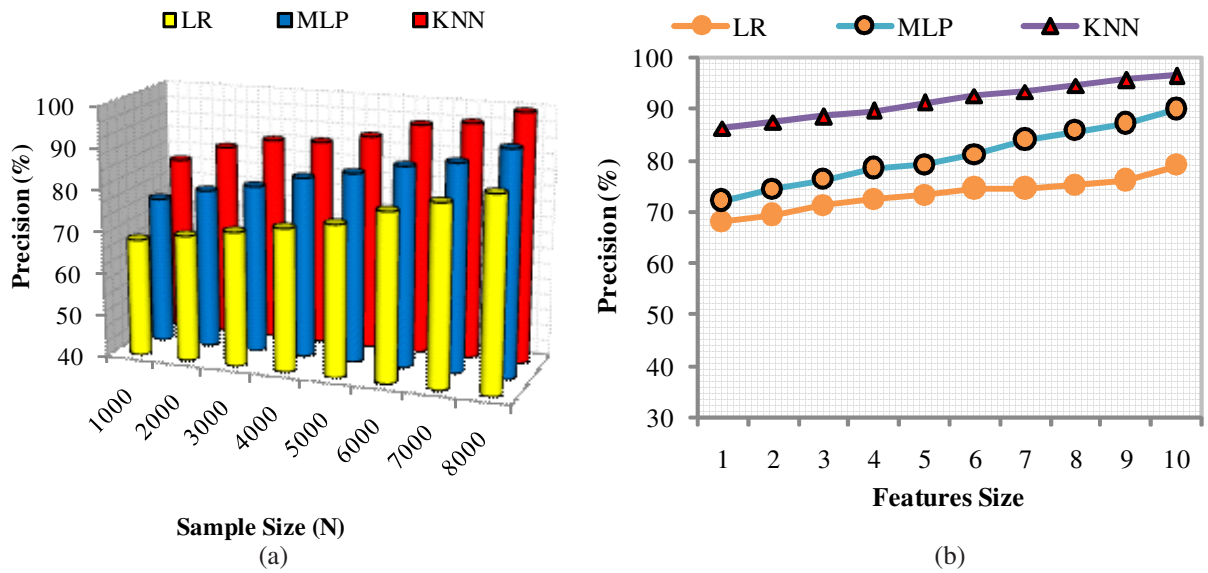
Fig.4.Comparison of Precision (a). Number of Samples, and (b). Feature Size
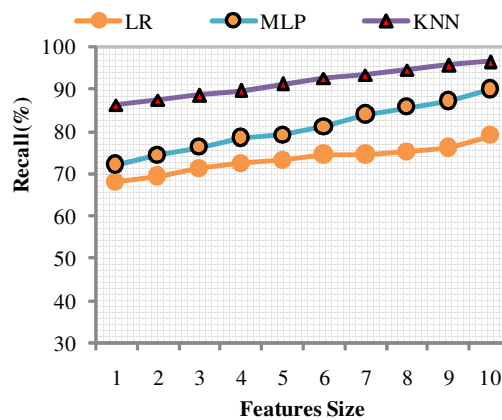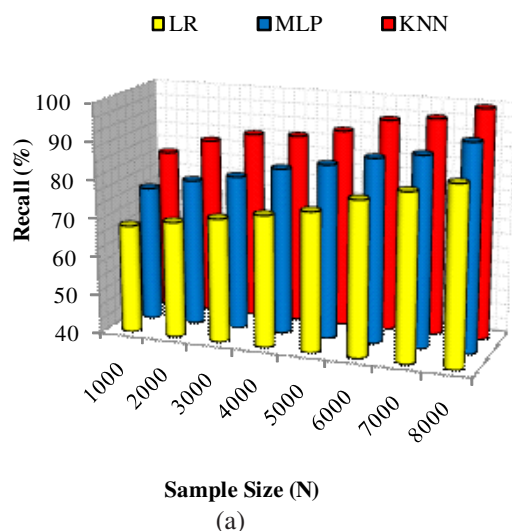
Fig.5. Comparison of Recall (a). Number of Samples, and (b). Feature Size
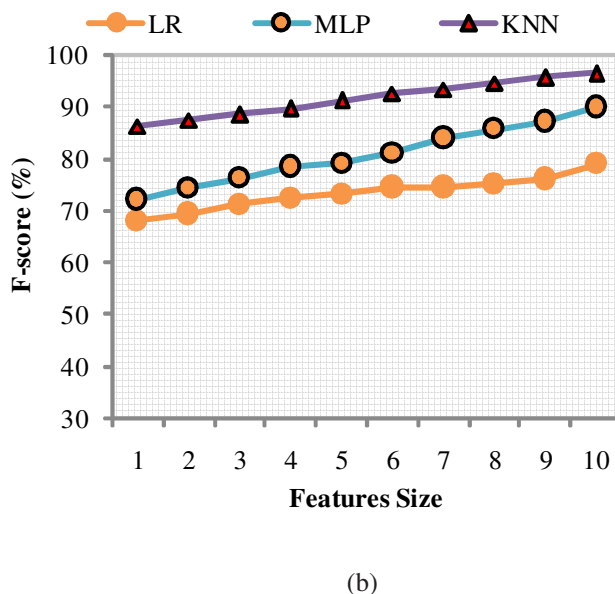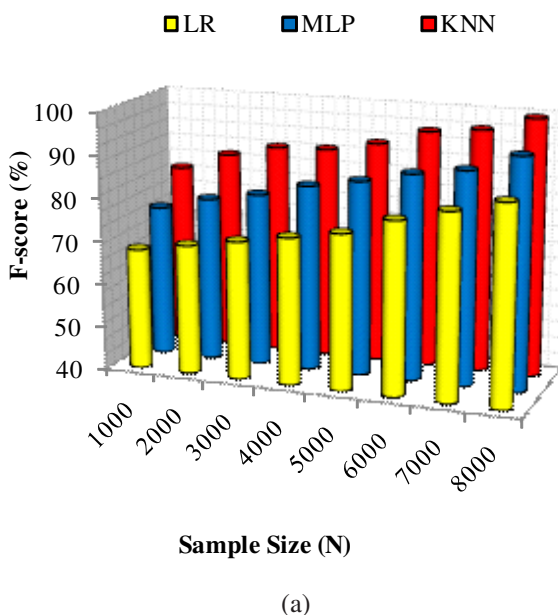
Fig.6. Comparison of F-score (a). Number of Samples, and (b). Feature Size

Fig 3, 4, 5, and 6 describes the performance of the proposed method as well as the existing methods in terms of accuracy, precision, recall, and f-score, respectively.

4.2 Use case

Drilling Automation:Many workers may be needed to complete the many, intricate activities involved in drilling. For the remainder of the operation to go well, each of these jobs must be completed safely, accurately, and often within a predetermined time limit. A useful feature is the ability to get real-time information outlining all the actions. This method of using machine learning in oil & gas production improves the safety and productivity of the sector. Currently, modern rigs come with a variety of sensors. These

are capable of measuring all pertinent variables related to vessel and drilling activities. The sensors may also keep an eye on the hole while it is being drilled. Engineers may do sophisticated interpretations of computer-based video data when deep learning and related techniques are used in oil and gas technologies. Since this can be completed swiftly and effectively, minimal time is lost.

5. Conclusion

With the help of ML and DL techniques, we tried to speed up the process of estimating oil and gas output in this study. Data was transformed using a number of transformation functions that were applied to the models. Companies are actively looking for new solutions to be more

efficient via the streamlining of production, lowering costs, and enhancing worker safety, among other things, as the oil and gas business is becoming more dynamic and uncertain. It is difficult to state that these are best performance we can get after playing the with dataset and looking at the outcomes for each strategy used. By experimenting with various approaches or a mix of methods, there is still a lot of space for development to get even better outcomes. Nonetheless, given the difficulty of the issue, the results we got are adequate.

Utilizing AI and ML-based solutions, which are rapidly developing and being embraced throughout the supply chain, is the way ahead. As more and more sectors learn about the advantages of these technological advances, there will be an increase in the number of Ai technologies created in the coming years.

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Neoliberal Decentralization : The Case of Solid Waste Management in Gujarat

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Abstract : The last decades have witnessed a consensus for decentralized local governance for improved service delivery and deepening democracy. The decentralization literature has been dominated by two major discourses- the neoliberal and the communitarian that greatly vary in their theoretical assumptions. The neo-liberal discourse based on theories of public choice and failure of the state, advocates for market transaction as the most efficient way of allocating resources, the communitarian discourse, on the other hand, places the importance of 'locals' as the focal point of development and governance. However, there is little evidence regarding the suitability of each type of decentralization depending upon the contextual fit with unclear details on the type of institutional arrangements that are required for each theory's direct applicability.

India is an excellent example that has witnessed the coexistence of both the discourses. While local governance through the Gandhian philosophy of village republics have been in the political discourse since independence, reforms initiated in 1991 under the 73rd and 74th Amendment Acts included a host of initiatives for marketization and democratization. While the acts provided a skeleton for uniformity much of the powers and responsibilities that were to be transferred were left to the respective state discretion leading to a wide variation in the powers and responsibilities transferred to the lower levels of government, with most states unwilling to share power.

This paper is attempt to engage with the literature on decentralization and its emergence in the India. Further, the institutional arrangements required under the conforming acts and its outcomes are analysed with specific focus on decentralized governance for solid waste management in the State of Gujarat. The paper argues that The 73rd and 74th CAA based on the neo-liberal discourse do not discuss the issues related to the citizenship rights of various communities, the power structures that hinder the associational capabilities of citizens, the divergence between and within cities due to political, economic and social inequalities. Without engaging in such a discourse, the claim about deepening democracy seems like a distant goal.

Keywords: Neoliberal Decentralization, Communitarian Decentralization, Discourse, Solid Waste Management, 74th CAA, Gujarat

1. Multi-valence of the term Decentralization

The most frequently used standard definition of decentralization comes from the UN (1962), where decentralization is defined as the "*transfer of authority on a geographical basis either through deconcentration of the administrative authority to field units of the same department or the level of government or political devolution of authority to local government units or other statutory bodies*" (Oyugi, 2000:3; Misra, 2009). Other common definitions of the term come from authors like Rondinelli where decentralization is defined as "*the transfer of planning, decision making, administrative authority and responsibility from central governments to filed units of the central governments, subordinate levels of government, semi-autonomous public authorities, non-governmental, voluntary and private organizations*" (Cheema and Rondinelli (1983:18); Rondinelli et. al, (1884:9)). Authors like Mawhood (1983) and Smith (1985) further define decentralization as "*an act that cedes power to actors and institutions within a political, administrative and territorial hierarchy.*"

Although being widely used, the above definitions make the concept of decentralization more ambiguous. First, the concepts of power, authority, responsibility have been used singularly, and not in conjunction with each other. These singularities may result in different connotations, for example, transfer of responsibility without authority and resources would result in partial changes and would not constitute a transfer of power thereby making decentralization ineffective (Balagoun, 2000: 153). Second, the transfer of power in the above definitions is too broad, including transfer to parastatals, NGOs, private agencies, etc. Most of such transfers do not change the distributive aspect associated with such transfers and merely alternate the legal structures within which such transfers are made to another centralized entity (Manor, 1999). Third, while the transfer of authority, responsibility or power to local government is included in the above definitions the focus has been instrumental, where local governments are seen as one of the many alternative implementation bodies of central government programs (Slater, 1989).

During the '80s and the '90s various terms have been used to denote different kinds of decentralization. Some of the terms include deconcentration, devolution, privatization and delegation, divestment (Cheema and Rondinelli (1983:18); Rondinelli et al., (1884:9); Cohen and Paterson 1999; Balogun 2000; World Bank 2003). Other categories include fiscal, administrative, democratic, spatial, political and market, top-down and bottom-up, principal-agent, and hybrid decentralization respectively (Rondinelli, 1990a; Manor 1999; World Bank 2003; Silverman 1992). Based on the above definitions of the terms that have been used to distinguish between various institutional reforms that

classify as decentralization, a framework can be immediately identified. Each definition specifies the type of power that is transferred the extent to which it is transferred and the entity to which it is transferred to (Misra, 2009).

The kind of power decentralized by the central government could be either or a combination of the executive, judiciary, and the legislature (Rondinelli et al., 1984; Savas 2000). The extent to which autonomy is granted is seen in the widely used terms to differentiate decentralization. For example, deconcentration refers to the internal shifting of the workload with only operational autonomy. Thus the type of organization involved where such powers would be transferred would typically be within the purview of the central government. The delegation, on the other hand, would entail a principal-agent relationship where indirect control is maintained through setting up of managerial duties and responsibilities with the transfer of responsibility. Thus the type of organization involved where such powers are transferred could include lower-tier structures within the central government or agents outside the central government structures such as private agencies, parastatals, membership organizations (Uphoff 1986; 1996). The extent of autonomy granted through devolution include a complete transfer of legislative, planning and policy-making powers with complete autonomy from the central government. The kinds of organization would include locally elected governments (Misra, 2009). Some authors also include privatization through delegation or divestment, liberalization, and deregulation as other kinds of decentralization. While there is a debate on the distribute effects of privatization that contest its categorization as a form of decentralization, liberalization, and deregulation has been added to the categorization since both include dispersal of centralized power and functions (Cohen and Peterson 1999).

Further, the terms fiscal, spatial, administrative, and political decentralization have often been used as different categories of decentralization without much engagement on the basis for such differentiation. Cohen and Peterson (2000) in their articulation of the various kinds of decentralization have specified a set of objectives. However, the objectives of a decentralized reform are often debatable and dependent on the discursive formations that give impetus to such reforms (Manor 1999: Kim 1992). Authors like Manor (1999) and Ribot (2002) approach decentralization from the perspective of political decentralization and democratization while authors like Littvack et al. (1998) and international agencies like the World Bank (2003) approach decentralization from resource mobilization and neoliberal concerns for service delivery. One important thing to note here is the strict categorization of these types, for all institutional reforms would have some degree of social, political, economic, spatial and administrative decentralization (Littvack et al., 1998). Thus all of the above

typologies denote different cross-cutting dimensions of a decentralization process rather than strict typologies (Oyugi, 2000).

2. The Neo-liberal and Communitarian Discourse

The decentralization literature has been dominated by two major discourses- the neoliberal and the communitarian. The neo-liberal discourse is based on theories of public choice and failure of the state and advocates for the market transaction as the most efficient way of allocating resources (Willamson, 1993; Kohl 2002; Mohan and Stokke, 2000). Decentralization of services to private enterprises or local government is effective since local governments can adjust the public service delivery based on the local preferences through the mechanism of exit and voice. Further, localization would reduce the transaction cost involved in the one size fit all strategy adopted by the central government (Tiebout 1956). Many authors also advocate for privatization of public services to be more efficient than municipal services since price captures consumer preferences in a more cost-effective manner than bureaucratic structures that encourage rent-seeking behaviour (Boyne 1998). These propositions are built on a set of assumptions that are often contested, for example, a rational and informed citizen who can make relocation choice at zero cost and only on the basis of service delivery, a market condition that favours competition and a uniform cost of production of service at different locations (Seabright, 1996; Oates 2006). One of the major criticism to such neoliberal theories is their silence on the distributive aspects of decentralization (Frung 1999).

The communitarian discourse, on the other hand, places the importance of 'locals' as the focal point of development and governance. However, the communitarian discourse is split into two strands advocated by academics and international donor agencies as one. Here the focus is on increased devolution of powers to the local governments, NGOs and CBOs (community based organization) private businesses and civil society for participative decision making (Manor 1999; Bardhan 1996, 2006; World Bank 1995). The narrative focusses on the transfer of powers functions and responsibilities to the local actors (Mohan and Stokke, 2000). The other strand of the communitarian discourse is the more radical approach where social movements challenge the existing power structures and reject both the state and the market narrative of development (Laclau and Mouffe 1985; Shiva 1989; Fung and Wright 2001). Criticism to the communitarian discourse point out to the contextual assumption that is implicit in the discourse. For citizens do not always have the associational autonomy to self-govern due to acute social, political inequalities (Heller 2001; Beteille 2002).

3. What does empirical evidence suggest?

Studies of reform experiences due to decentralization

offer a mixed picture with most studies reporting a positive gain in access in service coverage and efficiency but little effect on the quality of life and equity (Fiszbein, 1997;Robinson, 2003; Work, 2002). The main issue with equity challenges lies with the power differences in participative forums like citizen assemblies or user groups (Goldfrank, 2002;Mansuri and Rao 2004; Pozzoni and Kumar, 2005). In addition to the contextual problems a host of political economy factors such as resource sharing between the bureaucrats and the well off citizens, equal distribution of the cost of participation for varied communities (poor and rich), nexus between private agencies, bureaucrats and the executive are some other factors that hinder democratization (Sundar 2001). Democratic, decentralized reforms that had led to successful provisioning of services based on local priorities and especially for the marginalized have been tried in Kerala, India and Porto Allegre, Brazil. The reason for such successful outcomes have been tied to a strong center-state capacity, political commitment of municipalities, more resources and a history of strong social movement party (Heller; 2001; Johnson 2001).

4. Decentralization in India

India is an excellent example that has witnessed the coexistence of both the discourses. While local governance through the Gandhian philosophy of village republics have been in the political discourse since independence (Gupta 1996, Mathew 2000), reforms initiated in 1991 under the 73rd and 74th Amendment Acts included a host of initiatives for marketization and democratization. The devolved powers and responsibilities and resources to local governments mandated the formation of citizen assemblies at the municipal level and below (Mathew 2000; UNDP 2000). Under the revised neo-liberal discourse (strand one of communitarian), the municipal governments and the Panchayats were to devise their plans for economic growth and justice and implement schemes entrusted to them by the central government. Besides the Nagarpalika Act mandated the formation of a district planning committee (DPC) by consolidating the municipal and panchayat plans in the district (GoI, 1992). Through the process of liberalization, private firms entered the space that was dominated by the state in the area of sanitation, water supply, slum upgradation, power supply, etc (Sundar 2000; Sarin 1996).

While the acts provided a skeleton for uniformity much of the powers and responsibilities that were to be transferred were left to the respective state discretion specified through their conforming acts. This led to a wide variation in the formation of ward committees' powers and responsibilities under municipal corporations across states (De Wit, Nainan, and Palnitkar, 2008). Even though most states had panchayat elections by 1995, the functioning of the Panchayats differed little from the pre-existing situation (Bhide, 2017). The state governments had devolved restricted fiscal autonomy to the Panchayats and created many parallel bodies for development funding (Vyasulu, 2000). Surprisingly, the relatively progressive states in the constitution of Panchayati Raj Institutions (PRIs) (WB, Kerala, Karnataka) had centralized powers with regards to dismissal of sarpanchas and panchayats to making changes in the content of the seventh schedule (World Bank 200a:10).

Schedule 12 of the amendments outlined the responsibilities to be transferred to the state municipalities. Figure 1 and Figure 1shows the skeleton for self-governance specified by the 73rd and 74th Amendment Acts and the conformity acts passed by different state governments. There is a wide variation across the states regarding the powers to be devolved to the urban local bodies. For states like Maharashtra, Gujarat, Bihar, and Karnataka, additional responsibilities had been entrusted with no mention of how finances will be channelized to fulfill such responsibilities. Except for Bihar none of the states have included all the items listed under schedule 12 of the acts (Mohanty, 1995).

Due to the resistance from the state governments to devolve powers to the local bodies, the central government also bought in a range of sectoral functions viz., development of land, slum upgradation, water, etc. under the jurisdiction of parastatal organizations run by the member states. The parastatal organizations constituted ofbureaucrats and with very little political representation that further led to the fragmentation of local governance capacity and increased the vested interests of private elites (Bhide, 2017).Consequently, the state agencies became the main donors of capital investments in urban India, reducing the jurisdiction of local bodies to maintenance functions. The Bombay Municipal Corporation is an exception owing to its strong legal framework. However, its operation freedom has been curtailed intermittently due to restricted functional and fiscal autonomy.

5. Decentralization in Gujarat

5.1 The State Government of Gujarat's rules regarding the formation of Ward Committees and Area Sabhas

The State Government of Gujarat institutionalized the formation of ward committees in the year 2007. The rules were called "The Gujarat Municipal Corporation's Ward Committees Functions, Duties, Territorial Areas and Procedure for Transaction of Business Rules, 2007". Point 3 of the rules stipulates the functions and duties of the ward committees and reads "The role of the Ward Committee shall be advisory in nature" under the supervision of the Standing Committee and the Corporation. Thus the power of the ward committee is limited by the nature of roles it is supposed to perform. The major functions include

• To collect deficiencies related to essential services such as water, drainage, sanitation, disposal of solid waste,

road lighting, primary health services provided by the Municipal Corporation and assess the development of work to be undertaken in each ward and to recommend same to the standing committee through the municipal commissioner within the limits of the budget.

- To review complaints regarding services provided by the corporation and guide for its speedy disposal of complaints.

- To review the implementation of schemes in chawls and slums and increase their coverage.

- To review and implement programs for eradication of poverty, women and child development.

- To seek the cooperation of citizens and NGOs for solid waste segregation at source, collection, treatment, and disposal of garbage and ward wise citizen committees.

- To extend cooperation for the recovery of property and other taxes and create awareness among citizens towards their duties and responsibilities.

Given the above roles and responsibilities, it is obvious that it does not conform to the objectives' of the citizen participation law (GOI, 2006c). Democratic deepening is limited by the functions of the ward committees that are merely advisory. Moreover, the committee members comprise of elected councillors with fifty percent reservation of women and the ward officers. Therefore the rules are itself exclusionary and create closed spaces for participation. Further, there is no fiscal devolution to the ward committees, and hence they have no autonomy to sanction major developmental works.

The institutionalization of Area Sabhas came into effect in 2012. Similar to ward committees the functions, roles, and responsibilities of the area sabhas are advisory. The duties include:

- There shall be three area sabhas in each ward, and the chairman of the ward committee would be appointed as the chairperson of one area sabha, and the remaining councillors are to selected as the chairperson of the other two area sabhas.

- A minimum of nine and a maximum of twenty-one members.

- Members of the area sabhas shall be appointed by the municipal corporation including eminent citizens, retired government officials, ex-councillors, teachers, NGOs, and urban planners, architects, etc.

- Women, SC and ST population, would have representation according to GOI norms.

- The ward committees shall consult with the area sabhas for preparation of the annual budget.

- Ward officer would be the member secretary of the area sabha.

- The Ward committee have to call a meeting of one area sabha at least once a year.

The objective of CPL regarding the constitution of area sabhas was to institutionalize civic participation through the representation of all groups of a polling booth of 1500-4000 population. The constitution of three area sabhas per ward does not take into account the population of each ward that can vary significantly and do not adhere to the objectives of the CPL. The area sabhas have no fiscal autonomy for carrying out any developmental work, and the seriousness of the rules can be understood in the last bullet point that mandates "once in a year meeting of the ward committee with their respective area sabhas." However, it is interesting to note that the CPL of GoG closely resembles the objectives of the CPL of GOI in promoting corporate citizenship at the grassroots level. The power of the municipal corporation to appoint 'eminent' citizens and other groups legitimizes the access of middle class and business elites to these closed spaces of participation thereby increasing the possibility of political patronage.

5.2 Urban Governance in Ahmedabad

Established in 1950 under the Bombay Provincial Corporation Act of 1949, the Ahmedabad Municipal Corporation (AMC) is the Urban Local Body (UBL) responsible for the civic infrastructure and administration and governance of the city of Ahmedabad. The total area of the city is 464.16 sq. Km. The corporation has eight different departments viz., health, environmental services, revenue, road and transportation, town planning, urban poor and housing, support and other services. The governance of AMC is divided into six zones that are further subdivided into 48 wards. Each ward currently comprises of four councillors with fifty percent reservation for women. In total there are 192 councillors seats out of which 117 are in the reserved category and 75 seats in the general category (State Election Commission Gujrat, 2015). The councillors are elected through general elections held every five years and the corporation appoints the mayor from among the elected councillors. The mayor along with 192 councillors form the general board and heads the elected wing of AMC. Below the mayor and the general board is the standing committee comprising of members from both the elected and the executive wing, including the municipal commissioner. The standing committee consists of 12 elected councillors selected on a pro rata basis from the general board and is headed by a chairman who is chosen from 8 amongst them. The current standing committee has members only from the ruling party (see table IV).

Since the majority of seats are occupied by the ruling party in the general board, there is a bias in terms of a project

that gets sanctioned. As per the rules of the Bombay Provincial Municipal Corporation Act of 1949, "*one half of the member of the standing committee shall retire at every succeeding year*." Therefore any councillor who is not a member of the standing committee can be eligible for reappointment. Despite such provisions, the ruling party dominates as members of the standing committee, summarized in table IV. It seems clear that power and authority are skewed in such a scenario, leaving room for organized interests of both the elites and subalterns to engage informally with the state mediated by the elected councillors (Jeffrey, 2009).

6. Decentralization in Solid Waste Management in Gujarat

To understand the tensions that parallel structures have created in local governance let us take the example of SWM (solid waste management)in the state of Gujarat. Table I depicts the organization set up for the implementation of SWM services in the state. SWM is managed through multiple layers of jurisdiction; the responsibility for the overall enforcement of SWM rules in the state lies with the Principal Secretary, Urban Development and Urban Housing Department (UD&UHD). In line with the proposals of JnNNURM (see table II) the state government appointed the Gujarat Urban Development Authority (GUDA) as the nodal agency for the development of infrastructure and management of SWM. It is surprising that the municipal corporations have no autonomy regarding the framing of SWM policies and is guided by the GUDA directives which are at odds with the 74th CAA that sought to give autonomy to local governments. Further, although the UD&UHD is vested with the overall enforcement of SWM services in the state the compliance is monitored by State Principal Secretary for Forest and Environment and assisted by the Gujarat Pollution Control Board (GPCB).

Although the twelfth schedule of the Constitution envisaged that the ULBs (Urban Local Bodies- Nagarpalikas and Municipal Corporations), by law be endowed the power and functions to operate as local self-governing institutions (LSGIs) by the state governments, the multiple jurisdiction by GUDA and accountability by GPCB shows that the transfer is more notional than actual. The restricted autonomy is also reflected in the flow of funds for the creation of infrastructure, operations, and maintenance from the central government to the ULBs (see table III).

It was noticed that instead of releasing grants to the ULBs, GMFB (Gujarat Municipal Finance Board) had irregularly transferred the funds throughout 2012-2017 to a state-owned subsidiary Gujarat State Financial Services Limited (GSFC) and earned an interest of Rs. 301.57 crore (CAG, 2017). The investment of funds in GSFC was in complete violation of the Finance department that directed transfer of only surplus fund to the subsidiary. Due to such irregularities, the Nagar panchayats of Naidiad, Navsari and Dholkaand Patan had to had to divert Rs. 4.96 crore from other schemes (Sawarnim Jayanti Mukhya Mantri Shaheri Vikas Yojana) during June 2016 to pay wages and salary to staff including the safaikaramacharis, that adversely affected the management of SWM for such resource-starved ULBs.

The violations of GUDC was not only restricted to the diversion of funds, the nexus between the organization and NGOs (non-governmental organizations)for operations and maintenance of vermicompost plants in the urban areas are also visible in the way the contracts were awarded without following a formal tendering process between 2008-2012. The marketing cost to these NGOs was reimbursed from the O&M funds of the GUDC instead of the sale income received from the compost, as mentioned in the contract (CAG, 2013). This means that the actual MSW collected, processedand sold was not ascertained beforehand before making such payments or was wilfully ignored. Further, there were widespread irregularities in the construction of sanitary landfills in different NPs due to a faulty design prepared by consultants hired by the GUDC that led to an additional Rs. 9.52 crore expenditure towards procuring extra items for rectifying the design and consultancy charges. Consequently, such a centralized process delayed the hiring of a new consultant and compelled the NPs to resort to unscientific methods of disposal (CAG 2017).

From the organizational chart of management of SWM services in the state, it is quite confusing to ascertain how and in what ways is the GUDC accountable to or coordinates with the GPCB. This is especially true for nagarpalikas who are accountable to both GUDC for transfer of funds and GPCB for implementation of SWM services in the respective towns.

Subject to the Public Disclosure Law specified in the proposal of JnNURM for quarterly disclosure of performance of the ULBs and parastatals to all stakeholders,the UD&UHD department of Gujarat had issued a notification in 2007 informing the respective municipalities of the 'model municipality disclosure bill'(UD&UHD, 2007). However, the manner of disclosure had been kept at the discretion of each ULB, thereby reducing citizen's access to information regarding the plan and performance of different ULBs. Since there is no single uniform database to access such information, accountability is seriously compromised — none of the municipal corporations viz. Ahmedabad, Rajkot, Vadodara, and Surat have any quarterly updated records for plan and performance available for public scrutiny (Ahmedabad Municipal Corporation [AMC], n.d; Rajkot Municipal Corporation [RMC], n.d; Vadodara Municipal Corporation [VMC], n.d; Surat Municipal Corporation [SMC], n.d).

Even though the citizen participation law as prescribed by the JnNURM has been criticized for promoting corporate citizenship at the ground by allowing municipalities to

appoint two-third of the ward committee members (Coelho, Kamath and Vijaybaskar, 2013), the narrative is not uniform across cities in Gujarat. The GoG has kept the role of ward committees and area sabhas to be advisory in nature under the supervision of the standing committee and the corporation (GoG, 2007; GoG 2012), thus both the bodies have no fiscal autonomy to carry out any major development works except for the budget sanctioned to each councillor to the tune 25 crore each.

The assessment of decentralization in the Panchayati Raj Institutions under the 73rd CAA in Gujarat also portrays a grim picture of sanitation and SWM in the rural areas. The sanitation coverage was especially low in tribal areas under the Nirmal Bharat Abhiyan, even after eight years of implementation of the scheme the rural coverage remained as low as 46%. The TSC scheme provided NGOs/ SHGs with loans for setting up rural sanitary marts for production of the affordable toilet upto a maximum of 35 lakhs. This created a nexus between the DRDA (District Rural Development Authority) and the NGOs where advance amounts were paid to the many NGOs in different talukas without following any formal process of loan sanctioning (CAG, 2013).

Even though the TSC had allocated 10% of the project cost for SLWM (solid and liquid waste management) most of the GPs (gram panchayats) had not invested in the SLWM infrastructure in 2013. The reason though was at odds with the decentralization spirit as proposed by the 73rd amendment, most of the GPs were approved funds for SLWM only when they could achieve 100% sanitation coverage despite the availability of funds. Further, GPs in many talukas had to resort to providing low-quality makeshift material for toilet construction that did not last long (CAG, 2014). Thus the GPs had no fiscal autonomy to execute infrastructure development for SWM, second, the nexus between the DRDA and the NGOs further hindered the construction of toilets, third, the pressure for sanitation coverage resulted in a makeshift provision that incurred a financial loss for the state government.

The recent SBM (G) (Swachh Bharat Mission- Gramin) is also not without many flaws. The mission requires the GPs to come up with plans for sanitation at the local level. The OD(F) (open defecation- free) declaration adopts a bottom-up approach where once a GP declares it to be OD(F), it is validated by the district, block, and state respectively with multiple rounds of inspection. Since sanitation is a state subject, it is at the discretion of the state to decide the mechanism of verification and protocol (Kapur and Malhotra, 2019). The state discretion to declaring cities and villages OD(F) leaves room for the widespread disparity. For example, GoG had declared all the districts to be OD(F) by October 2017. However, audit report revealed that 29% of the rural households did not have any access to either public or individual household toilets until 2017 (CAG, 2018). The audit report further revealed discrepancy at the taluka level, for example at Kaprada taluka belonging to the district Valsad only 1.26 % of 17,646 toilets were newly constructed as per the SBM guidelines until March 2017, and none of the 120 test audited villages had any facility for segregation of waste or scientific disposal. There were only six villages with designated dumping sites and only one village with a wastewater treatment plant. The report thus highlights that solid waste management in many villages of Gujarat is inadequate.

From the above essay, it is clear that despite the 73rd and 74th CAA the powers and functions of the Panchayats and the ULBs haven't been demarcated from the state agencies. The lower levels of governments are both structurally and financially dependent on the state government and its parastatals for providing basic services to the urban and rural population. However, the fault is not in the design but the revised neoliberal discourse that informs such policymaking (Bhide, 2017; Misra 2009). The 73rd and 74th CAA and JnNURM based on such discourse do not discuss the issues related to the citizenship rights of various communities, the power structures that hinder the associational capabilities of citizens, the divergence between and within cities due to political, economic and social inequalities. Without engaging in such a discourse, the claim about deepening democracy seems like a distant goal.

Figure 1. Three Tier system of Local Governance

URBAN 74th CAA

District Planning Committee Municipal Corporation (District Level)

Municipality (s)   (Intermediate Level)

Nagar Panchayats (s)   (Village Level)

RURAL 73rd CAA

Zilla Parishad   (District Level)

Intermediate Panchayat (s)   (Intermediate Level)
(Block, Taluka or Mandal)

Gram Panchayat (s)   (Village Level)
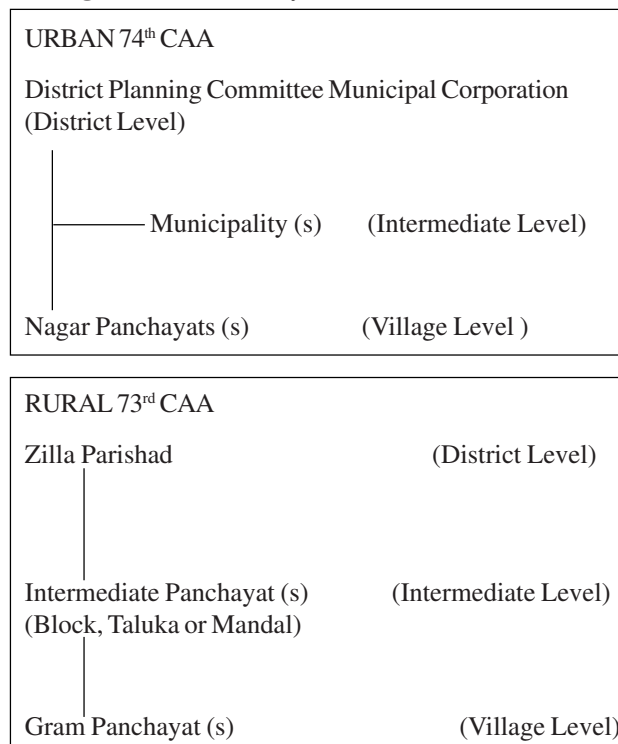
Source: Misra (2009).

Table I : Organizational Structure of SWM in the state of Gujarat
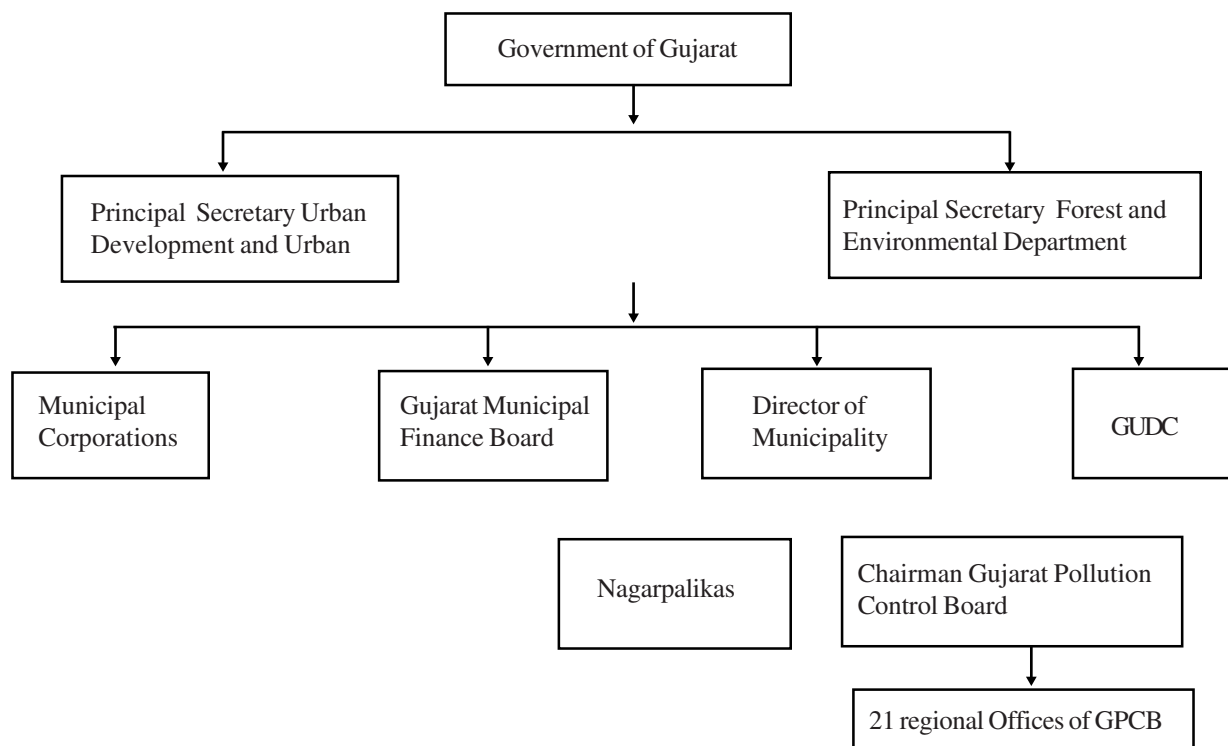
Table II : Flow of Funds in Urban Gujarat
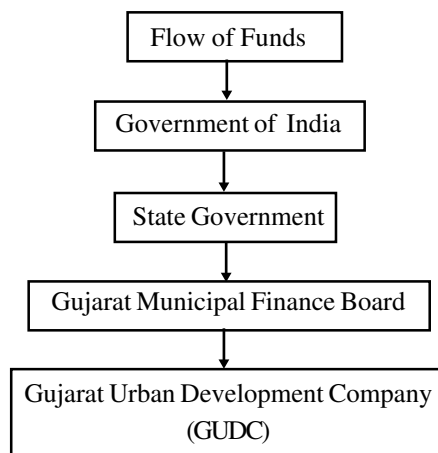
Table III : Proposals under JnNURM

Transfer of all 18 functions as prescribed under Schedule 12 of the 74th CAA with transfer of funds to realize the same
Property reforms, PPPs and user charges to increase efficiency and finances
Community Participation Law to deepen democracy at an electoral booth level
Disclosure of financial and performance data of all ULBs through the Public Disclosure Law
Statutory spending of 20% for the urban poor from the budget along with reservation of land for the poor.

Table IV : Members of Standing Committee

Ward Name	Name of the Councillor	Party Affiliation	Gender
Shahibaug	Praveenkumar Patel	BJP	Male
Thaltej	Bhavnaben Patel	BJP	Female
Naroda	Girishkumar Prajapati	BJP	Male
Isanpur	Gautambhai Patel	BJP	Male
Asarwa	Ishwarbhai Patni	BJP	Male
Nikol	GautambhaiKathirya	BJP	Male
Bhaipura Hatkesh	Gayaprasad Bhai Kanojiya	BJP	Male
Vejalpur	IIaben Patel	BJP	Female
Paldi	Sujoy Mehta	BJP	Male
Khokhra	Jayminben Dave	BJP	Female
Viratnagar	Chandrawati Chauhan	BJP	Female
Vatva	Pushpaben Mistry	BJP	Female

Source: Compiled and translated by author from Ahmedabad Municipal Corporation (AMC) website.

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Effectiveness of Television Advertising for FMCG Products with Reference to Rural Market

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Abstract : Advertising is an investment that requires a large sum of money in addition to a great deal of effort, creativity, and time. The stakes are quite high. If an advertising campaign fails to achieve the desired results, the errors become prohibitively expensive for both the advertiser and the advertising agency. Consequently, it makes sense for the advertiser to evaluate the effectiveness of advertising. The measurement of advertising effectiveness indicates the efficacy and success of a campaign. To measure the effectiveness of advertising, its effects should be isolated from those of other promotional and marketing activities.

The villagers in India have always been drawn to fast-moving consumer goods. The manufacturing companies are utilising this development as an opportunity to grow and diversify their businesses as urban demand for goods becomes saturated. To enter this sizable and expanding rural market, major FMCG companies, including multinational corporations, are developing their own strategies.

Keywords: Rural Market, Fast moving consumer goods

Introduction:

Consumer packaged goods (CPGs), also referred to as fast moving consumer goods (FMCGs), are goods with a high turnover rate and low price.Compared to other products, consumers tend to buy FMCGs with less consideration. While FMCG products generally sell in large quantities, despite the relatively small absolute profit they make, the overall profit on such products can be substantial. Examples of FMCGs typically include a wide range of frequently purchased consumer goods like glassware, bulbs, batteries, paper products, and plastic items in addition to other non-durables like detergents, soap, cosmetics, teeth cleaning products, and soap. Pharmaceuticals, consumer electronics, packaged food items, and drinks can also be considered FMCGs, though these items are frequently categorised separately.

With a total market size of more than US$ 13.1 billion, the Indian FMCG industry ranks fourth in terms of economic size. Its well-established distribution network, fierce competition between the organised and unorganised segments, and low operational costs give it a strong MNC presence. India has a competitive advantage due to the availability of essential raw materials, lower labour costs, and presence along the entire value chain. From US$ 11.6 billion in 2003 to US$ 33.4 billion in 2015, the FMCG market is anticipated to triple. Most product categories, including jams, toothpaste, skin care, and hair wash, have low penetration levels and low per capita consumption in India, indicating an untapped market. A growing middle class and rural population in India gives manufacturers of branded goods a chance to attract customers to their products. Additionally, 'upgrading' by consumers in the mature product categories is likely to contribute to growth. By 2010,

200 million people in India are anticipated to switch to processed and packaged foods, necessitating an investment in the food-processing sector of about US$28 billion (IBEF Report, 2006)

The following paragraphs discuss the various traits of the Indian FMCG industry, some of which are universal while others are specific to India:

High launch costs : A number of processes, including product development, market research, test marketing, promotion, and brand building, are involved in the launch process. A significant cash outlay in the form of launch costs is necessary; this amount can range from 50 to 100 percent of revenues.

Unorganized Markets : Due to the presence of factors like low entry barriers in terms of low brand awareness, low capital investments, and low fiscal incentives from the government, about 60% of the Indian FMCG sector is unorganised.

Distribution System : The FMCG industry in India distributes its goods to roughly ten lakh retail locations, necessitating a strong, effective logistics system and multi-tiered distribution system.

Consumption Capacity : The demand in rural areas is less stable than in urban areas, primarily as a result of the monsoon's unpredictable effects on rural income levels.In order to turn people who live below the poverty line into consumers, businesses that target rural markets must develop the ability to consume at the bottom of the pyramid.

Building a brand : Major Indian consumer goods companies have a solid presence on the Indian market thanks to their

powerful brands. Leading businesses invest a lot in R&D to keep and sharpen their competitive advantages.

Rise of Regional Brands : By pursuing geographically or need-based flanking strategies, regional brands are currently competing with well-known, established brands.While in need-based attacks they meet the market's unmet demand, challengers engage in geographical attacks to target markets not served by dominant brands (Dogra and Ghuman, 2008).

Literature Review

Easwaran (2006) examined how rural market demand increases rural incomes and lifestyles. The study found that city migration remains high despite this income increase. Non-farm incomes and the percentage of households dependent on them are also rising. Rural markets, which differ from urban markets, offer opportunities. To reduce migration to cities, increase rural consumption, and reduce urban infrastructure pressure, rural employment is essential for substantial growth.

Sehrawet and Kundu (2007) compared the buying behaviour of rural and urban consumers to determine if residential background affects buying decisions. 1090 Haryana residents from eight cities and 16 villages provided data. Rural and urban consumers differ greatly on packaging. Rural consumers thought better packaging meant better products. Rural consumers are less influenced by package ease of carriage, weight, simplicity, transparency, and consistency than urban consumers. Although labelling is consideredRural respondents were more eco-conscious and thought packaging was harmful. When rural customers switch from loose to packaged products, marketers and packaging manufacturers must understand their preferences and adapt their strategies. to be crucial to packaging, but rural respondents valued it less.

Raj and Selvaraj (2007) noted that the Fast Moving Consumer Goods (FMCG) sector underpins the Indian economy and affects every aspect of life. FMCG producers see rural market potential. Rural residents' rising incomes and lifestyles excite the sector. The FMCG sector sells to low- and middle-income consumers worldwide, including in India. Today, 70% of sales go to middle class households, and 50% of them live in rural India. A growing rural population with rising incomes and a willingness to spend on lifestyle goods excites the sector. FMCG producers are also forced to devise bold new strategies to target rural consumers due to urban India's near saturation and fierce competition. Rural penetration is low. Branded product makers who can persuade consumers to buy them have a huge opportunity. MNCs and regional players began marketing to the untapped market. The paper covers FMCG marketers' motivations to go rural, the challenges, the differences between rural and urban markets, and the best marketing strategy with examples of companies' rural

experiences. The authors concluded that FMCG companies must really penetrate rural markets to achieve double-digit growth targets in the future. The winner will have the time, money, and innovative ideas to tap rural markets.

Vaish (2006)said that India's rural markets have become a place that companies can no longer ignore. The product sold to people in rural areas may or may not be different, but how these products are sold should be different. Marketers are always looking for new ways to get their name out there. Due to differences between regions, it's important to have a different communication plan for each region. The author thinks that communication is effective when it leads to a purchase decision, the consumer remembering the brand, and the right associations with the brand. About 80% of how people in rural areas talk to each other is done face-to-face. The communication package should help spread a lot of "word of mouth" about the brand, so that it stays "at the top of people's minds." Marketers can use both common and unusual ways to get their message out. Communication should be done in a way that makes rural people feel like the product category is important to them.

Sakkithivel (2006)made an effort to design an appropriate promotion mechanism in an effort to entice consumers in rural areas and influence the purchasing decisions made by these consumers. He came to the conclusion that the strategies should be developed according to the factors that influence the behaviour of rural consumers. These factors include things like price, opinion leaders, easy finance schemes, benefits, and personal bonds. The rural market is characterised by a variety of different complexities, which has proven to be many experienced marketers' undoing in the past. The businesses have taken the first step toward reaching their "destination consumer in rural areas."

Research Methodology

A descriptive research design was used for this study. Primary data are the most important part of the study, but secondary data are also collected for a literature review and to build a strong theoretical framework. In order to successfully complete a factor analysis, the minimum size of the sample should be at least four or five times the number of variables being considered. In order to carry out the current study, a total 400 responses to the questionnaire were analysed. As a result, the present study satisfies the minimum requirements for the required sample size in order to conduct factor analysis.

Reliability Analysis

Factor analysis requires scale reliability testing. Cronbach's Alpha tests scale reliability. It is the average of all split-half coefficients from different scale item splits. From 0 to 1, this coefficient is satisfactory.Alpha should exceed

0.6. Results below 0.6 are usually unsatisfactory. We calculated Cronbach's Alpha to test scale reliability in this study. Its value of 0.797 confirms scale reliability. Factor Analysis requires checking data adequacy after scale reliability.

Kaiser- Meyer- Oklin (KMO) Measure of Sampling Adequacy & Bartlett's Test of Sphericity

It assesses factor analysis suitability. High values (0.5–1.0) indicate adequate data for Factor Analysis (Malhotra, 2007). KMO statistic is 0.800, indicating sufficient data for Factor Analysis.

It is used to test the hypothesis that the population correlation matrix is an identity matrix (Malhotra 2007). This test determines the correlation matrix's significance and the statistical probability that at least some variables are correlated (Hair, 2007). Bartlett's Test's Chi-square is 1.188E3 (approx), Df = 78, significant at 0.000. This significant value suggests correlation coefficient Matrix is not an identity matrix. This ensures Factor Analysis data quality.

Table No.1 Varimax Rotated Factor Loading Matrix

Variables	Components			Communality
	1	**2**	**3**	**Communality**
VAR00001	.480	.191	-.134	.285
VAR00002	.802	-.039	.068	.649
VAR00003	.532	-.008	.180	.315
VAR00004	.710	.110	.110	.528
VAR00005	.717	.138	.257	.599
VAR00006	.665	.299	.248	.593
VAR00007	.146	.624	.011	.411
VAR00008	-.003	.768	.023	.590
VAR00009	.169	.614	.187	.440
VAR00010	.078	.589	.255	.418
VAR00011	.085	.370	.683	.610
VAR00012	.148	.079	.784	.642
VAR00013	.175	.063	.721	.554
Eigen Values	3.838	1.618	1.180	6.636
Percent of Variation	29.520	12.444	9.079	—
Cumulative Variation	29.520	41.963	51.043	—

Table No.2 Interpretation of Factors

Factors	Loadings	Statements included in the Factor
Transformation Inconsumer Profile (F1) :	0.480	After seeing commercials on TV, we now want to try different things (X1)
	.0.802	After seeing TV ads, our buying habits have changed from planned purchases to purchases made on the spot (X2)
	0.532	The TV ads have made people aware of the product and given them confidence in it. This has made opinion leaders less important when it comes to buying toiletries (X3)
	0.710	Because of TV ads, the profile of consumers has changed and is catching up with those in cities (X4)
	0.717	TV ads have changed our idea of quality from products that are useful and don't cost much to maintain to products that are high tech (X5)
	0.665	TV ads have made young people aware of brands and trends (X6).)
Effect of TV Advertising on Economy (F2)	0.624	Many people spend more now because of TV ads (X7)
	0.768	TV ads have made people more interested in things, which has made corruption in the economy worse (X8)
	0.614	We have become more like the stereotypes shown in TV ads (X9)
	0.589	Advertisements that are close to religious feelings are more real and real (X10)

	0.683	TV ads use both sight and sound to get people to buy things (X11)
Impact of TV Ads on Lifestyles of Ruralmasses (F3)	0.784	Characters made for TV ads become as much a part of everyday life as other well-known fictional characters (X12)
	0.721	Most people want to change their lives because of TV ads (X13)

Conclusion

- Table No.1 shows that it explains 29.520 percent of variance. This factor has six variables. This factor changed rural buying behaviour. Variety-seeking rural consumers have switched to impulsive purchases from planned purchases. TV ads have rationalised consumers, reducing the influence of opinion leaders. Rural consumers now match urban ones**.**

- Table No. 1 shows how TV advertising affects the economy as a whole. TV ads have increased spending, stereotypes, and materialism, which has fueled corruption.

- Table No. 1 shows that television advertising is the third most important factor with 9.049 percent variance explained, affecting rural respondents' appearance and lifestyle. TV advertising has influenced rural consumers to imitate TV characters and improve their lifestyles.

- Factor analytic was used to determine how TV toiletry ads affect rural buying behaviour. Three factors accounted for 63.569 percent variance in factor analysis. "Role of TV advertisements" with Eigen value 6.757 accounts for 45.049 percent of rural consumer buying behaviour. "Outlook of rural consumer" and "Effect of Advertising on rural buying behaviour" are the next two most important factors. Television ads influence rural consumers' buying habits. They trust TV ads and buy better.

- Factor analysis proves TV ads change rural consumers' lifestyles. Three factors contributed 51.043 percent variance. "Transformation in consumer profile" with Eigen value 3.838 and 29.520 percent variance has had the greatest impact on rural consumer perception. "Effect of advertising on economy" and "Effect of advertising on lifestyles" are the next two most important factors. This shows that rural consumers want variety and buy impulsively.

- In an attempt to understand how television advertising affects rural consumers, respondents were found to buy toiletries after seeing their ads. After television advertising, rural consumers switched to another brand of Bathing soap, Washing soap, and Shampoo, but they stuck to their original brands of Talcum powder, Toothpaste, Cream, Blue, and Hair Oil. Television ads were the most popular source for consumers to choose a toiletry brand, while hoardings and friend recommendations were the least popular. Television was thought to inform rural consumers about toiletry ingredients and suitability. A factor analytic approach was used to determine how television ads affect rural buying behaviour. Television advertising, rural consumer outlook, and television effect were ranked by importance. To understand how television advertising affects rural consumers, factor analysis extracted three factors: consumer profile transformation, economy impact, and lifestyle impact.

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A Study of Effect of Goods Return Policies on Online Product Purchase

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Abstract : Traditional marketing methods are in danger now that more people are shopping online. Companies need to change how they do marketing so that they can use the internet. Buyers no longer need salespeople to find out about things because there is so much information online. Online shopping, which is a form of e-commerce, is liked by both customers and businesses because it is easy and covers a lot of ground. As the Internet became more popular, practitioners and academics became more interested in it. People put a lot of value on price, discounts, a wide range of products, and how easy it is to shop. Even shopping has become easier because of the internet. Shop online if you want to save time and money. Online shopping is easy because you can get free shipping, discounts, easy navigation, and customer reviews. For online transactions, how a person acts is very important. Shopping in a store, ordering from a catalogue or mail order, shopping while watching TV, or shopping online all have their own benefits that affect how customers choose their retail channel. Several online stores have lowered prices or made their products better because they know more and have lower operating costs. Online buyers who are smart and know how to use the internet do better.

Keywords : Online shopping, e-commerce, and knowing how to use the internet are some of the key terms.

Introduction

When it comes to business, the internet and the world wide web (www) have changed the way things have always been done. This threatens the traditional way of marketing. As more and more people shop online, it's important for businesses to change their marketing systems to work with new online marketing platforms. Buyers no longer need the help of a salesperson to learn about a product because there is so much information available online. Online shopping, which is a type of e-commerce, has become more popular with both customers and stores because it is more convenient and has a wider range of products. As online shopping has become more popular on the Internet, both practitioners and researchers have become more interested in it as a shopping tool. People put a lot of value on the price, discounts, product selection, and ease of shopping, in addition to the social and experiential aspects of shopping. Dennis, Harris, and Sandhu (2002) emphasised how important online businesses are by pointing out that they offer a wide range of products in different sizes and shapes, competitive prices, and ease of use. Alba et al. (1997) say that electronic shopping is a more modern way to buy things from home that offers more benefits than non-store and retail channels. People choose to shop online because they know they have more options than they did before and can get more information to help them decide what to buy.

The internet has made life easier in many ways, including making shopping easier. People who value their time and money more often choose to shop online. Online shopping is also convenient because of things like free shipping, discounts, easy navigation, and customer reviews, among other things. When it comes to making purchases online, it's the consumer's own traits that matter the most. Whether a person shops in a store, orders from a catalogue or mail order, watches TV, or shops online, each option has its own pros and cons that affect the consumer's decision. Because more and better access to information and low operational costs, many online stores have lowered their prices or improved the quality of their goods. Online shoppers who are more successful tend to have more education and know how to use the internet well.

Literature review

Customers may be unsure about their online purchases because they can't see or talk to anyone, there isn't enough staff, and other things. Customers should be careful when making online purchases because there is a good chance that the things they buy won't meet their needs. Because of this, companies are coming up with more and more complicated ways to return products (Yalabik, Petruzzi &Chhajed, 2005). The return policy is one of the most important parts of any store, whether it's online or in a physical location. Customers are attracted to simple return policies, which leads to more sales in the long run (Coolwijk, 2014). Griffis, Rao, Thomas, Goldsby, and Niranjan (2012) say that online stores don't compete with each other. Instead, they compete with physical stores that have more experience with returns. According to their research, a good returns policy is not only easy to use but also has effective gatekeeping that can tell the difference between real and fake returns.

In his study from 2004, Constantinides said that return policies are a psychological variable that play a key role in building trust with customers. It has been shown that clear return policies and compensation offered by online sellers in case a customer is unhappy make online portals seem more trustworthy. Since online customers can't look at or touch the product before buying it (Griffis et al., 2012), the

return policy acts as a guarantee and, to some extent, lowers the risk. Bonifield, Cole, and Schultz (2010) said that the return policy sends mixed signals because some online stores use it to show quality and others don't. Before making a purchase, people should find out how to return the products they are thinking about buying.

Jeng (2017) went on to say that e-retailers should have a flexible return policy because the products can't be checked out in person before they are sold. It was also stressed that the cost of sending products back to the online stores should be kept as low as possible. Products are returned for many reasons, like not meeting the customer's needs or the customer's needs changing (Yalabik, Petruzzi &Chhajed, 2005). Bonifield, Cole, and Schultz (2010) have said in their work on quality that e-tailers use return policies as a signal to set themselves apart from low-quality e-tailers. This is something that Bonifield, Cole, and Schultz (2010) have also said in their work on quality. E-tailers can stand out from other e-tailers on the market by using this type of signalling. A return policy that is easy or generous makes people more likely to return a product by giving them options like exchange, refund, or store credit and putting the fewest restrictions on how to return the product. Bower and Maxham III (2012) say that making it harder for people to get their money back is counterproductive and that it should be done to bring in money instead. Customers like it when it's easy to return things after they buy them. For example, they want to know how long they have to return something, if it's a questionable return, and if they get store credit or a refund if they return a sale item (Wood, 2001).

In their work from 1998, Davis, Hagerty, and Gerstner talked about this. When a customer tries a product for the first time and isn't sure about it, they can send it back. They said that the return policies of different sellers are different. Some have very strict rules about returns, while others are very flexible. When customers want to return items, a store will make it easy for them to do so if the items don't go bad quickly, the items can be sold together, and the returned item has a lot of value. The return policy can be handled better when there are different rules for each product. For example, a strict return policy can be better for products with a lot of moral hazard than a less strict policy for other products. The authors put their return policy into five categories: store exchange or cash refund, receipt required or not, original packaging/box required or not, no visible signs of use or wear required or not, and time limits given or not. Here's what happens: When good e-sellers make it harder to return consumable items (like food, flowers, and software) than non-consumable items, they are doing the same thing as the last one. Low-quality e-vendors, on the other hand, have more flexible return policies for consumable goods. This may be because their main goal is to get new customers instead of keeping the ones they already have (in economists language, it is called separating equilibrium).

So that online stores aren't hurt, there aren't many ways to return items that are used up. Wood (2001) thinks it's important to have strict rules about what can't be returned and how much shipping and handling costs are.

In 2005, Yalabik, Petruzzi, and Chhajed talked about three things that make people want to buy a product again. First, there is a policy about refunds that makes the customer feel safe when they buy the thing. The customer can return the item if he or she doesn't like it. When there is a refund policy, the product is less risky and more people want to buy it. The second thing that is talked about is the logistics process. Retailers need to make sure that their investments in marketing and logistics work together to improve the company's overall return system. If they don't, customers will spend more money than they planned to in the wrong places. The third and final part was the marketing initiative, which was about how to promote the product well and make people less afraid to buy it.

Heiman, McWilliams, and Zilberman (2001) came up with two ways to reduce risk: a money-back guarantee and a demonstration, which show how they can be used alone, together, or not at all. These two things are used by stores to make customers feel safer. Money-Back Guarantees (MBGs) help customers who don't know enough about a product, want to know what other people think, or buy something on the spot. These are usually offered by stores when the product is unlikely to be returned or when the cost of returning it is low. People might think it means the product is good, which would make them more likely to buy it. When it costs a lot to send something back, it's best to show people how it works. Make sure the customer knows as much as possible about the product before they buy it. It can also be used when a new product comes out or when a store or company doesn't have a good reputation in the market. MBGs and Demonstration can be used together to make a previous purchase less risky. Retailers sell more MBGs because manufacturers show off their products. On the other hand, the company has to help the stores. As a last step, they put return policy restrictions into groups based on how long it takes to return a product, how much it costs to send it back, and what kind of policy it has (refund, replacement, or exchange) (original packaging, etc.) Su (2009) said that the sellers decide on the product's price, quantity, and return policies. Customers can find out about the return policy after they've bought the product. In some cases, manufacturers can set up buy-back contracts where they buy the goods back at a lower price than what they would have paid for them when they were sold. The risk for the store is lessened by the buy-back contracts between retailers and manufacturers.

How to return a product is handled differently by retailers and manufacturers. People who write about consumer product returns call it that, and in their paper,

they talk about the effects and deadlines of them. The store wants to limit returns because it costs a lot to handle returned items and they don't have much value as used goods. Here's why. Often, companies have to pay a lot to get their products back. Then, to cut down on the number of returned goods, companies made their return policies stricter. For example, they cut the time it took to return goods and made it more expensive to return goods. According to the study, the return policy needs to be stricter, so they want to change it. Kim and Wansink's (2012) study on the relationship between return policies and how people act as customers is also very important. They say that strict return policies might have a better effect on how customers act after they buy something than less strict ones. Also, a limited return policy lets customers try out the product before sending it back. Retailers like it when customers don't send back things they don't need. But in reality, stores make it easy for customers to return items, which leads to a lot of returns that don't need to be made. Jeng (2017) thinks that smaller stores with less name recognition should have more flexible return policies based on the product. This means that a product that takes a lot of work needs a more flexible return policy than a product that doesn't take much work. Even if a well-known store has a good return policy, that might not make people want to shop there more. This is different from what Bonifield, Cole, and Schultz's (2010) study found, which said that e-tailers don't need to change all of their return policies, but they do need to change some of them, like not charging a fee and giving people less time to return things. In the past, people talked about different parts of the return policy, but they didn't always agree on what those parts were. Janakiraman, Syrdal, and Freling's (2016) new study was better than the previous one. Time leniency: Some of the types of leniency they look at are: 30–60 days, partial or full return policy, money leniency (partial or full return policy), effort leniency (forms or no forms required), scope leniency (what items can be returned), and exchange leniency (cash or credit).

Su (2009) looked into how customers feel about returning things and found that a high refund makes people more willing to pay, so sellers can charge more. In this study, returns were divided into two groups: partial returns and full returns. Full refunds don't help the supply chain, but partial refunds are best. People are more likely to use payment methods if they have product warranties and don't have to pay to get their money back (Li, Ward & Zhang, 2003). Su (2009) said that sellers should set a time limit for returns because some things aren't safe to keep for a long time. Coolwijk (2014) said in his report that customers think e-return policies don't affect their return behaviour because they will return the product when they need to, no matter what the return policies are for an online portal. They also get better at what they do by focusing on customers who buy things quickly but then regret them and send them back a lot.

Objective : The purpose of this study is to determine the effect of return policies on online product purchases.

Hypothesis :

H0: Goods return policies have no significant effect on online product purchases.

H1: Goods return policies have a substantial effect on online product purchases.

Research Methodology

A descriptive research design was used for this study. Primary data are the most important part of the study, but secondary data are also collected for a literature review and to build a strong theoretical framework. The most important information for this study, which had a sample size of 278 people, came from interviews. A statistical analysis was done on the data. SPSS software was used to test hypotheses.

Data Analysis

Table No.1 Descriptive Statistics

Descriptive Statistics			
	Mean	**Std Deviation**	**N**
Total goods return policy score	1.8892	.40907	278
Buyer prefer that online shopping portal which has a fair return policy	4.12	.758	278
Buyerexpect all products should qualify for the return.	3.81	.912	278
Buyer purchase only those products that have a return option	3.31	1.090	278
Buyer purchase online only if a return option is available on the product	3.90	.783	278
Buyerprefer that shopping portal where the return policy is clearly defined and expressed.	3.76	1.019	278

Buyer expect availibility of goods return policy for discounted as well as products on sale	3.59	1.060	278
Buyer prefer shopping from those portals which offer free return shipping on their products	3.79	.920	278
Buyer prefer a portal which provides at least a month to return a product	3.94	.942	278
Buyer prefer a portal which provides Longer return time	3.77	1.068	278
Buyer would shop from those portals which makes the return hassle free	3.62	1.077	278
Buyer prefer a portal which does not require retaining of original receipt for returning the products.	3.87	.896	278
Buyer prefer a portal which does not require retaining brand tags for returning the products.	3.57	1.055	278
Buyer prefer a portal which does not require retaining of product packaging for returning the products.	3.56	1.006	278
Buyer would prefer that return policy where no costs are involved in making a return of the purchased products	3.84	.769	278
Buyer prefer that portal which allows the return of products with visible signs of use	3.49	.964	278
Buyer prefer that portal where products can be returned without mentioning a reason.	3.45	1.230	278
Buyer expect a cash refund of the returned product	3.64	1.277	278

Hypothesis Testing

Table No. 2 Model Summary

Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	.795[a]	.633	.609	.25586

Table No. 3 Anova

ANOVA[a]						
Model		**Sum of Squares**	**Df**	**Mean Square**	**F**	**Sig.**
1	Regression	29.333	17	1.725	26.358	.000[b]
	Residual	17.020	260	.065		
	Total	46.353	277			

Table No. 4 Coefficients

Coefficients[a]		**Unstandardized Coefficients**		**Standardized Coefficients**	**T**	**Sig.**
Model		**B**	**Std. Error**	**Beta**		
1	(Constant)	.732	.413		1.771	.078
	Q.1 Buyer prefer that online shopping which has a fair return policy	.039	.036	.073	1.081	.281

Q.2 Buyerexpect all products should qualify for the return.	-.159	.070	-.354	-2.268	**.024**
Q. 3 Buyer purchase only those products that have a return option	064 .	.033	.172	1.940	.053
Q. 4 Buyer purchase online only if a return option is available on the product	-.121	.064	-.232	-1.885	.060
Q. 5 Buyer prefer that shopping portal where the return policy is clearly defined and expressed.	.191	.072	.476	2.644	**.009**
Q.6 Buyer expect availability of goods return policy for discounted as well as products on sale	.086	.043	.223	2.024	**.044**
Q. 7 Buyer prefer shopping from those portals which offer free return shipping on their products	-.058	.042	-.131	-1.395	.164
Q. 8 Buyer prefer a portal which provides at least a month to return a product	-.091	.049	-.209	-1.863	.064
Q. 9 Buyer prefer a portal which provides Longer return time	.066	.036	.171	1.849	.066
Q.10 Buyer would shop from those portals which makes the return hassle free	.048	.030	.128	1.604	.110
Q.11 Buyer prefer a portal which does not require retaining of original receipt for returning the products.	.105	.053	.231	1.970	.050
Q. 12 Buyer prefer a portal which does not require retaining brand tags for returning the product.	.099	.029	.255	3.379	**.001**
Q.13 Buyer prefer a portal which does not require retaining of product packaging for returning the products.	.016	.034	.038	.459	.646
Q.14 Buyer would prefer that return policy where no costs are involved in making a return of the purchased products	.006	.071	.011	.084	.933
Q. 15 Buyer prefer that portal which allows the return of products with visible signs of use	-.104	.083	-.245	-1.254	.211
Q.16 Buyer prefer that portal where products can be returned without mentioning a reason.	-.091	.077	-.274	-1.181	.239
Q.17 Buyer expect a cash refund of the returned product	.227	.068	.708	3.352	**.001**
a. Dependent Variable: Total3					

- Q. 2 Buyer expect all products should qualify for the return P- Value : **.024**

- Q.5 Buyer prefer that shopping portal where the return policy is clearly defined and expressed P-Value =**.009**

- Q. 6 Buyer expect availability of goods return policy for discounted as well as products on sale P- Value =**.044**

- Q.12 Buyerprefer a portal which does not require retaining brand tags for returning the products. P-Value= **.001**

- Q.17 Buyer expect a cash refund of the returned product P- Value = **001**

Since the P- Value of Q.2 , Q.5, Q.6, Q.12 and Q.17(Table No. 4Coefficient) is less than 0.05 hence it is significant and we reject null hypothesis and it can be concluded that goods return policy has significant impact online product buying.

Conclusion

1) R squared value for regression analysis is 0.633(Table No. 2 Model Summary) which depicts that model explains 63.3 % of the variance

2) Since the p value for Anova table(Table No.) is 0.000 which is less than 0.05 which signifies that regression model is significant

3) For the testing of hypothesis, Descriptive statistics for each item is calculated with their mean and standard deviation. For the hypothesis, there were 17 item related to dependent variables. Regression analysis with test with t values and p values was done. Test results shows that for Q.2, Q.5, Q.6, Q.12 and Q.17 (Table No. 4Coefficient) is less than 0.05 hence it is significant and we reject null hypothesis and it can be concluded that goods return policy has significant impact online product buying

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Evaluation of Consumer using the Technology Acceptance Model for Online Shopping in India

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Abstract : The main aim of this study is to understand the acceptance of online shopping among consumer. TAM model was used to conduct the study which helped in understanding the perception of Indian consumers in accepting online shopping. Descriptive research design is used. Primary data were collected through self-administered questionnaire and recorded. The analysis of the data was done using partial least square structural equation modeling (PLS-SEM). All the hypotheses of TAM were supported. The result of the study shows that consumers use online shopping app for general shopping and are very well comfortable with it.

Introduction

"Consumers no longer shop entirely online or offline; rather, they're taking a blended approach, using whatever channel best suits their needs"(AC Nielsen, 2015 April). The system of ordering from a neighbouring store to deliver goods home or physically going to a small crowded market to purchase is still into exsistance. But yet there are online websites where consumers place their order for things like books, clothes, utensils etc.

"Digital India is projected to be worth $1 Tn by 2024, fueling the next generation of economic growth via digital adoption; be it in the form of Industry 4.0, the maturation of the emerging start-up sector or early adoption of merging technologies like 5G, IoT, AI among others" (IAMAI, 2017). Mobile phones are now widely used for the purpose of shopping. "Emergence of newer forms of services and apps along with the availability and quality of mobile data service determine the usage of mobile internet" (IAMAI, 2017)."With the steady expansion in information transmission bandwidths and the rapid introduction of more sophisticated mobile applications, mobile device usability is now as important as mobile website usability"(Venkatesh Shankar & Sridhar Balasubramanian, 2009). India is soon to overtake the USA and become the world's second-largest market for smartphones exceeding 200 million smartphones users (eMarketer, 2016).

"E-Commerce is defined as the use of the internet to buy, sell or supports and services" (Gibbs and Dedrick, 2003). E-commerce ison the verge of expansion. India's e-commerce industry has reached around US$53 billion. "Generally speaking the trend of e-commerce has been increased rapidly in the recent years with the development of internet and due to the easy accessibility of internet usage" (Muhammad Umar Sultan and MD Nasir Uddin, 2011)."However, the online customer base has remained high in the major cities while the growth remains slow in the rural areas, the report mentioned" (Crisil, Shamshad Ali, February 20, 2018).

There is uniqueness found in the online business of Indian markets because of distinct consumer needs.Most of India's online business happens through the unorganized sector called as 'kiranas'. These stores know their customers and their needs personallyand stock only those products which has most demand by these cutomers. These customer's in turn buy their monthly goods from the kiranas because these kiranas are close to their houses, they provide credit facilities and also return or exchange the goods.

Review of Literature

"Online shopping is a form of e-commerce, which permits consumers to directly purchase goods or services from a seller by using the Internet" (Amit Kumar Singh &MalsawmiSailo, 2013). There are a lot of purchases that happens online. People on an average purchase 50% of their requirement online. Online purchase also provides an advantage by giving ample of variety also segregated into various sections which is easy to view and choose. "By shopping online customers are able to compare prices easily of many large retailers display internet link and will refer their customers to similar product" (T.Kavitha, 2017)."Using the internet to shop online has become a primary reason to use the internet, combined with searching forproducts and finding information about them" (Amit Kumar Singh &MalsawmiSailo, 2013). Consumers shop online due to easy access to internet.

Consumers on an average spend 4 hours on mobile internet. "With more and more consumers become increasingly familiar with the Internet and its benefit, online shopping is becoming popular and getting preference among a group of consumers seeking better value proposition regarding information, convenience, cost, choice" (Rahman et al., 2018). Mobile Internet Users as a percentage of the total population is 49% whereas total number of active mobile internet users is 3.722 billion.

"Mobile applications assist mobile users or consumers in all aspects of life, including: (1) searching for information;(2) video streaming; (3) gaming; (4) e-banking; (5) networking; and (6) online shopping" (Taylor and Levin,2014)."Mobile applications enable consumers to use their phones to search for and compare services or products through online functions, thus providing them with a considerable amount of assistance for making informed

choices when buying a product online" (Khald S. Alatawy, 2018). Consumers also have a lot of expectation from the mobile phones that they use or purchase and becomes a part of their daily use. Performance of mobile phones is this case plays an important role. "Performance expectancy in communication technology implies that users consider the mobile app to be beneficial because it enables them to accomplish their goal-oriented tasks" (Venkatesh et al.,2003)."In the context of mobile technology, it can be defined as the consumer's acceptance of their mobile devices as a method of shopping" (Khald S. Alatawy, 2018).

"Currently, smartphone connect more than 292 million people in India, making it the second largest smartphone market in the world" (IAMAI, 2016)."Online shopping using a smartphone is of considerable value to consumers, enabling e-shoppers to access a greater choice of services or products" (Khald S. Alatawy, 2018). Considering online shopping there is a concept of M- Shopping. In this the consumer orders online through internet or using the internet on mobile with the wide range of variety available and can also choose the product with low cost by comparing with multiple providers.With the increased internet penetration the growth of e- market in Indiais growing rapidly. With this

increase in pace it can be predicted that in the near future top online retailer will have its presence in the online market.

To understand the consumer acceptance of E-Shopping two theories are considered - theory of reasoned action(TRA) and technology acceptance model(TAM). "The TAM was designed on the basis of TRA"(Fishbein & Ajzen, 1975) "to predict the likelihood that a new technology will be adoptedwithin a group of individuals or organizations"(Davis, Bagozzi & Warshaw, 1989). The main reason of using TAM was to provide information on acceptance or rejection of a technology.

H. Eray Celik and Veysel Yilmaz (2011) "conducted a study on E-Shopping by using TAM model. Perceived trust, perceived enjoyment, perceived information quality, perceived system quality and perceived service quality were the factors used to produce an extended research model. This extended research model is tested against data obtained from 606 internet users in Turkey."Tero Pikkarainen, Kari Pikkarainen, Heikki Karjaluoto, Seppo Pahnila (2004) "explains that usefulness and information on online banking on the Web site were the main factors influencing onlinebanking acceptance."

The conceptual model is based on TAM as shown in Figure 1, and The constructs are explained in Table 1.
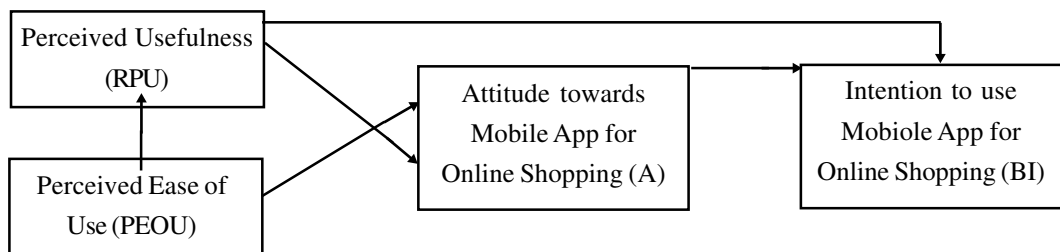
Figure 1. Framework of Technology Acceptance towards the Online Shopping Using Mobile Applications

Source: Adapted from the technology acceptance model (Davis, 1989)

Table I. Definition of Constructs

Constructs	Model	Definition in Context to Study	Refernce
Perceived usefulness (RPU)	TAM	The extent to which potential users expect that mobile app will benefit their online shopping.	Davis (1989)
Perceived ease of use (RPEOU)		The degree to which a consumer believes that using a mobile app would be free of effort.	
Behavioural intention (RBI)	TRA	How likely one is to buy goods using mobile application Ajzen (1975)	Fishbein and
Attitude (RA)		Feeling of an individual(positive or negative) about buying goods through mobile application	

Perceived Ease of Use and Perceived Usefulness

"The TAM suggest that perceived ease of use have strong linkage with perceived usefulness"(Davis et al., 1989; Venkatesh and Davis, 2000; Venkatesh and Morris, 2000). Thus, it is hypothesized that,

H_1: Perceived ease of use is directly proportional to perceived usefulness.

Perceived Ease of Use and Attitude

"Perceived ease of use has been found to effect attitude towards all technologies while previous research works have shown that impact of ease of use on attitude towards using technology depends on the specific technology or situation" (Davis, 1989; Wu & Wang, 2005). Thus, our second hypothesis is,

H_2: Perceived ease of use is directly proportional to attitude towards use of mobile phone foronline shopping.

Perceived Usefulness and Attitude

"It was found that perceived usefulness is related to attitude towards using internet onmobile"(Kim et al., 2007). Thus it is hypothesized that

H_3: Perceived usefulness is directly proportional to attitude for use of Mobile for online shopping.

Attitude and Behavioural Intention

Fong and Wong(2015) found attitude to be the most important factor in determining behaviour of consumer towards use of mobile apps. Thus, it is hypothesized that,

H_4: Attitude towards internet on mobile for online shopping is directly related to intention to use internet onmobile for online shopping.

Perceived Usefuleness and Intention to Use Mobile App for Online Shopping

Prior studies on consumer behaviour found that "a consumer's perceived ease of use and perceived usefulness of a system affect behaviour intention of the consumer towards the system" (Gao & Bai, 2014). Thus, it is hypothesized that,

H_5: Perceived Usefulness directly relates to Intention to use internet on mobile for online shopping.

Attitude Mediates the Relationship between Perceived Usefulness and Behavioural Intention

Kim (2012) theory explains that a relationship between belief and intention can be explained when it is mediated by attitude. Thus, it is hypothesized that,

H_6: Attitude mediates the relationship between Perceived Usefulness and Behavioural Intention.

Research Methodology
Sampling and Data Collection

Descriptive research design was used which used survey for data collection. Only those people were covered who are the users of smartphone and internet on mobile and are above 18 years of age assuming the fact that people above 18 years would deal with online shopping. To collect the data, self-administered questionnaire was distributed online using social networking websites. Respondents were fromfacebook pages, students, collegues and personal contacts. Link was emailed to them.This method is considered quite appropriate as it is fast and cheap method for data collection from infinite population(Malhotra, 2007). 400 email links were sent out of which 300 responses were received. Out of the rest 100 respondents few dint fill the survey, few were kept incomplete. Hence, the usable responces were 300. "The sample size was greater than 250, and therefore, missing values were treated using complete case deletion approach" (Hair, Black, Babin, Anderson & Tatham, 2013).

"The sample size that can be used for testing a model in PLS is obtained by either finding out the highest number of formative constructs or by identifying highest numbers of antecedents leading to that constructs"(Barclay, Higgins & Thompson, 1995). The one with greatest value is multiplied by 10 to calculate minimum sample size. There were no formative constructs in the model. The highest number of arrows directed towards behavioural intention is 2. Thus, minimum sample size necessary was 20. "Therefore, 300 responses are sufficient for analysing data in PLS"(Hair, Black, Babin, Anderson & Tatham, 2013)

Constructs	Notation	Items	Developer
Perceived Usefulness	RPU1	I believe that the use of a mobile device would make my online shopping process more effective	Frohlke and Pettersson (2015)
	RPU2	I believe that the use of a mobile device would make my online shopping process more convenient	
	RPU3	I think that I would save time by using a mobile device while shopping for groceries	
	RPU4	I believe that, in general, using a mobile device in my online shopping process would have been useful	

Perceived ease of use	RPEOU1	It is easy to purchase goods through mobile shopping	Frohlke and Pettersson (2015)
	RPEOU2	It is easy to learn how to purchase through mobile shopping	
	RPEOU3	It is easy to use mobile shopping	
	RPEOU4	I think it would be easy to use a mobile device in the online shopping process	
Attitutde towards mobile app	RA1	I believe it would be advantageous to use my mobile device in my online shopping process	Fishbein and Ajzen (1975)
	RA2	I think it would be a good idea to use a mobile device when shopping for groceries	
	RA3	I think it would be positive to be able to use my mobile device when shopping for groceries	
Intention to use mobile app	RBI1	I intend to keep using of mobile app for buying groceries in the future	Al-rahim & Othman (2013)
	RBI2	I intend to increase the use of my mobile app in the future	
	RBI3	I intend to recommend my friends to using of mobile app for online shopping in the future	

Table II. Constructs

Measurement Instruments

The questionnaire that was distributed among respondents had two parts. The first part consisted of personal questions, namely name, age, location, occupation, gender and marital status. It also consisted of questions on whether they use a smartphone, use internet on mobile use apps for shopping and apps for online shopping. Thesecond part consisted questions on standard scales to measure the constructs of the study(Table 2). The respondents had to mark their responses on five-point Likert scale ranging from strongly disagree(1) to Strongly agree(5)

Data Analysis

"The PLS_SEM was used for testing of hypothesis as it has few assumptions about data distribution"(Hair, Hult, Ringle & Sarstedt, 2013). "The PLS does not hold assumptions of normality for data as it uses the method of bootstrapping for estimating parameters"(Gefen, Rigdon & Straub, 2011). Normality was therefore not checked. The PLS is more advanced techniques as it means testing regression equation multiple times. "The PLS-SEM is considered to be a soft modelling approach as it has delivered good results with less assumptions" (Shukla & Sharma, 2018).

Results

Socio-demographic Characteristics

Table 3 describes the details of respondents demographic characteristics which include gender, age, location, marital status and occupation.

Variables	Category	Frequency	Percentage
Gender	Male	222	74
	Female	78	26
Age	18 - 29	150	50
	30 - 39	72	24
	40 - 49	78	26

Location	Maharashtra	99	33
	Delhi	35	12
	Kerala	45	15
	Uttar Pradesh	80	27
	Tripura	41	14
Marital Status	Married	189	63
	Unmarried	111	37
Occupation	Private Job	150	50
	Government Job	24	8
	Student	72	24
	Homemaker	54	18

Table III. Socio-demographic Characteristics

There are 74 percent male compared to 26 percent female. In the age variable the group between 18 – 29 years had maximum responses of 150 compared to the age group of 30 – 39 which had 72 respondents which is the least in distribution and the age group between 40 – 49 had 78 respondents. In terms of location, maximum responses were received from Maharashtra, which contributed 33 percent, followed by respondents from Utter Pradesh which is 27 percent. The response found were skewed as 63 percent of the responses were married. On the occupation side, the data received were diverse but salaried respondents were the maximum.

Model Assessment

TAM model is an existing model. Since it is an existing model PLS-SEM has been used for evaluation. "The SEM is consideredto be 'the dominant multivariate technique" (Hair, Black, Babin, Anderson & Tatham, 2013). The PLS-SEM model works in two steps. The first step checks the reliability and validity and the second step test the hypothesis.

PLS was used to prepare the diagram which was connected at par with the hypothesis. Initially PLZ algorithm was calculated. After checking the loadings, bootstrapping was done to test the sample is a representation of the population.

Measurement Model

Assessment of Measurement (Outer Model)

Cronbach's Alpha is used to measure the reliability of items as shown in Table 4.Since all the values of Cronbach's alpha are higher than 0.7 it is accepted. "Composite reliability is more suitable for PLS-SEM than Cronbach's Alpha" (Hair et al., 2013). The composite reliability mentioned in table 4 range from 0.849 to 0.932**.**" The valuesbetween 0.70 and 0.95 are considered satisfactory to good" (Hair et al., 2013)."To evaluate convergent validity, the average variance expected (AVE) of each variable is calculated"(Fornell and Larcker,1981). The AVE of items mentioned in table 4 have values higher than 0.5 hence they are convergent. The factor loadings were greater than 0.5 and, hence, found significant.

"Discriminant validity was used to assess if a construct is more stronglyrelated to its own measure than with any other constructs by examining the overlap in variance by comparing the AVE of each construct with the squared correlations among constructs" (Fornell & Larcker, 1981). The elements mentioned diagonally in Table 5 represent the AVE of constructs and elements apart from the diagonal represent the correlation among constructs. The square root of each AVE is higher than contructs correlation. Therefore, it can be concluded that the constructs share high variances among themselves as compared to other constructs. Hence it can be said that the constructs fit the model and reliability and validity is stable.

Table 4. Measurement Statistics of Constructs

Construct	Mean	SD	Indicator Loading	Composite Reliability	Cronbach's Alpha	Average Variance Expected (AVE)
Perceived Usefulness				**0.906**	**0.863**	**0.706**
RPU1	3.371	1.004	0.815			
RPU2	3.581	1.009	0.852			
RPU3	3.887	1.018	0.872			
RPU4	3.468	0.928	0.821			
Perceived ease of use				**0.849**	**0.768**	**0.584**
RPPEOU1	3.452	1.042	0.808			
RPEOU2	3.903	0.777	0.696			
RPEOU3	3.887	0.785	0.795			
RPEOU4	3.71	0.749	0.754			
Attitude				**0.932**	**0.89**	**0.819**
RA1	3.661	0.761	0.901			
RA2	3.548	0.855	0.931			
RA3	3.629	0.847	0.882			
Behavioural Intention				**0.932**	**0.891**	**0.821**
RBI1	3.548	1.011	0.936			
RBI2	3.71	0.974	0.861			
RBI3	3.5	0.98	0.919			

Table 5. Discriminant Validity of the Constructs: Correlations between Constructs
(Fornell-Larcker Criteria, 1981)

	Attitude	Behavioural Intention	Perceived Ease of Use	Perceived Usefulness
Attitude	0.905			
Behavioural Intention	0.829	0.906		
Perceived Ease of Use	0.585	0.587	0.764	
Perceived Usefulness	0.551	0.493	0.545	0.84

Assessment of Structure

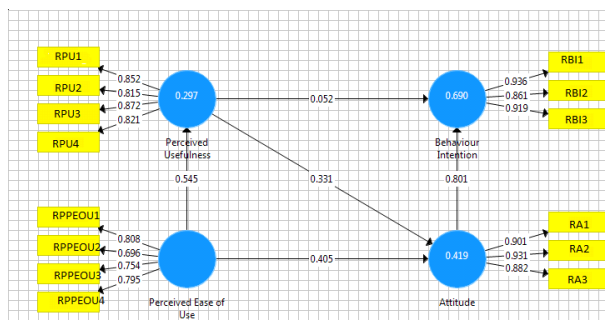Figure 2 represents the R-values and Table 6 analysis supports the 5 hypothesis.

Figure 2. Regression Values

The fourth hypothesis which studied the relationship between attitude and behavioural intention shows a strong relationship with β = 0.801. This shows that if the consumer develops a positive attitude for using the technology he may intend to use it in future.

Table 6. Result of PLS-SEM

Hypothesis	Beta	Result
H1	0.545	Supported
H2	0.405	Supported
H3	0.331	Supported
H4	0.801	Supported
H5	0.052	Supported
H6		Partial Mediation

The second strongest relationship is between perceived ease of use and perceived usefulness which is represented in the first hypothesis having β = 0.545. This shows that if the consumer finds mobile phones easy to purchase online then he will also find it useful too.

The third strongest relationship with β = 0.405 is of perceived ease of use and attitude. This shows that the consumer will develop a positive attitude towards technology if he finds it easy to use.

The fourth strongest relationship isfound between perceived usefulness andattitude with β = 0.331. It shows that if the consumer finds themobile technology to be useful for his online shopping,he can develop a favourable attitude towards it.

The last hypothesis between perceived usefulness and behavioural intention had β = 0.052. This shows that the consumer might develop a positive intention towards the purchase of goods using mobile if he thinks that the mobile app is useful.

Direct and Indirect Effects were measured and Mediating effects were analyzed as shown in Table 7. According to Hair, Ringle & Sarstedt (2013), "value adjustment factor (VAF) is measured by division of indirect effect by total effect. If VAF < 20 percent, no mediation, if VAF > 20 percent, but <80 percent, partial mediation and if VAF > 80 per cent, full mediation."

Theresults show that perceived usefulness completely mediates the relationship between perceived ease of use and behavioural intention, hence it proves the sixth hypothesis.

Table 7. Mediation Results

Hypothesis	Relationship	Direct Effect	Indirect Effect	Total Effect	VAF	Results
H6	RPPEOU – RPU - RBI	0.405	1.80395	2.20895	0.816655	

Model Prediction

The TAM model used in the present situation for adoption of mobile app in online shopping can be best anticipated by calculating variance (R^2) and adjusted (R^2) of the constructs. R^2 calculates the amount of variance in the construct in the model. As shown in Table 8, R^2 and adjusted R^2 values range from 0.285 to 0.69, which indicates that the model has high anticipated values and is capable of explaining the relation of the constructs.

Table 8. R-square Values

	R-Square	R-Square Adjusted
Attitude	0.419	0.400
Behaviour Intention	0.690	0.679
Perceived Usefulness	0.297	0.285

Conclusions and Implications

This paper uses TAM to check the acceptance of online shopping using mobile app in India. All the constructs in TAM and their relationships were found to be acceptable. "The Tam model was successful in explaining adoption of technology in the various fields, yet this model was not tested in the online sector"(Park, 2009). "It was found that tier II city consumers prefer to shop using the mobile app in comparison to the tier I consumers" (AC Nielsen Report July 2015).

The study shows that online shopping using mobile app is not very well developed and accepted by people. Even on the technology part user friendly technology specific to online shopping is still in the developing stage. E-retailers should analyze the reason behind the non acceptance of mobile app in online shopping. Even the time of delivery of the goods should be minimized so that morenumber of people adopt an online buying of goods. This will also benefit the E-retailers to increase their consumer base.

Limitations and Future Implications

The study conducted had some limitations. The sample selected could be increased so that more in-depth study and analysis could be performed. The study only considered Indian context, other countries can also be considered to understand the issues well. A study on actual behaviour can be tested.

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A study of impact of non-performing assets on profitability of Indian Public and Private Banksin India

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Abstract : Since the collapse of Lehman Brothers Holdings in year 2008 the profitability and ;performance of banking sector in terms of efficiency has been a critical issue.. However, the banking industry has been of interest for both academicians and different stakeholders since long. A comprehensive review of 116 research papers were studied and covered the critical study of efficiencies and performance of 130 Financial Institutions by Berger and Humphrey (1997) Due to competition, and especially after financial liberalization in India, banks become more attentive to issues related to efficient performance. Much of the banking efficiency literature focused only on profitability and cost efficiency evaluation, ignoring market efficiency (market value generating) in the banking industry (Luo, 2003), and the same applies in the Indian case as well.

The banking sector play a key role in financial performance and economic growth of the country and the banking sector in India faces many challenges and issues regarding the Non-performing assets. NPA are considered as big problem in the present days. The objective of the study is to find the non-performing assets of banking sector in India and the impact of non-performing assets on profitability of banks in India. The study also shows there is significant difference between Private Sector NPA & Public Sector NPA.

Keywords : *Non Performing Assets, Profitability, Public Sector Bank, Private Sector Bank*

Introduction

Non-performing Assets : A nonperforming asset (NPA) refers to a classification for loans or advances that are in default or in arrears. A loan is in arrears when principal or interest payments are late or missed. A loan is in default when the lender considers the loan agreement to be broken and the debtor is unable to meet his obligations.

Basically, the working cycle of a bank is that they receive deposits from customers and return them with interest and also give out loans out of those deposits on higher rate. So, when a customer becomes defaulter as to, he is unable to return the interest amount or principal that is called as Non-Performing assets of banks. As it's no longer going to generate income for bank as well it's a loss for them.

The NPA definition given by RBI "An asset, including a leased asset, becomes non-performing when it ceases to generate income for the bank. A non-performing asset (NPA) is a loan or an advance.

Categories of NPA

(i)   Sub-standard Asset:One of the subordinated assets is classified as a non-performing asset with a maturity of 2 years or less. Auxiliary assets as of March 31, 2001 are assets with a non-payment period of less than 18 months. In this case, the borrower V guarantor's net present value or the present market value of the value received is not sufficient to ensure full recovery from the bank. In short, assets are characterized by well-defined credit vulnerabilities that jeopardize debt repayment, and banks can incur a small loss if these deficiencies are not corrected

(ii)   Doubtful Asset: It is a questionable asset entry and remains the NPA for more than two years. If an asset remains NPA for more than 18 months as of March 31, 2001, the asset is classified as suspicious. Loans classified as Suspicious have all the weaknesses related to assets classified as substandard and the additional characteristics of these weaknesses that allow for a full recovery or liquidation depending on currently known and highly unquestioned facts, conditions and values

(iii) Loss Asset: Loss assets, i.e. assets for which a bank, internal auditor, external auditor or RBI has found a loss but the amount has not been fully liquidated. That is, such assets are considered to have a very low irrecoverable value and may have residual and recoverable values, but continuity as financial assets is not guaranteed.

Types of NPA:

Gross NPAs :

The total amount of bad assets is considered bad because the bank is preparing it, but it is an advance payment that is still in your passbook. Total non-performing assets is the sum of all credit assets classified as non-

performing assets based on the guidelines of the Central Bank of India as of the balance sheet date. The total amount of delinquent assets reflects the quality of bank loans. This includes all non-standard assets such as secondary assets, lost assets of suspicious assets. It can be calculated using the following formula.

Gross NPAs= Sub-standard Assets + Doubtful Assets + Loss Assets Gross.

Net NPAs

Net NPA is deducted from the sum of interest accrued, such as a portion of the amount maintained and received from the NPA temporary account. In other words, a net NPA is the type of NPA a bank does not include an NPA. Reserve fund. Internet NPA represents the actual load of the bank. In India, the loan collection and cancellation process takes a lot of time because banks' balance sheets contain a lot of bad assets. Therefore, it is very important for banks to regulate bad assets in accordance with the guidelines of the central bank. This is why there is such a huge difference between a growth NPA and an Internet NPA. It can be calculated in the following way

NPAs = Gross NPAs –Provision

Classification of Provisions for NPA

Standard Assets : 0.40% of the loan amount normally (some exceptions are there)

Sub-Standard Asset Secured : 15% on outstanding amount. Unsecured: 25% on outstanding amount. In some cases it is 20%

Doubtful Asset

Up to 1 year- Secured : 25% of the outstanding amount. Unsecured: 100% of the outstanding amount.

1 to 3 years- Secured : 40% of the outstanding amount. Unsecured: 100% of the outstanding amount.

More than 3 years- Secured : 100% of the outstanding amount. Unsecured: 100% of the outstanding amount.

Loss Asset 100% for the outstanding amount.

Objectives

Producing revenue is not the only goal of the banks, it is very important for banks to have good marketability, since good marketability maximizes the shareholders' wealth. The earnings per share (EPS), market value, and stock price of bank firms commonly receive more attention of the investors in the stock market. Seiford and Zhu (1999) originally proposed a two-stage production process and used the DEA approach to evaluate both profitability and marketability efficiency of top 55 US commercial banks ranked by Fortune magazine in 1996. The study found that large banks performed better in terms of profitability, and the smaller banks performed better in terms of marketability. The objective of this study is to find if NPA affects banks profitability.Study further explores on difference between public sector NPA & Private sector NPA.and tries to understand if there is relationship between NPA and Bank ratings.

Variables for the study

Profitability : An asset with no track record means an asset whose earnings have been interrupted. Therefore, more NPA It is to reduce the bank's income as well as being a major component of the bank's income. As a result, you endanger profitability and profitability of your assets. Bank growth constraints.

High Provisioning : A higher NPA than a bank According to the RBI's criteria, the "bad debt provisions" force a higher allowance. The allowance is done by realized profit, so the NPA blocks the bank's real profit this year. So NPA has a double effect. That is, the realization of interest income is not a separate allowance for NPA and profit.

Credit rating of the bank : The NPA functions as a tool to increase the value of a particular bank. Raising additional funds in the market is very difficult if the bank NPA level is high. It will give people a bad impression of the bank.

For sustainable economic growth : NPA in the country's banking sector needs to be controlled and minimized for sustainable economic growth. High NPA leads to economic inflation. NPA also reduces productive investment opportunities, destroys directed efforts.

Literature Review

Mishra & Pawaskar (2017) studied with the aim of understanding underperforming assets and their impact on the banking sector as they affect bank profitability and are believed to improve bank profitability and efficiency.In 2017 Chakraborty (2017) studied the effects of NPA on bank profitability Indian banks with enormous amounts of bad loans are in pathetic health and found a sharp jump in their gross NPAs.Naveenan (2019) study sought to understand the effectiveness of existing measures in managing existing NPAs and the effectiveness of measures to control the incidence of new NPAs and found that various measures will help to prevent or reduce the occurrence of new non-performing assets, thereby improving the reputation of the bank and achieving the goal of a sound financial system.Swamy (2012) explored the impact of macroeconomics and endogenous factors on banks' non-performing assets. The reason for this work is to identify and understand the determinants of non-performing assets, and find that private banks and foreign banks have an advantage in better credit management efficiency because it includes NPA , Indicating that bank privatization can better

manage the risk of default. Mukherjee (2003) Learn from international experience and study how to deal with NPA. And found that in the case of some specific banks, if necessary, after meeting all the prerequisites for AMC restructuring, a time-bound asset management company (AMC). Singh (2013) studied that in India, bad assets are one of the main concerns of banks. NPA is the best. An indicator of the health of the banking industry. NPA reflects the performance of the bank. .NPA is an important indicator of credit risk and has found that the banking sector in India is facing a serious crisis. NPA problem. The size of NPA is relatively high for public sector banks. Private sector bank. NPA is needed to improve the efficiency and profitability of banks. It is reduced and controlled.-Joseph (2014) studied that a healthy banking system is very It is essential for the economy to grow and sustain. Competitive environment. RBI and other regulatory bodies From the perspective of developing features, we have multiple policies. Of the banking sector. The best indicator of health The banking industry in a country is unprofitable. Asset (NPA). And found that the trends in NPA Factors contributing primarily to NPA in the banking industry Growing in the banking industry and also offers some Banks propose how NPAs can overcome this burden industry.

Pant (2017) Research shows that the Toxic Asset Crisis (NPA) of India's public sector banks is one of the biggest challenges facing the current government in 2017. NPA surges. Indian public sector banks have significant macroeconomic impacts and systemic risks in the financial system. And he found the crisis management framework developed by the following policy makers, focusing on the key challenges. Third, in light of these challenges, Indian public sector banks are making recommendations to resolve the NPA crisis. -Kiran & Jones (2016) studied that Bad assets are an important term for banking companies. default assets are bank performance. A bad asset is the amount the bank has not received in return for a loan. paid and found that the amount of bad assets affects not only the banking industry, but the entire financial system. There by the economy of the country.Das and Ghosh (2003) studied to execute public sector loans in India Banks on various indicators such as asset size, growth of credit, macroeconomic conditions, and indicators of operational efficiency. Sergio (1996) in an Italian bad debt investigation. The increased risk of loan assets is attributable to the bank's loan po. Licensing that will lead to a relatively non-selective and insufficient evaluation of sectoral outlooks.The previous study conducted by Thota Nagaraju (2014)

Showed different variables used for measuring performance of banking sector .

Authors	Samples	Input variables	Intermediate variables	Output variables
Seiford& Zhu (1999)	Top 55 US commercial banks	Assets, Employees, Stockholders' equity	Revenues, Profits	EPS, Market value, Total returns to investors
Luo (2003)	245 US large banks	Assets, Employees, Stockholders' equity	Revenues, Profits	EPS, Market value, Stock price
Ho and Zhu (2004)	41 Taiwan's commercial banks	Assets, Branch employees, Capital stock	Deposits, Sales	Net income, Interest income, Non-Interest income
Lo and Lu (2006)	14 Taiwan's FHCs	Assets, Employees, Stockholders' equity	Revenues, Profits	EPS, Market value, Stock price
Kao and Hwang (2008)	24 Taiwan's non-life insurance	Business and administrative expenses, Commissions and acquisition expenses	Direct premiums written, Reinsurance premiums received	Net underwriting income, investment income
Ho (2008)	69 US listed dot com firms	Assets, Employees, Operating expenses, Equity	Revenues, Profit margins, ROA, ROE loan, loss provision, Burden	EPS, Market value, P/E ratio, M/B ratio, Market capitalization
Tsolas (2011)	13 Athens Exchange listed commercial banks	Total interest expense, after		

Research Methodology

The descriptive research methodology was used for the study and secondary data was collected from the bank annual reports and the Reserve Bank of India website . The data further analysed by using Regression and correlation analysis method for understanding the impact and the significance association between different variable .The data related to NPA of banks was collected for the period 2016-2017 to 2020-2021 from the yearly financial reports of the selected commercial banks.The study tries to understand the impact of NPA on the profits of banks and tries to find

the relationship between Non performingassets and ranking given by CIBIL Ranking.

The constructs developed further on the Null and Alternative hypotheses of the study as follows:

- Ho: There is no significant impact of NPA on Banks Profitability.
  H1: There is significant impact of NPA on Banks Profitability.

- Ho: There is no significant difference between NPA of Private Sector bank & NPA of Public Sector Bank.
  H1: There is significant difference between NPA of Private Sector bank & NPA of Public Sector Bank.

- Ho: There is no significant relationship between NPA & Bank Ratings.
  H1: There is significant relationship between NPA & Bank Ratings.

Data Interpretation And Analysis

Analyzing the relationship between NPA & Profitability of Private Sector Banks & Public Sector Banks.: This data interpretation deals with the relationship of NPA

& Profitability of Private Sector Banks & PUBLIC Sector Banks. For this analysis tthe data of 5 Private Sector Banks i.e. (Yes bank, IDBI bank, Axis Bank, ICICI bank & HDFC bank) & 5 Public Sector Banks i.e. (Punjab National Bank, Central Bank of India, Bank of India, Bank of Baroda & State Bank of India) were considered . The five year data of GROSS NPA & Net Profit/Loss were selected from the year 2017 - 2021. For understanding the relationship between NPA & Profitability Correlation statistical tool was used .Following observations were made for the banks :

Table 1 : Correlation Table between profitability and NPA of YES Bank

Correlations

		NPA	NET_PROFIT
NPA	Pearson Correlation	1.000	-.764
	Sig. (2-tailed)		.133
	N	5	5
NET_PROFIT	Pearson Correlation	-.764	1.000
	Sig. (2-tailed)	.133	
	N	5	5

Table 2 : Correlation Table between profitability and NPA of Private Sector Banks

(All figures are in INR)

Years	YES		IDBI		ICICI		AXIS		HDFC	
	NPA	Net Profit	NPA	Net Profit	NPA	Net Profit	NPA	Net Profit	NPA	Net Profit
17	1072	3330	25205	-5158	25415	9810	21280	3679	5885	14549
18	1312	4224	28665	-8237	27886	6777	34248	275	8606	17486
19	4484	1720	14873	-15116	13557	3363	29789	4676	11224	21078
20	8623	-16148	5439	-12887	10113	7930	30233	1627	12649	26257
21	9813	-3462	2519	1359	9180	16192	25314	6588	15086	31116
Correlation	-0.76		-0.14		-0.28		-0.64		0.98	

Here we can see that each private bank has negative correlation except HDFC Bank which means NPA & Profitability are inversely related to each other. A **negative**

correlation is a relationship between two variables in which an increase in one variable is associated with a decrease in the other. i.e. whenever NPA increases Net Profit decreases.

Table 3 : Correlation Table between profitability and NPA of Public Sector Banks

Public Sector Banks										
	PNB		**CBI**		**BOI**		**BOB**		**SBI**	
Years	NPA	**Net Profit**	NPA	**Net Profit**	NPA	**Net Profit**	NPA	**Net Profit**	NPA	**Net Profit**
17	55370	1324	27251	-2439	52044	-1558	42719	1383	112342	10484
18	86620	-12282	0	-5104	62328	-6043	56480	-2431	223427	-6647
19	78427	-9975	32356	-5641	60661	-5546	48232	433	172753	862
20	73478	336	32589	-1121	61550	-2956	69381	546	149091	14488
21	104432	2021	29276	-887	56534	2160	66671	828	126389	20410
Correlation	**-0.12**		**0.47**		**-0.64**		**-0.11**		**-0.86**	

Table 3 shows that each public sector bank has negative correlation except CBI Bank which means NPA & Profitability are inversely related to each other i.e. there is negative impact of NPA on the Net Profit of the bank .

2] Analyzing if there is difference between NPA of Private Sector Banks & Public Sector Banks.

Null Hypothesis (Ho): There is no significant Difference between NPA of Private and Public Sector Banks.

For this we analyze the same numerical data from previous objective. For this analysis we have taken all the NPA's of Public sector banks & private sector banks together & divided them sectoral wise & run ONA WAY ANNOVA TEST. Data further analyzed using the confidence level of 95% of significant test.

(All figures are in INR)

Private Sector Banks					
	YES	**IDBI**	**ICICI**	**AXIS**	**HDFC**
Years	NPA	NPA	NPA	NPA	NPA
17	1072	25205	25415	21280	5885
18	1312	28665	27886	34248	8606
19	4484	14873	13557	29789	11224
20	8623	5439	10113	30233	12649
21	9813	2519	9180	25314	15086

Public Sector Banks					
	PNB	**CBI**	**BOI**	**BOB**	**SBI**
Years	**NPA**	**NPA**	**NPA**	**NPA**	**NPA**
17	55370	27251	52044	42719	112342
18	86620	0	62328	56480	223427
19	78427	32356	60661	48232	172753
20	73478	32589	61550	69381	149091
21	104432	29276	56534	66671	126389

Table 4 : ANOVA Table for NPA of Public Sector Banks and private sector Bank

Test Results

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.5288	1	15.288	34.59	.000
	Residual	13.696	48	.581		
	Total	48.983	49			

a. Dependent Variable: Consumer Preference

b. Predictors: (Constant), Brand Legacy Britannia

- Since the p value is less than 0.05. we can conclude that,

- There is significant relation between dependent and independent variables.

ONEWAY /VARIABLES= NPA BY NPA_BY_SECTOR.

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
NPA	Between Groups	4.5E+010	1	4.5E+010	34.59	.000
	Within Groups	6.2E+010	48	1.3E+009		
	Total	1.1E+011	49			

Here P-Value is less than 0.000< 0.05, therefore the Null Hypothesis is rejected . This shows that there is significant difference between NPA of Private Sector Bank & NPA of Public Sector Bank.

Summary Statistics for performance Score

Var	2017			2018			2019		
	Mean	*S.D.*	**Min**	**Mean**	*S.D.*	**Min**	**Mean**	*S.D.*	**Min**
HDFC Bank	0.940	0.052	0.823	0.955	0.055	0.825	0.961	0.042	0.830
AXISIDBI	0.969	0.046	0.842	0.977	0.037	0.876	0.986	0.025	0.910
ICICI	0.970	0.035	0.883	0.977	0.038	0.843	0.975	0.033	0.861
IDBI	0.517	0.311	0.156	0.492	0.318	0.117	0.685	0.233	0.329
YES	0.633	0.267	0.294	0.690	0.236	0.326	0.911	0.106	0.693
SE_m	0.788	0.208	0.280	0.663	0.250	0.298	0.746	0.217	0.371

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.519[a]	.414	.400	.76221	.414	36.315	1	58	.000

a. Predictors: (Constant), NPA by sector

The study further tries to analyze if there is a significant relationship between NPA &Bank Ratings of Private Sector Banks & Public Sector Banks.

Null Hypothesis (Ho): There is no significant relationship between NPA & Bank Ratings.

For this NPA of 5 Public and Private sector banks and their Bank ratings were considered respectively. As the Ratings were ranked in Alphabets so coded these into numbers to apply One-way ANNOVA .the data analysed at the confidence level of 95% of significant test.

Ranking/Coding	
A+	1
AA+	2
AAA	3
AA-	4
AAA-	5
B+	6
BB+	7
BBB	8
BB-	9
BBB-	10

Table 5 : Table for Bank Ratings and NPA of Public Sector Banks and private sector Bank

Test Results: (All figures are in INR)

Private Sector Banks										
	YES		IDBI		ICICI		AXIS		HDFC	
Years	NPA	Bank Ratings	NPA	Bank Ratings	NPA	Bank Ratings	NPA	Bank Ratings	NPA	Bank Ratings
17	1072	8	25205	7	25415	10	21280	2	5885	1
18	1312	2	28665	8	27886	10	34248	3	8606	2
19	4484	4	14873	7	13557	7	29789	3	11224	3
20	8623	9	5439	7	10113	7	30233	3	12649	3
21	9813	8	2519	7	9180	7	25314	3	15086	3

Public Sector Banks										
	PNB		CBI		BOI		BOB		SBI	
Years	NPA	Bank Ratings	NPA	Bank Ratings	NPA	Bank Ratings	NPA	Bank Ratings	NPA	Bank Ratings
17	55370	10	27251	3	52044	10	42719	3	112342	3
18	86620	9	0	4	62328	9	56480	3	223427	3
19	78427	10	32356	3	60661	10	48232	2	172753	3
20	73478	10	32589	3	61550	10	69381	2	149091	2
21	104432	10	29276	3	56534	10	66671	3	126389	2

Table 6 : ANOVA Table for Credit rating and NPA of Public Sector Banks and private sector Bank

Test Results

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
NPA	Between Groups	2.2E+010	7	3.2E+009	1.56	.☐☐173
	Within Groups	8.5E+010	42	2.0E+009		
	Total	1.1E+011	49			

Here P-Value is less than 0.017< 0.05, therefore we will reject the Null Hypothesis. We can conclude that there is significant relationship between Bank Ratings and NPA's of Banks.

The pvalue is greater than the critical value (0.05) at 5% level of significance, so we reject the null hypothesis and accept the alternate hypothesis.

Hence,we can say that there is a no significant relation between the age and the interests of using the social media in youngsters.

Conclusion

This research explored the impact of Gross NPA on profitability of different Public and Private Banks from year 2017 to 2021.It can be concluded that, there is an adverse impact of the NPA on the Profitability of Public and Private sector bank's.The financial performance is not only affected due to NPA but also the financial growth of the economy. As our economic growth depends on financial system, so both Public as well as Private sector banks should focus on the NPA management to improve the profitability. An increasing NPA suggests high number of credit defaults

which affect the Profitability, liquidity and solvency position of banks.NPA problem is mainly affecting the Public sector banks.

Statically it can be seen that he by the tests that NPA of Private sector banks & NPA of public sector banks are different. Practically Private sector banks are more efficient in managing NPA than public sector banks. The test aspects show the same results. We can say that there is significant relationship between Bank Ratings and NPA's of Banks.

Almost all the Indian banking efficiency studies conducted previously evaluated only cost, productivity, and profitability performance (generating more profits), but they did not evaluate the marketability performance (generating more market value) of a bank. It is very important for a bank to have better profitability efficiency, and also, it should have better marketability efficiency, since the real ultimate value of a bank will be defined by the current stock market (Luo, 2003). Profitability efficiency was analyzed using four inputs (assets, equity, operating expenses, and employees) and four outputs (revenue, profit margin, ROA, and ROE). Marketability efficiency was analyzed using four inputs namely, revenue, profit margin, ROA, and ROE and four outputs namely, EPS, market value, P/E ratio, and M/B ratio (Ho, 2008). This is the first study that used four inputs and four outputs for the banking sector's profitability and marketability efficiency analysis, and this model justifies the usage of extra input and output variables by obtaining improved efficiency levels of the banks as compared to the existing literature on the profitability and marketability efficiency model.

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"Impact of Mind Fitness and Physical Fitness on Professional Competence of Mumbai based working Professionals with Special reference to Harvard Health Publishing and Google Scholar Literature Review"

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Abstract : One of the biggest difficulties facing firms is managing the mental health of their human resources. The organisation puts out all effort on its end to guarantee that employees are motivated and work at a high production level by providing them with the proper salary, training, and growth opportunities. There are other variables, though, such as an employee's own mental health, which largely goes ignored and directly affects performance and productivity.

The objective of this paper is to assess the impact of mind fitness and physical fitness on professional competence of Mumbai based working professionals. The Study includes analysis of 100 responses from Mumbai based working professionals. The study concludes that mind fitness and physical fitness significantly impacts competence of working professionals.

1.1 Introduction

Wellbeing is influenced by variables which did not get much attention of our modern education system. These variables are namely Happiness, Relationships, Fitness and Personal Wealth. Lack of importance, focus and priority has adversely impacted our ability to manage these important variables which leads to suboptimal life experience, setbacks and unhappiness.

Lack of wellbeing tempts individuals to go for short term gratification-based choices instead of long-term mature choices. Individual experience stress and starts avoiding things which are not falling in his/her comfort zone. The approach of life shifts significantly from growth zone to protection zone. This is not a place where the individual grows both personally and professionally. This is the place where we start setting mediocre goals and start accepting mediocracy. Our inability to manage these important 5 buckets compromises our excellence trajectory and becomes major obstacle in achieving our full potential. Higher degree of wellbeing ensures higher resilience thereby significantly increasing our probability of achieving excellence.

Management of the mental well-being of Human Resource is one of the most important challenges of organizations. Organization from its end, does every bit of their effort right from offering them appropriate compensation, right training, right growth opportunities to ensure they are motivated and they operate at high productivity level. However, there are other factors like employees' own state of mental health which largely remains unaddressed and has direct bearing on his performance and productivity.

1.2 Literature Review

Conrad (1988), explains examines participants' perspectives on participation in a health and fitness program, based on participant-observation and 35 in-depth interviews with members of one corporate program. Participants have a decided fitness-orientation (as opposed to a health-orientation), focusing on staying in shape and controlling weight. The consequences of this orientation for the promotion of health, the future of wellness programs, and the corporation are discussed.

Willis, S. L., & Dubin, S. S. (1990) describes the methods for defining standards of competence within a profession and show how to assess professionals' command of field-related knowledge and practices, and how to evaluate their proficiency in interpersonal and problem-solving skills. They present contemporary approaches and strategies for enhancing and maintaining the vitality and performance of professionals throughout their careers, revealing how to create work environments that foster continuous learning and renewal, provide training in skills perceived as deficient, and promote self-directed learning opportunities.

Kane (1992), describes the valid assessment of professional competence has proven to be an elusive goal. Objective tests, direct observation of performance, overall ratings of competence, and simulations have been tried and found wanting in one way or another. It proposes a general framework for evaluating the validity of measures of competence, and it uses this framework to examine the strengths and weaknesses of three approaches to the assessment of professional competence: direct observation, simulation, and objective testing.

Blanton, Schambach and Trimmer (1998) aim was to evaluate the relationships between individual personality differences and manageable work context factors and the degree of professional competency, or conversely obsolescence of ITPs. Structural equation modeling was employed in evaluating the direct-effects model of professional competency. The results suggest that individual personality differences and factors of the work environment do affect professional competency levels.

Conlon (2003), described that informal learning's challenges are applied to developing global professional competence, including theory, practice and policy implications. The paper argues that informal learning plays a considerable role in developing professional expertise in the workplace and private life, yet believes no current theoretical model exists to balance conflicts between the role of individual and organizational benefits in a global context.

Bell, Lee & Yeung (2006), describes that information technology has been cited as a critical driver of HR's transition from a focus on administrative tasks to a focus on serving as a strategic business partner. This strategic role not only adds a valuable dimension to the HR function but also changes the competencies that define the success of HR professionals. Interviews were conducted with HR representatives to examine the linkage between electronic human resources (e-HR) and the reshaping of professional competence in HRM. Based on the findings, we draw implications for the development of HR competencies and identify learning strategies that HR professionals can utilize to fulfill their changing roles and responsibilities.

Paloniemi, S. (2006) aims to examine employees' conceptions of the meaning of experience in job-competence and its development in workplace context. The aim is to bring out the variety of conceptions related to experience, competence and workplace learning. The paper shows that differentiating employees' conceptions paves a way to more specific perspectives on the development and utilisation of experience-based competence in work communities and organisations. The findings in the paper show the importance accorded to experience in competence and in workplace learning. The employees valued work experience as the main source of their competence. They also developed their competence mainly through learning at work.

Eilström, P. E., & Kock, H. (2008) describes to present a review of research on strategies for competence development in organizations, their prerequisites and effects. He also concludes that a series of conditions seems to be related to the possibilities of organizations to achieve significant effects from the investments made in competence development, but it is far from obvious how these relations should be interpreted. The findings in the paper show the importance accorded to experience in competence and in workplace learning. The employees valued work experience as the main source of their competence.

Jörgen Sandberg & Ashly H. Pinnington (2009) states that an existential ontological perspective is proposed as offering a more comprehensive and integrative analysis of professional competence. It is explored through an empirical study of corporate lawyers and the findings suggest that professional competence should be understood as ways of being. The results show that different ways of practising corporate law distinguish and integrate a specific understanding of work, a particular self-understanding, other people, and tools into distinct forms of competence in corporate law. Such studies may elucidate further how ways of being constitute professional competence and how these ways of being create tensions and power struggles in fields of professional practice and within professions.

Wolever et.al (2012) states two objectives. Primary objective was to evaluate the viability and proof of concept for two mind-body workplace stress reduction programs (one therapeutic yoga- based and the other mindfulness based), in order to set the stage for larger cost-effectiveness trials. A second objective was to evaluate 2 delivery venues of the mindfulness-based intervention (online vs. in-person). When compared with the control group, the mind-body interventions showed significantly greater improvements on perceived stress, sleep quality, and the heart rhythm coherence ratio of heart rate variability. Both the mindfulness-based and therapeutic yoga programs may provide viable and effective interventions to target high stress levels, sleep quality, and autonomic balance in employees.

Borisova (2015), states that the accelerating rates of development today require higher levels of adaptability to the new conditions and better competence of all employees. Thus the capacity of organizations to learn, and to increase the value of their human resource and use it efficiently has become of primary importance. Today the leaders and managers who are responsible for the adequate management of their organizations are required to utilize in full the potential of their employees. This is why the employers and experts are increasingly interested in the processes of personnel training and development.

Cheah (2018), described that he aims to recover the conception of fitness in light of the philosophical interests of self-care, which is to bring upon body-mind integration and better self- use in relation to the other selves and things. The implications on recovering a deeper conceptual understanding of fitness as a practice of self- care may also redirect human fitness towards a way of life that is socially and sustainably sound in our contemporary society.

Irina Bagaeva et al. (2018), describes the standpoint of theory and methodology, a competent approach to the evaluation of company personnel is described. The models

for assessing the company's personnel from different approaches are presented. The methods used by modern companies for the personnel assessment procedure are highlighted. The meaning of the competence concept and approaches to understanding the essence of the competence concept are given.

Schmerling (2019), states that the While this study suggests the impact may be small or nonexistent, some programs may be better than others, and some people may get more out of them than others. Despite these significant (though small) differences, those with a wellness program and those with no wellness program had similar self-reported health behaviors and outcomes (such as amount of regular exercise, sleep quality, food choice, and 24 others), results on 10 health measures (such as blood pressure, cholesterol, and body mass index), use of medical resources (including medical spending and medication expenses) absenteeism and job performance. The results might have been different if the study had been performed at a different

type of workplace, with different types of wellness programs and different types of workers. The worksites without a wellness program had relatively high rates of self-reported health behaviors.

Valle et.al (2020) describes systematically to review the effectiveness ofYoga interventions carried out at workplace on work-related stress among employees and to assess their impact quantitatively. Hence, workplace Yoga interventions were more effective when compared to no treatment in work-related stress management. Further high-quality studies are needed to improve the validity of these results and to specify more characteristics of the Yoga intervention, such as style, volume, and frequency.

Godman (2020), describes that regular junk food snacking brings many risks.

Processed foods are typically filled with loads of unhealthy saturated fats and high amounts of salt, calories, added sugar, and refined (unhealthy) grains. Eating too much of these foods can lead to increased blood sugar (which raises the risk for diabetes), constipation, or an increased LDL cholesterol level (which boosts the risk for heart disease). He also stated recent consumer surveys are finding that people have changed their eating habits and are snacking more.

Schmerling (2020), describes that people who start taking medications assume they no longer need to be as careful with how they eat or other lifestyle choices. It's also possible that people who ultimately needed medications were less careful with following a healthy lifestyle even before medications were prescribed — and that may explain, at least in part, why they needed medications in the first place. Or, it could be that those destined to require medication therapy inherited more high-risk genes for future obesity.

For people with high blood pressure, high cholesterol, and many other conditions, medications should be in addition to lifestyle changes, not instead of them. Ahmed (2020), describes the aim to find out whether there are certain health benefits of exercise. She also stated the study of researchers who found that any amount of running is better than no running. Compared with no running, those who ran habitually — even just once a week — had a 27% lower risk for death from any cause, and a 30% and 23% reduced risk of cardiovascular and cancer mortality, respectively. Running pace and distance didn't matter. And even those who ran for less than 50 minutes a week saw these benefits. This study provides good evidence that in the general population, the mortality benefit of running outweighs the risk. And again, even a relatively small investment of time in running regularly still confers benefits. Tello (2020), describes the recent study suggests healthy habits may help people tack on years of life and sidestep serious illnesses, such as diabetes and cancer. The study found that having at least four of the five healthy habits gave people significant protection against developing any of these illnesses: on average about a decade more of life free of these diseases. He also stated the study of the researchers had found that five low-risk lifestyle habits are critical for a longer life expectancy. The healthy diet, which was calculated and rated based on reports of regularly eating healthy foods like vegetables, fruits, nuts, whole grains, healthy fats, and omega-3 fatty acids, and avoiding less healthy or unhealthy foods like red and processed meats, sugar-sweetened beverages, trans fat, and excess sodium.

Subramanian & Upadhyay (2020), describes that opioid misuse is more pronounced in people who have had surgery and been given opioids than in people who have not had surgery. The longer a person uses opioids, the greater risk of their misusing these medications. The ongoing opioid epidemic has led physicians to look for adjunct and nonmedication therapies to help people reduce opioid use and still effectively manage pain. Mind-body therapies (MBTs) are integrative practices, and they include breathing exercises and/or body movements aimed at achieving relaxation of mind and body. Some MBTs are Isha yoga, vipassana, mindfulness- based stress reduction, integrative body-mind training, tai chi, guided imagery, cognitive behavioral therapy, and others.

Macmanus (2020) describes that many people around the world eat plant-based diets for a variety of reasons, some because meat is not readily available or affordable, others because of religious convictions or concerns about animal welfare. And research supports the idea that plant-based diets, including vegan diets, provide health benefits. She has also specified the study of researchers who analyzed the diets of over 26,000 men for nearly eight years. They found that vegan diets were linked with a 35% lower risk of prostate cancer compared to non-vegetarian diets.

And in one position paper it stated that appropriately planned vegetarian (including vegan) diets are healthful, nutritionally adequate, and may provide health benefits for the prevention and treatment of certain diseases.

Anekwe (2021), explains that connections between the mind and body, fitness also has an effect on mental alertness and emotional stability. Maximal oxygen consumption (VO2 max), a laboratory measure of the maximum amount of oxygen a person can use during exercise, is the optimal measure of CRF. However, self-reported physical activity is often used as a proxy for VO2 max in research studies because it's much easier and less expensive to assess. Fatness, as I discussed in an earlier blog post, can be defined in many different ways. Body mass index (BMI), a calculation of your size that takes into account your height and weight, is used most commonly.

Rutheshnan & Vaithianathan (2021), states that the regular practice of yoga leads one's to control his mind and body. It unites our physique and mind which leads to perform the activities in an effective manner. It enhances overall well-being and quality of life. The impact of asanas and core strength exercises with meditation on breath holding time among IT employees with lumbago syndrome. The study was concluded that eight weeks of asanas with meditation practice group had better improvement on breath holding

time than other groups. The research showed that core strength exercises with meditation practice group also had significant improvement on breath holding time than control group.

1.3 Hypothesis:

H01- There is no significant impact of Body Fitness on professional competence of mumbai based working professionals

Ha1- There is significant impact of Body/Physical Fitness on professional competence of mumbai based working professionals

H02- There is no significant impact of Mind Fitness on Professional Competence of mumbai based working professionals

Ha2- There is significant impact of Mind Fitness on Professional Competence of mumbai based working professionals

1.4 Research Methodology

The Study includes analysis of 100 responses from Mumbai based working professionals. The research includes primary data collected through structured questionnaire. The data collected is analysed with help of SPSS.

1.5 Data Analysis and Interpretation

Regression Analysis

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.438a	.192	.146	.80880	.192	4.156	4	70	.004

a. Predictors: (Constant), Physical Fitness 4, Physical Fitness 1, Physical Fitness 2, Physical Fitness 3

a. Dependent Variable: Professional Competence 1

b. Predictors: (Constant), Physical Fitness 4, Physical Fitness 1, Physical Fitness 3

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	10.876	4	2.719	4.156	.004b
Residual	45.791	70	.654		
Total	**56.667**	**74**			

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	(Constant)	2.000	.633		3.160	.002			
	PhysicalFitness1	.072	.100	.081	.718	.475	.203	.085	.077
	PhysicalFitness2	.271	.096	.321	2.820	.006	.388	.319	.303
	PhysicalFitness3	.132	.084	.181	1.568	.121	.284	.184	.168
	PhysicalFitness4	-.008	.103	-.008	-.078	.938	.033	-.009	-.008

a. Dependent Variable: ProfessionalCompetence1

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.314^a	.098	.047	.85434	.098	1.909	4	70	.119

a. Predictors: (Constant), PsychologicalMentalFitness4, PsychologicalMentalFitness2, PsychologicalMentalFitness1, PsychologicalMentalFitness3

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.574	4	1.393	1.909	.119^b
	Residual	51.093	70	.730		
	Total	56.667	74			

a. Dependent Variable: ProfessionalCompetence1

b. Predictors: (Constant), PsychologicalMentalFitness4, PsychologicalMentalFitness2, PsychologicalMentalFitness1, PsychologicalMentalFitness3

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.422^a	.178	.132	.57106	.178	3.802	4	70	.007

a. Predictors: (Constant), PhysicalFitness4, PhysicalFitness1, PhysicalFitness2, PhysicalFitness3

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.959	4	1.240	3.802	.007^b
	Residual	22.828	70	.326		
	Total	27.787	74			

a. Dependent Variable: ProfessionalCompetence2

b. Predictors: (Constant), PhysicalFitness4, PhysicalFitness1, PhysicalFitness2, PhysicalFitness3

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.371ª	.137	.088	.58516	.137	2.787	4	70	.033

ANOVAª

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.818	4	.954	2.787	.033ᵇ
	Residual	23.969	70	.342		
	Total	27.787	74			

a. Dependent Variable: ProfessionalCompetence2

b. Predictors: (Constant), PsychologicalMentalFitness4, PsychologicalMentalFitness2, PsychologicalMentalFitness1, PsychologicalMentalFitness3

It is observed that all 'R' Values are between 0.3 to 0.5 which indicates positive linear co- relation between dependent and independent variables. Hence alternate hypothesis Ha1 and Ha2 are accepted.

We can conclude that Physical Fitness and psychological fitness significantly impacts professional competence of Mumbai based working professionals.

KMO analysis shows the value of .722 which indicates successful factor analysis and extraction. Data is validated.

Around 54 % respondents fall under the income range of below Rs. 2,50,000. 57 % respondents feel themselves physically fit with sufficient resistant power/immunity followed by 24% respondents as they do regular exercise and also eat nutritious food and also take good protein diet to improve diet and also improving professional competence. Majority of 48% of the respondents agree that they have experience and can have control on their emotions because they have patience and they are professionally competent while 23 % of respondents have neutral opinion whether they can experience and have control on their emotions. Around 28% respondents agree that they practice yoga, diet plan and nutritional intake in their day-today life. This is the reason why they are fit and healthy and hence they are professionally competent. Around 40% of respondents think that their performance and contribution to their respective organizations is "Good" so they have better skills Around 60 % of the respondents agree that they are perceived as a professionally competent employees in their respective organizations .

Around 47 respondents strongly agree that they are not addicted to alcohol/cigarette. This shows that addiction to alcohol/cigarette affects the mind and body fitness and hence losing professional competence required in workplace. Around 46% respondents agree that they are not easily frustrated when there is a workload in the workplace. This shows that we have to handle the pressure and workload and by keeping our mind calm and hence it improves professional competence.

1.6 Conclusion

The study concludes that mind fitness and physical fitness significantly impacts competence of working professionals. As we all know, it is crucial to maintain both our physical and mental well-being. This can be done by adhering to a Highly Intensive Training (HIT) programme that includes exercise, yoga, and better nutritional intake, or sustainable eating for a healthy habit. Therefore, by carrying out all of these, professional competency will be more positively impacted. Knowledge, skills, and behaviour are all examples of competence. Employees can demonstrate leadership and communication skills if they possess these skills.

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Indian Banana Supply Chain : A Critical Review of Issues and Challenges

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Abstracts : Bananas are an important source of nutrition for many people in India, and they must be transported and stored properly to maintain their quality and reduce waste. India's banana supply chain can be affected by a number of challenges, including a lack of agricultural investment, a lack of transparency in pricing, a dominant position for traders, and weak supply chain links. Farmers can lose money and other supply chain partners can incur increased costs, which can be passed on to consumers.

One potential solution to these challenges is the growth of organized retail in the marketing of bananas in India. With investments from these retailers, the supply chain for bananas in India may become more efficient and transparent, which could benefit both farmers and consumers. However, it is important to carefully consider the potential impacts of organized retail on the agriculture sector in India and ensure that any changes to the supply chain are fair and sustainable.

Overall, there is a need for further research on the challenges and opportunities in supply chain management for bananas in India to better understand how to bridge the gap between rural and urban markets and create a more sustainable and efficient system. This research should consider the various stakeholders involved in the supply chain, including farmers, traders, retailers, and consumers, and should aim to identify and address any overlooked problems or gaps in the current system.

Our primary objective in this paper is to examine the constraints affecting Supply Chain Management for bananas in India. The process is complex and is impacted by various factors, including seasonality, transportation, lack of refrigeration, labor concerns, climate change, and competition.Better transportation infrastructure and technologies, collaborative forecasting and data integration, and increased use of IT may be necessary to address these constraints and improve banana supply chain management.The importance of proper supply chain management for perishable goods should also be made known to firms from established and mature economies that are expanding into emerging markets. As part of India's growth and development as a global leader in food, this will be crucial. Management of vendors, warehouses, and logistics will be essential for bridging the gap between rural and urban markets.

Introduction

Bananas are an important fruit crop for many countries around the world, not just India. They are a major source of food and income for millions of people, and their cultivation plays a significant role in the sectors of the economies of many nations. In India, bananas are grown in many states, with Maharashtra being a major producer. The state has a high productivity rate, with an average of 60 tons per hectare. This is due in part to the use of modern techniques such as tissue culture, which allows for the production of high-quality planting material and helps to increase yields. In addition to being grown for consumption, bananas are also used in the production of a variety of products such as flour, chips, and animal feed.

Most of the bananas produced in India are consumed domestically or sold in local markets. The cost of transportation and storage for fresh produce can be high, which makes it more economical to sell locally. Despite this, India does export some bananas, mainly to countries in the Middle East and Southeast Asia. The Indian food industry plays a significant role in the country's economy, with a significant portion of the population employed in the sector.

The banana industry is an integral part of this industry, with the fruit being a staple in many Indian households.

Concept of supply chain management (SCM) has been widely introduced, there remains confusion about its definition and purpose. Despite this, there has been little focus on assessing the performance of supply chains through the use of metrics and measurement systems (Shepherd and Günter, 2006). However, SCM is now widely understood as the management of key business processes across the network of organizations within a supply chain. The Global Supply Chain Forum defines it as the integration of key business processes from end-users to original suppliers, with the goal of providing customers and other stakeholders with products, information, and services that enhance their lives (Global Supply Chain Forum, 1998). Additionally, according to Menter et al. (2003), SCM involves coordinating traditional business functions and tactics both within a company and across businesses within a supply chain, for the purpose of achieving long-term performance improvements. Despite this growing understanding, some managers and researchers continue to confuse SCM with logistics (Rogers et al., 2001).

Literature Review

The study aimed to identify the challenges and obstacles that the fruit and vegetable supply chain in India is facing. Through the use of descriptive research methods, the supply chain of the fruit and vegetable sector was examined and the problems that affect it were identified. The research found that a variety of factors such as lack of Cold Chain Facilities, lack of integration and linkages among partners, tax-related issues, inadequate infrastructure, fragmentation in the supply chain, inadequate use of technology and techniques, lack of knowledge and awareness among farmers, lack of quality and safety standards, high costs of packaging materials, inefficiency in processing and value additions, poor supply chain management, low income for farmers, loss and wastage of fresh produce, inadequate transportation facilities and lack of information about market demand are posing significant challenges to the fruit and vegetable sector and hindering the growth of the Indian agricultural sector as a whole.(Negi & Neeraj Anand, 2015). The study aimed to identify the obstacles that are hindering growth in the Indian food processing sector (IFPS) by focusing on different stages of the supply chain (SC) and utilizing AHP techniques and Delphi analysis. The research aimed to identify key areas of concern that could be used by policymakers in India and other developing countries to make significant changes.(Singh, Yash Daultani , & Rajendra Sahu, 2021). This study aimed to examine the state of the supply chains for bananas, black peppers, capsicums, and seed spices in the context of the trafficking of different horticultural products around fiscal markets, including their status, issues, and potential. The study's primary methodology included consulting secondary sources of information, sharing experiences with key stakeholders, and collecting digital information. Through the structured and methodical process, it became clear that there are many challenges in Indian horticultural markets, such as poorly organized supply chains, low market performance, a disproportionate number of intermediaries, and a lack of interest in value-adding by growers. Indian horticulture has a hard time dealing with the fast-changing global market scenario and its demands due to weak infrastructure, lack of interest in value addition and the absence of policy support.(SHARANGI & S. K. ACHARYA, 2007). This study conducts a systematic literature review of agriculture supply chains, examining various dimensions such as scope, objective, waste, driver, obstacle, and outcome. The research includes the analysis of 203 relevant scholarly articles published between 2000 and 2016 by various researchers and practitioners. The information collected and analyzed includes the definition of ASC, research methodology, global research spread, supply chain strategy, type of product, author profile, and year of publication. The major finding of the study is that it provides an in-depth examination of the empirical research

and perspectives of various ASC drivers. The study also highlights that while ASC is important in areas such as inventory policy, forecasting demand, and integration, these areas have received less attention, study or research.(Routroy & Astajyoti Behera, 2017). The research aimed to investigate the sustainable food supply chain perspective by identifying the critical factors that are crucial in managing sub-suppliers effectively, specifically in the food industry. The study was conducted through a year-long field study in two food supply chains and identified 14 critical success factors (CSFs) that impact the success of sub-suppliers in meeting corporate sustainability standards (CSS). These factors were grouped into four categories: those related to the focal firm, relationships, supply chain partners, and context. The study applied the theory of critical success factors to sustainability and sub-supplier management to expand on it. The field study findings and insights from practitioners support the theory that CSFs exist and their management is vital for successful sub-supplier management. Further research is needed to explore sub-supplier management in the food industry and other industries that may face similar issues.(Grimm, Joerg S. Hofstetter, & Joseph Sarkis, 2014). This research paper aims to identify the underlying causes of post-harvest losses in vegetable and fruit supply chains in India. The study uses interpretive structural modeling (ISM) to model the causal factors associated with post-harvest losses. The author identified 14 critical factors through an extensive literature survey and expert opinions. The research was conducted in two parts, involving academics and field experts. The major findings were then compared and discussed. The analysis revealed that three factors - lack of links between industry, government, and institutions, lack of advanced technology and techniques in food processing, and lack of linkage between farmers and processing units - were the most significant. The ISM model developed in this study is intended to guide supply chain members at various levels and stages, and increase the efficiency of the vegetable and fruit supply chain by eliminating key factors causing post-harvest losses, in order to achieve sustainability in social, economic, and environmental dimensions.(Gardas, Rakesh D. Raut, & Balkrishna Narkhede, 2017). The study focused on topics related to Supply Chain Management, with the goal of identifying the best methods for integrating these processes. Along with proposing a framework, the study also presented questions for further research and implementation related to supply chain management. To better understand the concepts discussed, the study utilized case studies from several companies, involving multiple members of the supply chain.(Lambert & Cooper, 2000). This study explores the emerging challenges and issues in managing extended supply chain networks. It examines the technologies, systems, and approaches that can be employed to manage networked businesses (supply chain networks), specifically long supply chains. The paper

provides a thorough literature review and also highlights the latest enabling technologies that can address the complexities, gaps, and challenges associated with managing long supply chains. The research findings, based on a survey conducted by the researcher, input from industry experts, and a review of the literature, indicate that competition in the future will not be between individual companies, but between rival supply chains. Companies are forming groups within the same enterprise network to capture business opportunities in response to global competition that forces businesses to focus on their core competencies.(Jain & Benyoucef, 2008)The paper explores the significant challenges and problems associated with implementing circular supply chain management in India. Through a comprehensive review of the literature, a total of 19 challenges have been identified. Out of these, five are external challenges and 14 are internal, which all impact the successful implementation of circular supply chains in India. These findings are crucial for developing an environmentally sustainable and economically viable supply chain for circularity in the Indian context.(Saroha, Garg, & Luthra, 2018).

Methodology

The research will be conducted using a descriptive qualitative approach, and analyze secondary data from a variety of sources including industry reports, company websites, and news articles which involves collecting and analyzing data through various sources such as literature review, and field visits to banana farms.

Banana Industry in India

The country is one of the largest producers of horticultural crops and is particularly known for its banana production. A total of 30.808 million metric tons of bananas are expected to be produced in 2021, making it the second-largest producer of horticultural crops worldwide.Bananas are grown on a relatively small portion of India's total cultivated land, with only 0.40% of the country's 197.016 million hectares (Mha) devoted to banana cultivation. Despite this, India has relatively high productivity for bananas, with an average yield of 34.86 metric tons per hectare. This is higher than the average productivity for both Asia and the world.

Production of bananas in India in 2021-2022, according to the National Horticulture Board (NHB). It lists the top ten states in terms of production, along with their respective production levels and share of total production. Andhra Pradesh is the top producer of bananas in India, with a production of 5,838.88 metric tons, which is equivalent to 17.99% of the total production. Maharashtra is the second largest producer, with a production of 4,628.04 metric tons, followed by Gujarat with 3,907.21 metric tons. Tamil Nadu, Karnataka, and Uttar Pradesh are also among the top

producers of bananas in India. Overall, these ten states account for around 30,184.09 metric tons of banana production in India, which is 100% of the total production.

Supply Chain and Distribution

A key aspect of the banana industry is supply chain management, which involves coordinating and optimizing all activities and resources involved in production, distribution, and sales.In the case of bananas, this includes everything from growing and harvesting the fruit to transporting it to market, as well as grading, packaging, and marketing the final product.

A well-managed supply chain can increase productivity, reduce costs, and improve the quality of products. It is particularly important to handle fresh produce such as bananas promptly and efficiently, since their product life cycles are short, thereby reducing waste and losses.

As part of supply chain management, farmers, wholesalers, retailers, and other stakeholders need to build strong relationships. The entire supply chain can benefit from working together and sharing information, leading to greater value for everyone involved, including the end customer, through increased efficiency and effectiveness.

Value Chains for Banana

In the process of producing and delivering a product to market, the value chain is made up of the steps and participants involved.

Traditional Banana Value Chain

Agricultural products are traditionally value-chained through multiple intermediaries between farmers and consumers, but the process can be inefficient and lack value addition at various points.This can lead to lower incomes for farmers and other members of the value chain. Challenges include a lack of access to information and resources and a lack of grading and packaging facilities.

Modern Banana Value Chain

Bananas are transported from the farm to the consumer through a system that involves multiple stages of production, transportation, storage, and distribution.The goal of this system is to minimize post-harvest losses, increase farm incomes, improve food security, and reduce poverty. This is achieved through a variety of methods, such as the use of modern storage and processing facilities, transportation networks, and market intelligence to optimize the distribution and sale of bananas. It is also possible to attract a wide range of consumers and lower retail prices using corporate-owned stores and lean supply chains. It is also possible to improve the technical knowledge and skills of farmers by transferring technology from contracting agencies to them, which can ultimately improve supply to the export market and modern distribution sector.
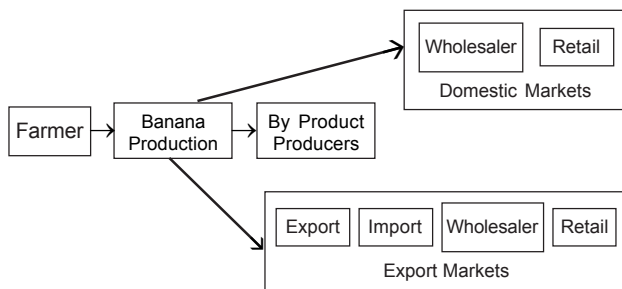
Discussion

The banana industry in India offers numerous opportunities for growth and development. The increasing demand for bananas both domestically and internationally presents an opportunity for the industry to expand and meet this demand. Additionally, the development of new production techniques and infrastructure improvements can lead to increased efficiency and productivity in the industry.

Using bananas to create value-added products is viable because they are always available. In addition to the potential for value addition, the banana industry in India has the opportunity to create products like banana slices (chips), banana powder, banana pulp, and beverages from bananas. A stable income source for small farmers can be provided as a result of this increase not only in profitability for the industry.

There is also potential for the banana industry in India to diversify into new markets, both within the country and abroad. With a large production base and a strong reputation for quality, the industry has the potential to tap into new markets and further increase its share of the global banana market.

Overall, the banana industry in India presents numerous opportunities for growth and development, and with the right strategies and investments, it has the potential to make a significant contribution to the country's economy and the livelihoods of small farmers.

Technology Intervention

The technological intervention has helped improve the quality of Indian bananas for export. This can lead to increased demand and potentially higher prices for Indian bananas in the international market. Additionally, the fact that Indian bananas have a logistical advantage, with shorter transportation times to major markets, and a year-round availability due to multiple harvests in a short period, also makes them an attractive option for buyers. These factors, along with lower costs compared to other producers, likely contribute to the popularity of Indian bananas in the export market.

Challenges: Discussion

Many constraints impact banana supply chain management, making it a complex process.

Seasonality: The fruit is not grown year-round in all parts of the world. This can lead to fluctuations in supply and demand, which can be challenging to manage. One way to address this constraint is by diversifying the sources of supply, by sourcing bananas from multiple countries or regions. This can help to smooth out seasonal fluctuations and reduce the risk of shortages or surpluses. It may also be possible to use storage and other techniques to preserve bananas for longer periods, although this can impact the quality of the fruit. In addition, demand-side measures, such as marketing and promotions, can be used to smooth out fluctuations in demand.

Infrastructure: Costs and efficiency of transporting fruit can be influenced by the quality and availability of transportation infrastructure, such as roads and ports. Transporting bananas from areas where they are grown to markets can be difficult and expensive with poor infrastructure, which can reduce supply chain efficiency and competitiveness. It may be necessary to upgrade roads and ports, or to build new transportation facilities, to improve infrastructure. Using data analytics and transportation management systems to improve route planning and maximize asset use, may be beneficial to adopt technologies and practices that will optimize the use of infrastructure.In addition, policy and initiative development that support infrastructure development and improvement may be beneficial to working with governments and other stakeholders.

Transportation: Banana is delicate and can be easily damaged during transit. This can make it difficult to transport bananas over long distances, especially by land or sea. One way to address this constraint is by investing in better transportation infrastructure, such as roads and ports, to make it easier to transport bananas from areas where they are grown to markets. In addition, using specialized packaging and handling techniques can help to minimize damage to the fruit during transportation. Bananas can be packed in boxes with dividers and transported in refrigerated containers to help maintain their quality. Finally, using faster modes of transportation, such as air freight, can help to minimize the time that bananas spend in transit and reduce the risk of damage.

Lack of refrigeration: The lack of access to reliable refrigeration in many areas where bananas are grown can be a significant constraint in the supply chain management of the fruit. Without access to refrigeration, it can be difficult to store bananas for long periods, which can limit the distance that they can be transported. In addition, the lack of refrigeration can make it difficult to maintain the quality

of the bananas, as they are prone to spoilage and can lose their flavor and texture if not stored properly. However, 100% foreign direct investment (FDI) is allowed, it may be necessary to invest in refrigeration infrastructure, such as cold storage facilities and refrigerated vehicles. In addition, it may be possible to use techniques such as ripening control to extend the shelf life of bananas and improve their storage and transportability.

Labor issues : Production and transportation of bananas often involve large amounts of manual labor, making labor issues a significant constraint in banana supply chain management.This can include tasks such as planting, harvesting, packing, and loading. Labor shortages or disputes can disrupt the supply chain by causing delays or increased costs. To address this constraint, it may be necessary to invest in training and education programs to ensure that there is a sufficient supply of skilled labor. In addition, it may be necessary to implement policies and practices that promote good working conditions and fair treatment of workers, to reduce the risk of labor disputes. Finally, it may be necessary to develop contingency plans to deal with unexpected labor shortages or disruptions.

Climate change : changes in temperature and weather patterns can impact the cultivation and transportation of the fruit. extreme weather can destroy banana crops and disrupt the supply chain. In addition, changes in temperature and rainfall patterns can affect the growth and quality of bananas and may require changes in cultivation practices. it may be necessary to invest in technologies and practices that help to mitigate the impact of climate change on the supply chain. This could include measures such as irrigation systems, greenhouses, and more resilient varieties of bananas. Further, companies may need to adopt practices that reduce carbon footprints, such as using sustainable energy and environmentally friendly transportation.

Market conditions: Factors such as consumer demand, the presence of competitors, and the overall economic environment can impact the supply chain. Changes in consumer demand can affect the volume of bananas that are produced and transported and may require adjustments to the supply chain to meet the changing needs of customers. A firm's supply chain may also be affected by the presence of competitors, as it may need to adapt to market changes to remain competitive. Moreover, the overall economic climate can influence the supply chain by influencing financing availability, input costs, and other factors. it may be necessary to adopt strategies such as market research, demand forecasting, and pricing strategies to better understand and respond to changes in the market.

Findings

The banana industry in India offers significant opportunities for growth and development due to the increasing demand for bananas both domestically and internationally. New production techniques and infrastructure improvements can increase efficiency and productivity in the industry. The potential for value-addition through processing bananas into products such as chips, powder, pulp, and beverages can increase profitability and provide stable income.

The industry also has the potential to diversify into new markets, both within India and abroad, due to its large production base and reputation for quality. To address these challenges, the industry may need to invest in infrastructure improvements, adopt technologies and practices that optimize the use of infrastructure, and work with governments and other stakeholders to develop policies that support infrastructure development and improvement, also suggest that the industry in India faces several challenges in supply chain management, including seasonality, infrastructure, transportation, lack of refrigeration, labor issues, climate change, and market conditions. Investing in infrastructure and technological advancements, addressing labor issues, mitigating the effects of climate change, and responding to market conditions can address these challenges and improve the efficiency and competitiveness of the supply chain.

Investing in better transportation infrastructure and technologies to enable more efficient and cost-effective transportation of the fruit. This could include upgrading roads and ports, building new transportation facilities, and adopting technologies such as transportation management systems to optimize the use of assets. Another strategy is implementing more advanced cold chain systems to improve temperature control and reduce spoilage. This could involve investing in cold storage facilities and refrigerated vehicles, as well as using techniques such as ripening control to extend the shelf life of bananas.

In addition, the industry could consider developing new packaging materials and methods that can better protect the bananas during transportation, to reduce damage and maintain quality. Implementing quality control measures throughout the supply chain can also help to ensure that only high-quality bananas are being sold to consumers. This could include measures such as inspecting and testing the banana at various stages of the supply chain. Working with suppliers and farmers to improve production techniques and reduce waste can also help to optimize the supply chain. Collaborating with retailers and distributors to better predict and meet consumer demand can help to ensure that the right amount of bananas is being produced and transported to meet market needs.

As a result of blockchain technology, the banana industry will be able to track all activities involved in the banana life cycle from farm allocation to delivery, which will increase transparency and traceability.

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A Study on Impact of change in logo on brand perception of a Leading Steel Company

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Abstract : The study was conductedfor a market research firm for a client to understand their brand value and brand image as perceived among the Internal (Employees) and External (Industry Customers and Trade Channel Partners) Stakeholders. This research was conducted through primary data obtained from respondents. Interviews among the target respondents were conducted among different stakeholders of client's company. The stakeholders considered for the study were the key industries, value channel partners like retailers and distributers and internal stakeholders like plant heads, senior management people working in branch offices. Customers with combination of existing, lapsed, happy and unhappy customers were considered. The interviews were conducted as a mixed approach of qualitative and quantitative interviews.The study found that stakeholders believe that the logo is an important element in the steel industry as it helps to identify the product easily. And changing the logo may have some impact on its stakeholders.It is pertinent to understand the brand value and industry benchmark in the industries where they serve and the growth aspects in all the segments.

Key words : Brand Perception Study, Brand Value, Brand Image, Steel Company

Introduction

A consumer's sentiments, experiences, and opinions about a good or service are all combined to form their brand perception. It is what people perceive a brand represents, not what the brand claims to represent. Despite being a psychological association, brand perception is crucial for building emotional bonds with customers. When deciding between competing items, people assess their attitude toward brands. They research possibilities by reading reviews, speaking with customer service, consulting friends, or signing for a complimentary trial. Each one of these touchpoints influence brand perception and hence the success of a firm. Consumer buying behaviour may be significantly affected by how customers perceive a brand, its values, and its goods and services. A company is more likely to have a long-lasting, devoted, and expanding consumer base if it can promote good opinions centred on these factors.

It is acknowledged that Brand Image is a relational construct, the impact of stakeholders varied relational aspects on their perceptions of reputation is not well understood. The goal of this study is to contribute to the present knowledge of stakeholders' connections, interactions, subsequent relational dimensions, and the impact on stakeholders' views in order to affect relational reputation further.

This study was conducted by Market Search India Private Limited and it is based on the project carried for a client which was one of the leading Steel Company. In this project, the client company is referred as 'The Client's Company' as the agreement made between Client Company and the firm (Market Search India Private Ltd.) states that the name of the company should not be disclosed.

The type of research adopted here was Descriptive research. Generally, descriptive research responds to queries of the who, what, when, where, and how kind. Descriptive research is commonly utilised in market segmentation and targeting. To understand the demographics and other features of the population, to comprehend customer perceptions of various goods and services, to comprehend the degree of relationship between marketing variables, and to formulate some forecasts regarding sales, production, or other phenomena of interest. The type of research adopted here was Descriptive research. Generally, descriptive research responds to queries of the who, what, when, where, and how kind.

Literature Review

Karim R.A. (2020)investigated in their studyExploring Factors Affecting Brand Marketing of Bangladesh Steel Industry the marketing communication variables that influence the brand marketing of the steel sector in Bangladesh based on corporate firm and retailer perspectives.A total of ten in-depth semi-structured interviews were held with business firms and merchants in Chittagong city to obtain interview data, which was then thematically analysed using NVivo-11 software. This research identified eight sub-themes under the umbrella of "corporate and retailers' perspectives," including "brand value," "brand activities," "consumer demand," "direct communication," "facilities," "pricing," "quality," and "workshops & seminar." This study was finally ended by offering a few suggestions for organization application.

Kaur & Kaur (2019) in their study Connecting the dots between brand logo and brand image, identified that though the importance of brand logos for businesses is well accepted, a comprehensive analysis of the literature

indicates an absence of empirical research on the influence of brand logos on customer impression of brand. Consequently, the goal of this article is to close the gap in existing marketing studies that examine how a logo affects consumer perceptions. The study focuses on two issues: first, how favourable rating of a company's logo influences brand image, and second, how a brand's logo shapes customer views of that brand mostly through brand personality traits and brand familiarity.

Muller, Kocher and Crettaz (2013) studied the effects of visual rejuvenation through brand logos and found that the impacts of logo resemblance and type on brand modernization and brand loyalty are examined in this study to better understand the phenomena of brand revival. An investigation with 385 participants demonstrates that logo change influences the sense of brand modernity. The suggested model emphasises the significance of certain logo attributes in understanding logo attitude and exhibiting the impacts on brand modernization, brand attitude, and, lastly, brand loyalty. The findings contribute to addressing gaps in existing theories in this study field.

Moges and Getu (2020) in their study, the effects of brand image on customer brand perception aims to shed light on how a brand's image affects how the general public perceives it. It does this by examining the brand image dimensions of the STEELY R. M. I. PVT. LTD. organisation. Explanatory study design and a quantitative research technique were utilised. In the study, a convenient and random sampling strategy was utilised to choose a sample from a limited population. In this study, a qualitative research technique was utilised. An identity questionnaire (40 questions) was prepared and delivered to 381 consumers in order to obtain primary data. Correlations are used to examine the acquired data.

Henniger et. al (2016) studied the perspectives of two post-industrial cities—Sheffield in the United Kingdom and Essen in Germany—are examined in this study to examine perceptions of stakeholder involvement throughout the city branding process. This qualitative study employs a multi-case study technique, which allows for the utilisation of semi-structured interviews and semiotics. According to preliminary research, there are four 'levels' of stakeholders. These stakeholder groups are all somewhat involved in the process of municipal branding. Results point to the major stakeholders, who are viewed as important decision-makers in the branding process, as having a significant influence on the level of engagement. Other stakeholders who "can" participate in the branding process are chosen by these major stakeholders. Isolating Stakeholders may also result in the loss of components of a heritage-based identity. Because the study focuses on two towns with a strong industrial legacy, the conclusions may not be relevant to other places. This article examines both stakeholder involvement and city branding, offering four levels of stakeholder participation.

Research Methodology

The research was conducted through primary research through a mix of convenience sampling and judgement sampling. Interviews with the target respondents were conducted among different stakeholders of this Steel Company. Stakeholders include customers across Industries, value chain partners like retailers and distributors and internal stake holders like plant heads, senior management people working in branch offices. The interviews were conducted as a mixed approach of qualitative and quantitative interviews. Qualitative interviews were conducted online on Zoom and Quantitative interviews were conducted online using web-based survey.

Targeted Sample Size

Target customer segment	Target Sample size
Industry customers	50
Retailers & Distributors	50
Internal stake holders – Employees	25
Total	**125**

The mode of collecting data was Personal Interview, Telephone Interview and Web Based Interview. The data for Trade Channel Partners was collected through Personal Interview mode by contacting them by conducting an interview at their work place. Whereas, the Data collected for Industry Customers and Employees was conducted either by Telephonic mode or Zoom meetings (Web Based Interviews). This Data was later converted into Transcripts and the Data in the transcripts were Tabulated for further Analysis.

Data Analysis & Interpretation

Industry Customer's Feedback on brand awareness and performance: TATA is found to have the highest brand recall followed by JSW, Client's Company, AM/NS, SAIL and Jindal steel. Client's Company has a brand recall among 40% of the respondents. Other brands in brand recall include POSCO, RNL, ATI, Bhilai steel, Bhushan Steel & ESSAR steel. 'This Leading Steel Company' is highly recalled for its overall good service, timely delivery and product quality. They are also known for their competitive pricing; few customers recalled it with high price. 60% of their customers would prefer to continue their business with 'This Leading Steel Company' as compared to competition in future. 81% of industry customers find 'This Leading Steel Company' is performing as per their satisfaction level.

Brand Recall of 'This Leading Steel Company' logo : 84% of the respondents recognize 'This Leading Steel Industry' with Capital U , 5% respondents are able to recall the SWAN logo

Impact on Brand Perception : As per the responses received, there is no change or impact on the brand perception if there is a change in the brand identity.Respondents believe that as long as the service and product quality is not affected the brand identity change will not make any difference.40% of the respondents feel the change of 'This Leading Steel Company' brand identity would help the company's growth in the coming days. 30% feel it won't make any difference in their business relation. Findings regarding expectations from 'This Leading Steel Company' to change to have better image and identity in the market are 26% of respondents feel improving product quality will help 'This Leading Steel Company' improve their brand image. Other factors like price, deliveries, better customer satisfaction, technology innovations are also mentioned as expectations for better brand image.Data shows that majority of respondents feel timely delivery of productsis an USP of 'This Leading Steel Company' along with good quality product and quick response time. Customers would like the company to increase their manufacturing capacity and move upward on technological advancement.The company should also expand into more industries and markets and improve customer service further.

Findings on Interpretation of logo

89% of the respondents have recall 'This Leading Steel Company with the Swan logo while 11% of them identify the Company with Capital U logo

All the Respondents recognize the TATA logo wordings as well as the other sub brandings like TATA shakti & TATA Kosh

Majority find the SAIL logo very simple with triangles on it, 15% of repondents do not recall the logo

97% of the respondents are unaware of the AM/NS logo, while 7% recognise the brand with umberella logo

Majority recognize the brand logo Capital JSW as it is a dominant brand in the market also they also carry out a lot of branding activities

7% recall the brand with capital JSPL logo. Respondents find this brand as an old dominant company with a simple logo

Product quality was found as a prominent factor of a brand image of 'This Leading Steel Company' among the dealers & retailers followed by timely supply and good rate.Product Price, brand image, good management, good products and consistent performance are the other words describing 'This Leading Steel Company'.Respondents believe that 'The Leading Steel Company' is an independent identity and is not associated with any other brand in the market.In term of brand image, 'The Leading Steel Industry' is taken as a value for money brand with moderate pricing and moderate product quality.77% are found to be satisfied with 'The Leading Steel Industry' as a brand.95% of the dealers/retailers believe logo is very important as it creates a great perception among the customers. Findings support the fact that Logo helps identify the products easily, change in the logo may change the trust among the customers as they have emotional connect with the brand identity.

Brand perception of 'This Leading Steel Industry' if their brand logo of Swan is changed

- 24% feel there will be positive impact and that it will help in the growth of the brand

- 54% feel that there might be either some impact or no impact depending on the further approach of the brand

- 21% feel there will be negative impact on the brand identity as the customers will fail to identify the brand logo/identity if the branding is not communicated effectively

Some of the describing words for the company among employees are Durability, Customer friendly, Employeecentric, timely dispatch, Slow growth, lacks technology advancements and customizable products. Employees of 'This Leading Steel Industry' are ready for the change but need clarity of the future of the company from the management. There are good number of suggestions

related to employee retention, enhancing product quality, increasing product range and capacity, and technological advancement are shared by them.

Findings

A. Industry Customers

- Study shows that the feeling of satisfaction and the product quality is the most important factor that a customer associates when it comes to brands in the steel industry.

- Competitor brands like TATA, JSW and Jindal are performing better than 'This Leading Steel Industry' in the hot roll and cold roll segment, while 'This Leading Steel Company' is found to be in the top 3 in the galvanized product segment.

- Customers feel that new range of products should be introduced by the brand to match the requirements of the industry.

- The overall satisfaction with 'This Leading Steel Company' is found to be quite good at 81%.

- Customer loyalty is found to be high, as 60% of the customers would still continue business with 'This Leading Steel Industry' in future.

- Major reasons for higher customer satisfaction are the product quality, timely deliveries, trust with the company, and the overall relation with the brand and many customers have been procuring from 'This Leading Steel Company' for more than 6 years.

- 41% customers feel that the change in the brand identity would be beneficial in the future growth and would have a positive impact on an overall basis. But only the change should be communicated.

- The SWAN logo is found to have a lower recall of 5% while the majority recall Capital U as the brand identity of 'This Leading Steel Company'.

- 16% respondents feel 'This Leading Steel Company' should focus on the technology advancements to match the industry requirements which would indirectly help in the overall growth of the company.

- When compared with competitors, 'This Leading Steel Company' is rated better on location advantage and helpful and co-operative sales staff.

B. Trade Channel Partners

- 'This Leading Steel Company' has the highest recall among the dealers and retailers followed by TATA and JSW in galvanized steel products.

- In the trade segment, the SWAN logo of 'This Leading Steel Company' is found to have maximum recall than the Capital U logo.

- 'This Leading Steel Company' is found to be the most favoured brand in the galvanized segment with a satisfaction of 77% among its dealers and retailers.

- 'This Leading Steel Company' has a good brand image among the dealers and retailers due to factors like good product quality, rates of the products, timely deliveries and relations with the company.

- 54% of the retailers and dealers feel that there would be some impact if the brand identity of 'This Leading Steel Company' is changed hence the branding activities and communication plays a key role.

C. Employees

- Majority of the employees have mentioned that 'This Leading Steel Company' has a collaborative work culture and is a trustworthy brand in the industry.

- 97% of the employees have found to be satisfied working with 'This Leading Steel Company'.

- Majority of the employees have mentioned that 'This Leading Steel Company' gives the freedom to work which has been a major reason for the overall satisfaction of the employees.

- The policies, core values and culture are the major characteristics of the organization that employees value the most

- Employees believe that branding activities should be focused on priority as this would help in upbringing the brand name in the market.

- 48% of the employees feel that in order to grow, technology advancements need to be made by the organization as this would help in catering to larger orders and fulfilling the consignments much better.

- 'This Leading Steel Company' should focus on communicating the vision and mission of the new company among its employees.

Limitations And Future Scope

Inadequate Information : Trade Channel Partners and Industry Customers were reluctant to share their views. And many Trade channel partner were not at all ready to participate in this survey.

Technical Difficulties : Interviews were done on a digital platform wherein a zoom link was sent to them which consumed more time to initiate and it was challenging for

some interviews due to technical errors. After the interviews were initiated, a part of questionnaire was sent to them via link for quantitative data collection which indeed was a challenge for some Industry Customers and Channel partners as they were hesitant to reveal their demographic information.

Biased Information : As the data was collected from only one manufacturing plant as per the requirement from Client's Company, the data collected was insufficient. The finding might not be applicable to the other manufacturing plants.

Suggestions And Conclusions

Branding : On an overall basis 'This Leading Steel Company' as a brand is doing good in terms of product quality but they should focus on the branding activities. As Trade Channel Partners plays main role in mouth publicity, 'This Leading Steel Company' should try to increase their incentives and vendor promotional activities.

Innovations : The Company should look into new innovative technologies and new range of products to cope up with the competition in the market.

Communication : This Leading Steel Company should communicate their Vision and Mission as it is found out that there is overall lack of awareness about it among the employees

Manufacturing Capacity : 'This Leading Steel Company' should focus on increasing their production capacity to manufacture large orders.

Employees' Development : Employee training needs to be improved in order to improve an employee's overall growth and development.

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Comparative analysis of consumer buying behaviour towards Britannia and Parle for biscuit category

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Abstract : One of the most challenging area for research is consumer behaviour. If a company want to stay for a long time, it should be able to compete well. The motive of this research is to find the most important factor in consumer buying decision. Four variables are taken into consideration 1.Price, 2.Quality, 3.Brand Awareness, 4. Brand Legacy. Questionnaire has been designed, and taken the responses from the customers of both the companies. 120 responses were received from the customers. 60 from Britannia and 60 from parle. On which SPSS was used to analyse the data collected. The finding shows that, the greatest number of consumers purchase as per the legacy of brand. So, the suggestion to the companies is, they should focus on building their brand legacy.

1. Introduction

Fast moving consumer goods are the fourth-largest industry in the Indian economy (FMCG). The sector is broken down into three main categories: household and personal care, which makes up 50% of the total, healthcare, which makes up 31% of the total, and food and drink, which makes up 19% of the total. About 55 percent of revenue is generated in the urban sector, and 45 percent in the rural sector. An increase in rural consumption will fuel the FMCG market.

The Indian FMCG industry expanded by 16% in CY21, a 9-year high, despite state-wide lockdowns. This growth was fuelled by rising consumer spending and increased product prices, especially for necessities, which increased the value of the industry. Between 2015 and 20 there was a 5.2% CAGR in final consumer spending growth. According to Fitch Solutions, the economic consequences of the pandemic will cause real household spending to rise 9.1% YoY in 2021 after falling >9.3% in 2020. According to CRISIL Ratings, the FMCG sector will see a double-digit increase in revenue from FY21 to FY22, going from 5 to 6 percent to 10 to 12 percent. Across all product categories, price increases, demand for discretionary goods, volume growth, and growth in volume are the main drivers of growth. The domestic FMCG market expanded 12.6% yearly in Q3 2021.

The number of households purchasing through the modern trade channel increased by 29.15% year over year in the third quarter of 2016, while the volume of purchases increased by 19.25%...

In September 2021, the consumption of FMCG in rural areas increased by 58.2 percent year over year, which is twice as much as the consumption in urban areas (27.7%). The domestic FMCG market expanded 36.9% year over year in April to June 2021.

The FMCG market in India is anticipated to grow at a CAGR of 14.9%, from US$ 110 billion in 2020 to US$ 220 billion in 2025. According to projections, the Indian processed food market will grow from US$ 263 billion in 2019–20 to US$ 470 billion in 2025.

1.1 Biscuit industry

The bakery sector is one of India's oldest industries due to its high nutritional value, and it is evolving in terms of its product line and services. One of the top producers of biscuits worldwide is India. Some of the factors driving the India biscuits market include an increase in disposable income, rising packaged and convenience food consumption, and the accessibility of different types of biscuits. The market is expanding due to concerns about health and wellness as well as a shift toward the most delicate biscuits like sugar-free, oats, wheat, and multi-grain biscuits.

The market for biscuits in India, which is growing at a CAGR of 12.4%, is predicted to reach USD 5,151.2 million by 2020. By 2027, it is expected that the market will be worth USD 11,792.3 million. In India, the market for biscuits is expanding quickly due to shifting consumer tastes and preferences. Convenience food demand is increasing as consumers become more health conscious. An increase in the selection of biscuits on the market and an increase in household income per capita are additional factors influencing market growth.

1.2 Major Market Player

A. Britannia Biscuits

Among the most reliable biscuit brands of India. Nearly 5 million retail establishments that sell Britannia products across India serve more than 50% of all homes in the country. And market share of 29%. The Brand's global reach includes domestic manufacturing in the United Arab Emirates and Oman, as well as being the No.2 biscuit brand in the UAE with a strong claim to leadership and a comparable strong market position in the other GCC countries.

B. Parle Biscuits

The company has developed since 1929 to become India's top manufacturer of biscuits and confections. As the creator of the most popular biscuit in the world, Parle-G, as well as numerous other well-known brands, the Parle brand stands for quality, nutrition, and superior taste. And market share of 24%. The brand has made it a tradition to provide both health and taste, and its value-for-money positioning allows customers of all socioeconomic backgrounds and ages to fully enjoy Parle products.

C. ITC Sunfeast

Sunfeast biscuits are well known for their creative and nutritious biscuits, and they have always been associated with quality. And first among the top 3 biscuit brands for cream biscuits. And market share of 10%. Sunfeast Biscuits serves all market segments, with Dark Fantasy dominating the high-end market. This category has advanced thanks to recent innovations and high quality. With its revolutionary centre-filled structure and luxurious packaging, Dark Fantasy Choco Fills has delighted Indian consumer.

D. Surya Food Agro Ltd (Priyagold)

Since many years ago, millions of Indians have been eating Priyagold biscuits. Due to its well-liked biscuits, Priyagold has gained widespread recognition in India. Our position as one of the top rivals in the market has been cemented by the fact that The Brand's products are now offered in more than 20 nations. And market share of 4.5%. The large professional staffs of the Brand have earned the corporation's unwavering trust and confidence. In business for 23 years, Priyagold produces delectable premium biscuits. Quality and safety are additionally ensured thanks to the most recent advancements in baking technology. A producer is Priyagold.

E. Anmol Industries Limited

Anmol Industries Limited is a manufacturer of packaged foods with a focus on cookies, cakes, and biscuits. The company is actively trying to expand into the Southern and Western regions of India, where it already has a significant presence. And market share of 4%. Revenue: more than Rs 1000 cores. Since 1994, we have been able to reach the largest number of households thanks to the effective use of our well-known brand, strategic supply chain, broad range of products, and consequent value proposition for customer.

1.3 Challenges faced by Biscuit Industry

If we talk about government regulations, it can affect any industry. In the same manner, in covid also government regulations affect the whole industry.

Due to rise in the cost of the primary ingredient, Maida, as well as other raw materials. Industry faced problem. They have to reduced their profit margin. As they cannot increased the price because of the price sensitivity of Indian market.

Price sensitivity of the market affect them a lot. Because, even when the prices of the raw material rise, they cannot raise the price of the products.

1.4 Objectives

To study consumer behaviour of Indian consumers towards biscuit category.

To understand biscuit category industry with respect to Britannia and parle company.

To evaluate impact of variables such as Legacy of Brand, Brand Awareness, Quality and Price on consumers preferences in biscuits category.

To understand customer satisfaction for this category.

2. Literature Review

Price

Effect of price on consumer buying behaviour, Wai-Kwan Li et al (1994), *is that the customers' purchasing intentions are greatly influenced by a product's pricing. The results imply that the product's price has a direct impact on how much consumers like it.*

According to Al-Salamin et al. (2015), Good prices from well-known companies have a negative impact on the purchasing decision. The lack of money that young people have prevents them from purchasing the brands they want to. Only the price element of the marketing mix produces income; all other elements result in costs. The authors also pointed out that consumers' decisions to buy products are mostly determined by their impression of price and how much they value a given item. The basic objective of marketing is to comprehend how consumers arrive at their sense of price. No matter how young, intelligent, wealthy, or skilled we are, we are all customers. Thus, for advertisers, distributors, and salespeople, comprehending client behaviour becomes a crucial task. Therefore, we hypothesized the following:

H1: Product pricing is significantly correlated with consumer buying behaviour.

Quality

The influence of Product Quality on Purchase Intention is $p = 0.009 < 0.05$, this means there is a positive and significant influence between Product Quality and Purchase Intention. A good quality can increase the purchase decision of the customers on the product or service.

Madahi and Sukati (2012) claims that, in more recent times, the intention to purchase has grown complex and

important. Here, the product's quality is a key factor in deciding whether to make a purchase.

Alhedhaif (2016) a consumer will be satisfied and think a product is of acceptable or even high quality if it meets their expectations. The customer will assume the goods is of bad quality if his or her expectations are not met. Accordingly, a product's quality can be described as "its capacity to satisfy the demands and expectations of the consumer."

H2: Product quality is significantly correlated with consumer buying behaviour.

Brand awareness

Wen Li, Tiane Fu and Ziying Huang (2016) said that the most of the customer behaviour is learned. He said that making customers aware of all the various characteristics of the product is the greatest method to create brand awareness. As a result, it is suggested to use a variety of promotional techniques to build brand awareness. Every consumer has a distinct level of education, so people's brand cognition varies as well. The research examined consumer brand cognition of mobile phone brands and refuted the null hypothesis.

H3: Brand Awareness is significantly correlated with consumer buying behaviour.

Brand legacy

Tansuba Nasir et al., developed a more profound understanding of the influence a brand name might have when consumers shop and choose products from numerous companies, notably private vehicles like cars. Additionally, this study makes an effort to look into the relationship between brands and consumer dynamic engagement. This investigation was conducted using a writing-focused approach and a poll-controlled review. To determine the examining edge and size, a simple irregular inspecting approach has been used. For the review, a comfort test involving 100 respondents from various age groups, income levels, and occupations has also been taken into account. The acquired data were broken down to fit the goals and also to draw conclusions. According to the investigation, a buyer's decision to purchase a vehicle is influenced by brand names. The investigation also reveals that marked

automobiles hold a special place in consumers' minds. When customers go car shopping, they prefer to purchase a well-known marked vehicle. Clients would prefer not to attempt new or obscure marked vehicles since they have very little data on the lesser-known brand.

H4: Brand Legacy is significantly correlated with consumer buying behaviour.

2.2 Methods

The research is built upon the survey plan. The primary goal of the survey was to gather relevant information that could be used to support conclusions and produce results. Research technique is the means through which the research challenge is systematically solved. In addition to discussing the methodologies employed in a research study, research methodology also discusses the reasoning behind those methods and explains why a certain method was chosen over others.

Since this research is undertaken to describe the consumer behaviour of people for Britannia and parle biscuit through suggestion assist the company in selecting the best course of action that's why the research is done under Descriptive research type

Sample size

Total sample size from this study is 120. 60 from Britannia and 60 from Parle.

Source of Data

Secondary and primary data are both used in this study. While secondary data is gathered from the internet and other sources, primary data is gathered using questionnaires

Model
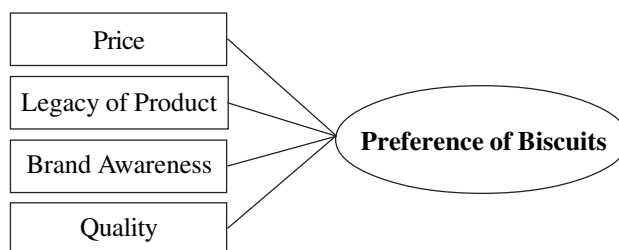
Date Analysis
Brand Legacy and Consumer Preference

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.559[a]	.312	.300	.76221	.312	26.315	1	58	.000

a. Predictors: (Constant), Brand Legacy Britannia

ANOVA [a]

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	15.288	1	15.288	26.315	.000[b]
Residual	33.696	58	.581		
Total	**48.983**	**59**			

a. Dependent Variable: Consumer Preference

b. Predictors: (Constant), Brand Legacy Britannia

- Since the p value is less than 0.05. we can conclude that,
- There is significant relation between dependent and independent variables.

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	**Std. Error**	**Beta**		
(Constant)	2.065	.176		11.703	.000
1 Brand Legacy Britannia	.370	.072	.559	5.130	.000

a. Dependent Variable: Consumer Preference

- Since the p value is less than 0.05. we can conclude that,
- Brand Legacy and Consumer preference are significantly co-related as r value is 0.559 and p value is below 0.05.
- Consumer prefers the brand which has legacy.

Quality of products and Consumer Preference

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.266[a]	.071	.055	.88582	.071	4.425	1	58	.040

a. Predictors: (Constant), Quality Britannia Products

ANOVA [a]

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	3.472	1	3.472	4.425	.040[b]
1 Residual	45.511	58	.785		
Total	48.983	59			

a. Dependent Variable: ConsumerPreference

b. Predictors: (Constant), QualityBritanniaProducts

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	**Std. Error**	**Beta**		
(Constant)	2.340	.254		9.217	.000
1 Quality Britannia Products	.253	.120	.266	2.104	.040

a. Dependent Variable: ConsumerPreference

- Quality of products and Consumer preference are moderately co-related as r value is 0.266 and p value is below 0.05.
- Consumer may prefer the brand which promises good quality. Definition of Quality differs from consumer to consume and needs clarity.

Brand Awareness and Consumer Preference

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.255[a]	.065	.049	.88852	.065	4.046	1	58	.049

a. Predictors: (Constant), Brand Awareness Britannia

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.194	1	3.194	4.046	.049[b]
	Residual	45.789	58	.789		
	Total	48.983	59			

a. Dependent Variable: Consumer Preference

b. Predictors : (Constant), Brand Awareness Britannia

- Brand awareness and Consumer preference are moderately co-related as r value is 0.255 and p value is below 0.05.

Price and Consumer Preference

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.062[a]	.004	-.013	.91722	.004	.224	1	58	.638

a. Predictors: (Constant), Price of Britannia Expensiveness

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.188	1	.188	.224	.638[b]
	Residual	48.795	58	.841		
	Total	48.983	59			

a. Dependent Variable: ConsumerPreference
b. Predictors: (Constant), Price of Britannia Expensiveness

- Price is negatively correlated with consumer preferences.
- It means, consumer is preferring products with high prices.
- The sample belongs to premium consumers of reliance hence the results.

Descriptive Statistics

	Mean	Std. Deviation	Analysis N
Priceof Britannia Expensiveness	2.7667	1.36998	60
Brand Legacy Britannia	2.0333	1.37738	60
Quality Britannia Products	1.8833	.95831	60
Brand Awareness Britannia	2.0333	1.11942	60
ConsumerPreference	2.8167	.91117	60

Correlation Matrix

		Price of Britannia Expensiveness	Brand Legacy Britannia	Quality Britannia Products	Brand Awareness Britannia	Consumer Preference
Correlation	Price of Britannia Expensiveness	1.000	-.166	.185	-.039	-.062
	Brand Legacy Britannia	-.166	1.000	.208	.219	.559
	Quality Britannia Products	.185	.208	1.000	.051	.266
	Brand Awareness Britannia	-.039	.219	.051	1.000	.255
	Consumer Preference	-.062	.559	.266	.255	1.000

KMO and Bartlett's Test[a]

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.595
Bartlett's Test of Sphericity	Approx. Chi-Square	34.584
	df	10
	Sig.	.000

a.   Based on correlations

Conclusion

In the expansion and development of a nation, manufacturing is crucial. In line with the nation's economic expansion, marketing has always advanced. In their current activities, modern manufacturers face intense competition. The norm today is competition. It has begun to dawn on businesspeople. Only by ensuring customers are happy can business be profitable. Customer needs must be understood in order to satisfy them. Information gathered from the consumer is the only way to make this possible. Consumer is where it all starts and ends. While doing study I evaluate four variables, on whom consumers are more depend while buying. The study reveals that brand legacy plays important role while buying any product. It is observed that it is necessary to focus on all the parameter at a time and not on single parameter. As there are many brands giving neck to neck competition. Some customers go for brand legacy, some go for price and offers, and some are miss guided by other brands promoters. Soo to get maximize profits from the market company should focus on all the parameters at a time. Promotional activities are also required. Parle and Britannia are leaders in their respective business. Parle should increase their product mix and should focus on the quality and taste of their product, whereas Britannia should develop economy range biscuit to capture the low-income group.

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Investigating emergence of Household Businesses during Covid 19 pandemic

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Abstract : In India, business is carried out mostly through established commercial premises. Restaurants, hotels, cafe, food stalls, dhabas, food malls, etc. were the modes through which customers were served fresh food. People too were content with the eateries available in their localities or famous pockets of the city. Employed people found weekends the best time to head out of their homes to dine at their favourite restaurant or a cafe. A home business or a household business is a concept not so heard of in India. Though, the concept is prevalent abroad, particularly in western nations. A household business is not only carried in a particular household but also has family members as the active participants in it.

The world was introduced to the deadly Covid-19 virus by the start of 2020. By the month of March, India was forced into a lockdown due to increasing cases of Covid-19 led deaths. This led to mass unemployment among employed people while some got an option of Work-From-Home. The lockdown initially felt like a much-needed break from daily hassles of life, but as it grew beyond couple of months, various problems started gripping each and every individual. Gradually, to meet the financial needs and to utilise the available spare time, individuals started to start their small businesses from their homes. This study focuses on the sudden wave of household businesses within a short span during Covid-19 era. It focused upon the challenges faced by these budding entrepreneurs along with studying factors motivating dozens of families to start a business of their own.

The research concluded with findings which explored the bond between the sellers and customers. The main boost behind the rise of household businesses was lack of steady income and ample of time in hand with the sellers. The household businesses welcomed the new entrepreneurs with both hands and provided a source of income to them along with scope of a new profession. The friendly environment created among the sellers and buyers won't fade away even after the lockdown ends. Additionally, the research shed light on necessary actions needed to be taken by the sellers like planning for longer run and digitalizing operations to enable its smooth functioning.

Keywords : household business, lockdown, Covid-19, small business.

Introduction

A home business or a household business is a concept not so heard of in India. Though, the concept is prevalent abroad, particularly in western nations. A household business is not only carried in a particular household but also has family members as the active participants in it. In India, business is carried out mostly through established commercial premises. Household business was generally limited to home tuitions or clothing resale conducted by housewives. Additionally, some families deal in family businesses through their houses selling products like home-cooked snacks or exotic dishes on seasonal basis or during specific festivals. In such businesses, mainly the females in the family manage the operations to cope with the free time available or for additional income while the males in the family act as a helping hand balancing with their primary careers. In the past few years hospitality industry was one of the few industries minting profits on a regular basis. Eateries comprised of restaurants, hotels/motels, cafes, food joints or small makeshift stalls. People too were content with the eateries available in their localities or famous pockets of the city. Employed people found weekends the best time to head out of their homes to dine at their favourite restaurant or a cafe. In other business industries dealing with manufacture of any particular product, the business levels were average attributing to the unstable economy. Gradually, all the businesses were growing along with the nation's economy.

The month of December, 2019 introduced to the world a deadly virus. The highly contagious was named Covid-19 after the group of viruses named Corona Virus. It was first detected in the city of Wuhan in China. The highly controversial virus was spread across the globe in not more than a couple of months. This virus can be spread through air as well as through touch. Thus, a highly populated nation like India became its favourite playground. As a preventive measure, lockdown in India began at the end of month of March, 2020. A nation-wide curfew put restrictions on all the activities that needed one to step out of his house. All the business activities came to a standstill. Any business entity not dealing in essential services was forced to shut until the curb of the virus. This led to mass unemployment among employed people while some got an option of Work-From-Home. Individuals from a wide range of services faced the heat of lockdown- be it education industry or hotel industry or any professional services. The lockdown initially felt like a much needed break from daily hassles of life, but as it grew beyond couple of months, various problems started gripping each and every individual. Some parts of the nation have the lockdown continued even in the month of December,

2020. With rise in cases of Covid-19 every passing day, the hopes of normality shrunk during the lockdown.

At such a time when people were deprived of tasty food available outside, individuals stood with a beam of light by catering tasty food home cooked by them. The dishes varied from snacks to cakes to traditional dishes. Housewives as well as employed ladies working from home encashed the opportunity to sell delicacies to their neighbours. As the need for personal protection products like masks, shields, sanitizers, hand gloves, etc. increased, a number of people joined the bandwagon selling medical items through their homes. Individuals of different ages made small profits selling essential commodities to their friends circle. Gradually, individuals acted as dealers for various local brands that were famous in some other city. Such dealerships were three-way beneficial: Firstly, people got a chance to earn commission through the products they sold, secondly, the brands increased their consumer base to various cities and lastly consumers got a wide range of products to choose from. Food items like dairy products, packaged snacks, etc whereas garments like sarees, kurtis, personalised face masks, etc were sold by the people with dealerships of a third party. Individuals who had farmlands at their native places brought fruits and vegetables in bulk and provided to localities thus benefiting hundreds of households.

Thus this survey was conducted to grasp the situation and study how lockdown inspired so many households to start a household business. The main objectives behind this survey were as follows:

- To study what prompted individuals irrespective of their professions or income groups start their business.

- To observe the variety of business lines opted by the entrepreneurs.

- To learn about individuals who aced their household business successfully.

- To know about consumer perceptions about household business.

- To study if these household businesses generate enough revenues.

- To consider the legalities in starting a business from home.

The research was conducted focusing on the objectives mentioned above and surveyed wide range of individuals in the city of Thane.

Review of Literature

According to Wikipedia, a home business (or 'home-based business' or 'HBB') is a small business that operates from the business owner's home office. In addition to location, home businesses are usually defined by having a very small number of employees, usually all immediate family of the business owner, in which case it is also a family business. Earlier home businesses had been where families lived on the second floor of their house while converting the first floor into a store, where upon close of business they would secure the first floor and retire to the upper floors. This type of home business is still done in some rural areas. The concept of home-based business, as opposed to the previous terminology of 'cottage industry', first appeared in 1978. The phrase was coined by Marion Behr, the originator of a study to find out what businesses women throughout America were carrying on in their homes. 'Women Working Home: The Home based Guide and Directory' by Marion Behr and Wendy Lazar contained the stories of many women who ran home based businesses throughout the country in many diverse fields, as well as information on business formation, conduct and compliance with the law.

Various blogs, economic websites, websites of newspapers and news channels, etc. have provided different ideas to start business as well as has mentioned lines of businesses already started at various locations by ordinary people while sitting at home during lockdown.

The first step involves figuring out what type of business you want to run. Too many people focus on fast profits over choosing the right idea. Although the goal is to make money, you shouldn't base your decision on profit potential alone, ignoring your interest in or compatibility with the business; Lilyquis(2021). Some famous business ideas suggested comprised of services like appliance repair, computer repair, home theatre design, television repair, bookkeeping services, commercial cleaning, consulting, corporate party planning, courier services, graphic design, direct mail marketing, internet marketing services, social media management, virtual assistant, web design, lawn, garden and yard care, bathtub re-glazing, carpet cleaning, floor installation, green cleaning products distribution, home decorating, remodelling or restoration, house sitting, pet sitting, pool cleaning and maintenance, snow removal, window cleaning, auto repair and maintenance. Being a multinational page, some ideas may not be applicable to the whole India, but is surely applicable to some pockets of the nation.

Agarwal (2020) suggests the wide range of business options that can be started with minimum investments. She has mentioned selling products like masks, surgical gowns, disposable gloves, hand sanitizers, dishwashers, soaps, tissue papers, toilet paper and touch less dispensers. Miss Palak Agarwal in her article mentioned all the possible products that can be sold with minimum investments. Panipat-based 'M/S Shree Shakti Enterprise' started building products that could come in handy in the present COVID-

19 situation. Thus venturing into uncharted territories, M/S Shree Shakti Enterprise received 850+ orders from various industries, public and government institutions.

Mishra(2022)has listed various options for starting a household business. Apart from the ones mentioned above, the list includes ideas like doorstep delivery business, food delivery or Tiffin service, online tuition business as well as selling paintings or other artworks. Mr. Rahul Mishra further lists out business lines like online consultancy, freelancing and blogging, website development, photography, homemade clothes, wooden toys, handbags, greeting cards, kitchen accessories and plantation items, Candles manufacturing and gift items like antiques, picture frames, ornaments, customized cups, perfumes, ceramic goods and much more.

Few renowned newspapers carried out surveys to understand the situations of small businesses during the pandemic and to know the customer preferences. Small scale businesses across the nation experienced different transitions in the business operations and demographics due to the lockdown. As published by The Hindu, the reports of a survey conducted by Adobe across Asia-Pacific regions shed light on various details. Among all countries surveyed, Indian consumers (88%) were the most likely to support small businesses. With respect to categories, consumers reported an increase in purchase frequency for groceries (36% buying more) and media (26% buying more) while clothing (65% not buying or buying less) and home improvements (60% not buying or buying less) faced the steepest decline.

'No Lockdown blues, say Bengaluru's home entrepreneurs, as orders pour in' Fernandes (2020). Positive responses have been gained by a household business in Bengaluru. The article reports stories of a home baker, Zahan Gafoor. The youngster has been selling brownies for over two years now through social media. He received so many orders, that there was a two-day wait for his customers. Similarly, the demand for telecom professional Maitrayee Roy's cross stitch products, too, rose during the lockdown. She channelized her hobbies of making decorative items into making masks for herself and her son and shared the images on social media. This resulted in a high demand for her masks and now she sells 4 to 5 masks daily.

While many sources suggested ways to start a business, various sources acknowledged how few people started their business with close to no resources and built a good enterprise for themselves. Karelia(2020) mentioned few businesses that started from a house and grew to be a hit.

- Pratibha Kanoi, a homemaker, tried making her family's favourite restaurant dishes at home. Impressed, her sons, Visshaal and Vikaas pushed her to start her own small venture. Thus, was born Mommy's Kitchen which

delivers fresh pizzas to people's doorsteps, and in just 3-4 months, her clientele has grown to over 200 people across the city.

- Samera Kumar is a dance and yoga teacher, but her classes came to a standstill a few months ago. Uncertain of when her work would resume, she decided to bank on her culinary skills. With help from friends, the logo was designed and an Instagram page was set up. Samera's venture The Brownies Stories offers a wide range of options including *fudgy brownies with chocolate ganache, sea salt, dark chocolate brownies*, to name a few.

- Prerna Singh who created a jewellery business page 'Just Prerna' on social media giant Facebook has attracted scores of people from across the country to silver market once again. Customers, community members, friends, family and of course online jewellery vendors showered her with the praise and admirations for her unique way of success."

Household businesses generally fall under the MSME. i.e. 'Micro, Small and Medium Enterprises' category. Recently, FHRAI (Federation of Hotels and Restaurant Association of India) declared mandatory registration for any home cooked food seller operating from his house.

The literature gathered for this research throws light on various documents published by various sources. Numerable articles and blogs suggested business ideas varying in business lines and investment levels. The literature gathered did not end at suggesting business ideas but also highlighted successful individuals who established their business from the comforts of their home. Examples prove that a household business can be successful up to unimaginable extents.

Research Methodology

Covid-19 pandemic followed by a long lockdown allowed salaried people as well as self employed individuals and housewives to start a business from the comforts of their home. Every passing month, the household businesses not only grew in numbers but also in variety based on products. Thus, a survey was needed about such business run from home to understand their impact on the market and influence on customers.

Thane, a metropolitan city in the state of Maharashtra was chosen to conduct the research. Thane has a population roughly around 18,90,000 spread on a landmass of 147 kilometres and constitutes to be the 15th most populous city in India. Beside Marashtrians, sizable populations of North Indians, South Indians, Sindhis, Gujaratis and Marwari and other people from different regions including Pakistan live in Thane, mainly because of its proximity to Mumbai. There are more than 100 companies registered in Thane city.

A research can be of various types viz. basic, applied, descriptive, analytical, empirical, qualitative, quantitative, etc. The research conducted for this study is basic in nature. There is no obvious commercial value to the discoveries that result from basic research. The necessary data for this research is collected through a combination of primary as well as secondary sources. Primary data in this research has been collected using the survey method. A number of individuals were asked to respond to a questionnaire tailored according to the respondent i.e. if he/she is a seller or a customer. The questionnaire delivers a separate set of questions to a seller and a buyer. Different responses by different types of respondents constitute the primary data. The primary data constitutes the main body of this research.

On the other hand, Secondary Data comprises of information readily available through external sources. Secondary data is data gathered from studies, surveys, or experiments that have been run by other people or for other research. Websites, government reports and records, private blogs, newspapers, study books, etc. form the secondary data. Present scenario of household businesses can be learnt through renowned websites publishing articles on the topic. The recorded sample size for the research is 80 respondents. The 80 respondents are a collective mix of sellers as well as buyers. Additionally, the respondents differ in income groups, residential areas, careers, age, gender, buying/selling patterns, etc. As expected, majority of the respondents turned out to be buyers outnumbering the number of sellers responding to the questionnaire. The following null hypotheses were considered before conducting the research:

1. The household businesses generate enough revenues to attract new participants.

2. It is easy to start a business from the comforts of home.

3. Consumers are satisfied by the products/services provided by the businesses.

4. The household businesses will register them as business entities in the future.

The research must be conducted with the aim to find answers to the research questions. The questions behind conducting this research are:

• What influenced individuals from different professions to start a small business at their homes?

• Are these household businesses profitable enough to the entrepreneurs?

• Is it so easy to start a new business whenever one wishes to?

• What has led to consumers turning to household businesses?

The primary data and secondary data jointly constitute the research findings. The data collected through research was analysed to understand the situation and derive solutions to the problems.

Data Analysis

Data Analysis reviews the data in the light of hypothesis or research problem. The analysis of the data found through the survey helps to construct an opinion on the problem, frame new rules, create strategies, begin an advanced research, etc. The responses received for questionnaire are recorded and ready for its analysis. Pie Chart method and Bar Chart method is used to illustrate and compare the data found. Among the individuals surveyed, it was observed that a majority of respondents aged above 40. Among the 80 individuals, 75% i.e. 60 individuals were buyers and the rest reported to be sellers.
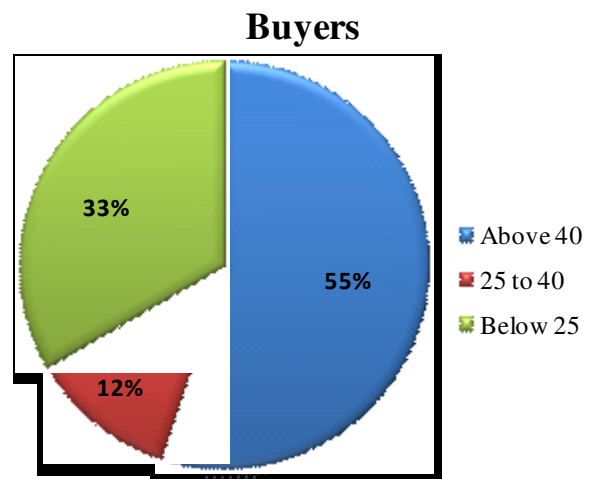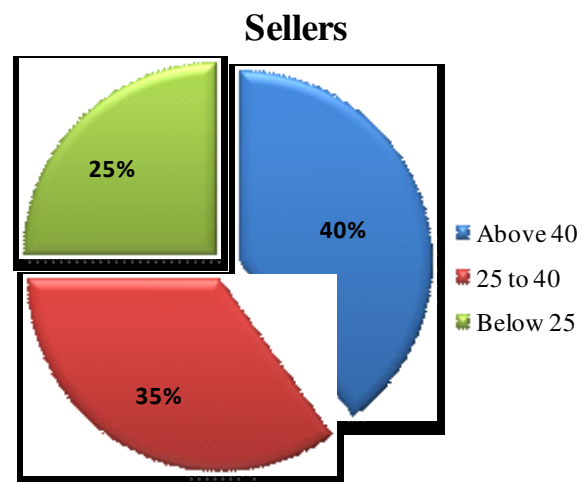
Sellers

Buyers

The age group distribution of all the respondents

To analyse the data collected, the responses by sellers and buyers need to be studied separately.

A] Responses by Sellers

A total number of 20 respondents were sellers. Whopping 90% sellers acknowledged that they could maintain product diversity while selling in their neighbourhoods. Barring 3 sellers, others complained of storage capacity being one of the biggest hurdles depending upon product size or the sizes of the houses. Most of the business takes place on weekends with weekdays generating minimal revenues. These household businesses helped families become partly or completely self reliant as confirmed by 17 sellers. Most of these businesses had the comforts of being carried out on social media platforms. With right advertising strategies implemented by the families, most of the businesses experienced a significant boost in their customer base. A majority of sellers have shown interest in registering their businesses and continuing beyond the Covid era.

B] Responses by Buyers

Out of the 80 respondents, a majority was formed by 60 buyers. Among the products purchased by the buyers, groceries were most bought by the buyers followed by other FMCG products and medical equipments. Other than mere 2% of the buyers, all buyers found the household businesses helpful during the Covid era. As per 63% customers, sometimes such household businesses are a better option than e-commerce giants. Though minimal or no bargaining power is enjoyed by such customers. On customer satisfaction grounds, most businesses scored average ratings from their customers. Except 3% customers, everyone intended to continue shopping from their beloved neighbours even after life comes back to normalcy post Covid era. A major portion of publicity earned by the household businesses was through word of mouth by the customers.

In the research conducted, it was found that there exists a nice bond between the sellers and customers. Most of the buyers are satisfied with the products or services they get from the household sellers. The individuals who turned sellers during lockdown have benefitted enough from their business as they have gained a side income from the business revenues. The main boost behind the rise of household businesses was lack of steady income and ample of time in hand with the sellers. Thus, to summarise the entire research, it can be stated that the pandemic created a situation where the sellers needed the buyers badly and vice versa. Thus both the parties coexist and benefit from each other.

Conclusion

Once the research is completed, it is the researcher's duty to share the opinion he has formed after studying the subjects of the research. The recommendations and suggestions made by the researcher carrying out this particular research hold importance for individuals running the household businesses or dealing with them. The respondents who expressed displeasure during this survey for the sellers or customers can look at the responses given by other respondents and introspect themselves or recommend the necessary points to others.

A number of observations were made during and after the research. The suggestions can be explained as follows:

1) Plan for the future

The household businesses must plan for their future even after the lockdown ends. When individuals working from home or unemployed resume their jobs, someone must look after the business. If a business ceases its operations suddenly, then the finances are blocked within the infrastructural investments made for the business. Thus such business ends up being a dead investment.

2) Digitalise the business

In the modern world, almost everything can be done through one's smartphone. if the businesses want to reach maximum customers, the best and cheapest way is to run the business through social media. Almost every person has an account on famous social media platforms like Whatsapp and Facebook. Operating from such platforms, if not advertising, can boost the sales of the household businesses. A business that is not visible digitally through the smartphones and internet has already hindered its progress.

3) Register the household business

As per the updated laws, any commercial activity conducted by an individual must be registered as a business. Even if the business is carried from one's residential premises, it needs to be registered provided it falls under the criterion mentioned by the laws. Thus, if a household business aims to grow big and run for a long term, the first step it must take is to register itself as a business entity. If an entrepreneur is not willing to register his business, he must be mentally and financially prepared to shut his business at some point in the future.

4) Compare all the options personally

A buyer must not fall prey to stereotypes like 'Online shopping is the most viable option' and 'Products sold/made at home are not good in quality' as every seller differs from the other. Few household businesses may serve better quality of products than the local shops or online sites. Thus a buyer must compare products from household businesses, local shops as well as online portals and then decide the best seller for him/her.

These recommendations suggest corrective measures

for the problems shared by the respondents as well as future-oriented solutions to the sellers as well as buyers. Reading these suggestions and recommendations can prove to be fruitful all the parties dealing with the household businesses.

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Empirical Study on the presence of Turn of Month and Weekly effectin Nifty 50 Index

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Abstract : The unique nature of 'Calendar Anomalies' in the context of stock market returns have intrigued researchers all over the world. The presence of anomalies is considered to be a sign of inefficiency in the stock markets as per the theory of 'Efficient Market Hypothesis'. This research paper aims to find the presence of two forms of 'Calendar Anomalies' i.e., 'Turn of Month effect' and 'Weekly effect' (Monday-Friday effect) in NIFTY 50 index. The study uses daily values of NIFTY from the year 2008 to 2022. The authors use 'Single Factor Regression Model' and 'Two-Tailed T-distribution for difference of mean' in order to test its hypothesis. The findings of the study suggest that there is presence of 'Turn of Month effect' and 'Friday effect' in NIFTY 50 index while 'Monday Effect' has not been observed. The study adds to the existing body of research with its novel findingsand it also has practical implications for the policy makers of the stock markets in India.

Keywords : Turn of Month Effect, Day of the Week Effect, Calendar Anomalies, Stock Market, NIFTY

1. Introduction

An anomaly is a strange or extraordinary occurrence in the world outside of investing. Anomalies in the financial markets relate to circumstances where a security or set of securities behaves differently from what is predicted by the Efficient Market Hypothesis (EMH), according to which security prices at any one time should accurately reflect all available information (Wats, 2019). It can be challenging to establish and even harder to keep up efficient marketplaces given the frequent release and quick transmission of fresh information. There are numerous market anomalies; some arise only once and then vanish, while others are constantly noted.

Lakonishok and Smidt (1988) found that US returns at the turn of the month (the last and first three days of the month) are significantly higher than those during the rest of the year even when the December/January turn-of-year period is excluded. Wats (2019) found that Day-of-the-week effect was prevalent in Nifty 50, it also demonstrated Turn-of-Month effect to a large extent and concluded that Efficient Market Hypothesis (EMH) is not established in Indian market.

Baring few studies

A gap exists in the literatureas calendar anomalies in the context of Indian stock markets is an under-researched area. The methodology which this study uses is unique, especially, considering the period between the period 2007-2022. The purpose of this paper is to investigate two major calendar anomalies Turn-of-Month (TOM) effect and Weekly effect (Monday-Friday Effect) in NIFTY 50 index.

2. Objectives And Review Of Literature

2.1 Objectives

1. To study the presence of Turn of the Month (TOM) effect in Nifty 50 index.

2. To analyze the impact of Weekly Effect (Monday-Friday effect) in Nifty 50 index.

2.2 Review of Literature

According to Fama and French (2008) there are patterns in average stock returns that are considered anomalies as they are not explained by traditional asset pricing models like the Capital Asset Pricing Model (CAPM) of Sharpe (1964) and Lintner (1965). While the paper dealt mostly with fundamental anomalies, it gave an excellent glimpse of how pervasive these anomalies are.

Calendar anomalies

A calendar effect (also known as a calendar anomaly) is any market anomaly, variation in stock market behavior, or economic effect that seems to be related to the calendar, such as the day of the week, time of the month, time of the year, etc. The turn-of-the-month (TOM) effect, one of the return seasonal anomalies, is the propensity for stock returns to increase during the course of the last trading day of one month and the first few trading days of the following month.

Turn-of-month effect

This effect is connected to the brief boost in stock prices that occurs in the final or opening days of every month. According to some of the study studies on the topic, the wage distribution in the final or first week of a month causes the turn-of-the-month effect since it increases investor liquidity. Some analysts also blame the quick stock market reinvestment of seniors' payouts from pension plans and other retirement accounts. The turn-of-the-month effect

states that early-month mean returns are higher than those of later-month days.

Kok and Wong (2004) examined the third-month anomaly that occurred in five ASEAN nations during the 1997 ASEAN financial crisis. Third-month anomaly primarily refers to the calculation and analysis of returns for each of three sections inside a given month. Cadsby & Ratner (1992) studied the international data to conclude presence of turn-of-month and pre-holiday effects. Chandra (2009) found evidence of these anomalies in BSE, which state that the existence is against the principle of Market Efficiency.Chandra (2009) Singh et al. (2020), stated that average return during Turn-of-the-Month is greater than non-Turn-of-the-month days.

Chandra (2009) Singh et al. (2020) Tadepalli et al. (2021), states that among broad market indices Turn of the Month anomaly has strong persistence in small and mid-cap indices. Strength of anomaly is higher if only first 2 trading days are considered. Overall, the wide existence of the anomaly is evident in the context of Indian markets.

Weekly Effect

Over the past few decades, there has been a lot of research done on the phenomena of day-of-the-week impacts. The calendar time hypothesis is a continuous process, therefore the return on Monday would be equivalent to an investment of three calendar days. As a result, the expected return on Mondays would be three times greater than the expected return on any other day of the week (French, 1980).

Verma (2004) found that the Indian stock markets do manifest seasonality in their returns' pattern. Singhal and Bahure (2009) found lower returns on Monday and higher returns on Friday across different indices. Their study also indicated that it might be possible for investors to obtain positive risk-adjusted returns using timing measures.

Kumar (2015), studied the similar aspect of Turn-of-the-Month, Weekly effect and found the evidence that Indian markets are not resistant to the same.

3. Data Description

For the purpose of thisresearch paper, we have gathered a total of 3,716 daily closing prices of Nifty 50 index for the period 1st October 2007 to 30th November 2022. The closing prices have been extracted from the official website of NSE. Taking into account the Indian stock market, Nifty 50 index includes 50 largest and most actively traded stocks on NSE. It is widely considered as the benchmark index to gauge the overall stock market performance and hence, the same has been selected as part of the study.

Daily market returns from NIFTY 50 index were calculated as mentioned below:

$$Ret_t = In\left(\frac{Value_t}{Value_{t-1}}\right)$$

$Value_{t-1}$ = Openingvalue of the NIFTY on previous trading day

$Value_t$ = Closing value of the stock on the given day

Ret_t = Return from the stock using Natural Log function

4. Research Methodology

The study uses the methodology established by Lakonishok and Smidt (1988) to measure the TOM effect. This measure has also been part of the similar studies conducted by Ogden (1990), Kumar (2015) and Singh et al. (2020). Under this approach, the TOM days are considered as the last four days of previous month and the first three days of the following month. Then the returns from TOM days are compared against the returns of non-TOM days to effectively analyze whether there is significant difference among the two.

H_{01}: Return from TOM days are not significantly different from Return from Non-Tom days

H_{a1}: Return from TOM days are significantly different from Return from Non-Tom days

The TOM effect is measured using the single factor regression as follows:

$$R_t = a + \beta D_{TOM} + \varepsilon_t$$

Where,

R_t = Return from NIFTY at time t, D_{TOM} is the dummy variable to indicate TOM days as '1' and non-TOM days as '0'. α and β signify the 'intercept' and the 'slope coefficient' respectively while ε indicates the error term. If the β tern is statistically significant, then there is presence of 'TOM' effect and the H_{01} would be rejected.

The weekly effect mentions that the average return from 'Monday' or 'Friday' can be significantly different from 'Tuesday, Wednesday and Thursday' (TWT) return.

H_{02}: Return from Monday are not significantly different from Return from TWF days

H_{a2}: Return from Monday are significantly different from Return from TWF days

Similarly,

H_{03}: Return from Friday are not significantly different from Return from TWF days

H_{a3} : Return from Friday are significantly different from Return from TWF days

For measuring the weekly effect, we have carried out the 'Two-Tailed T-distribution' for difference of mean

$$t = \frac{\overline{X}_1 - \overline{X}_2}{\sqrt{\dfrac{s_1^2}{N_1} + \dfrac{s_2^2}{N_2}}}$$

Where,

For Monday Effect

t = value of t-statistics, $\overline{X}_1$ and $\overline{X}_2$ are the means of the respective samples of Mondayreturn and TWT return. S_1 and S_2 are the standard deviations of the samples while n is the sample size.

For Friday Effect

t = value of t-statistics, $\overline{X}_1$ and $\overline{X}_2$ are the means of the respective samples of Friday return and TWT return. Sand, S_2 are the standard deviations of the samples while n is the sample size.

If the t-statistic is statistically significant, then there is presence of 'Weekly effect' and the H_{02} and H_{03} would be rejected.

5. Data Analysis And Interpretation

Descriptive	Statistics
Statistical Measure	Value
Mean	0.04%
Standard Error	0.023%
Median	0.062%
Mode	0.00%
Standard Deviation	1.39%
Sample Variance	0.02%
Kurtosis	13.8419
Skewness	-0.26869
Range	30.24%
Minimum	-13.90%
Maximum	16.33%
Sum	131.79%
Count	3,715

Source : Authors' Contribution

Regression Output for TOM Effect

	Coefficients	Standard Error	t Stat	P-value	Significance Level
Intercept	-6.45172E-05	0.000281272	-0.229376713	0.818588768	NS
D_{TOM}	0.001222623	0.000480309	2.545491591	0.010952496	**

Source : Authors' Contribution

NS = Not Significant, ** = Significant at 95%

t-test Output for Weekly Effect

	Mean	Variance	N	Difference	SD	df	t-stat	p-value	Significance Level
Monday	-0.028%	0.0289%	745	-0.077%	0.07%	1094	-0.90	0.3709	NS
Friday	0.06%	0.0205%	731	0.01%	0.06%	1211	5.54	0.0000	***
Other	0.05%	0.0193%	2239						

Source: Authors' Contribution

NS = Not Significant, *** = Significant at 99%

6. Finding

Based on our statistical output, the findings can be summarized as follows :

- The coefficient of the term 'D_{TOM}' is statistically significant at 95% confidence interval which means that there is presence of 'TOM' effect in the NIFTY during the period of our study.

- The t-statistic for 'Monday' is not statistically significant, however, the t-statistic for 'Friday' is

statistically significant at 99% confidence interval. Therefore, we conclude that there is no 'Monday Effect' while there is presence of 'Friday' effect in NIFTY over the period of our study.

Effect	Null Hypothesis	Status	Alternative Hypothesis
TOM	H_{01}	Reject.	Accept H_{a1}
Monday	H_{02}	Failed to Reject.	Cannot Accept H_{a2}
Friday	H_{03}	Reject.	Accept H_{a3}

7. Conclusion And Implciations

This study adds originality to the existing literature by analyzing the presence of Calendar Anomalies in the Indian stock market for the period from 2007 to 2022 on NIFTY index. Along with the above implications for the researchers, this study also presents useful findings for the policymakers and investors. Presence of anomalies is usually considered as an adverse outcome as per the theory of Efficient Market Hypothesis. The markets that typically show weak form of efficiency have presence of calendar anomalies. The findings of this study are in line with the findings of similar studies carried out previously in the Indian context. The presence of calendar anomalies found by Verma (2004), Chandra (2009), Kumar (2015), Singh et al. (2020) and Tadepalli et al. (2021) have been reciprocated by this study. The presence of TOM effect and Weekly effect in the NIFTY can be considered as a critical area that needs to be addressed from the point of view of policymakers.

8. Limitations And Future Scope

This study limits itself only to the returns of Indian listed companies during the period 2007 to 2022. The study considers the daily returns from 'NIFTY 50' which is a Large-cap equity index. In future, similar study can be carried out for mid-cap and small-cap companies by using relevant indices. Similar studies can also be carried out with other country's indices. The authors have focused only on the two form of calendar anomalies, a causal study identifying factors behind the presence of such anomalies can be explored using appropriate statistical techniques. Finding presence of other form of anomalies using NIFTY index can also be a topic of future research work.

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Human Behaviour and Egress in Fire

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Abstract : The majority of fire-related deaths and injuries in India and other countries continue to occur in situations involving fires in homes and workplaces, where it is recognized that human factors play a crucial role. However, there isn't a current analysis of the literature on people's actions during house fires in the field of fire safety. A review of the literature in this field is necessary given the expanding corpus of research on human behavior in home fires. This study summarizes what is now understood about how people behave in residential and commercial fires, highlighting the apparent disparities between these settings and what is understood and accepted about human behavior in public, commercial and industrial spaces.

This paper then considers the nature of "fire risk," contending that much of the work in this field still confuses or fails to acknowledge the presence of several risk profiles, instead defining fire risk as a single category of risk, focused primarily on criteria connected to fatalities. The danger of a fire occurring, the risk of fire injury, and the risk of fire fatality are at least three different types of fire risk, according to research findings. This paper makes the case that persons who survive home and workplace fires should not be regarded as "near miss sufferers," but rather as a separate and unique category, by combining the research on human behaviour in residential fires.

Keywords : 'Human behavior in fire', 'Dwelling fire', 'Domestic fire', 'Fire injury', 'Fire fatality', 'Fire risk', 'Fire incidence', 'Fire mortality'.

Introduction

Home fire danger rose as a result of the COVID-19 pandemic lockdowns. Since so many people were at home, there was a risk of home fires starting due to the increased use of heating equipment, increased cooking, and increased smoking. The market for fire safety systems is anticipated to expand significantly in the years following the pandemic due to the rising population of nations and the need to protect lives.

The need for new, better systems were caused by the inadequacies of the outdated ones or by the incapacity of the fire and safety systems for the new, vertically expanding real estate. Distributors, system integrators, and manufacturers of fire systems can use this to inform the general public or a client about more effective protection. Additionally, the business environment is anticipated to benefit from the growth of the industrial and commercial sectors as well as the increased knowledge of fire safety.

To counteract the growing threat and lower fire risks in warehouses, fire safety rules across large warehouses are also driving demand for fire safety equipment. The British Sprinkler Alliance (BSA) also discovered that the impact of warehouse fires on productivity and the supply chain results in an additional yearly loss of USD 230 million for UK firms. It is crucial to install fire protection systems to guarantee people's safety during emergencies. Installation is required from buses to hospitals to prevent deaths and injuries. In order to deploy fire safety systems at workplaces, buildings, and transportation, government authorities in numerous nations have been initiating new programmers and regulations

Fire rules and building alarm system standards are primarily intended to give building occupants early warning so that they can leave the structure and call the fire department. The demand for fire safety systems is being fueled by rapid urbanization and industrialization. It is also projected that increased fire safety awareness will support market expansion.

The Indian government claims that since fire incidences increased in February 2022, there was a greater necessity for installing fire safety equipment in passenger and school buses. To recognize the importance of deploying such systems, government authorities have been taking various actions. Companies in the market are increasingly adopting a digitalization strategy while developing new products. As an illustration, Siemens AG implemented the Cerberus Portal, a cloud platform that enables remote access to all fire control panel information, including faults, alarms, and general system status, from mobile devices. With this application, the business anticipates adding more than 10% of clients while maintaining the same number of employees.

For building and fire safety on job sites, the National Building Code of 2016 offers rules and guidance. A legal framework for ensuring fire safety on construction sites is provided by the Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act of 1996, The Building and Other Construction Workers (Regulation of Employment and Conditions of Service)

Central Rules of 1998, as well as numerous other state regulations.

Fire situations on construction sites have the potential to have disastrous effects on the buildings and workers involved (Little wood et al., 2017). Plans for emergencies include numerous actions, such as assembly locations and evacuation routes [(Aedo, 2012)]. The numerous safety management strategies for the building and construction industries were described by Clarke (1999). The concepts of organizational culture, safety culture, summaries of definitions and research, models and measurements of safety culture within construction safety were reviewed by Rafiq et al. in 2007. In their study of several management techniques, Alison et al. (2002) covered the best strategies for lowering employee injury rates. The growth of safety awareness in varied working situations was investigated by Ann et al. in 1997.

Objectives of the study

- To study human behavior in fire situations

- To study the effect of fire on environment

- To study awareness in humans about fire and its safety measures

- To provide a systematic and objective approach to assess hazards and their associated risks to fire safety.

- To suggest measures and strategies to enhance fire safety in residential and commercial building.

Literature Review

Today's fire-fighters make up greatly skilled fire departments, which respond to all types of emergencies. Emergencies that require swift response and expertise of the Fire service includes cave-ins, building collapse, motor vehicle accidents, air craft crashes, hazardous material releases, explosions, natural disasters, terrorism incidents, water related incidents and a vast range of medical and trauma related injuries. According to Moore-Merrell (2008), fire-fighters undergo excessive numbers of line-of-duty injuries and illnesses. Fire-fighters are at risk for injury or death responding to the emergency and returning from the emergency. Moreover, fire-fighters attitude and the environment that attitude creates gives rise to injuries as an aggressive, uncontrolled and individualistic approach (Young, 2001). Injuries may range from minor to career ending. the study of ShubertiandiSobalai (2002), pointed out that fire-fighters work are related to diseases like cardiovascular disease, respiratory diseases and cancers, traumas as health effects. According to Moore (2008) fire-fighting is an occupation that is liable to injuries and illnesses and fire-fighters are not able to eliminate the risks. as risks

cannot be eliminated in this profession, injuries can and will occur. as a matter of fact increase in number of injuries and fatalities is appalling worldwide as the fire fighters are facing serious health problems (anon). This shows that even if developed and under developed countries try to reduce the level of risks it still remains a concern as in this profession injury can and will occur. Finally, this chapter will furnish by safety measures, safety management system and safety in order to reduce injuries, death and health problems of fire-fighters.

Research Methodology

This research study is conducted by analyzing secondary informationon fire and its effect on human behavior and environment.

The Information used was from secondary data from company's websites, research journals, and from other research sources from internet. The data used was effects, cause, and mitigation during fire situations.

When carrying out a systemic study, it is necessary to have an idea of the objectives of the study and an appropriate methodology. Which methodology is suitable depends upon the study objectives and the nature of the systems involved. It is useful to consider systems as either 'hard' or 'soft'. A 'hard' system is one ii which the parts and relationships can be well defined and quantified (such as an engineering System). A 'soft' system is one in which the parts and relationships are not easily defined and quantified. All systems in which human beings play a large part are essentially Soft'. Also, it may not be possible to give exact expression to the objectives of a study of a soft system, at least at the beginning. When considering the problem of fire safety in humans, the objective might be rather. Tentatively stated as: "How to increase fire safety in environment". However, the exact Statement of the 'problem' would almost certainly change as the study progressed

1. Measures

Fire safety measures The idea of offering complete safety in a facility is known as ." Different points of view on fire safety and management were examined. Fire safety management should be planned for new structures at the design stage of the fire safety requirements using the "engineering approach." The goals for fire safety should be articulated in a clear and concise manner. safety instruction manual as suggested. For older structures, it is advised that the fire safety features be evaluated using a ranking system based on the passive building design and active fire protection system and then contrasted with the new fire rules.

The first rule of fire management stipulates that there must be enough exits from the structure in accordance with its scale and occupancyas specified in the safety instruction

handbook. It is suggested that, for older buildings, the fire safety features be ranked in accordance with the active and passive building designs and contrasted with the new fire regulations.

According to the first principle of fire management, there must be an adequate number of exits from the building given its size and occupancy.

The National Building Code (NBC) of 2005, a comprehensive set of regulations for the construction, maintenance, and operation of buildings of all sorts, specifies the number, size, and position of exits. Office occupants must also make sure that staircases, stairwells, and hallways are clean, well-ventilated, and clear of obstructions in order for them to be usable. effective at a time of need. Open spaces in buildings are essential for effective fire management.

Smoke detecting systems

The initial few minutes of a fire are critical for keeping it under control. Automatic fire alarm systems, including smoke and heat detectors, are required by international building codes and are particularly helpful in spotting fires at periods when building occupancy is low. effective at a time of need. Open spaces in buildings are essential for effective fire management.

Install smoke detecting systems

The initial few minutes of a fire are critical for keeping it under control. Automatic fire alarm systems, including smoke and heat detectors, are required by international building codes and are particularly helpful in spotting fires at periods when building occupancy is low.Installing your smoke alarms correctly - and making sure they are in working order - is an important step to making your home and family safer from fire.

Where should smoke detectors be placed?

The NFPA states that smoke detectors should be installed inside and outside of bedrooms as well as on every level of your house, including the basement. Your home's size will determine how many smoke detectors you require. Your interior should have dual-sensor smoke alarms installed to most efficiently identify both sorts of small fires.

Smoke rises, thus it is better to put smoke detectors high, usually on ceilings. The optimal location for a smoke alarm on a wall would be less than 12 inches from the ceiling. Choose a location far from air ducts, windows, and other draughty areas where smoke could escape and not reach the detector. If you connect all of your smoke alarms, they will all beep simultaneously, giving you more comprehensive protection.

Maintain smoke suppression systems

Fire extinguishers are only useful if they function, so you should frequently inspect them. High-rise building that are challenging to enter and evacuate should think about installing automated sprinkler systems.It is very important to have strong fire protection elements in any building, regardless of the size or space. Although all companies are required to have fire inspections, there are still maintenance duties you can complete yourself to ensure that your fire protection system is always working. Keep reading to discover easy steps to maintaining your company's fire safety.

Maintain your Sprinklers

One of the first steps that you can take to maintain your fire protection system is to optimize the sprinklers. It's your responsibility to keep your sprinklers up to date and up to code. In the event of an emergency, your sprinklers are crucial to putting out a fire. It's also important to never block sprinklers. Do not place tall objects near a sprinkler head and never paint over sprinkler heads.

Check Fire Alarms

Your system and alarm equipment are both important when it comes to notifying you of a potential threat. Your alarms should be tested regularly to ensure they are working properly. Simply pressing the "test" button on your alarm system will allow you to showcase the system is in working order throughout your facility. It is also helpful to keep the alarm sensors dusted and dirt-free.

Test Smoke Detectors

Similarly, smoke detectors are vital when it comes to indicating a fire threat. Replace your batteries regularly and keep the detectors clean. Be sure to never paint over your detectors either. There should be at least one smoke detector on every floor of your building, including a basement level. These devices should never be installed near windows or vents.

The National Fire Protection Association (NFPA), a non-profit organization based in the United States, states that automatic suppression systems save damage costs by 60%.

Ask the local fire brigade to assess safety

Fire departments will independently evaluate the level of fire safety in your building for a small cost. storage of potentially dangerous or combustible goods, ageing and unstable structures, and insufficient escape routes.Install smoke alarms inside of bedrooms and outside of sleeping spaces on each level of your home. And check the smoke alarms once a month. If a fire breaks out in your house, leave right away, stay outside, and call for assistance.

U have to discuss and practice your fire escape plan with all of your family members at least twice a year. And avoid overusing the electrical equipment.

When temporary equipment isn't in use, it shouldn't be left plugged in.

Never use extension cords and never think of them as permanent solutions.

Escape Plan for Building

Include two escape routes in your escape plans for each building .

Select a meeting location outside the building and make sure smoke alarms are positioned to provide early detection and notice so you have enough time to execute your escape plan.In order to open from the inside in all lighting conditions, doors must be located in your path of travel. Verify that doors located in your path of travel **Do not** require a key to open from the inside Take note of whether any disabled or elderly residents will require evacuation assistanceConduct a roll call to verify everyone has escaped the building Remain outside until notified by i the fire department that it is safe to re-enter the building Practice, practice, practice your plan.

Escape Plan for Office

Evacuation plans should include areas of refuge Check to see if the window can be opened from the inside and if you can fit through the opening.

To test if you can fit through the opening, see if the window sill is low enough.

A rainy security should be able to be opened from the inside without a key and should be usable in all lighting conditions.You need to decide how you're going to get out if the window is above the first story.

Ensure that anything—sloping terrain, the window's location, or anything else—will not prevent someone from using the window as a backup escape route.

It is easy to dismiss the need for a workplace evacuation plan before a disaster really happens, but by that point it might be too late. Furthermore, it's important to be ready for a variety of emergencies, not only large ones like floods, earthquakes, hurricanes, and terrorist attacks. When was the last time your office staff practiced a basic fire drill or even just discussed what to do if a fire breaks out in your building?

Fortunately, it doesn't take much time or money to create a straightforward, potentially life-saving office evacuation strategy. Start by preparing for the worst and doing the following things to fully prepare your office for an emergency:

By identifying probable calamities, choose which ones to prepare for.

Create easy evacuation strategies.

Conclusion

To determine the factors that cause occupants to decide to take a specific action and the factors that determine whether they actually take that action, research on actual fire occurrences is required. Researchers can start creating a comprehensive, predictive behavioral model for a building fire evacuation by identifying the variables that have been proven to affect each stage of the behavioral process. Anywhere, at any time, a fire could break out. It generates complete waste. It might endanger the lives of anyone inside and seriously injure nearby property.

About 5.9% of all deaths in India reported in 2012 from natural and unnatural causes were caused by fire. The risk of fires in Indian industry has been ranked as the fifth highest. In India, electrical failures are the main reasons for fires. The community as a whole will eventually be responsible for covering any losses, thus adequate attention must be taken to minimizing fire loss.

Smoke detectors, fire alarms, water mist systems, automated sprinklers, and clean agent suppression systems should all be encouraged, especially in high-rise structures. A significant part of fire protection should be played by passive fire prevention systems.

Even though there are several fire safety laws, guidelines, and standards in India, they are rarely adhered to. Major fires were started in numerous buildings due to a lack of adherence to fire safety regulations. Although a fire safety audit has been proven to be a useful tool for evaluating the fire safety standards of a building, there are no specific guidelines about the scope, goal, methodology, or frequency of a fire safety audit in any of India's safety legislation. As a result, Fire Safety Audit should be made compulsory throughout India, and the task should be delegated to independent organizations with the necessary knowledge. It seems sense to do an annual fire safety check. Above all, the effectiveness of fire defense and prevention and fire protection mainly depend upon the active co-operation from all personnel in an occupancy.

Any essay on fire safety should start by clarifying why the problem can prove to be disastrous. In the workplace, the losses due to conflagration can be regarded in terms of property damage and loss of lives. However, most people do not worry about material loss because they are easy to replace; life is the most precious thing.

In most situations, fire arises from avoidable situations. Additionally, some are caused by unavoidable circumstances such as lightning. This fire prevention essay

will focus on safety measures that organizations can adopt to prevent the occurrence of fire-related incidences.

Recent fire incidences have revealed that most organizations do not have a fire prevention and detection program. While the role of fighting fire is designated to firefighters, organizations should do whatever it takes in their capacity to ensure fire is avoided. This is because firefighters always come in when the situation is out of control.

Fire detection and prevention programs provide guidelines to all the employees so that they would be empowered to detect fire early enough to take the necessary precautions (Diamantes, 2010). Besides, it helps the workforce understand how they should carry themselves in the event of fire. For instance, the organization educates the employees on how to use fire extinguishers and the emergency exits.

Employers should include regular orientation periods to ensure that the employees are familiar with the structures that are within the organization's close proximity. This should include fire drills to evaluate an organization's level of preparedness in handling disasters. It is essential to use the drills to identify areas that need improvement.

For instance, if the emergency exit is not clear, the management should clear all the possible barriers. Additionally, the management should ensure the firefighting equipment's are in good working condition. Moreover, there should be appropriate signage to direct people to the emergency exit, and give warnings concerning areas that are prone to fire probably due to presence of combustible substances (Jones, 2010).

Similarly, workers should handle combustible materials, such as propane, with a lot of care because they can burst into flames from a slight inducement. This implies that they should keep such materials from possible sources of ignition such as electricity and smoke. In addition, such materials should include warning labels so that whoever is handling them, he/she is aware of the potential hazard (Jones, 2010).

When disposing combustible materials, it is advisable to avoid mixing with ordinary waste matter, but they should be disposed in separate bins. Moreover, organizations should establish designated smoking areas to ensure cigarette ends do not cause fire. If the smoke is exposed to smoke detectors, it could trigger the fire alarm to turn on.

Firefighting equipment should be clear from any form of obstruction to make sure they are accessible when the need arises. Some workplaces lack proper arrangement of equipments, and in the event of fire, these items have to be stumbled upon to get the fire fighting equipment. What makes it worse is that some of these items are quite flammable.

Electrical faults are also the major cause of fire. Some are bound to happen while others are caused by negligence. For instance, it is insane to leave any electrical appliance unattended. Additionally, workers should avoid overloading electric sockets beyond their supply ratings.

If one has to use an electric appliance, he/she has to stay within until he/she finishes what he/she was doing with the gadget. Cracked electric cables can be disastrous, and hence, electricians should repair them immediately because leaving them un-insulated could result in a fire if exposed to flammable substances.

A qualified technician should repair faulty appliances immediately. Workers should not use faulty appliances because they can easily trigger a fire. Furthermore, there should be a central electric power control unit to switch off power in the event of fire (Diamantes, 2010).

Additionally, a building that has heavy machinery requires proper ventilation. This is because poor ventilation can cause a lot of heat to accumulate in the chambers and later result in explosions that could cause fire. If gasoline powers such machinery, it should be refueled in an open air space because refilling it in a confined location increases the chances of igniting a fire. Moreover, the machinery should be given some time to cool before refueling because the high temperatures within its compartment can ignite a fire.

Incase flammable substances spill on the floor, they should be wiped out completely. Such substances can be ignited easily even by increase of temperature in room. All equipment should be switched off at the end of the day. This task should be assigned to someone who has expertise in handling electrical and mechanical equipment.

In case a fire is detected early, all the employees should be evacuated from the house immediately and gather at the designated fire assembly point. This is done to help in identifying individuals who need to be rescued. The assembly point should be at an open space at least fifty meters from the premises.

During the evacuation procedure, no one should be allowed to use the elevator because it is likely to be stuck, possibly because of power failure. The alarm system should be turned on in order to sensitize all workers that they need to exit from the premises, and no one should be allowed to re-enter after exiting. Fire has consumed many people in the past simply because they went back into the building after a successful exit.

A fire should be arrested before it builds up into huge flames. This can be done using appropriate fire extinguisher. Appropriate here means that fire is categorized into various categories, and each group has its own unique type of extinguisher. For instance, a fire caused by electric faults is

different from a fire caused by flammable substances. Therefore, unless the appropriate extinguisher is employed, the fire will persist.

Furthermore, the individuals who are using these extinguishers should put on protective clothing to shield them from any injuries. In brief, all these instructions should be included in the company's fire emergency plan. Wainwright (n.d.) argues that such plans are supposed to be put in writing and displayed in an area that is regularly visited by employees to ensure they know what they are supposed to do in case of a fire.

In conclusion, fire in workplaces should be avoided at all times because besides the damage of property and loss of lives, there are people whose career might be ruined by such incidences. Similarly, fire causes organizations to fall back as they struggle to recover the losses incurred. In case a business premise catches fire, the employees should open all windows and doors before they vacate the building. Any equipment that is on should be switched off because if it explodes, it will only escalate the fire.

Measures

A key component of fire protection is an efficient fire prevention strategy. Nevertheless, it is important to remember that certain fires will unavoidably occur regardless of how effective a fire prevention technique is.

There are many various kinds of firefighting tools and suppression systems, including CO_2, FM 200, and NOVEC, to meet varied needs. The most efficient fire prevention system found in High Rise structures, which can both detect and put out flames in the early stages, is automatic fire sprinklers linked with detection. Water Mist's use in a variety of situations is increasing popularity every day. In India, passive fire protection systems are also gaining popularity.

Water is the most affordable, effective, and environmentally friendly fire extinguishing medium despite all technological advancements. The best coolant and protection is water, which has a high latent heat of vaporization. If there isn't enough water on hand at the right pressure to battle a fire, no amount of appliances or equipment will be very useful. It must be applied sufficiently and quickly enough to effectively stop the fire's increasing expansion for it to be successful. It must be kept in mind that if corrective action is not done as soon as a fire breaks out, the volume of water needed multiplies exponentially as the amount of time it takes the fire fighting personnel to put out the fire to arrive at the fire's scene and launch efficient firefighting efforts.

A fire may be put out with less than 1000 liters of water if it is discovered within two or three minutes after its start. However, if the water is not applied until after 5 to 10 minutes, which is likely the quickest time for a fire brigade to get at

the location of the incident, the fire may have gotten out of control and require 50 to 100 times more water to put out. Any sort of fire apparatus must be used successfully, and this is dependent on factors including equipment, maintenance, and training. An occupier must make sure that all of its personnel are prepared for and aware of what to do in the event of a fire. It must be kept in mind that using water to put out a fire improperly has even resulted in significant damage.

It has been noted that inadequate emergency drill training and a lack of expertise in the field of fire retard firefighting efforts. It's likely that regular emergency exercises and sufficient fire safety training can improve the effectiveness of the emergency response.

It is a frequent misperception that doing regular fire drills discharges an occupier's training duties. While teaching employees and occupiers and conducting fire drills are clearly related, they are not the same thing. Fire drills are undoubtedly a very beneficial activity, but when viewed in isolation, they fall short of fully educating staff members and building occupants on all pertinent issues.

It is still debatable whether or not all employees or occupants should receive fire safety training, with many occupiers adopting the viewpoint that it is not fairly practical to do so. Most likely, this viewpoint has never been put to the fullest legal test. However, many employers and occupants take fire safety seriously and train a significant portion of their workforce.

Legislations

The laws, regulations, and rules are crucial in requiring owners to install the necessary active and passive fire safety systems. The primary model code in India for laws governing building construction and fire safety is the National Building Code of India, 2005. Numerous State Governments and Local Bodies have included many of the code elements in their own construction laws.

As an illustration, the Maharashtra Fire Prevention and Life Safety Measures Act 2006, which was created with this goal in mind, established the 2009 Maharashtra Fire Prevention and Life Safety Measures Rules. Who will be in charge of supplying the necessary fire protection and prevention system in a structure or in an occupation has frequently been a topic of discussion.

On these topics, the laws and regulations that the State of Maharashtra has passed are clearly stated. The developer, owner, occupant, or whoever is called must adhere to all fire and safety measures adhering to the National Building Code of India, 2005, and as amended from time to time, failing which it shall be treated as a violation of the Act, as stated in Section 3 of the Maharashtra Fire Prevention and Life Safety Measures Act, 2006. It indicates that the

owner or occupier of a building or other structure is responsible for maintaining the fire safety installations within that structure or other structure.

Even though there are several fire safety laws, guidelines, and standards in India, they are rarely adhered to. Major fires were started in numerous buildings due to a lack of adherence to fire safety regulations. Some of the fire officials in India even believed that because there are no severe fines or penalties, owners or societies do not care to maintain the fire prevention devices they have put in their buildings on a regular basis.

Probably for this reason, the Maharashtra Rules now include a clause referring to "Licensed Agencies." A licensed agency is required to issue a Certificate regarding the work executed by them is in compliance in relation to Fire Prevention & Life Safety Measures in Form "A" and Six monthly Certificate in Form "B" to the owner or occupier for compliance of the Fire Prevention & Life Safety Measures in accordance with Section 3(3) of the Maharashtra Fire Prevention & Life Safety Measures Act, 2006 and Rule 4 (2) of the Maharashtra Fire Prevention & Life Safety Measures Rule, 2009 At the time a certificate is issued, the safety measures that were properly implemented by them in the buildings or premises are still operational.

Fire and safety audit

It has been discovered that fire safety audits are a useful tool for evaluating the fire safety standards of a business or an occupancy. The National Building Code of India, applicable Indian Standards, and laws passed by State Governments and Local Bodies regarding fire prevention, fire protection, and life safety measures are all intended to be evaluated for compliance with the building.

The scope, objectives, methodology, and frequency of a fire safety audit are not clearly defined in any of India's safety legislations, despite the fact that a thorough fire safety audit can address the inherent fire hazards connected to the regular activities in an occupancy and recommend measures to reduce the potential fire hazards.

To achieve fire safety standards, NBC of India advises that the key personnel of the building's occupants do periodic fire safety inspections. Depending on the type of operation and the nature of the materials handled in the facility, the statutory authorities need an external agency to conduct a fire safety assessment for industrial buildings. Building owners and residents are required by the 2009 Maharashtra Fire Prevention and Life Safety Measures Rules to conduct half-yearly fire safety audits and submit the results to the fire department.

It is a sensible measure that other states can adopt. However, because the same agency has been entrusted with the work of "installations" and "maintenance" of firefighting systems, transferring the obligation of conducting the fire safety audit to the "licensed agencies" has led to some uncertainty. Perhaps the scope and methods of the audit have been diluted as a result of this arrangement. Furthermore, it is questionable if the so-called "licensed agencies" possess the qualifications and experience needed to carry out a successful fire safety examination. The fire safety assessment appears to have therefore turned into a routine.

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Employment Opportunities in Gig Economy : Challenges for Recruiters

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Abstract : The world today is witnessing slow recession, every day we read a news about big giants laying off or firing employees. This has resulted the change in the pattern of way people work. Especially millennials today who would be the part of majority of work force have different ways to work and keep themselves engaged. Covid-19 also gave a rise to the change in the working styles of organizations from physical to work from home to now work from anywhere are the styles we are observing. Employees prefer to be engaged with their work more than spending their time in travelling to office. These changes have given rise to many opportunities which were not in existence before, gig economy is one such concept. Gig economy means a labour market characterized by the prevalence of short-term contracts or freelance work as opposed to permanent jobs. Gig-economy has greatly impacted individuals making them more persuasive and engaging towards their work. As many people aren't dependent on one employment, they are seeking for more and more opportunities to work simultaneously to sustain in this competitive world. Many flexible, employable, and freedom free opportunities are been offered in gig-economy. Through this study we would explore the opportunities gig economy is offering for the millennials and the challenges that would prevail for the recruiters and organizations will also be highlighted.

Keywords : Gig economy. Recruitment, HR policies, Millennials

Introduction

The world has entered the industrial revolution 4.0 where technology, computers and automobiles has captured the market with great efficiency, cost cutting and with less human intervention and minimum human support. This fourth industrial revolution is creating a lot of opportunities and bringing change in how the individuals work, engage and collaborate. It has also brought new challenges in the global market as it has minimum human support, it has given rise to unemployment and brought questions over income security and job security. As we are aware about the recession being hit on the large scale, it has created a fear of security of work. As these changes are taking place in the market, this has given rise to the concept of gig economy, where the individuals are not involved or committed to work as employee but are free lancers or temporary employees. Today'syouth is preferring to work independently with steady work flow, flexibility, learning opportunities and the better work life balance and this are turning to be reasons for shifting from corporate job towards the gigs.

Covid-19 has also brought more advancement in technology but it has also impacted jobs and the way people work. We are witnessing more people opting for freelancing (both online as well as offline) or minimum work which can give them livelihood opportunities for the new and young entrants in the industry. It has also provided opportunities to the informal labour creating the vast pool and especially women are benefitting from this as they need to balance between both household as well as work life. It has been providing a platform with the changing demands from the market and being offering livelihood to the society that to working for limited time and earning better.

The advantages for gig economy trends are as follows:

1. Reduction in employee cost

2. Reducing unemployment

3. Flexibility of work

4. Hiring best talent

5. More opportunities for women.

Literature review

Gobinda Roy and Avinash K Shrivastavain their article titled **"Future of gig economy: opportunities and challenges"** emphasized on many factors that impact the growth and significance of Indian economy. The number of gig workers will continue to increase as more and more top talent makes gig labour their primary source of income employment. Although the gig economy offers workers tremendous benefits in terms of flexibility, additionally, it negatively affects the industry in which people work in terms of employment, independence, environment etc. Whereas Friedman, g., 2014 giving us global perspective through their research on **"Workers without employers: shadow corporations and the rise of the gig economy"** highlighted that a growing percentage of American workers are no longer employed in "jobs" with long-term relationships with businesses, but rather are recruited for "gigs" under "flexible" agreements as "independent contractors" or "consultants," working solely to finish a specific task or for

a specific amount of time and having no more connection to their employer than there may be between a customer. Although some have praised the growth of the "gig" economy as a reaction to the desires of a more entrepreneurial generation, it is more probable that it is being driven by firms' concerns about how to reduce pay and benefit costs during business downturns while simultaneously decreasing their liability to unfair dismissal lawsuits.The development of gig work demands new social policy initiatives since it pushes greater economic risk onto workers while also excluding gig workers from many employment-based social insurance programs from the new deal era. A study conducted by Leeds University Business School, 2018 on **"The gig-economy and the impact on the millennial generation"** shares that there is a positive impact of gig economy on millennials. Covid 19 also had an impact on the way employees work and Muhammad Umar, Yan xu &Sultan Sikandar Mirza, 30 Dec 2020, in their study on "The impact of covid-19 on gig economy" concluded that covid-19 has positively affected the gig economy. Since the occurrence of covid-19, there have been more regular chores and jobs posted and filled on platform economies. Due to the ongoing uncertainty, the gig economy is taking some time to adapt to the new normal since the covid-19 incident has produced an exceptional scenario. The study was unable to identify a long-term association between covid-19 and the gig economy, but it surely had a short run effect.

Based on the literature review, the study aims to consider the following objectives:

Objectives of the study

1) To understand the employment opportunities available in gig economy for millennials.

2) To highlight the challenges faced by recruiters in hiring millennials for gig economy

Research Methodology

Secondary research has been made to analyse and draw inferences for the study. Based on secondary data available below mentioned challenges were identified:

Challenges for recruiters

1. Data security

Due to covid-19 cases many people were working from home, and which gave rise to the chances of data leakage. The main problem occurred when the husband and wife were working in the competitor companies, which resulted in the shutdown of many companies due to data sharing and raised issues of data security.

2. Gig workers behaviour and no control on turn over

As gig workers also known as freelancers aren't the full-time employees and they work on contractual basis and charge on hourly basis, project basis or weekly basis they don't have a superior who controls them. Gig workers take up projects mostly for the second income which focuses only on money therefore people tend to move on to other organization if cthey are highly paid for the work, it's totally uncontrollable to retain the freelancers to work with the organization as they aren't full time employees which results in high attrition rate.

3. Lack of policy

Mostof the policies, laws are applicable for full-time employees. Henceno policy as such is designed for the gig workers as they work and are paid on timely basis. In many cases it happens that due absence of appropriate policies, organisation sometimes refuse to pay to the gig workers or do not pay on time. They do not have any fringe benefits.

4. Data analysis & interpretation

India's booming gig and platform economy estimates that 7.7 million workers were employed in the gig economy in 2020-2021. According to reports, the gig workforce is projected to grow to 2.35 million by 2029-30. About 47% of gig work is now medium-skilled, about 22% high-skilled, and about 31% low-skilled. *-timesofindia.indiatimes.com*

Current scenario of the industries, regarding hiring new employees, employees are turning to gig jobs for a better work-life balance. *-www.business-standard.com*

Percentage of companies looking to hire gig workers

Industry	2020	Future (2-5 years)
FMCG- Pharma	15%	69%
BFSI	32%	56%
Manufacturing	35%	65%
Technology & BPO	57%	60%
Services	47%	76%

As per the Aon survey in 2020, it shows that different sector are looking to hire gig workers in coming years. Like FMCG which has 15% in 2020 would be extended to 69% of gig workers hiring. BFSI from 32% to 56% to hire gig workers. With a manufacturing sector to hire up to 65% of gig workers whereas the service sector to hire the highest amount of gig workers with 76%. *- www.ibef.org*

Multinationals are introducing flexible hiring options, especially for niche projects, to cut operating costs post-pandemic. Decoding the gig economy reveals that 49% of 145 companies are already hiring gig workers, and 65% plan to increase that number in the next 2-5 years. (aon research) *-www.ibef.org*

Deloitte's latest millennial study found that 64% of full-time workers want to do "side hustles" to make extra money. (Deloitte)

19% say the main reason they have a gig job is to make extra money or cover day-to-day expenses. (Pymnts)

1 in 6 workers in traditional jobs would like to become a primary independent earner. (Mckinsey)

Gig employees are more likely to be young, with 38% of 18-34-year-olds being part of the gig economy. (Edison research)

Recommendation

Policy formation for specially for gig workers can be first recommendation given to the HR and Organization. The policy should include risk and issues like payment, reporting, attendance, etc. Also, there should be a backup plan in case the gig worker leaves the organization suddenly. Even hiring the quality gig worker is a challenge in coming days for the niche skills segment. Though the relation between the organization and gig worker is short term the organization should ensure the timely payment, period of work and finally the exit. In case of recruitment there should be simplified and transparent process. Hr should implement training program for gig workers in order to retain them for next projects. With training programs, HR should also keep digital records of each gig worker and his/her performance; it may help organizations to decide on re engagement with the gig worker.

Conclusion

The gig economy is showing a favourable trend for expansion. The gig economy platform provides an opportunity to connect with individuals in labour markets that are underserved by the traditional job market. Organizations cannot ignore the gig economy, and the HR department must get ready to participate in and make the most of this new labour market.

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Second Generation Entrepreneur – A SWOT analysis

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Born with the silver spoon- that is the instant impression one conjures when we think about a second gen entrepreneur. It is presumed that all the resources are available to him/her and are at their disposal. Placed herewith are my views on the SWOT Analysis of such a person.

Let's start systematically analysing the strengths – The core idea of the business is thought out by the first gen. They have actually struggled and faced all odds and challenges of establishing a business- in their old and tested waywith limited resources of money or formal expertise in the subject and by sheer instinct and on the job learning, a reasonable business is already in place. So the strengths? - An established performing or otherwise business with some outreach in the market with reasonable stability and tremendous growth potential. A reasonably loyal staff who is contented with being a part of the success story of the launch of the business. Usually a unity of command exists and the entrepreneur knows the in's and out's with respect to markets, operations, production, rendering of services, customer relations HR and finances too. Usually there is a paucity of funds and hence being frugal is auto ingrained in the system.Sothere is no existential crisis.

There do not seem to exist much challenges or weaknesses, do they? Well well…Here's the catch. The business must have the capacity and capability to scale up efficiently and effectively keeping time in mind. The second gen must understand the business as a whole, the forward and the backward integration too. The major challenge is HR and Finance along-with maintaining quality while scaling up of operations. To adapt to the growth trajectory, the next gen has to bring in newer talent with fresh views and new tech savvy ways. Alsothey have to ensure that the rich experience existing in the organisation is utilised efficiently. However, most of the times, the earlier gen is reluctant to hand over seamlessly to the next gen leading to considerable loss of precious time, duplication of work and ultimately chaos in hierarchy. This coupled in with third gen can lead to catastrophe for the organisation if not handled effectively.

Now the opportunities – Abundant and plenty. This is because abundance is now slowly becoming the norm. Earlier whatever resources were available were limited. With widening horizons the entrepreneur has to choose wisely as it is only the time that is in short supply. The opportunities to grow horizontally as well as vertically exist. The options of commanding expert knowledge through consultancy services can be exercised. Growth can be both domestic as well as overseas. With the right mix of old and new, the entrepreneur can scale amazing heights in a short span of time.

And the threats – Major being sustaining in the highly competitive environment as second gen entrepreneur usually has come the mid way. He is neither too small nor too large. Further, there are many external threats of acquisitions and mergers which can turn out to be wise decisions financially. But then the entrepreneurship of the first gen tends to get lost. With the rise in social media, just as the good seems to spread fast, any perceived untoward incident travels faster. This is one of the major threats which may hinder talent from getting attracted to the organisation. Alsoalongwith this there are newer threats of data security and natural disasters.

The SWOT matrix would look as follows:

Presumption underlying this analysis is that the business is based on delivering technical expert solutions in a B2B situation. For consumer based business this might vary a bit. For eg. Threat might be greater from competitors setting up similar businesses.

In conclusion, it can be summarised as follows :

The second generation entrepreneur is the strong link for a sustainable business to grow, thrive and add value to the economy. He/she is more aware of the efforts put in by the earlier generation to establish the business, yet is struggling himself to adapt to the speed that the business now requires. Mostly there is a requirement to rethink the earlier set patterns – in fact disrupt the thinking sometimes – in order to breach the old mental barrier in order to achieve the newer set goals. The strength required to breach this barrier is enormous especially if this is a family based business and more than five family members are working for the business. This person is also looked up to by the third gen as their speed is even more and in order for them to be

attracted to this lucrative business, decisions need to be taken at lightning speed.

Basically there exists a huge cultural and perception gap here. I fondly refer to it as the **3S** of the 3 generations. The second gen known as the Millennial and the third gen – Gen Z are clueless as to why the first gen is making such a hue and cry about **Survival** or the Millennial about **Sustenance**. For the GenZ facing the New **Social Experience** –from personal to Digital is a Quantum Leap. There are various statistics to prove how daunting a task it is going to be for the third gen. Mental health is taking precedence over everything else as survival and sustenance are not an issue for them.

So, for the Millennial, newer concepts offinance and adaptations to new patterns of working hours, logistics, work cultureand nuances of communication in newer ways with colleagues can make it difficult to navigate.

Further challenges of natural disasters, global warming and pandemics make the learning curve a lot tougher for the second gen. This person has to be a really tough and positive person in order to carry the business ahead profitably.

To sum up, the Second Gen needs to do a thorough SWOT analysis for **Sustenance** as *statistics show that GenZ entering business is unlikely* and *only about 17% businesses pass beyond third gen. But those businesses who do, last for long and most transition into a professional organisation*(Do Most Family Businesses really fail by the Third Generation? By Josh Baron and Rob Lachenauer - July 19,2021 the Harvard Business Review)

The views expressed hereinabove are based on my 20+ years of experience with the First Gen- Millennial and GenZ in my company Ashida which is a family based private limited company into the business of manufacturing and providing solutions to the power sector.

Entrepreneurial Process

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Introduction

The word 'Entrepreneur' originates from the French word, '*Entreprendre*' which can be translated to *"undertaker"* or, *more interestingly, to "adventurer"*. And that's what it is, isn't it? An Adventure!

An entrepreneur is someone who identifies and acts on an idea or problem that no one else has identified or addressed and dives into it like it is an "adventure" to be 'undertaken'.

This combination of recognizing an opportunity to bring something new to the world and acting on that opportunity is what truly distinguishes an entrepreneur from a small business owner. A small business owner is someone who owns or starts a business that already has an existing model, such as a restaurant, whereas an entrepreneur is someone who creates something new. This new creation can be a new process, product or a concept… a business that identifies a new or unique target market, or a combination of ideas that creates a new approach or method.

Who is an Entrepreneur?

Studies of the entrepreneurial personality find that entrepreneurs share certain key traits. Most entrepreneurs are -

- Ambitious : They are competitive and have a high need for achievement.

- Independent : They are individualists and self-starters who prefer to lead rather than follow.

- Self-confident : They understand the challenges of starting and operating a business and are decisive and confident in their ability to solve problems.

- Risk-takers : Although they are not averse to risk, most successful entrepreneurs favour business opportunities that carry a moderate degree of risk where they can better control the outcome over highly risky ventures where luck plays a large role.

- Visionary : Their ability to spot trends and act on them sets entrepreneurs apart from small-business owners and managers.

- Creative : To compete with larger firms, entrepreneurs need to have creative product designs, bold marketing strategies, and innovative solutions to managerial problems.

- Energetic: Starting and operating a business takes long hours. Even so, some entrepreneurs start their companies while still employed full-time elsewhere.

- Entrepreneurs love their work and are passionate about it.

- Because they are so committed to their companies, entrepreneurs are willing to make personal sacrifices to achieve their goals.

Types of Entrepreneurs

Type of Entrepreneur	Approach to Venture
Innovators	Find new approaches, methods, or products that add value through solving a problem in a unique manner
Creators	Make something new or see a problem that other people have not noticed
Market makers	Innovate or reinvent their market from a future perspective by asking what the market could evolve into
Expanders and scalers	Seek out opportunities to expand upon previously created methods, processes, or products

The Entrepreneurial Process

In general, the entrepreneurial process includes several key stages or some variation of these stages. Keep in mind that these stages do not always follow a sequential pattern, as circumstances and opportunities change. One popular method of understanding and connecting to this entrepreneurial process is to think of your new venture as similar to the human life cycle, the major stages that humans pass through in their life development, and the different growth processes in between.

New Venture Life cycle				
Pre - seed	Early stage			Late stage
Idea generation/ development	Implementation	Growth	Maturity	Sale/ IPO for further funds

Stage 1 : Startup

Startup activities are related to your perceptions about a potential idea, how you develop your idea, and how you might recognize appropriate opportunities.

Key actions in this stage include

- *Idea development*

- *Opportunity recognition*

- *Identification of a market opportunity*

- *Research and due diligence to make informed decisions that minimize risk, such as ensuring you are not duplicating an idea that already exists*

Stage 2 : Development

In Stage 2, you might select a business model and assemble a team to make your dream venture a reality. The business model identifies how a business will build revenue, deliver value, and receive compensation for that value. Entrepreneurial decisions in the development stage include many options to consider, including bootstrapping, receiving venture funding from external sources, licensing to receive royalties on a per-item basis, purchasing another business, franchising either through the purchase of a franchise or building your company with the goal of eventually creating your own franchise, creating a virtual web-based company, using mobile apps that support your business or connect with other businesses, founding a social venture to support a cause, consulting, or freelancing.

Key activities in this stage include

- Formulation or refinement of your concept

- Design of business model, plan, goals, launch team, and operational structure

- Creation of prototype product to fit market

- Further research and due diligence, as needed

Stage 3 : Resourcing

Resources include financial support; support and selection of a manufacturing location or facility, personnel talents, knowledge, and skills; possible political and community support; and family support, because the new venture will require time commitments that will cut into time with your family.

The key activities in this stage include

- Gathering pertinent resources, such as human and financial capital, investors, facilities, equipment, and transportation

- Establishing connections, networks, and logistics

Stage 4 : Market Entry

To minimize exposure to unforeseen challenges, market entry—the launch of your venture—is frequently undertaken as a soft launch, or soft opening, within a limited market. As an entrepreneur, you are presenting your new venture to a specific market to see how well it is received and supported.

One of your most important responsibilities at this point is managing your cash flow. In the early stages of the venture, you will need large amounts of cash to fund the operational activities, because your sales are not yet guaranteed. Production costs, payroll, supplies, inventory, lease payments, and marketing. All of these expenditures involve cash outflows from your venture as part of the startup costs. A successful business needs available cash as well as customers for its products and services, or it will not survive.

Key activities at this stage include

- Assessing management structure and needs, adjusting as necessary

- Managing cash flow

- Launching the entity

- Monitoring progress

Stage 5 : Growth

In the growth stage, your decisions reflect the scalability of your venture. At this point, your organizational structure needs an update. You might need new functional levels, such as a finance department, a human resources department, or perhaps an assistant manager. Other considerations include the size of your facilities. Other questions relate to the appropriateness of your suppliers or inventory providers. In this stage, you should also monitor the growth of your venture and make appropriate adjustments. For instance, if your venture is not growing as expected, you might go back to your business plan and see what adjustments you can make.

Key actions in this stage include

- Managing the venture

- Making key adjustments, as required.

- Further research and due diligence.

Stage 6 : Maturity

In the maturity stage, your venture has moved into the maintenance phase of the business life cycle. Entrepreneurs monitor how a venture is growing and developing according to the business plan, and its projections and expectations.

Depending on your situation, you will still need to take action to support the venture. Even if the venture is operating efficiently and in a predictable manner, external changes could compel you to change your venture, e.g.making improvements to the product or service, finding new target markets, adopting new technologies, or bundling features or offerings to add value to the product etc.

Key actions in this stage include

- Strengthening market position

- Awareness and willingness to change

- Reaping return on investment (ROI)

Stage 7 : Harvest

At this stage, you are harvesting or collecting the most return on your investment while planning how to retire or make a transition away from this venture. Many entrepreneurs enjoy the excitement of starting and building a venture but are less interested in the routine aspects of managing a company. In the field of entrepreneurship, the entrepreneurial team creates a venture with the goal of harvesting that venture. Harvesting is the stage when all your hard work and ingenuity are rewarded through a sizable return on the invested money, time, and talents of the startup team, including any investors. During this stage, the entrepreneurial team looks for the best buyer for the venture to achieve both a return on investment and a match for the continued success of the venture.

Key actions in this stage include

- Identifying what the entrepreneurial team, and investors, want out of the venture, their ROI

- Planning for your future: What's next on your entrepreneurial journey?

Stage 8 : Exit

The exit stage is the point at which your venture either has fulfilled its purpose as a harvested success that is passed along to the next generation of business owners or has not met your needs and goals. These two situations give rise to vastly different scenarios. In the harvesting of the venture, you might receive a sizable cash payment, or a combination of a cash payment and a minority share of stock in the venture's buyout. In an exit that reflects the closing of the venture, your option is most likely the liquidation of assets, which you would sell to pay off any remaining creditors and investors. In both harvesting and liquidation, the challenge for you as an entrepreneur can be to accept the emotional withdrawal from a venture that has consumed your thoughts, time, and energy. The time has come for you to step out of the picture and allow the venture to be cared for by a new "parent" or to close the venture completely.

Key actions in this stage include

- Exit strategy and plan

- Transition to the next generation of owners

Stage 9 : Rebirth

For some entrepreneurs, the excitement of creating a new venture supersedes the financial gain from harvesting a successful venture. The thrill of transforming an idea into a realizable opportunity and then creating a thriving venture is difficult to find elsewhere. In the rebirth phase, the entrepreneur decides to seek out another new venture to begin the process all over again. As an experienced entrepreneur, you can create a new type of venture or develop a new spin-off of your original venture idea. At this point, you have become a "serial entrepreneur," an entrepreneur who becomes involved in starting multiple entrepreneurial ventures.

Key actions in this stage include

- Redesigning or creating a new venture

- Bringing in a new entrepreneurial team or the team from the previous venture

So, in summation, Entrepreneurship is a journey of an adventurer that is not set in a mould. It is a unique journey with twists and turns and surprises. It does not really have a set pattern and creativity and innovation is what gets you to realize your dreams. And it is not really an endless journey but a beginning of a phase in your professional life cycle that enriches you and entrenches you in a class of your own to set a legacy for generations to come!

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How HR analytics are changing the way HR decisions are made

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In the human resources field, decision-making is changing. Once guided by instinct and intuition, modern human resources specialists utilize data and algorithms to drive business solutions. HR is about the emotions and feelings of employees; how can numbers and data fit in this department? This article on HR Analytics answers this question.

Human resources analytics is a field that deals with analyzing employee data and applying analytical processes within HR. HR Analytics is the collection and analysis of a company's employee data to improve performance and business results. This allows the organization to measure the impact of a set of HR metrics, such as the time-to-hire, attrition and retention rate, Talent potential matrix on the commercial objectives.

Just imagine a situation where there is a new business opportunity coming and your organization does not deployable resources ready for the project and you as an HR are caught up in a struggle to hire external resources in a limited time for meeting the project expectation. This is a very common scenario these days in many IT and ITES organizations looking at the pace at which industries and the skill set are changing, the above situation can also be seen in internal project movements, having the right talent pool as per location and managing talent across locations including onsite and offsite locations altogether. Such issues and problems can be easily predicted using HR analytics, basis of which a timely decision can be taken to avoid such situations.

HR analytics is widely used by organizations by applying techniques of descriptive-What happened, diagnostic-why did it happen/, predictive-what will happen? and prescriptive analysis-How can we make it happen? Where the descriptive and diagnostic analysis provide insights on what has actually happened using techniques like data drilling, data mining, probability and regression analysis, Predictive and Prescriptive analysis uses techniques involving Machine Learning, AI, Algorithms and pattern recognition to better predict the future and to take timely decisions to make situations better and in future.

Looking at above we can easily understand that HR analytics has involvement of large amount of data. As a HR professional, you collect vast amounts of data. Unfortunately, this data often remains unused. Once you start to analyze human resource challenges by using this data, you are engaged in HR data analytics. To get started with HR analytics, you need to combine HR data from different systems. Say you want to measure the impact of employee engagement on financial performance. To measure this relationship, you need to combine your annual engagement survey with your performance data. This way you can calculate the impact of engagement on the financial performance of different stores and departments. Key HR areas will change based on the insights gained from HR analytics. Functions like recruitment, performance management, and learning & development will change. Imagine that you can calculate the business impact of your learning and development budget! Or imagine that you can predict which new hires will become your highest performers in two years.

All of the above predictions and insight of data in more understandable fashion can be seen through a HR dashboard, which given relevant information which can be tweaked as per user needs to make better decisions using the insights from an HR dashboard. The top 3 functions of HR dashboard can be:

1. To monitor human capital: Regular reporting enables HR to keep a track of the activities that are going on in the organization and amongst the employees by tracking the key workforce metrics. New trends can be anticipated and emerging problems can be addressed before they negatively impact the business.

2. Help HR perform better: An HR metric dashboard helps managers perform better at their workplace. The report can inform managers about any significant changes or development within the teams. For example, consider that the accounting department struggles with high employee turnover, managers will be more likely to put emphasis on employee retention and keep in mind the risks time taken to replace an employee if he/she quits.

3. Tackle problem areas: The metrics dashboard also offers a great way to tackle problem areas with greater transparency. In an organization HR will pay greater attention if the system is transparent and known to all, the HR metrics dashboard helps regulate this transparency since the reputation of the HR will be on line. HR Dashboard can be a one-stop solution to all your HR issues. You can track Employee activities, Submit Feedback, Managers can perform and submit reviews and much more.

Hence we can see that by use of HR analytics we can make data driven decisions which are not based on emotions and intuitions, and how overall the decision making is being changed in HR by using analytics and dashboards, now a day's HR are able to improve hiring process, reduce attritions, improve employee experience and engagement make workforce more productive improve talent processes and most importantly gain trust of employees and improve the work culture.