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Analysing the Impact and Influence of Green Marketing Communication in Consumers' Green Purchase Behaviour

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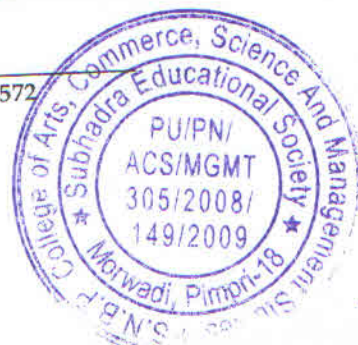
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ABSTRACT

The study aims to find out how green marketing communication influences consumers' green purchase behavior through the aspects of transparency, brand trust, and influence by social media. This paper will be based on a quantitative method, in which a structured questionnaire was sent to 400 respondents from different demographics. The outcome showed that during transparent communication on sustainability by the brands, 78% of the respondents are more likely to buy green products. Further, the results revealed a substantial correlation of brand trust with purchase intentions ($r = 0.65$, $p < 0.01$). This, therefore shows that trust builds eco-friendly consumer choices. The media is also another influencer as it was revealed in the research



whereby 67% of the respondents said that online relationships had a significant impact on their purchases. The results suggest that to attract the environmentally conscious consumer, brands would have to adopt authenticity in communication strategy. Good green marketing communication is a driver for sustainable consumption as more and more sustainability becomes the basis for consumer decision-making. This study adds to the existing knowledge base by providing empirical evidence of the factors that affect green purchase behavior, thus guiding marketers on the paths toward furthering their sustainability efforts.

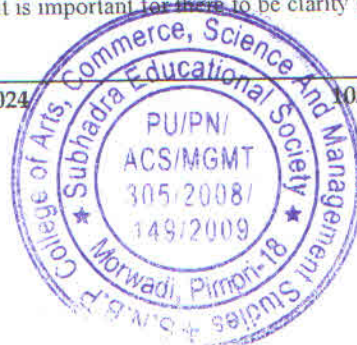
Keywords: Green marketing communication, consumer behavior, brand trust, social media influence, sustainable consumption.

I. INTRODUCTION

Increased environmental concern has impacted the global marketplace in such a way that it has made consumers highly conscious of their purchase decisions. Therefore, environmentally responsive customers have become a vital target market for organizations with a view to gaining these clients. Hence, green marketing only refers to the promotion of a product or service in terms of its green benefits while green marketing communication will detail the specific strategy adopted by any company in its communications to educate and persuade consumers about efforts in the environment and ecofriendly products [1]. Generally, such communications seem to feature product attributes in terms of how they might be sustainable, recyclable, energy-efficient, or have minimal carbon footprints. Green consumer purchasing behavior basically reflects an attitude toward purchasing products that concur with their beliefs about protecting the environment. In this regard, brands are significant in forming these attitudes and either satisfying or disappointing consumer intentions with the mixed messages received [2]. Green marketing communication has therefore become one of the critical factors determining how consumer preferences will be created. Increased utilization of digital space and social media allows green marketing messages to be spread to more people easier. There is variation in the effect of green marketing communication on consumer behavior. Such factors as brand trust, authenticity of the message, and environmental attitudes among consumers are important to determine the effectiveness of green marketing communication [3]. Misleading claims, or "greenwashing," can be harmful to consumer confidence and have negative purchase behavior. This paper will discuss the influence of green marketing communication on consumer's green purchase behavior in the context of different communications strategies and associated consumer reactions. Focus will be placed on this particular influence of such marketing efforts in shaping consumer decisional processes toward adopting sustainable consumption. Further, it aims to understand and then inform functioning of different approaches toward credibility through findings that would help business to devise more effective green marketing strategies for their credibility.

II. RELATED WORKS

There has been a greater focus on green marketing and sustainable consumption concerning the way marketing communication differs in the development of the behavior of consumers across different business lines. Different research studies discussed the factors that influence sustainable consumption respectively, within cross-cultural contexts. For instance, Farooqi and Frooghi (2024) researched factors influencing sustainable consumption in a context of green apparel brands in Pakistan with an emphasis on the cultural values and consumer awareness in deciding purchase [15]. His findings reveal authenticity in green marketing communication is also pivotal due to reasons of trust and loyalty building among consumers, parallel to the broader global trends to sustainability. Fatemi et al. (2023) in a detailed review, explored consumer responses to sustainable product branding strategies. Some of the critical elements identified were consumer perception, brand positioning, and environmental claims that affect the decision of the consumer towards green purchase behavior. According to the findings, although consumers are interested in more green attributes, the efficacy of a branding strategy really lies in the communication methods adopted [16]. The study thus serves as a basis for more research and challenges marketers to embrace holistic approaches in green branding. Consumer behavior has also been studied comprehensively, relating to the use of social media. Gökerik (2024) analyzed brand trust as a mediator in the relationship between social media marketing and repurchase behavior. This study found that engagement with brands via social media exerts a high influence on trust; therefore, when customers relax in their faith in the brand or when the brand could better its relation with customers through other alternatives, a chance of repurchase intention for eco-friendly products arises. Similarly, Hafyana and Alzubi (2024) explored the impact of social media in health choices through fitness services in the research: the authors found a correlation between online engagement and making a decision to act more sustainably [18]. Green consumer behavior under the influence of exogenous factors, including the impact of the COVID-19 pandemic, had also been one of the focal areas of research. Hu et al. (2022) examine the influence of the pandemic on consumer behavioral intentions toward purchasing green products. The authors found that the pandemic encouraged the enhancement of consumers' awareness on environmental and health issues and gave a better willingness to buy sustainable products [19]. This links with Huang's study on the role of consumer perception, attitude, and purchasing intention towards green housing products in 2023. According to Huang, consumer willingness to pay a premium increase where the consumer recognizes benefits of the product with regards to the environment and health [20]. Iacovacci et al., (2023) undertake a study that sought to establish the impact of brand transparency and performance before and during crises, focusing on the COVID-19 pandemic on the business performance of a green Italian start-up. From that research it was established that clear and consistent information provided by the green brands on their endeavors during the pandemic were most effective in customer loyalty retention [21]. This explains why it is important for there to be clarity especially in



the course of the rocky period. Jaini et al. (2020) aimed at testing the moderation role of eWOM on green purchase intention in the cosmetics industry among Malaysians. Writing for the same, they were able to establish that Online positive consumers' reviews also boost the impact of the campaigns based on green marketing strategies. A consumer will target to buy a product that is 'green' if a fellow peer approves it [22]. Based on the Slovenian consumers, Kršnik and Erjavec (2024) conducted a corresponding examination to determine the determinants of green behavior. These researchers named the following factors as some of those antecedents that foster the transition of the consumption patterns toward sustainability: marketing communication, lifestyle, psychological and social factors. In their views, it will only be possible to use the concept of managed marketing mixes to deliver on consumption lifestyles that fit the consumer niche perfectly [23]. To this end, Liao and Wu pointed out that brand greenwashing has a positive effect on the electric vehicle purchasing intention on the grounds that high innovativeness would reduce the effect of vulnerability to environmental false signals from brand greenwashing. From their argument, brands were condemned for greenwashing, and instead, they should give accurate information in order to create trust among people who enhance the rates of buying the EVs [24]. Last, Lima et al. (2024) sampled a systematic review on the effect of green marketing on consumers' buying behaviour. The above results suggested that green marketing can regulate consumers' purchases of cosmetics, electronics, fashion and other relevant industries [25]. In a similar vein, Ling et al. (2024) asked whether social interaction in e-commerce live streaming is significant and discovered that social interaction was statistically significant for influencing user purchase intentions, especially in relation to green products [26].

III. METHODS AND MATERIALS

This study applies a mixed-method approach focusing on qualitative and quantitative data in the analysis of green marketing communication effects on consumer green purchase behavior. The target population for this particular study are the urban dwellers who consume more environmentally friendly products and brands.

1. Research Design

A descriptive research design has been followed in order to gain a holistic view of how green marketing communication impacts the consumers' behavior [4]. It is divided into two phases: the first phase is qualitative interviews with industry experts while the second phase is quantitative in nature, dealing with an administered questionnaire for consumers.

2. Qualitative Phase

The qualitative phase is expected to capture ideas from marketing professionals, environmentalists, and consumer behavior experts about the relevant green marketing strategies. The interviews would take up a semi-structured format, which allows for a degree of flexibility in investigating the key themes pertaining to communication channels, message framing, and perceived credibility of green claims [5].

Sample Selection: The sample consists of ten professionals from various industries including retailing, manufacturing, and consulting. The participants were selected based on their experience in green marketing and environmental programs. Each interview lasted approximately 45 minutes and was recorded with the participants' consent and later transcribed for analysis.

Data Analysis: Thematic analysis was used to identify common themes and patterns. Key themes emerging include the importance of transparency in messaging, social media influence as a perceptual tool for consumers, and the need for marketing claims to harmonize with corporate practices [6].

3. Quantitative Phase

The quantitative phase is also concerned with measurement, and in this regard, the relationship between green marketing communication and consumer purchase behavior is measured. For this purpose, an online survey was designed for consumers between 18 and 45 years old who are residing in urban centers, using Google Forms. This questionnaire contained both closed-ended questions and Likert scale questions to measure the attitude of the respondents toward green marketing communication as well as purchasing behavior.

Sample Size: Through Cochran's formula for sample size estimation, it is determined as 400 respondents. The sampling was stratified by applying the random sampling method so that various demographic characteristics such as age, gender, income, and education level were well represented [7].

Data Collection: The questionnaire was distributed to the social media, environmental forums, and networks of universities. It reached a large number of samples and after one month, the total questionnaires collected had risen to 385 with a response rate of about 96%.

Survey Structure: The format of the questionnaire contains demographic characteristics, awareness, and perception of green marketing, and self-reported green purchase behavior. Most of the questions are as follows.

- **Awareness of Green Marketing Communication:** "How often have you noticed advertising messages supporting the use of environment-friendly products?"
- **Perceived Credibility:** "How much do you believe the greenness of the claims from the following companies?"
- **Green Purchase Behavior:** "How often have you purchased environment-friendly products?"

Table 1 Summary of the Demographics of Respondents



Demographic Factor	Frequency (n = 385)	Percentage (%)
Age		
18-24	120	31.2
25-34	145	37.7
35-44	85	22.1
45 and above	35	9.1
Gender		
Male	190	49.4
Female	195	50.6
Education Level		
High School	50	13.0
Bachelor's Degree	205	53.2
Master's Degree	110	28.6
Doctorate	20	5.2

4. Data Analysis for Quantitative Phase

SPSS for statistical software was used in analyzing the quantitative data. Calculation of descriptive statistics followed to summarize the data. Inferential statistics followed in which correlation analysis and regression modeling were run to understand the association between the independent variable, green marketing communication, and the dependent variable, green purchase behavior.

- **Correlation Analysis:** Spearman's rank correlation coefficient was used to understand the nature and the strength of the relationship that exists between the perceived credibility of green marketing messages and the intention to purchase eco-friendly products [8]. A positive correlation exists if, with an increase in the credibility of green marketing, the chances of consumers buying green products also increase.
- **Regression Modeling:** With a multiple regression, the effect of awareness, credibility, message framing, and social media influence as predictors was measured on the green purchase [9]. It helped in identifying particular significant factors causing the consumers to make buy decisions in favor of products that are eco-friendly.

Table 2. Correlation matrix of variables under study:

Variable	Green Purchase Intention	Awareness of Green Marketing	Perceived Credibility	Message Framing
Green Purchase Intention	1.000	0.562	0.674	0.431
Awareness of Green Marketing	0.562	1.000	0.453	0.301
Perceived Credibility	0.674	0.453	1.000	0.512
Message Framing	0.431	0.301	0.512	1.000

Note: **p < 0.01 (two-tailed).

5. Ethical Considerations

Ethics were placed at a higher level when conducting the research. All respondents ensured that they consented to the activity, and anonymity was assured by anonymizing the responses. Ethical concerns were observed from the guidelines of the institutional review board to avoid harming the respondents in any way and ensuring that the information gathered was for research purposes only.

IV. EXPERIMENTS

This paper will provide a discussion of the findings of the research study on the influence of green marketing communication on green purchase behavior among consumers, followed by a discussion of implications of these findings. The analysis draws its data from in-depth qualitative interviews with industry experts and a quantifiable consumer-based survey [10].

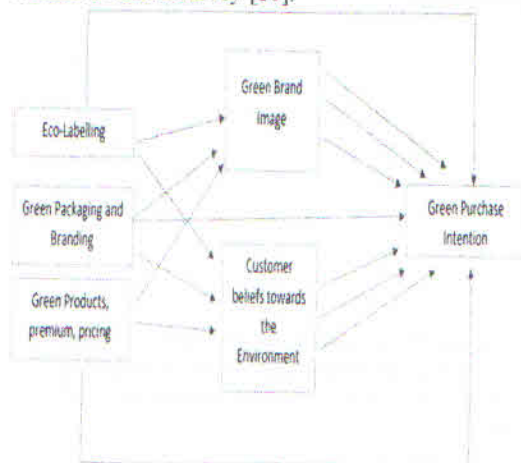


Figure 1: "Green Marketing Approaches and Their Impact on Green Purchase Intentions"

1. Qualitative Results

Qualitative interviews from marketing professionals brought insightful perceptions about the nature and experiences of the green marketing communication; several key thematic areas emerged:

- **Transparency and Authenticity:** The most common response to the survey was a call for more transparency in green marketing. Experts did note that consumers are becoming more aware of green washing, and actual environmental claims now had to be proven verifiable. "Brands that could not only speak about their sustainability efforts but also report on their approach fairly transparently were most likely to succeed with the consumer," one of the experts said [11].



- **Communication Channels:** Respondents testified that the digital marketing channels, notably social media, had been effective in targeting responsible consumers of the environment. A marketing director stated, "Social media allows brands to engage directly with consumers on their sustainability stories in real time, which is critical for building trust."
- **Message Framing:** Green message framing were considered to be of the highest priority in leading consumer perceptions. A more appealingly crafted message that focuses on benefits such as health and community welfare outperformed pure environmental arguments. These findings support the existing literature that proper communication can effectively be an initiating factor for consumer acceptance of environmentally friendly products [12].

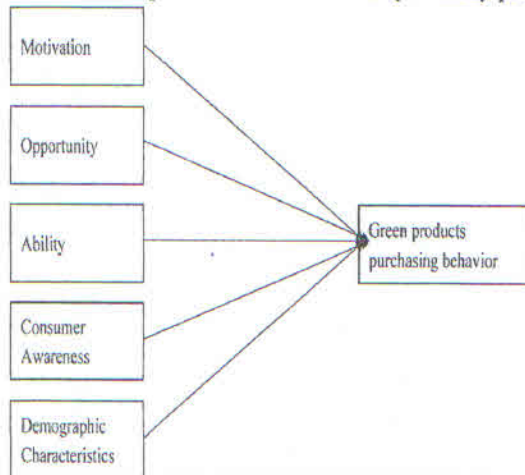


Figure 2: "Factors Influence Consumers to Buy Green Products"

Awareness and Perceived Credibility

The survey report showed a high degree of awareness of green marketing communications from the respondents. About 78% of the respondents claimed to have views of green marketing messages that occur frequently. Besides, the credibility of the messages was considered to be relatively quite high; on average it scored 4.1 out of a rating scale of 1 (not credible) to 5 (very credible) [13]. This infers consumers are more likely to trust brands which indicate effective communication of their green efforts.

Table 2: Awareness and Credibility of Green Marketing Communication

Measure	Mean Score (1-5)	Standard Deviation
Frequency of Exposure to Green Marketing	4.1	0.86
Perceived Credibility	4.3	0.75

Green Purchase Behavior

Responses regarding self-reported green purchase behavior were measured through a set of questions using Likert's scale. The results show that 63% of the respondents reported doing this very frequently while shopping and purchasing environmentally friendly products, and 21% did this from time to time [14]. This outcome presents an encouraging trend about the green purchasing of urban consumers.

Table 3: Green Purchase Behavior

Purchase Behavior	Frequency (%)
Often choose eco-friendly products	63
Occasionally choose eco-friendly products	21



Rarely choose eco-friendly products	16
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3. Correlation and Regression Analysis

Correlation analysis was conducted to explore further the relationship between green marketing communication and green purchase behavior. Results indicate a significant positive correlation for the perceived credibility of messages about green marketing and green purchase behavior, at $r = 0.674$ ($p < 0.01$). This implies that there is a possibility of increasing the purchase of the green product if it has a high credibility for the purpose of purchasing [27].

In a move to understand the impact of various factors associated with green purchasing behavior, multiple regression analysis was conducted. Some predictors considered in this model include awareness of green marketing, perceived credibility, message framing, and social media influence.



Figure 3: "A new model for testing green consumer behaviour"

Regression Results

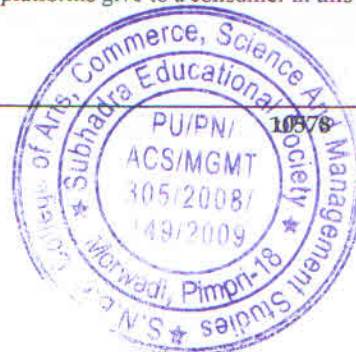
Table 4 reports the results of the regression analysis. The model explained 54% of the variance in green purchase behavior; hence, the predictors have a strong effect on $R^2 = 0.54$.

Table 4: Regression Analysis Results

Predictor	Unstandardized Coefficients	Standardized Coefficients	t	p-value
Awareness of Green Marketing	0.213	0.201	3.235	0.001
Perceived Credibility	0.354	0.487	6.219	0.000
Message Framing	0.158	0.188	2.733	0.007
Social Media Influence	0.182	0.215	3.124	0.002

Significant Findings:

- Perceived Credibility was the greatest contributory factor to green purchase behavior ($\beta = 0.487$, $p < 0.000$), indicating that it is at marketing messages that consumers perceive as credible that they are more likely to buy.
- Awareness of Green Marketing also contributes positively to green purchase behavior ($\beta = 0.201$, $p < 0.001$), therefore green marketing message exposure increases green purchasing [28].
- Both Message Framing and Social Media Influence were the leading factors: That was a shocking revelation by the fact that the way one delivers a message and what influence digital platforms give to a consumer in this regard are very much important.



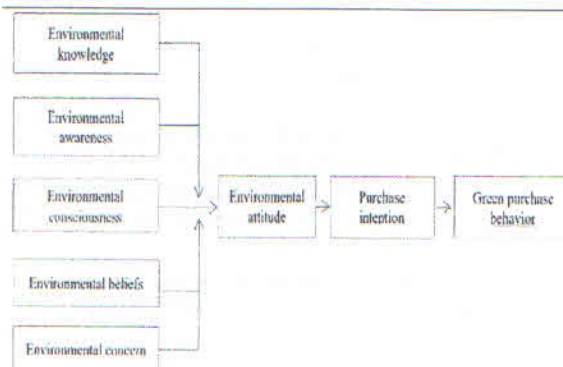


Figure 4: "Factors that Influence Consumers' Green Purchase Behavior"

4. Discussion

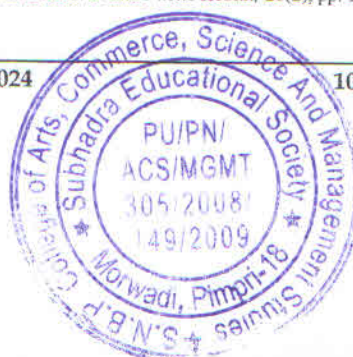
The results of this study persuasively inform that a green marketing communication seriously influences consumers' green purchase behaviors. In addition to high awareness and perceived credibility, this would prove the fact that an urban consumer is receptive to efforts of green marketing. Therefore, it puts forward the viability of sustainable marketing strategies [29]. Qualitative findings and stress on transparency and authenticity thus resonate with the quantum data, indicating that perceived credibility emerges as the most important predictor for green purchase behavior. Brands perceived to communicate sincerely and authentically to their audiences about their commitments toward the environment are likely to strike trust among consumers and drive green purchasing [30]. The study further explores the role of communications channels, social media included, in fostering the impacts of green marketing. As online channels become increasingly an essential part of the engagement process among consumers, brand owners must harness such channels to amplify authentic and contextually relevant green messages. The findings of this study are in agreement with other studies that have documented the positive framing of green marketing messages, encouraging consumers' interest as well as purchased behavior. Thus, companies should market what eco-friendly products do for consumers: health, quality, and community impact rather than environmental value added.

V. CONCLUSION

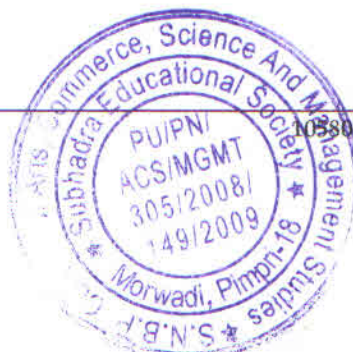
In general, the present study clearly showed that, indeed, green marketing communication really makes a difference in the way consumers think about green purchase behavior. Analysis of different factors, such as brand transparency and social influence, and consumer perception shows that communication has enabled the development of trust in consumers' minds to influence sustainable purchasing decisions. In fact, this case study provides evidence that most consumers purchase products due to environmental concerns, and if the brands are being transparent and honestly conveying their sustainability propositions, people buy products. The social media channel and peer recommendations are also additional external influences that shape consumer attitudes and intentions toward green products. Sustainability is rapidly gaining importance in the context of consumers, and brands have to place a significant emphasis on credible communications and reach out to meaningful interactions with the audience to capitalize on the trend. This study's findings are, therefore useful for the understanding of the nature of the interaction between green marketing practices and consumer behavior in practical applications through selling green products. Future studies can then assess the effectiveness of such strategies over extended periods or look into the effects of demographic variables on consumer response to such green marketing initiatives and make the understanding of sustainable consumption behavior richer.

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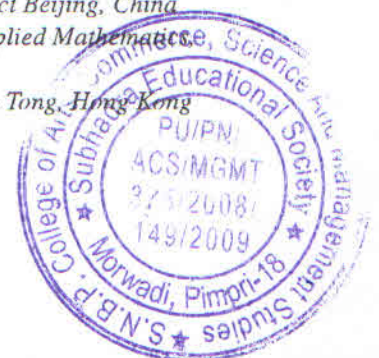
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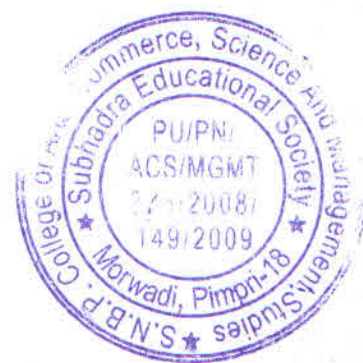
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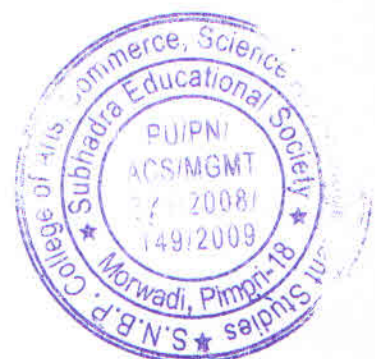


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Business Analytics: Prospectiveness and Opportunities

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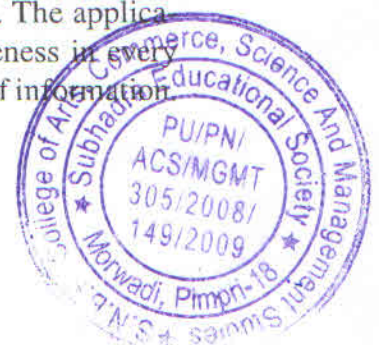
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Abstract. At present, Business Analytics (BA) is getting more momentum and radical changes. Today business analytics is a popular and attractive field in academic as well as commercial units. By considering this truth the present paper highlights the development of business analytics and its conceptual patterns. The changes in ICT technologies and their impact on business analytics are also considered in the present study. The study elaborated on the classical concept and new emerging concepts of business analytics. The essential foundation of BA and changes in ICT shapes to business analytics is discussed and how business analytics works. The paper focuses on the big data phenomenon and its implications and the digital economy. This paper highlights the future scope of Business analytics and its applications.

Keywords: Business Analytics (BA) · Information-Communication Technologies (ICT) · Big Data · Digital Economy · Decision making

1 Introduction

Digitalisation has grown up very fast in the world and the adoption of digital technologies creates new connectivity. Omnipresent connectivity provides the continuous entertainment and makes it easy to access information through various social networks. The use of various devices and applications such as Big Data Analysis, Block Chain, AI, and ML makes technical improvements in digitalization. The changing environment of digitalization has revolutionary changes in the way of working policies. The new stage of an economy is the digital economy is created by the framework of 5G networking and conjunction of information and communication and changes the nature of the business environment with the adoption of AI, IoT, and ML applications. On one hand digital economy creates an opportunity for consumers to access all kinds of appearance, information, and knowledge, and on the other hand, it makes available the huge information of the consumer and market to industry. The digital revolution of the industry is taking the form of new business strategies, business models, and new systems of management which create new innovative markets and replace the traditional industry. The application and devices of digital technologies increase efficiency and effectiveness in every sector and provide analytical decision-making due to the huge collection of information.



of output in value creation and crucial management of business analytics providing various alternatives for decision-making, effective operational efforts inclusive growth of a firm [4]. Verma and Bhattacharyya (2017) observed that the adoption of business analytics in India is an emerging phase. Many organisations are still struggling and they are under interpretation. The authors also observed that there is a low level of awareness of BA, inadequate IT infra, lack of skilled personnel and complexity are the key challenges in the adoption of BA. Many educational institutes promote business analytics programs that build up the awareness and importance of analytics [5]. Kaur and Singh (2019) observed that there is an increase in demand for programs in big data, business analytics, and data science in many universities and institutions but still, there is a concern about practical training and real experience of applications [6]. Davenport and Dyche (2013) noticed that three types of analytics are descriptive analytics which produce curving past or present data through business intelligence, predictive analytics which apply different methodologies and models to produce forecast results, and prescriptive analytics permits administrator to discover future opportunities and according to the course of action [7]. Tan (2015) mention potential principle leanings of transformation and vital source of viable benefits and conception in which administrator gradually collect new type of information and data [8]. Davenport and Dyche (2013) emphasize on the latest information devices and applications, business analytics carry a considerable cost, substantial modifications in the needed period to achieve the task, and new provision aids [9]. Tripathi and Tiwari (2019) observe that in India Excel, R, Python, and SAS tools are used for business analytics. These tools are commonly existing and generally accepted among organisations in India [10].

3 Classical Concept of Business Analytics

The classical concept of Business analytics covers various tools, techniques, and procedures with the aim of analyzing business data and identifying new trends and patterns. It also discovers considerations that provide added potential importance in business standards. Evans (2017) explains that business analytics is a process of transforming data into actions through analysis and insights in the context of organisational decision-making and problem-solving [11]. According to Gartner's (2018) definition, business analytics is combined results applied to develop analysis models and replications to create situations, understand realities, and predict future states which includes data mining, predictive, applied, and statistics analytics which provides suitable applications for business developers [12]. Schniederjans & Starkey (2015), there is a long period of classical approach to business analytics which is divided into three types of analytics descriptive, predictive, and prescriptive analytics[13]. The association between these types is mainly balancing. These types emphasize specific business issues and provide specific alternatives. The descriptive analytics is based on past and present data and uses descriptive statistical techniques. Most analytics use descriptive types of analytics at present. Predictive analytics is focused on the future and combines past data with quantitative techniques, algorithms, and probability which predict future business environments and outcomes. The predictive analytics is identifying trends and patterns by using advanced analytic techniques. The prescriptive analytics is emphasised on problem optimisation



and simulation which improves business standards. The aim of prescriptive analytics is adequate decision alternatives and relevant implementation of each decision. This type uses hybrid data and mathematical, applied statistics, and computational models to analyse the existing business practices and provide decisions to business developers.

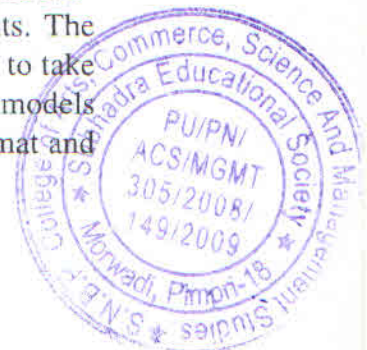
4 Modern ICTs Reflect on Business Analytics

The modern ICT reflects on business analytics and the significance of communication technologies and applications are an integral part of the concept of business analytics. Directly and indirectly many of ICT innovations influence business analytics. There is the impact of major two tendencies from the ICT domain is considerable and these are the Big Data revolution and the process of coordinating the public and business data and utilization of business standards. On a global level concept, big data is gaining more momentum day by day and also on the educational level in the last decade. In the history of data gathering and storage, there has been rapid growth and a vast rise in data is an example in the last few years. In the last few years, there has been 40% growth rate estimated by IBM annually in data volume. In every second 1.7 Mb of new data will be produced by online users which is predicated by Entrepreneur.com [14]. The volatile growth in data is largely influenced by ICT applications and globally connections through networks of people. GPS, GIS, and RFID also produce huge data volumes. IBM observes that 80% of data that is currently produced is semi-structured and unstructured. In early computation, the pattern was based on the analysis of static data whereas the new paradigm shift was based on big data technology which facilitated the processing of data in dynamic patterns. The big data phenomenon takes significant innovations and changes in business and the public field. The impact of big data on business analytics reflects on the new variety of business analytics which is streaming analytics or analytics on data-in-motion and the classical business analytics based on stock of data. The streaming analytics provide data processing in real time which is known as real-time big data analytics is an important benefit.

5 How Business Analytics Works

Business analytics starts with several foundation processes before data analysis. It initiates with the purpose of the analysis and business prospectus and according to that selects the methodology for analysis. The various systems and sources generate the data to support the analysis. Sortation and integration of data into a single point and data warehouse are also important in business analytics. To make sound professional and commercial decisions business analytics is a tool. The foundation impacts the functioning of the whole organization which supports increasing the market share and revenue and improving profitability.

Business analytics provides a better understanding of the existing primary and secondary data which reflects on functioning effectiveness in various departments. The flow of information in the digital era is equal to all and this information is used to take the competitive benefits. Business analytics combines all data through various models and translates it into significant information and presents it in any required format and



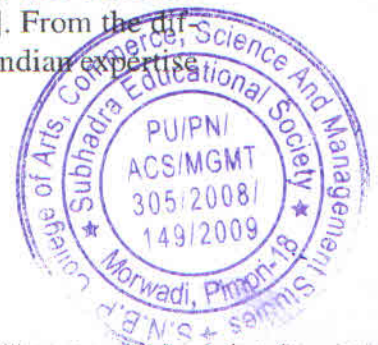
supports better business decisions which provides competitive advantages to the organizations. The four main ways business analytics are important to improve the performance of the business is a clear idea of what is and isn't performing. Essential of business analytics provides faster and more accurate decisions for business improvement. The analysis of future trends and patterns in business minimize the risk.

6 Scope of Business Analytics

Day by day the business complexities are increasing and it requires instant decision-making. It is essential to make the right decision at the right time to take the competitive advantage. There are various methodologies adopted by various firms and these methodologies constantly growing. In the present scenario, the business analytics field growing in importance and updating with a wide range of applications and adoptions. Big firms are adopting business analytics techniques and making crucial decisions. Business analytics has varied series of applications and it can be applied for descriptive analysis where the previous and current data is understood. It identifies the current market situation and the success of earlier business decisions. The predictive analysis is applied to know the previous business progress. Prescriptive analysis is applied to frame the most effective decision to get competitive advantages and stronger business performance. Business analytics is the most effective tool and it requires a skilled human set. To accomplish a successful professional in analytics requires a significant skill. The analytical profession needs the knowledge of necessary tools and techniques, description ability, quantifiable set of skills, and expertise in Excel. With this consideration, many educational institutions started various business analytics and correlated programs to fulfill future manpower needs. In recent days information and data generation have the most valuable advantage. However, there is a need for employees who have the knowledge to process data and apply analytical tools for better decision-making. Today many organizations have invested in data and data processing for the expansion of business. The research market is getting more important day by day and business analysts need to grow very rapidly in India in upcoming years.

7 IT Industry Shaping the Future of India

In the past few years IT industry has shaped India as and knowledge center with global interest. The IT industry applies IT-enabled services, e-commerce, software and hardware, and IoT applications in each business and public sector. IT services improves efficiency and productivity, easy to perform task, transfer activities, and improvements in economically. The IT sector not only contributed to the economic growth of India but it also made capable and sociable governance. The IT mechanism provides access to various government services easier and makes easy management by enhancing transparency. IT industry is the backbone of the Indian economy and it will improve the socio-economic position of people. As McKinsey reports, by 2025 India will cross more than three hundred billion in annual revenues by technological services and domestic technologies grow by 2–4% with rapid acceptance of digitalization [15]. From the different parts of the world, India will get the maximum share of tasks and Indian expertise placed globally.



8 Conclusion

The Indian market changing very rapidly with the new innovative technologies and changing natures. New players are entering into market with new approaches and the business complexity has increased. To cope with these circumstances business players adopted innovative practices. Business analytics is the alternate solution to handle such circumstances. In India the concept of Business analytics growing fast and the scope is prominent. The classical concept of business analytics is shaped by the updating technologies. The value of data is recognized as the growth of businesses and competition. The decision making is a crucial part of the business at every stage as they need skilled analysts and this demand is growing. Business analytic practices adopted by various firms in India including IT, online retail, banking and finance, manufacturing, and healthcare. Nowadays government focuses on digitalization which increases the business analytics field in India. The scope and future of business analytics are positive and it will grow continuously in upcoming years in India.

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A Theoretical and Empirical Integration of Internet of Things and Digital Marketing: Opportunities Issues and Challenges

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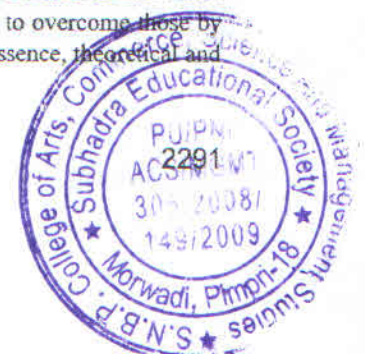
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Abstract: This paper 'a systematic literature review of internet of things IoT with digital marketing' compiles and studies recent research articles concerned with the prospects, issues, and directions of integrating IoT with digital marketing. A qualitative interview survey with industries and a quantitative survey of businesses were conducted to obtain the results. According to the quantitative analysis, it can be stated that, 45 % of the sampled business have adopted high IoT elements in marketing communication. Select benefits reported are better customer interaction (75%), optimization of promotional material (68%), opportunity for execution of real-time analysis (62%). Other issues like; data privacy was also discussed as an issue faced while adopting this method together with high implementation costs. The qualitative analysis showed that organizations displayed tactical patterns of handling sensitive information on consumers and that there is a pertinent need to implement a sound security model. Furthermore, the study also identified other issues such as compatibility of IoT with existing marketing technologies which was underlined by stakeholders as fundamental to unlock the full benefits and possibilities offered by IoT to the marketing operations as well as consumers.

Keywords: Internet of Things (IoT), digital marketing, customer engagement, data privacy, qualitative analysis, quantitative survey

I. INTRODUCTION

When configured with the digital marketing paradigm, IoT signals a shift in the approaches that are adopted in creating market value. Therefore, this research aims at discussing the theoretical and practical prospects of integrating this approach; the problems arising from its use; and the threats it poses to businesses and customers in their interacting point. IoT can be defined as the concept where various physical objects are connected, and they can gather and transfer information through the use of the internet, and has impacted production, medical, and mobility industries. In the context of digital marketing, IoT continues the classical model by providing a literally unlimited access to the concrete and dynamic consumers' data and their behavior regularities [1]. This makes it easier for marketers to create segments that are unique, more focused and ultimately delivering the most engaging and captivating messages to customers. Nevertheless, this concrete utilization of technology as a tool of collection and archival is not without its challenges. Some of the issues that can be considered as vital include the question of the ethical and legal implications of data privacy and security. Due to the continuous influx of data to IoT devices, the vulnerability of data privacy and breaches among IoT devices is high, which requires increased security measures and legislation [2]. Also, the enormous amount and variety of data originating from IoT devices are an impressive achievement but offer remarkable problems for data storage, analysis, and processing. The following objectives are proposed for this study: The primary objective of this research is to propose a research framework to explain the relationship between IoT and digital marketing by integrating and analyzing the current theoretical and empirical literature [3]. Therefore, the purpose of this research is not only to elucidate the potential benefit of Innovation or challenges in front of companies and producers as well as societies but also provide a direction to overcome those by understanding the dynamics of Digital Commerce which is a new growing area of business. In its essence, theoretical and



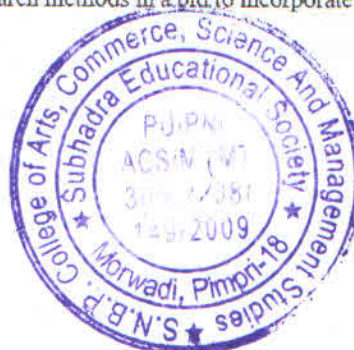
empirical analysis of IoT and its interaction with digital marketing, on the one hand, and establishment of its significance and categorization, on the other, pose a radical change that, on the one hand, can potentially revolutionize business landscapes, and, on the other hand, becomes an intricate task with numerous implications in terms of providing a general perspective.

II. RELATED WORKS

The world financial markets and the factors affecting investment decision, and their integration has been widely covered in many literatures in the recent past across disciplines. This section consolidates and evaluates the literature in financial market related research works that examine the various aspects of financial markets including traditional stock investments and new trends such as crypto relationships and behavioral factors. It is referred to as Bermudan swaptions netting in Hoencamp, Jain, and Kandhai (2023) who present a new semi-static replication method of the product under an affine multi-factor model (Reference [15]). They explore new and complex techniques in derivative pricing, but avoid getting mesmerized by a variety of algorithms to control the interest rate risk in portfolios. In the work of Jose and Jose (2023) [16], we find out that cross-hedging can help minimize the risks of equity investment within the context of the Indian banking industry. In the light of their findings, their study enhances the current knowledge of risk management practices in emerging market environments, and the advantages and challenges of various cross-market hedging methods. Non-agricultural commodities and their market efficiency are explored by Kantamaneni and Asi (2023) in the Asia-Pacific Region and is represented by reference number [17]. The features they discovered help investors and policy-makers understand how information asymmetries and transaction costs affect the price-determinants and efficiency of derivative markets. In the study made by Khajiev and Turgunov, the investment effectiveness has been examined in relation to behavioral biases (Year: 2022, Reference: [18]). Their work focuses on the psychological aspects of decision-making over assets, and their findings bear on portfolio choice and on the character of markets. Thus, Khaliq and Kameshwar Rao Venkata (2021) discussed the concept of Shariah equity investment, with a special emphasis on the effects of investment duration and market riskiness (**Note** **19**). Their study brings new findings in the literature on Islamic finance, thereby filling a gap on ethical nature of investment practices. In another study, Khan et al. (2022) examine shifts in interconnectedness and risk spillovers across the South Asian markets vis-a-vis regional integration initiatives (Reference [20]). This shows how actors, especially across regional financial markets, are interdependent and how risks are systemically connected, which is crucial information for policy makers, as well as investors, who evaluate international investment environments. Lithin et al. (2023) estimate the sovereign bond yield volatility for emerging economies and developing nations such as India using univariate GARCH and draws and experiences from actual data (Reference [21]). Altogether, their work enhances the knowledge of the behavior of fixed-income securities in emerging markets, providing insights into the relevant policy initiatives by a country's central bank and investors. Using the example of investment diversification, Liu (2022) analyze the deviations in systemic risk, with a focus on risk management in financial markets [Footnote: Reference [22]]. His study gives understanding on portfolio diversification and arising questions concerning the effect of diversification on the portfolio in situation of market risks. Mapfumo et al. , (2023), in their paper explore effects of interest rates on equity market in South Africa and the policy implications considering monetary policy and investor sentiment (ibid). Their study helps in establishing how changes in the macro environment affect performance on equity markets. In the same paper, Yavuz, Bozkurt & Boğa (2022) explore the correlation between cryptocurrencies and typical financial assets in their analysis of the integration and risk aspects (Reference [24]). To understand the dynamics of non-traditional assets and their inclusion in diversification of portfolio, their study is unique. The roles of currency risk pricing on equities and their corresponding asymmetric effects are investigated employing regime-switching C-Vine copulas in Mudiangombe and Weistrass (2022) [26]. They advance knowledge in the field by investigating how changes in the exchange rate and the stock market are intertwined. Muguto, clear, and Kanyova (2022) assess the role played by sentiment on sectoral returns and volatility in Johannesburg Stock Exchange (ID [26]). They investigate the behavioral finance characteristics, paying special attention to cultivating financial behaviors and attitudes in investors.

III. METHODS AND MATERIALS

Actually, this research utilises a mixed method approach in an attempt to provide a broad perspective and ample empirical and theoretical understanding of the convergence of Internet of Things (IoT) and digital marketing. The approach used is an amalgamation of both qualitative and quantitative research methods in a bid to incorporate the perception of the themes and concerns occasioned by this convergence.



Qualitative Approach:

The research methodology used in the collection of the data shall be the qualitative data collection technique in which a set of open-ended questions will be administered to key players in the applicative field of IoT technology and digital marketing. To that end, these interviews will help capture the participants' personal views and practical and theoretical knowledge on perceptions, experiences, and strategies concerning IoT devices in digital marketing [4]. Key stakeholders will consist of marketing directors and managers, IoT technology manufacturers and designers, and independent specialists in the field of regulation of such technologies. Semi-structured interviews will be held and the questions will be framed to fit topics that will cover specific aspects such as: the potential of IoT in marketing and its applications, issues of implementing IoT, data ownership or privacy, how IoT is likely to influence consumer interactions, and organization-brand loyalty [5].

Quantitative Approach:

The quantitative component of this research entails administering questionnaires to an assorted population of firms that have embraced IoT-based marketing strategies. A quantitative data will be collected through a structural questionnaire by using close-ended questions with respect to the extent of incorporation and practices of IoT in marketing, perceived effectiveness towards achieving marketing goals and objectives, IoT investment, IoT metrics used to measure ROI and consumer engagement [6]. Otherwise, the survey will be administering online to marketers working in different organizations both large and small, situated in different regions of the world. The survey data will then be subjected to descriptive analysis in order to establish agrarian characteristics of IoT adoption on the various marketing performance indicators.

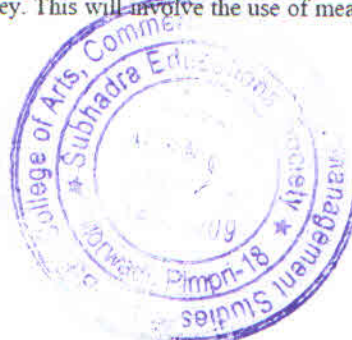
Theme	Description
Perceived Benefits of IoT in Marketing	Insights into how IoT enhances personalized marketing, improves customer engagement, and boosts operational efficiency.
Challenges in IoT Implementation	Identification of barriers such as high implementation costs, interoperability issues, and concerns over data privacy and security.
Strategies for Data Governance	Examination of approaches to manage IoT-generated data, including data collection, storage, access control, and compliance with regulations.
Impact on Consumer Behavior	Analysis of how IoT influences consumer purchasing decisions, brand loyalty, and interaction with digital marketing campaigns.

Data Collection Instruments:

- Interviews: Face-to-face or, where appropriate, video interviews will be upheld in order to administer semi structured interviews. All the interviews will be digitally recorded and the participant's permission will be sought to transcribe the interviews for data analysis in the form of textual data.
- Survey: The survey will follow a structured questionnaire design furthermore, where ever possible self developed scale will not be used but rather adopted from previous studies, this will be complemented with custom made items from the objectives of this study [7]. The questions will be presented using online survey tools in an electronic self-administered survey to enable large number of responses and easier analysis.

Data Analysis:

- Qualitative Analysis: They in turn will use Thematic analysis to analyse the data accrued from the interviews as it is a form of qualitative data analysis. The collected transcripts will be analyzed and put into thematic sets to discuss possible opportunities, issues and strategic directions concerning IoT integration into digital marketing. Systematic arrangements and connections of the contents of TEXT 2 will be observed, in order to derive comprehensible structures and frameworks in theory.
- Quantitative Analysis: To compare reliable values between different groups, descriptive statistics will be used on the quantitative results obtained from the survey. This will involve the use of measures of central tendency such



as the means, medians, variability such as standard deviations and frequency distributions to capture the number and nature of firms that are implementing IoT in digital marketing, as well as the perceived impacts and corresponding metrics [8]. Descriptive techniques are likewise in a position to be used in analyzing relationships between precise variables for instance the correlation involving IOT investment decision and marketing returns.

Ethical Considerations:

Maintaining high standards of ethical practice, consideration will be given to ethical consideration in the conduct of the research. Consent from all participants to participate in the study will be sought and all responses given will be anonymous and kept confidential. Some of the strategies that will be employed for the safety of the data obtained from the interviews and surveys will be used to ensure security of the data obtained. Subject rights will be exercised with respect to the ability of participants to withdraw from the study at any given time with reasons without any repercussions [9].

Industry Sector	Company Size	Geographic Location	Number of Respondents
Technology	Small (1-50)	North America	20
Healthcare	Medium (51-500)	Europe	15
Retail	Large (501+)	Asia-Pacific	25

IV. EXPERIMENTS

The findings of this study extend current knowledge about the use of IoT technology in digital marketing context paying attention to opportunities, threats, and possible strategies as it has been observed in the survey of the businesses [10].

Level of Integration	Percentage of Respondents
High	45%
Moderate	35%
Low	20%

The analysis of the survey results shows that a considerable number of firms have reported on their web-sites the efficient usage of IoT, which occupies the midpoint of the marketing field (45%) [11]. This point to some level of increased implementation of IoT solutions within the marketing function aiming at improving marketing techniques, customer relations, and organizational effectiveness [12].

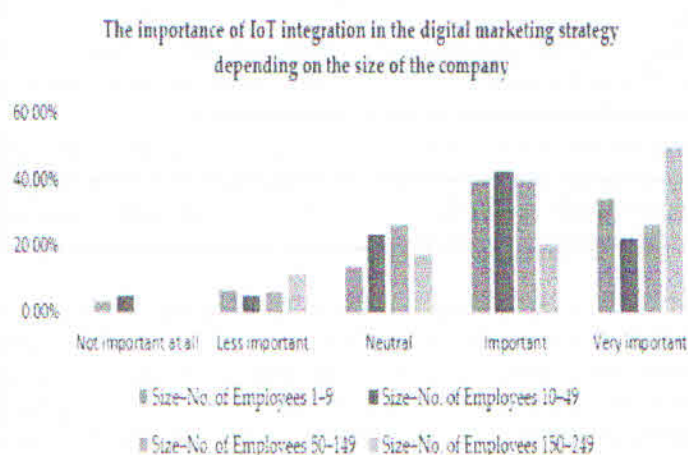


Figure 1: The importance of the IoT integration in digital marketing

Benefits	Percentage of Respondents
Improved customer engagement	75%
Enhanced personalization of marketing campaigns	68%
Real-time data analytics	62%
Increased operational efficiency	55%
Better ROI on marketing investments	50%

The marketing teams in the survey highlighted the following major advantages of the use of IoT in marketing [13]. About three-quarters (75%) said that increased customer interactions, with less attention given to quantitative measures, as the main benefit over traditional methods, while 68% mentioned better targeting of marketing campaigns and 62% mentioned real-time data analysis capabilities [14]. The given results prove the opportunities that IoT has to shifting the marketing paradigm and creating stronger bonds between consumers and brands.

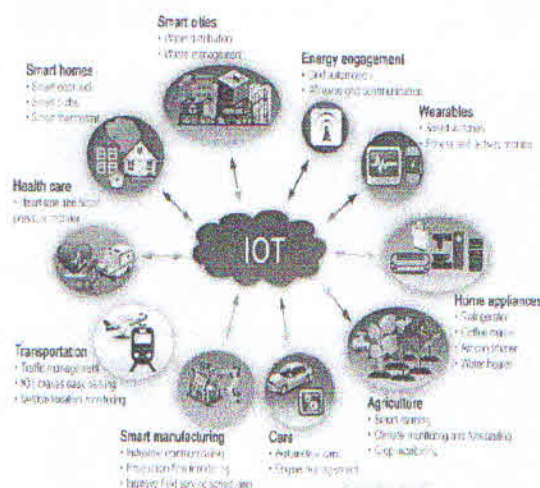


Figure 2: Role of IoT in digital marketing

Discussion:

Opportunities of IoT in Digital Marketing:

Naturally, a great number of possibilities that IoT technologies may bring to digital marketing strategies are discussed in detail both from quantitative and qualitative evidence. Customer interaction becomes enhanced on the whole, given the fact that IoT devices can capture customer information including his/her activities and preferences in real-time [27]. This information reveals the targeted audience on a deeper, more specific level, thus making marketing messages and communications more targeted and effective.

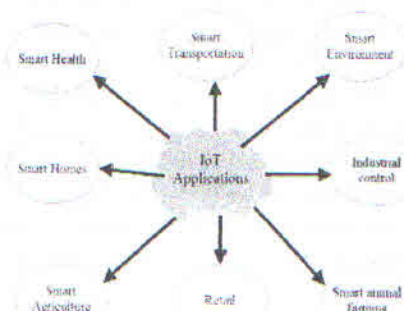


Figure 3: Applications of Internet of Things

Also, IoT helps marketing personalization occurs which let brands target the right people with the right message thus making the marketing messages more meaningful [28]. Such a personalization positively impacts customer satisfaction levels, brand image, and ultimately, brand associations, which contribute to brand loyalty and consumer advocacy [29]. According to the survey that has been conducted, 68% of participants find this aspect as a formidable strategic strength in using IoT to enhance the already existing consumer relations.

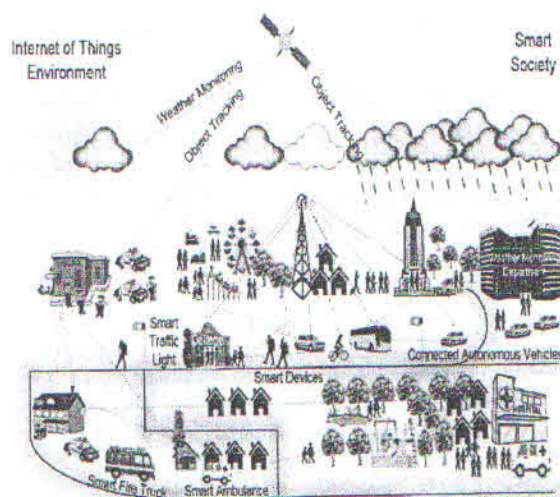


Figure 4: Machine Learning-Enabled Internet of Things (IoT)

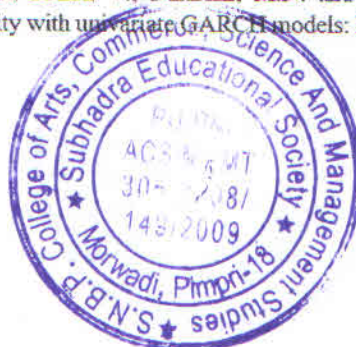
From an operational perspective, around IoT some insights about the resource utilization, supply-chain, and customer services. Respondents from the businesses revealed that IoT deployment made their businesses more efficient as 55% of total respondents mentioned it [30]. This operational efficiency actually cuts costs in addition to accelerating organizations' ability to conform to customer and competitive requirements.

V. CONCLUSION

The abundance of information on a range of topics related to financial markets and investments which have been considered in the paper contributes to the understanding of its complexity and constant evolution as well as interrelation between global financial systems. The research students have also presented the results of studies addressing the complexities of the derivative pricing and the management of risks associated with derivative products as well as other important aspects of the market, based on such findings, one can conclude that enhancements in financing models, especially in the field of derivatives like Bermudan swaptions, provide the means to solve issues of handling specialty risks in portfolios meaningfully. Likewise, research on cross-hedging effectiveness in emerging markets such as India highlights that the risk to equity investments can be managed through cross-hedging in times of uncertainty in the market. Furthermore, the discussion on the behavioral aspects of biases and their impact on investments highlights the relevance of mental factors in stock exchanges. These insights are useful in reviewing current best and ideal practices for portfolio management and improving the efficiency of the market. Also the studies conducted by researchers on the relationships between traditional assets and novel digital currencies reveal the changing patterns in the modern pattern of diversification and risk management. It is, therefore, relevant to acknowledge and comprehend such interconnections as key for successfully addressing digital changes in financial systems. Therefore, it is agreeable that this titanic review clearly shows how financial work is a multi-disciplinary science that integrates factual findings with abstract theories to stipulate policies, advise on investment plans, and strengthen the operative structure of markets. Future research should also focus on topics like sustainable finance, fintech advancements, and how geo-political changes play out in the global financial system. In other words, by cross-pollinating theories from various fields, there is a way for stakeholders to cope with the changing risks and leverage chances within the era of globalization.

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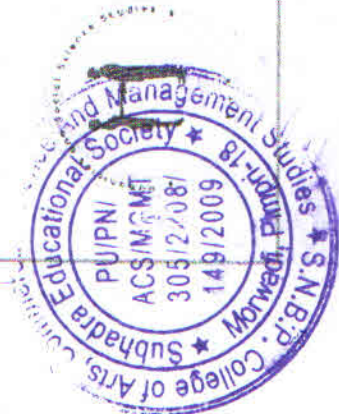
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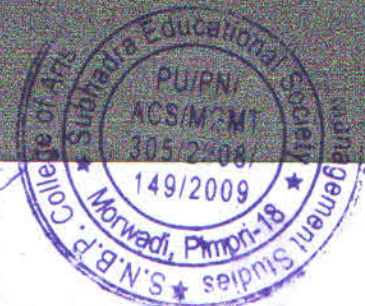
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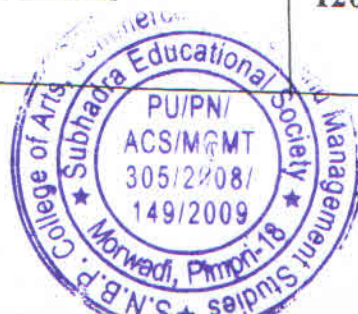
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IMPACT OF TECHNOLOGY ON YOUTH AND EDUCATION

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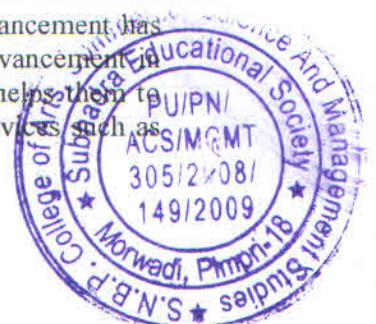
Abstract: Current technology has become a must for the younger generation nowadays, with many of their activities being generated and accompanied by today's technological structures. From learning to keeping informed, from work to entertainment or recreation activities, all these elements with pragmatic or aesthetic focus, collectively in a group or an intimately individual one, are built upon or mediated through new technologies. Technology has changed the way human beings live. In the past, if someone wished to learn something, they went to the school directly under a roof. Nowadays however it is possible to take courses or even earn degrees without even stepping foot outside a building. Rejecting technologies in the name of so-called absolute theoretical values would mean not paying attention or rejecting them. The best thing is to subdue the technology, to humanize and spiritualize it, assigning its practices where the complimentary values would be present. Recognizing the conduct that youth have adopted the new technologies makes us think that they are not completely negative or blameable, the way they might be described at first glance. Most young people use technology carefully and within respective limits, the excesses not being greater than ones peculiar to other psycho-behavioral contexts. Nevertheless, the delay and creation of certain habits- also the awareness regarding their existence! We prevent this at the level of our educational activities. People under consideration are especially sensitive and flexible.

Keywords: Technology, youth and education activities, modern technologies.

Introduction: The rapid advancement in technology helped to shape in the future of the young generation. For decades machines have been used, but with the recent advancement, they deserve a considerable advancement to enable better learning systems.

For instance, the use of computers such as internet applications that allow them to capitalize on their greatest learning resource has increased. Technical enhancement has contributed to effective communication and enhanced socialization among the youth. They have been exposed to modern technology to the extent that society started experiencing the impact of technology. Therefore if societies make the right choices now, they can sustainably make better changes in the ways technology can be used today and also future generations without affecting young people. Since technology is integrated into young people's lives, it is vital to discuss how technology is being affected positively and negatively as well. There is no precluding from securing how they improve lives and simpler, particularly in fields of science, drugs, and instruction. Yet, as with most things, technology has its downsides. Truth be told, a portion of later innovations are currently known as apathetic guides, and specialists counsel that innovation has been clinically destructive to youngsters with their well-being. Can something similar be said for something innovative being utilized in study hall? Devices, for example, PCs, cell phones, and the web are presently coordinated in an instructive framework. While they are gainful in certain scholarly perspectives, they likewise impact sly affect the training framework.

The positive impact of technology on youths and education: Technology advancement has positively affected the lives of young people in diverse ways. First, with the advancement in technology, the lives of young people have become easier because technology helps them to accomplish which were formerly not achievable. For instance use of machine devices such as



telephones, television, radios as well as the internet has made their life much easier. This is because they can use such as computer games to improve their skills in sports. Moreover, it creates awareness of changes occurring across the globe. For instance, young generations can learn about healthcare benefits and be aware of the way they can maintain their body healthy. This can be done through mass media such as television and radio thus raising awareness among the young generations.

Secondly, technology in communication benefits young people in many ways. Through the use of phones and internet applications, the youths can communicate effectively and efficiently. This is because of the use of the internet especially emails in delivering faster and effectively due to high speed and clarity. Lastly, technology has helped in education sector in many ways. Firstly many educational sectors be it private or public institutions incorporate technology as an educational process. This is because computers aid in research processes for various courses under study. Students nowadays can find online materials books, scholarly journals, and online dictionaries thus making research easier. Through the utilization of websites, students from poor communities can get access to better libraries and the best instructors around the world. This is crucial because will develop basic academic skills thus improving student's and teacher's access to educational information.

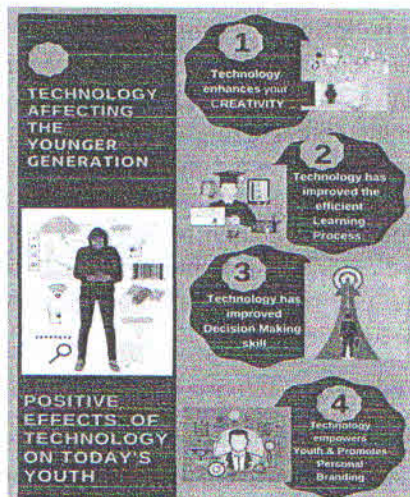
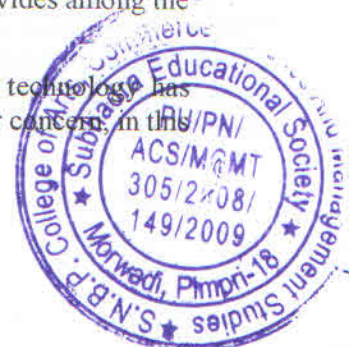


Figure 1: The positive impact of technology on youth

The Negative impact of technology on youths and education: Technology advancement has negatively impacted the lives of young people in various ways. First, it has induced attention deficit. The attention deficit prevalence in youth has increased dramatically. According to a research study carried out on the negative impact of technology, it was found that there is a high increase in cases whereby youths are diagnosed with Attention Deficit Hyperactivity Disorder (ADHD).

The problem is associated with inattentiveness, impulsivity, or both. It is the most common disorder that affects children. The researcher argues that ADHD is a developmental disorder caused by too much time spent on technology especially playing video games. The rapid pace appears to be a vital element linked with the exposure of video games and Attention deficit. Secondly, digital devices are yet another disadvantage of technology. Sefton Green the author of his book points out that digital technology has led to contradictions in the technology age for young people. It has led to contradictions in the communication process. He further clarifies that due to misinterpretation of information, there have been cases of gender divides among the youths.

Lastly, technology has helped education in various ways. Firstly, innovative technology has changed educational values and the shared behaviour of young people the major concern in the



case, is that many students spend their time playing video games, and watching explicit things which can affect their behaviour. Others pretend that they are doing research work on their computer but they are busy downloading, watching, and listening to music, TV shows, and movies. This has been noticed by parents, educators and government, but they have still neglected to help students. Thus because of technology, the performance of students in many schools has declined. In addition, it affected the young people's writing habits. The writing styles of abbreviating names especially youths who are writing short messages have significantly contributed to poor language development. Mainly in education disadvantages have been a lot like insufficient methods of teaching, transforming from learners into inefficient learners, and waste of valuable time.

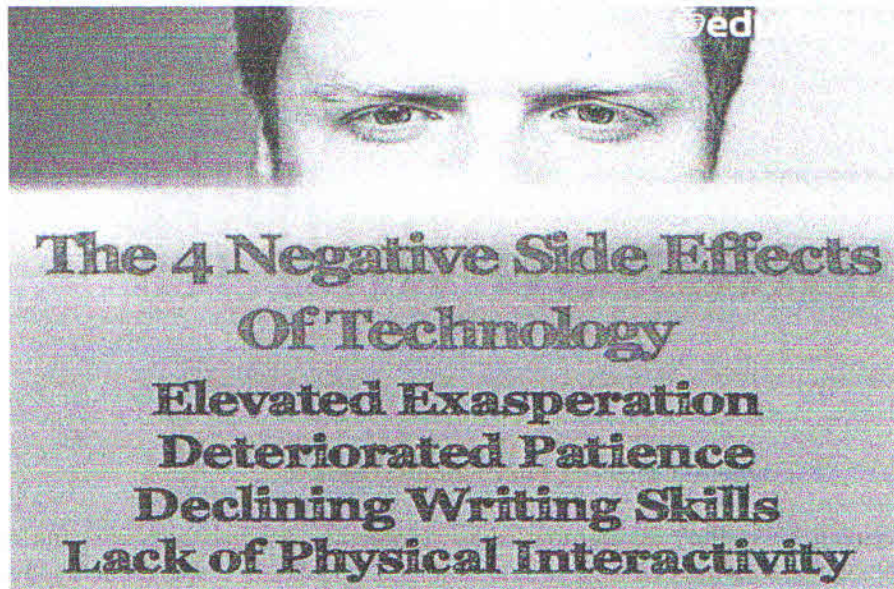
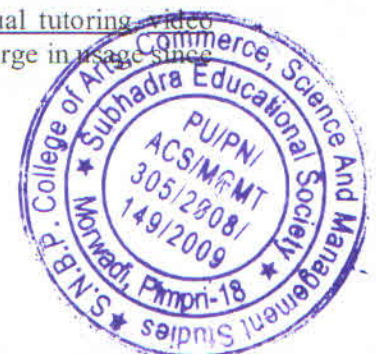


Figure 2: The negative impact of technology

Usage of technology in the education sector during the COVID-19 crisis:

- COVID-19 has resulted in schools shut all across the world. Globally, over 1.2 billion children are out of the classroom.
- As a result, education has changed dramatically, with the distinctive rise of e-learning, whereby teaching is undertaken remotely and on digital platforms.
- Research suggests that online learning has been shown to increase retention of information, and take less time, meaning the changes coronavirus has caused might be here to stay.

While countries were at different points in their COVID-19 infection rates, worldwide there were more than 1.2 billion children in 186 countries that had been affected by school closures due to the pandemic. With this sudden shift away from the classroom in many parts of the globe, some are wondering whether the adoption of online learning will continue to persist post-pandemic, and how such a shift would impact the worldwide education market. Even before COVID-19, there was already high growth and adoption in education technology, with global tech investments reaching US\$18.66 billion in 2019 and the overall market for online education projected to reach \$350 Billion by 2025. Whether it is language apps, virtual tutoring, video conferencing tools, or online learning software, there has been a significant surge in usage since COVID-19.



In response to significant demand, many online learning platforms are offering free access to their services, including platforms like BYJU'S, a Bangalore-based educational technology and online tutoring firm founded in 2011, which is now the world's most highly valued tech company. Since announcing free live classes on its Think and Learn app, BYJU'S has seen a 200% increase in the number of new students using its product, according to Mrinal Mohit, the company's Chief Operating Officer.

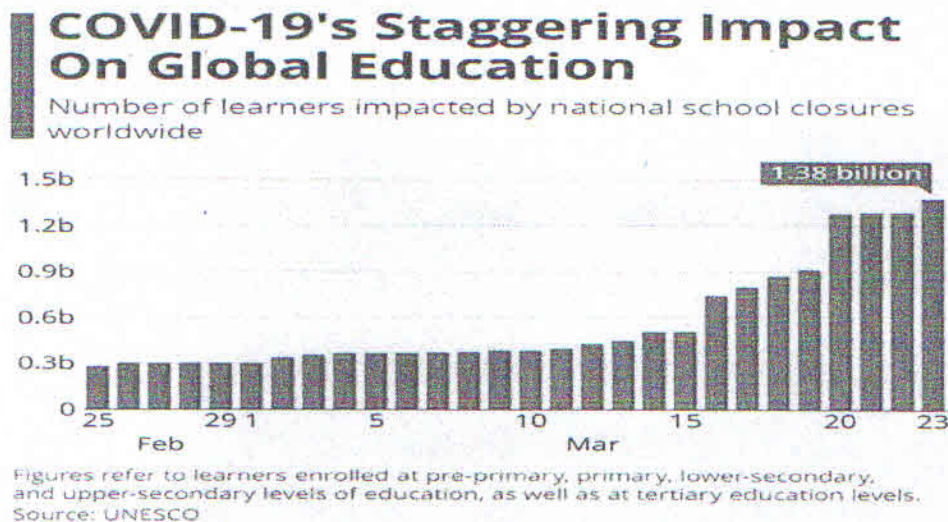


Figure 3: Covid-19 Impact on Education

Review of literature: This study is design to know in-depth insights that how and why technology has been and being impacted on youths as well as education. It also aims to identify the conditions that lead to its successful implementation and any differences between primary and secondary settings. This research is structured draw the evidence that how technology impacted on today's young people's lives and on education sectors. Technology has helped in simplifying the life of youths in education sector. This is because it has loads of valuable effects to the young generation in the society. This is because has played vital role in improving the students the learning skills. The quality of public education especially mass media has helped to create awareness among the students. In fact many institutions advertise the best learning environment suitable for advancing their studies. Another way it has helped education is through online discussions. Students share their learning ideas on a certain topic of discussion by active participation in online discussion. Today's youth are using technology in a variety of ways, from texting and tweeting to chatting, online gaming, and posting through a variety of Internet portals.

About 15% of India's Internet Users Are Aged 5-11 Years, Says IAMAI Report. An estimated 66 million children aged between 5-11 years in India access internet on devices of their family members, constituting about 15 percentage of the country's active internet user base, as per Internet and Mobile Association of India. An initial approach might start with acknowledging that the Internet is central to the lives of most teens and young adults, for whom technology literacy is pivotal to academics, work, and play. Among the challenges are gaining an accurate history of online activities and associated health and risk factors. Media use tells a great deal about patients—how they use their time, what they enjoy, how they want others to view them, awareness/use of privacy settings, proneness to risky behaviours, executive functioning, and awareness of the consequences of behaviour. It is also a snapshot about the number and depth of relationships, the types of friends they have, family relationships, cultural self-identification.



and pro-social aspects of Internet use. In this research I went through survey on how, why and how much technology have been and will being use and impacted on youth and education.

Data Analysis or hypothesis of the research by questionnaire methods: The Respondents Group: The survey focus on total 100 people among which approximate 60 responses I got, from College students and some other pupils of my circle. 40 respondents were from college and remaining 20 were pupils. The following graph illustrates the respondents group, according to the gender criteria.

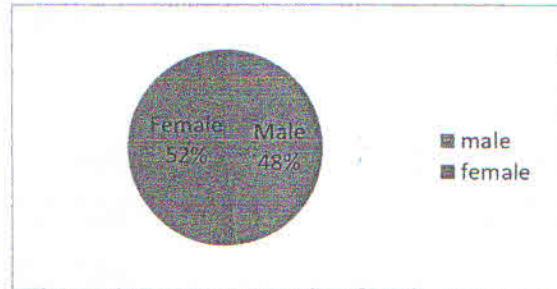


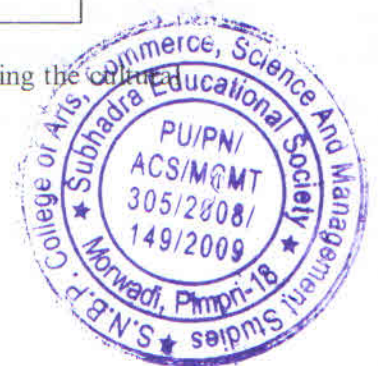
Figure 4: Percentage ratio of Male & Female

The respondents were assigned 5 questions and also to Yes/No answer to each of them. According to their own opinions the five questions were.

1. Do you use internet on daily basis?
2. Did watching certain movies or TV shows determine and inspire you to things like reading books, keeping our body healthy?
3. Do you think online mode of teaching is better and efficient than offline mode?
4. Does internet have been efficient and beneficial to you?
5. Does through advanced technologies such as videos games, Social Medias youth's behaviour and mind-set get polluted?

Questions	Total	Female	Male
Do you use internet on daily basis?	Yes: 96.5%	93%	100%
	No: 5%	10%	0%
Did watching certain Movies or TV shows determine and inspire you to things like reading books, keeping our body healthy?	Yes: 43%	48%	38%
	No: 57%	52%	62%
Do you think online mode of teaching is better and efficient than offline mode?	Yes: 9.45%	6.9%	12%
	No: 90.55%	93.1%	88%
Does internet have been efficient and beneficial for you?	Yes: 100%	100%	100%
	No: 0 %	0%	0%
Does through advanced technologies such as videos games, social medias youth's behaviour and mind-set get polluted?	Yes: 84.85%	86.4%	83.3%
	No: 15.15%	13.6%	16.7%

Table.1. This table signifies the questions that I asked during the survey regarding the valences of internet, as the whole.



Internet usage frequency	0-2 Hours	2-4 Hours	4-6 Hours	Or more Hours
Total	23.5%	30.4%	21.35%	24.75%
Female	20.5%	30.2%	25.0%	24.3%
Male	26.5%	30.6%	17.7%	25.2%

Table.2. The below percentages reflects the amount of usage or time being spent on Internet on daily basis

Activities undertaken on internet	Total		Female	Male
Searching of useful information	Yes	100%	100%	100%
	No	0%	0%	0%
Mp3s, music and movies listening and downloading or listening radios	Yes	92.65%	93.5%	91.8%
	No	7.35%	6.5%	8.2%
e-mails	Yes	82.25%	75%	89.5%
	No	17.75%	25%	10.5%
Internet application chatting	Yes	66.95%	60.5%	73.4%
	No	66.1%	39.5%	26.6%
Downloading documents and softs	Yes	92.65%	91.5%	93.8%
	No	7.35%	8.5%	6.2%
Reading news or articles	Yes	38.95%	42.4%	35.5%
	No	61.05	57.6%	64.5%
Playing online games	Yes	38.15%	32.8%	43.5%
	No	61.85%	67.2%	56.5%

Table.3. This table illustrates that what are types of activities done on internet, on the whole.

Conclusions: The result of the present research the fact the young ones are able to understand the cultural valences of new media technologies, and also advantages and risks the technologies can affect in a positive and negative ways for their behaviour and personalities. According to opinion classical way of teaching or other stuff cannot be replaced by modern technologies. Young people also admit that the important role it plays in making us aware of the spokesperson of other cultures and their religion, the access to information being a way to diversity and the acceptance of otherness. Among the most accessed internet activities by young people are the ones regarding formation and documentation and those based on communication and entertainment. As far as mobile phones concerned, the most accessed of functions by young people is the calling purposes, Documentation and searching for useful information on internet.



Past scholarly substance, there is an expanding acknowledgment that understudies need a more extensive arrangement of social and enthusiastic abilities to prevail throughout the everyday life, similar to metacognition, basic reasoning, ingenuity and the self-guideline. But since instructors need to such a great amount of energy in substance conveyance, appraisal, and the study hall executives, there isn't much time to mentor and guide understudies to manufacture these basic aptitudes.

It is equally important to mention the fact that internet usage for academic purpose is evenly undertaken by students i.e. both male and female. Through which it is estimated that comparatively girls, boys spend most time on accessing online games and boys spend most amount of time on internet for it.

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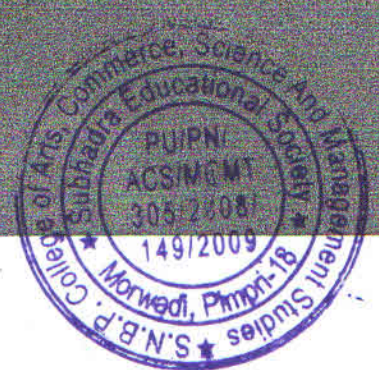
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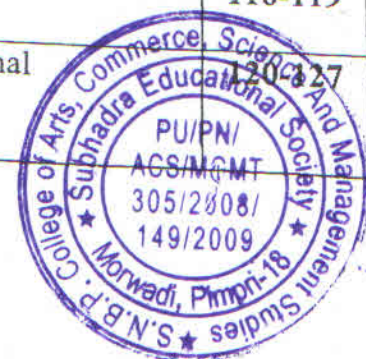
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A NEW ALTERNATIVE COMPETITIVE REMEDY OF STORAGE FOR AYURVEDIC FORMULATIONS - TETRAPACKAGING

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Abstract: Tetra packaging is a multinational food packaging and processing technology developed by the company of Swedish origin. With the motive that "A package should have save more than it costs and it is for making food safe and available anywhere." In Ayurveda field, the packaging, marketing and distribution of drugs is still remained undeveloped making them un-affordable to people. The study initiated keeping a view that the tetrapak will prove a best alternative method for packaging of Ayurvedic drugs as they will rejuvenate the entire Ayurvedic drug packaging system. Also it is more eco-friendly as well as it can be recycled. Tetra pak are not yet used for the packaging of Ayurvedic drugs

Keywords: Tetra Pak, Storage, Packaging, Ayurvedic drugs, Shelf life.

Introduction:

Ayurveda is a traditional system of Indian Medicines. It had been using naturally available herbs or medicinal plants in wet or dry forms for preparations of various combinations and formulations of drugs. But when the question arise about packaging, storage, quality, efficacy, shelf life and cost effectiveness of the drugs, Ayurveda is lagging behind in adapting new technologies for packaging. The conventionally using methods of Glass Bottles, Plastic Bottles for drugs like Churna (Powder form), Kashaya (Decoction), Tail and Ghrita (Oil and Medicated Ghee) are not sufficient enough to overcome the above arise questions. Conventional packaging methods certainly maintain *Savirya-avadhi* (drug potency) of drugs, but they are not attractive, cost effective and not so easy to transport and cannot be recycled. To break this barrier of conventional packaging methods we should think about new and innovative alternative which are more attractive, cost effective and easy to carry with increase in shelf life.

Tetra Pak

A Tetra Pak is a multinational food packaging and processing sub-company of Tetra-Laval, with head offices in Lund, Sweden and Lausanne, Switzerland. Tetra Pak offers packaging, filling machines and processing for dairy, beverages, cheese, ice-cream and prepared food, including distribution tools like accumulators, cap applicators, conveyors, crate packers, film wrappers, line controllers and straw applicators. It was founded by Ruben Rausing and Built on Erik Wallenbergs innovation- A tetra-hedron shaped plastic coated paper carton from which a company name is derived. It produces all sorts of paper packaging. Goal of Tetra Pak is to provide optimal food safety, hygiene and distribution efficiency using a minimum amount of material, according to the subsequently famous credo that a package should "save more than it costs." It had to be sufficiently cheap so that it could compete other packaging systems. Other packaging systems include conventionally used Glass Bottles and Plastic Bottles. Comparatively when we see the efficacy of tetra pak over the above conventional packaging systems, we found the following data as search result:

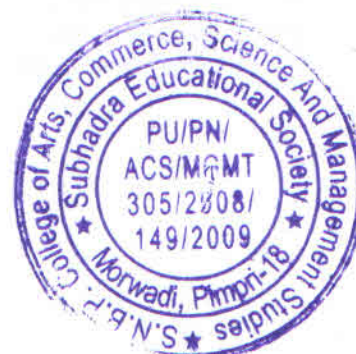


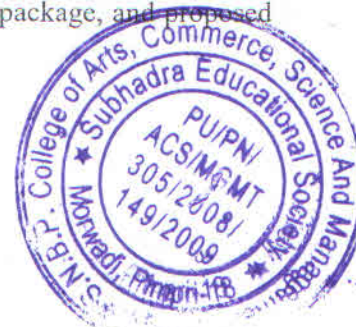
Table No 1: Comparison Chart of Tetra Pack with conventional methods:		
Sr.no	Glass Bottles	Tetra Pak
1.	Breakable	Un-breakable
2.	Difficulty in transportation	Easy transportation
3.	Costly	Cost-effective
4.	Causes pollution	Pollution-free
5.	Can't be degradable at a time	Can be degradable at a time
6.	Can not be recycled	Can be recycled
7.	They are not too attractive	Looks attractive or can be done attractive
8.	Aseptic precautions are not maintained	Provides aseptic packaging technology
(Source : Primary Data)		

Significance of study:

Tetra Pak will be certainly a great timely revolution in packaging, marketing industry and doctor-patient level use of drugs in Ayurvedic field. The need of choosing this subject is nothing but the new idea -that tetra pak which had been used for packaging of general food products till today, can be used for packaging of Ayurvedic Medicines. The study will hopefully enhance export of Ayurvedic drugs which was previously banned in some countries due to its perishability. Use of Tetra pak will increase the demand of Ayurvedic drugs being attractive and cost effective. It will also create some kind of awareness about Ayurvedic formulations among common people and it will help to demolish the mis-concepts about the handling discomfort and costly nature of Ayurvedic drugs.

Review of Literature:

In Research Paper, By FAN Fang-juan¹, YANG Zhong- ping¹, SHI Fu-xi² (1.Machine & Electron College, Northwest A & F University, Yangling 712100, China; in the article "Discussion on Recovery and Reuse of Tetra Pak Package", Tetra Pak(Beijing) Co. Ltd, Beijing 100044, China), Stated that, As the pioneer of aseptic packing technology, Tetra Pak company has promoted many kinds of paper carton packing, because has much characteristic such as does not have to refrigerate, guaranteed the nature for long time, retained food nutrition and the natural taste and so on drink convenience, so became liquid state food, milk, drink, fruit juice first choice packing which are deeply welcomed by the consumers too. With the enhancement of consumers' Purchase ability, more and more abandons packages are produced and then initiated serious environment question. This article discussed from the material and organizational structure embarks of package, and proposed how to use recycling the abandons tetra packages.



In Research Paper, By Abdul Aleem Butt, Sarah Wali Qazi, Student MBA (Marketing) from SZABIS, their article "Phenomenological Analysis of Consumers' Preferences, Experiences and Perceptions for Tetra Pack Milk Packages and Usages", Concluded that, Consumers think and according to their experience, about how safe & also believe that while purchasing tetra pack brand it is hygienic is tetra pack milk and they more convenient to them because of its features and heli cap make easier for the customer in the breakfast and also it ensures the quality of milk. to use it repeatedly. Consumers also attached to them because of time save. Usually people use tetra pack milk for drink, tea and shake mostly. Customer are also emotionally attached to the tetra pack brands ads and also associated with the color packaging of brand. Graphic, images and design are those attributes which leads to the purchase decision of customer. Shelf space and red color also play important role in the attractiveness of tetra pack brand and good combination of color attract consumers' eyes and they like jug and jar shape design pack because handling is easy.

In Research paper, By LV Jin-fen, SHEN Jian-fen, ZHENG Ru (School of Pharmaceutical and Chemical Engineering, Taizhou University, Zhejiang Taizhou 317000, China), in their article named "Research and Development of the Recycling of Tetra Pak Package" Found that With the market demand and the development of packaging technology, Tetra Pak in the world was extensively developed. There were high-quality wood fiber, plastic and aluminum in Tetra Pak. So, if not recycled, while the environment polluted, it would result in substantial waste of resources. In the promotion of sustainable development, all countries paid more attention to the new technology of recycling of Tetra Pak. Research and development of the recycling of Tetra Pak were focused on.

In Research Paper, By B. Kasem, R.F. Matthews, P.G. Crandall, J.A. Cornell. In their article, "Nonenzymatic Browning in Aseptically Packaged Orange Juice and Orange Drinks. Effect of Amino Acids, Deaeration, and Anaerobic Storage" It is concluded that, Single strength orange juice and synthetic orange drinks containing 10% (v/v) orange juice and 0.4 and 0.8% w/w concentrations of each amino acid, aspartic acid, arginine, and 4-aminobutyric acid were aseptically packaged using 250 mL Tetra Brik Packs. Samples were stored at 24°C for 16 wk under anaerobic and aerobic conditions, and were tested every 4 wk for nonenzymatic browning, ascorbic acid (AA) retention, dehydroascorbic acid (DHAA) formation, and sensory changes.

Deaeration and anaerobic storage resulted in increased retention of ascorbic acid. However, there was very little change in the flavor score, browning, color or change in the amino acid content of the different samples during the entire storage period.

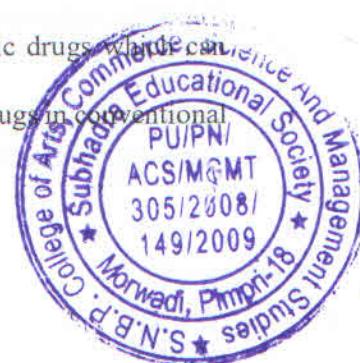
In Research Paper, By Cui Zhongwei (Tetra Pak China 200041), he presented the article "The Research of the Recycling of Liquid Packaging Paper Box" and Concluded that With the development of packaging technology and packaging requirements of the people growing, complex flexible packaging in the world have been widely attention and rapid development, and gradually replaced the metal, glass and other packaging materials, at the same time, the use of flexible packaging of raw materials more varieties, and the substrate mutual bond strength, using a single method of recovery is not feasible, which caused the difficulty of increasing recycling, but if these materials will be discarded, it will not only cause environmental pollution, and will cause a lot of useful raw materials wasted, because in such a box containing both the precious metal aluminum, but also contain relatively good wood fiber and plastics. Therefore composite flexible packaging material waste recycling and reuse study is still important.

Aim of study:

The present study aimed to improve the packaging system of Ayurvedic drugs by using the Tetra Pak as a new alternative remedy against conventional methods.

Objectives of study:

1. To find out the product profile opportunities for ayurvedic drugs which can be packaged by Tetra Pak.
2. To compare physical and chemical properties of selected drugs in conventional systems of packaging and tetra pak.



3. To develop the cost effective, attractive and efficient packaging system for Ayurvedic drugs.

Hypothesis of study:

Hypothesis 1

H₀ : Tetra Pak is not the advanced technological solution for packaging of Ayurvedic drugs.

H₁ : Tetra Pak is better advanced technological solution for packaging of Ayurvedic drugs.

Hypothesis 2

H₀ : Tetra Pak is not a better solution for packaging and storage of ayurvedic drugs compare to conventional packaging system

H₁ : Tetra Pak is a better solution for packaging and storage of ayurvedic drugs compare to conventional packaging system

Materials and Methods of study:

Materials: Glass bottles Tetra pak

Sample Ayurvedic drugs- Samples of Asava :1.Drakshasava 2. Kanakasava

Samples of Arishta :1. Khadirarishta 2.Ashokarishta

Methods:

Researcher processed study of physical and chemical properties of Ayurvedic drug after packaging it in glass bottles and the tetra pak. For this purpose, we had taken four drug samples having variety in consistency and formulations (mainly liquid and powder form). Then we carried out different physical and chemical tests of Ayurvedic drugs placed in glass bottles and Tetra paks.

Quantity of each Asava & Arishta - Approx. 2 liters each Asava & Arishta will be made available from the manufacturing unit of ADAMC, ASHTA.

Methodology:

Research Design:

A randomized comparative study of Tetra Pak with conventional packaging methods for Ayurvedic drugs. Primary data:

Primarily we had taken samples of Different Ayurvedic Formulations along with the same no. of Glass Bottles and Tetra Pak of different sizes.

Secondary data:

The secondary data is collected from the web, journals, books, articles, and previous work done on Tetra Pak. This was collected from various sources like the Tetra Pak website, and previous research done on Tetra Pak.

Sampling method: All samples are stored in Glass Bottles and Tetra Pak at the same time and checked after 5, 10, 15, 30 days and 2 and 3 months. While checking drugs for changes, various physical and chemical tests are carried out. And concerned observations are noted down. We started our research study on 20th March 2017 and simultaneous observations are noted so on. We had completed this study on 20th June 2017. And started a further statistical study to prove our earlier-mentioned hypothesis.

(i) **Location of study:** Dhanvantari Ayurved Rasashala, Ashta

(ii) **Testing laboratory:** Nikhil Laboratories, Kolhapur Road, Sangli

(iii) **Statistics:** Companies presently producing tetrapak in India:

Presently many companies in India are producing Tetra Pak for the packaging of food products.

Some of the names are mentioned below:

*Main Production Houses:

- Tetra Pak India Pvt. Ltd. Gurgaon, Hariyana.
- Tetra Pak India Pvt. Ltd. Chakan, Pune, Maharashtra.

Other:

- MLM India Ltd. New Delhi, Chawri Bazar- Rate: 43 rs/kg
- Tetra Pak milk M.A. Marketing. Hyderabad- Rate: 50 rs/lit



- Aman machine services for tetra pak roll-Rate: 65 rs/kg
- Seaway Exime for tetra pak roll- Rate: 43 rs/kg
- Hasini Trading Company Chennai- Rate: 40 rs/kg
- Vivo-kesar milk tetra pak, Shri.Sadguru Ent.NewMumbai. Rate: 28/tetra pak

Methods:

For Asava & Arishta following are the tests that will becovered by Nikhil Laboratories.

Colour – Odour – Weight - Moisture Contents - PH value- Sp. Gravity – Viscosity - TLCRefractive Index

Table No. 2 Refractive Index	
For <i>churna</i> :	For <i>Tail</i> :
Drying	Refractive index at 40 degrees
Total Ash	Specific gravity at 40 degrees
Acid solubility	Saponification value
Alcohol solubility	Iodine value
Water solubility	Acid value
pH	Peroxide value
For <i>Ghrita</i> :	For <i>Kashaya</i> :

Refractive index at 40 degrees	Refractive index at 40 degrees
Weight per mole at 40 degrees	Specific gravity at 40 degrees
Saponification value	pH
Iodine value	Viscosity
Acid value	
Peroxide value	
Congeaing point	

10) Assessment of Tests:

Table No.4: Analysis of Physical Tests:			
Sample	Parameter	Class bottles	Tetra pak
Brab mi Gbriit a	Shabda(Sound) Sparsh(Feel on touch) Rupa(Appearance) Rasa(Taste) Gandha(Odour)	Unctuous Greenish Yellow Bitter Pleasant	Unctuous Greenish Yellow Bitter Pleasant
Maha naway aya Tail	Shabda(Sound) Sparsh(Feel on touch) Rupa(Appearance) Rasa(Taste) Gandha(Odour)	Sticky-Oily Yellowish Brown Unpleasant	Sticky-Oily Yellowish Brown Unpleasant
Dash mool Kash aya	Shabda(Sound) Sparsh(Feel on touch) Rupa(Appearance) Rasa(Taste) Gandha(Odour)	Watery Liquid Brownish Black Bitter Characteristic	Watery Liquid Brownish Black Bitter Characteristic
Hing u- ashta ka churn a	Shabda(Sound) Sparsh(Feel on touch) Rupa(Appearance) Rasa(Taste) Gandha(Odour)	Free Flowing Powder Light Brown Spicy-Astringent Aromatic-Pleasant	Free Flowing Powder Light Brown Spicy-Astringent Aromatic-Pleasant



Table No. 3 Assessment of Tests of Analysis of Drugs						
Method Used	Number of tests Applied	No. Of Samples	Phase (I) after 4 months	Phase (II) after 8 months	Phase (II) after 8 months	Phase (II) after 8 months
Traditional Packaging	9 tests per sample	2	9X2 (18)	9X2 (18)	9X2 (18)	9X2 (18)
Tetra Packaging	9 tests per sample	2	9X2 (18)	9X2 (18)	9X2 (18)	9X2 (18)
Total number of tests for all samples of Aava=144						
Total number of tests for all samples of Arishta=144						
Total tests carried out for all samples = 288						

(Source: Primary Data)

Chemical Tests

Table No.5 : Chemical analysis of Brahmi Ghrita		
Test	Glass bottles	Tetra pak
Refractive index at 40 Degree	1.458	1.456
Weight per mole at 40 degree	0.931	0.941
Saponification value	194	195
Iodine value	36	36
Acid value	1	1
Peroxide value	3	3
Congelating point	21	21

Observations and Results of pilot study :

For the pilot study 1. Brahmi Ghrita

2. Mahanarayana Tail

3. Dashmool Kashaya

4. Hingu- ashtaka churna has been taken to check the parameters.

Table No. 5 : Chemical analysis of Dashmool Kashaya		
Test	Glass bottles	Tetra pak
Refractive index at 40 degree	1.32	1.34
Specific gravity at 40 Degree	1.021	1.001
pH	5.65	5.60
Viscosity	9.41	9.41

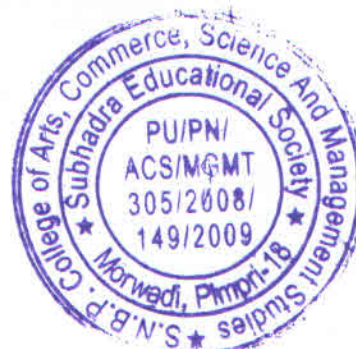


Table No.6: Chemical analysis of Mahanarayana Tail

Test	Glass bottles	Tetra pak
Refractive index at 40 degree	1.4600	1.4595
Specific gravity at 40 degree	0.935	0.937
Saponification value	190	191
Iodine value	84	83
Acid value	5	5
Peroxide value	5	4

(Source: Primary Data)

Table no.6: Chemical analysis of Hingu-ashtaka churna

Test	Glass bottles	Tetra pak
Drying	12.2 %	12.2 %
Total ash	23%	22.9%
Acid solubility	4.3%	4.4%
Alcohol solubility	13.6%	13.6%
Water solubility	33.3%	33.4%
pH	6.5	6.6

(Source: Primary Data)

Taking All the Observations and Discussion in consideration we concluded that:

- i) Tetra pak can be an alternative packaging option over conventionally used glass bottles having similar packaging benefits, and yielding similar results on physical and chemical tests
- ii) From all the Study And Discussions We Concluded that Tetra Pak is more Beneficial than Conventionally used Glass Bottles as tetrapak has the following Advantages:
 - a) Tetrapak Increases the Shelf Life of drug
 - b) Prevents Organisms from entering the pak
 - c) Prevents Harmful Radiation
 - d) Tetra Pak is easy to handle
 - e) After opening the pak it can be used for 3-4 days.
 - f) It Retains Refreshment
 - g) Protect from Spoilage

In a pilot study, According to Observations from Table No. 2, 3, 4, 5, 6 overviewing all aspects of the subject, we discussed over Following Points :

- Physical Properties of drugs Remain Unchanged with the use of Tetra Pak or remain the same as that of with the use of Conventionally Used Glass bottles.
- There is a slight or minimal change in the Chemical Properties of drugs with the use of tetra pak than with the use of conventional glass bottles.
- The advantages and Disadvantages of both packaging systems are taken in consideration and discussed with respect to the above observations and with a perspective of packaging, storage, quality, efficacy, shelf life, and cost-effectiveness.
- Comparative Analysis of Both Packaging Systems is done.



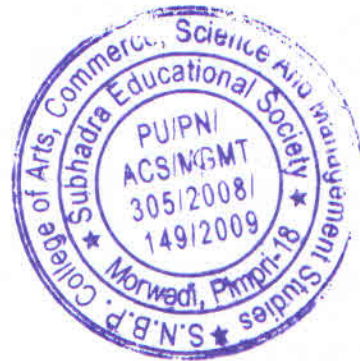
Result:

As per our results of the study, It is proven that A Tetra Pak is Definitely A New Alternative and competitive Remedy of storage for Ayurvedic Drugs.

Conclusion:

Protect Quality, Taste and Maintain Potency

More Useful and Cost-effective than conventional Methods



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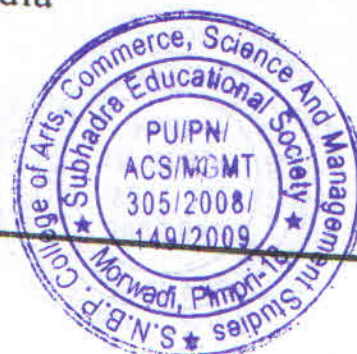
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DIGITALIZATION IN TEACHING AND LEARNING: A COMPREHENSIVE STUDY

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Abstract:

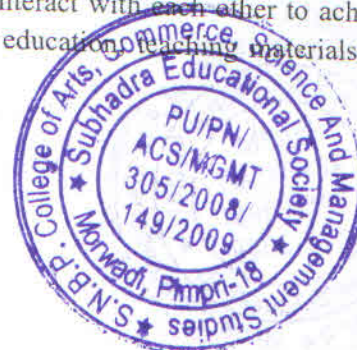
The educational system was severely impacted due to COVID-19 pandemic and teachers and students were both supposed to adapt digital environment. Rapid development of digitalization has affected in the development of teaching and learning. Digitalization is to provide digital platform and it is process of transformation of information in computerized format. Teaching is world's largest profession of transmission of knowledge where learning is ability to learn and understands the knowledge. Digital age has changed, how we communicate, inform ourselves, and even how we teach and learn. Main objective is to minimize manual work and physical documentation. Technologies and use of digital media will improve teaching and learning development. This paper provides a comprehensive review of the digitalization in teaching and learning, highlighting its impact on education system. Based on literature review author describes effect of digitalization on teaching and learning, author specify challenges and suggestions to overcome for the same. Finally, some recommendation and future directions for digitalization is highlighted in this research studies.

Keywords: Digitalization, Digital, Learning, Teaching, Challenges

Introduction:

Digitization is related to the concept of digital transformation. Digitization is to provide a digital platform in every field all over the world. Digitization is the process of transformation of analog data into digital information, so it can be stored and understood by computer machine which include transfer of paper document to electronic or digital format that result as digital representation. Digitization refers to the conversion of existing hardcopy learning material and process to making them available through digital means. It can be easily stored, shared and backup the information of all kinds in all formats with consistent efficiency & managed. Digital and new technologies are used to send and receive information, deliver services and also impacted the way learning occurs. In the current situation people, society, businesses, and education have to matched and access the knowledge via Information and combination technology (ICT's) to be heart of digital world.

Education is a system with several components that interact with each other to achieve a particular goal. Some of the components include objectives of education, teaching materials, teaching tools/



media, teaching methods etc. If anyone component is missing then the result will not be very good. Learning is process which can be done through formal and non-formal education. In formal education teacher and student are communicate with each other where teacher is facilitator of social interaction education for student. Learning is an ability to learn, understand knowledge, behavior, skills, value and many more new things which is continuous and lifelong process, it doesn't end and play very crucial role in human development and modify existing knowledge, attitude towards current trends. It is active and adaptive to the current environment to learn and engage with information, and experience, and develop the necessary skills to function effectively in various areas.

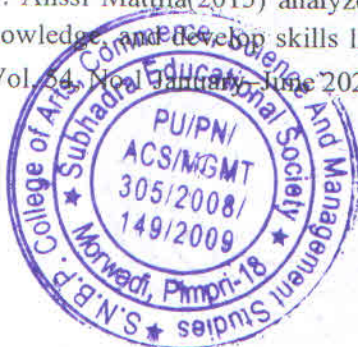
The digital revolution has brought about significant changes in various aspects of our lives, including education. With the proliferation of digital technologies and the internet, education has become more accessible and convenient than ever before. The impact of the digital revolution on education and how it has transformed the way is essential. Teaching is the world's largest and cutest profession, where we can transmit knowledge to learners, Students, or any other audience. During the teaching process, a teacher's job is to impart knowledge to students and inspire and motivate students to be more active. In higher education teaching are committed to developing as professional teachers not only as researchers, they should provide good quality learning material with the help of researchers. Teachers can broadly be defined as the confident, creative use of ICT tools, this is an essential skill for today's teachers. This helps the teacher to acquire and update skills needed in their work for teaching. To create a positive, respectful, curiosity, and punctuality learning attitude among the learner, teachers should be innovative, creative, motivational, caring, enthusiasm, adaptable, and research-oriented to lifelong learning.

The present paper is considering the view of digitalization in teaching learning process and its impact on education institutes. The present study based on mixed methods approach of secondary data with the following objectives -

- to understand the evolution of digitalization in education.
- to study the importance and relevance of digitalization in teaching and Learning.
- to know the benefits and challenges of digitalization in education.

Review of Literature: In 2015, Jessica Muetterties in her paper "Enhancing Education through Digitization" highlighted that teachers must learn to embrace the fact that computers and other aspects of technology are used by children every day the classroom needs to incorporate new and emerging technology. It also focuses on how to prepare online presentations with various methods. Dr. Raju Kumar (2020) emphasis that Artificial Intelligence will boost to digitalization and it can be used for making education systems online. It also highlights that computer tools and applications will help to conduct the examinations and evaluation of papers. Saiful Islam(2018) presented in his paper that today most of the learning styles have been converted into digital education system. Digital education also extends through social networks. He said the effect of social networking on our education site.

Dr. Anssi Mattila(2015) analyzed Teachers should be able to deepen students' understanding and knowledge and develop skills like problems solving, interaction, self-correction, critical reflection,



competence improvement meaning making an experiential learning. In the future, we have to focus resources on teaching teachers, and not only at the beginning of their career, but teachers should have a possibility to develop professionally throughout their academic working life. M Tsarapkina(2021) concludes that the leading role in any pedagogical process belongs to the teacher, and in the application of digital technologies, his contribution is undeniable. He said the primary focus should be on innovations created by teachers which must associate with technology produced in the market and improved technological process while using in practice. Tarmo Tuis(2015) concluded this leads the researchers to believe that ICT does play a role in increasing and facilitating, interactions for students studying in an international context both with each other and with university staff.

Mei, X., Aas, E. & Medgard, M. (2019), stressed that teachers use of digital learning tools for teaching in higher education and exploring teaching practice and sharing culture as creating activity, variation and commitment are some of the main reasons for using digital learning tools in planning and conducting the teaching with positive impact which can improve by teaching practice through digital learning tool. Vasileios Dagdilelis (2018) concluded as the initial data analysis seems to indicate that the use of ICT in teaching has been generally accepted by the teachers.

Ulyawati (2022) describes digitalization is using media of digital form, the research illustrates that digitalization of effective elementary school natural science learning using E-learning, personalized learning, and continuous feedback mechanisms and student have their ownership towards learning. Issa I. Salame (2023) proposed there are significant differences between online learning and a traditional face-to-face format. Jens Riehemann & Regina Jucks (2017) highlighted that the digital age has changed how we communicate, inform ourselves, and even how we teach and learn. Sheila García-Martín (2019) concluded the ability to integrate and use of technologies for educational purposes requires generic and specific teaching skills, known as professional digital competence.

Evolution of Digitalization in Education ; As the effect of technology seen in every aspect of society, the results of digitalization in education have been unable to avoid. In educational field, digitalization has different applications like e-learning, online courses, online examinations, distant learning and administrative work. Along with these methods, mentality of students is also changing. They are not restricted with text books available in market. Their methods of learning are changing every day. They like to learn through social media such as YouTube, Online Apps, Facebook etc. The e-books provide an interactive media in which the students have access to multimedia contents such as videos, slide presentation and hyperlinks. Learning through animations like pictures, diagrams, and different color combinations is more effective.

Like traditional methods, nowadays people don't like to stand in long queue for admission process. Students can fill their applications online at their convenience. Payment of fees can be transferred online from anywhere and anytime using internet.

Effect of Digitalization in Teaching and Learning: Some benefits are not so obvious, but still worth noting. So, let us show you some of the critical areas where you can digitalize the learning process.



Managing Admissions: Uploading the enrollment application to institution offline is lengthy and time-consuming process but through the digital way submitting them is more convenient and a time-savvy.

Minimizing Risks: Whether lectures or classes were canceled due to unhealthy conditions, online learning can handle it all and convenience to maintain excellent attendance rates and not miss an important lesson through digital tools or just read through the material uploaded on the cloud.

Improving Learning Outcomes: With interactive lessons and implementing high-tech solutions can motivate students and, as a result, improve their learning skills. The more attention will give to what's going on, the more relevant information will be able to absorb at once.

Evaluating Performance: The process of digitalization in education offers a lot of benefits for students, such as faster access to tests and grades through online systems. E-learning systems allow to track students' performance levels that you can easily measure via a digital platform.

Benefits of Digitalization in Education:

Today education is becoming digitized faster than expected the reason cited is that digital way of learning has a long-lasting impact on the memory of the learner and makes him smarter embodied with logical thinking and sharp reactions in a given situation that that being possessed when more reliance was on class room teaching and traditional methods of imparting education. Following are the important benefits of digital education over the traditional education system of education.

- Digital tools provide students with access to vast amounts of information, enabling them to explore diverse perspectives and resources beyond traditional textbooks.
- Digital platforms can be tailored to individual learning styles and paces, allowing students to engage with content at their own speed and receive personalized feedback.
- Interactive multimedia elements, gamified learning experiences, and virtual simulations can make learning more engaging and enjoyable, fostering active participation and motivation among students.
- Nowadays, E-learning, distant learning and online education have become very important of education system now days. Even several foreign universities have started online degree courses that students can join. There is no restriction to attend the class physically. Thus, digitization of education has crossed all boundaries for students who have thirst for knowledge.

Challenges of Digitalization in Education:

While the benefits of digitalization in teaching and learning are clear, there are also significant challenges that must be addressed to realize its potential. According to review of various papers ,there are some challenges faced by people in various filed. It can be difficult to teachers to keep up with the latest trend in technology

- One of the key challenges is related to technology integration. Integrating technology effectively into teaching practices requires significant time, training, and support for teachers,



as well as access to reliable infrastructure and technical support. Without adequate support, teachers may not adopt digital technologies, or they may use them ineffectively which can negatively impact student learning outcomes.

- Socioeconomic disparities in access to technology and internet connectivity can exacerbate inequalities in educational opportunities, creating a digital divide among students from different socioeconomic backgrounds.
- Excessive use of digital devices and online platforms can lead to distractions, multitasking, and information overload, potentially hindering students' ability to focus, retain information, and develop critical thinking skills.
- Digitalization raises concerns about the privacy and security of student data, as well as the risk of cyber threats, data breaches, and unauthorized access to sensitive information stored on digital platforms.
- Implementing digital tools and online learning environments requires careful consideration of pedagogical approaches, instructional design principles, and assessment strategies to ensure meaningful learning experiences and academic integrity.
- Students and teachers need to develop digital literacy skills to navigate digital platforms effectively, evaluate online information critically, and use digital tools responsibly for learning and communication.
- Ensuring equitable access to digital resources and addressing barriers to participation for students with disabilities, English language learners, and other marginalized groups are critical challenges in digitalized learning environments.
- During online learning students complaining about of lack of motivation, it happens because every student is not accompanying by teacher face to face interaction of student teacher is not possible because more number of student are present in the session. Some students are not able to speak in front of all students due to fear as there is lack on one to one interaction between student and teacher.

Conclusion:

Digitalization used to provide digital platform and it is process of converting hard paper in digital form. Teachers must realize that they are the main facilitators not replaced by new technology, but with the new technology, one can improve the efficiency of teaching by teachers. The use of digital learning media used by teachers for teaching as well as used by students for learning in beneficial in the current situation. Challenges faced by students are lack of motivation, infrastructure problem and faced by teacher as availability of learning media; innovative learning is an expensive part. In the following ways, the digitalization of education can be more fruitful results in terms of knowledge and learning

- Teachers must consistently update with the latest technologies by taking part in training and workshops, especially in the field of education sector which will help them not only to learn



how to use new technology but also how to provide meaningful instruction and activities using technology in the classroom.

- With the potentially powerful effect of media and the growing empirical evidence for the negative impact of technology on students, parents should take care to limit exposure to deleterious technology. They should know what content their wards are reading and viewing in the name of online education.
- There should be clear learning objectives and Institute should provide facilities to teachers and students as per the requirement of new digitization technology. So, be ensure about a technology planning team comprising administrators, teachers, technology coordinators to determine the educational goals for students and the types of technology that will be beneficial to meet the goals.

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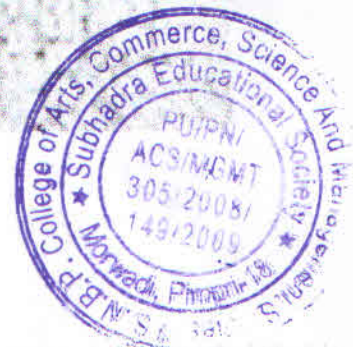
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मध्य भारती

मानविकी एवं समाजविज्ञान की द्विभाषी शोध-पत्रिका

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BIG DATA AND BIG DATA ANALYTICS: CONCEPTS, DIVERSE FORMS AND TECHNOLOGICAL DIMENSIONS

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Abstract: Nowadays, Big Data has emerged as a critical asset for businesses in the contemporary digital landscape. It encompasses vast and diverse sets of digital data generated by companies and individuals through various sources such as social networks, the Internet, and other technological platforms. The concept of Big Data has revolutionized the way companies operate and make decisions in the digital age. The continuous growth of digital data necessitates sophisticated tools and strategies for storage and analysis. Big Data Analytics plays a pivotal role in unlocking the potential of these vast datasets, offering valuable insights that drive strategic decision-making and innovation. As companies navigate the challenges associated with Big Data, those who successfully harness its power are positioned for success in an increasingly data-centric business environment.

Keywords: Big Data; Big Data Analytics; Hadoop; Internet; Security.

I. Introduction:

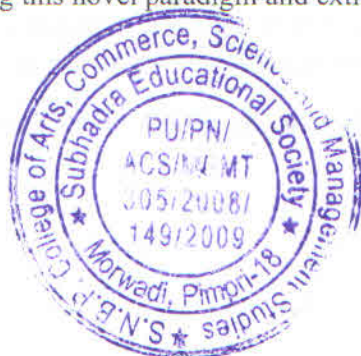
In contemporary era, the surge in digital data is intricately tied to the widespread use of Internet-connected devices, such as smartphones, tablets, and computers. These devices continuously transmit valuable information about users, while connected smart objects contribute insights into consumers' interactions with everyday items. Beyond device-generated data, a plethora of sources, including demographic, climate, scientific, medical, and energy consumption data, contribute to a rich tapestry of information. This vast array of data unveils details about users' locations, travel patterns, interests, consumption habits, leisure activities, and projects. Simultaneously,

It illuminates how infrastructure, machinery, and apparatus are utilized. As the Internet and mobile phone user base continues to expand rapidly, the amount of digital data is skyrocketing. This digital era can be characterized by its Informational Age, where data plays a pivotal role in shaping decisions and strategies. We find ourselves immersed in the Informational Society, steadily progressing toward a Knowledge-Based Society. This evolution is characterized by the recognition that to gain deeper insights and knowledge, we must harness larger volumes of data. In the Society of Information, data assumes a central role, influencing economic, cultural, and political dynamics on a significant scale.

II. Big Data:

Big Data" represents the continuous advancement and application of technologies designed to provide relevant insights to individuals when needed, drawn from an ever-growing reservoir of information within our society. The challenge extends beyond managing the sheer volume of data, encompassing the complexities associated with diverse formats and the intricate interconnections within the data itself. Functioning as a complex and polymorphic entity, the definition of Big Data varies depending on the perspectives of communities engaged either as users or service providers. Originating from web giants, Big Data is positioned as a solution crafted to offer real-time access to colossal databases for everyone.

Precisely defining Big Data proves challenging due to its dynamic nature. The concept doesn't hinge on a fixed set of technologies; rather, it delineates a category encompassing a range of techniques and technologies. As an evolving field, our understanding and application of Big Data continue to shift. The concept of "scale" in data volume can vary significantly across different domains. Consequently, the definition of Big Data is not static but is subject to transformation as we navigate the intricacies of implementing this novel paradigm and extract its inherent value.



Characteristics of Big Data: Big Data is distinguished by its three key dimensions: volume, variety, and velocity, collectively known as the 3V's. This framework encompasses datasets of massive proportions (volume), spanning a wide array of structured, semi-structured, and unstructured data formats (variety), and streaming in at an unparalleled pace (velocity). These dimensions capture the expansive, diverse, and dynamic nature of data in our modern digital environment, highlighting the challenges and opportunities inherent in managing and extracting insights from such vast and multifaceted datasets.

A) 3V:

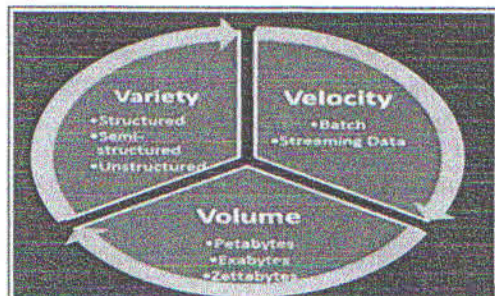


Fig 1: 3V Concept

Volume: This dimension encapsulates the vast quantity of data being generated, stored, and processed within the system. The increase in volume not only stems from the growing amount of data but also underscores the critical need to effectively manage and derive value from this abundance of information.

Variety: In this dimension, we encounter the diverse array of data types that information systems handle, adding complexity to the interconnections and relationships between them. The variety extends to the multitude of potential applications associated with raw data, emphasizing the depth and versatility of the information landscape.

Velocity: Reflecting the speed at which data is produced, captured, and disseminated, this dimension highlights the continuous flow of data that necessitates real-time analysis for meaningful insights. The rapid velocity of data underscores the necessity for systems capable of swift processing and response. The contemporary digital landscape is marked by the Informational Age, where the triumvirate of volume, variety, and velocity defines the challenges and opportunities presented by Big Data.

B) 5V:



Fig. 2. 5V Concept

Expanding upon the foundational 3V's of Big Data, we introduce two additional critical dimensions:

Veracity: This dimension delves into the quality, accuracy, and reliability of both the data and its sources.

Value: Here, we consider the intrinsic value and potential that can be extracted from the data.

III. What Is Big Data Analytics?

Big Data encompasses datasets that surpass the conventional capacities of typical databases and data analysis techniques in terms of storage, processing, and computing. This expansive resource necessitates specialized tools and methodologies for effective analysis and pattern extraction on a large scale. The evolution of structured data analysis is driven by the variety and velocity inherent in the manipulated data. Traditional approaches to analyzing data and generating reports are no longer



sufficient due to the diverse array of data types. Systems must now possess the capability to aid in the analysis process. This involves automatically identifying correlations within rapidly changing data to facilitate its exploitation. Big Data Analytics involves a methodical approach to gathering, structuring, and examining vast datasets to reveal meaningful patterns and valuable insights. It encompasses a range of technologies and methodologies that require creative integration to uncover significant hidden value from datasets that are notably intricate, complex, and large-scale. The central aim of Big Data Analytics is to tackle emerging challenges or enhance current solutions with greater efficiency and effectiveness, driving innovation and advancement in data-driven decision-making processes.

A. Types of Big Data Analytics

a) Descriptive Analytics:

Descriptive analytics seeks to answer the question: What is happening? This initial phase in data processing involves organizing historical data using data mining methods to uncover patterns and provide insights into past occurrences. It not only creates a set of historical data but also offers future probabilities and trends, offering a glimpse into what might transpire.

b) Diagnostic Analytics: Diagnostic analytics addresses the question: Why did it happen? This type delves into the root causes of a problem, aiming to understand the reasons behind specific events or behaviors. It is instrumental in determining the underlying factors that led to a particular outcome.

c) Predictive Analytics:

Predictive analytics seeks to answer the question: What is probable to occur? It achieves this by leveraging historical data to forecast future scenarios. Through techniques like data mining and artificial intelligence, predictive analytics examines present data to develop models that anticipate potential outcomes, thereby enabling informed decision-making based on projected probabilities.

d) Prescriptive Analytics:

Prescriptive analytics addresses the question: What actions should be taken? Distinguishing itself from descriptive analytics, which looks at historical data, and predictive analytics, which forecasts potential events, prescriptive analytics focuses on determining the optimal actions to achieve desired outcomes. It draws upon both historical data and predictive parameters to recommend the most effective course of action, facilitating informed decision-making aimed at maximizing desired results.

IV. Hadoop for Big Data Application:

Big Data represents vast and previously unimaginable collections of information, which a decade ago would have been deemed too massive to store and process effectively. Traditional database management systems are ill-equipped to handle such immense quantities of data. Introducing Hadoop, an open-source software framework developed and freely distributed by the Apache Foundation, serving as a versatile toolkit for addressing Big Data challenges. Widely adopted by industry leaders such as Facebook, Twitter, LinkedIn, eBay, and Amazon, Hadoop functions as a distributed system for processing and managing data. Its components, including HDFS, YARN, and MapReduce, play integral roles in its architecture. HDFS operates as a distributed file system, facilitating high-performance data access across Hadoop clusters, while MapReduce enables resilient and distributed processing of vast unstructured datasets across commodity computer clusters. Notably, each node within the cluster possesses its own storage, ensuring efficient data processing. Hadoop's architecture relies on two pivotal servers.

JobTracker: In every Hadoop cluster, a singular JobTracker assumes the responsibility of receiving Map/Reduce tasks and coordinating their execution. This central component constructs an execution plan by identifying nodes containing pertinent data, organizing nodes to align with data distribution, monitoring task progress, and launching tasks as necessary to ensure efficient completion.

Task Tracker: Within each Hadoop cluster, numerous TaskTrackers are deployed, tasked with executing Map/Reduce operations, encompassing both Map and Reduce tasks along with their corresponding input data. The JobTracker server interacts with HDFS to efficiently distribute tasks based on data location.

To execute a Map/Reduce program:

- Store input data in HDFS.



- Submit the program to the JobTracker in the cluster.
- Retrieve output data from HDFS after processing.

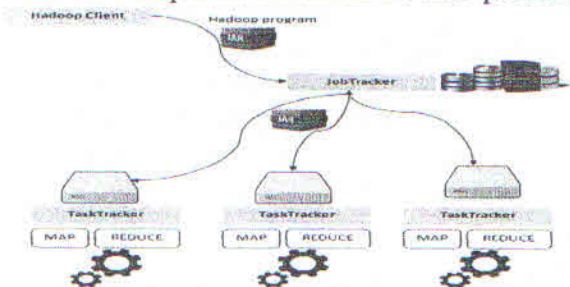


Fig. 3. Hadoop Architecture

Task Trackers continuously report their status, and in case of failure, the Job Tracker redistributes tasks to other nodes.

HDFS relies on three servers:

1. **NameNode:** Exclusive within the cluster, this component serves as the repository for file metadata and attributes, functioning as the master of HDFS and overseeing the operations of subordinate DataNodes.
2. **Secondary NameNode:** This component actively monitors the HDFS cluster's status and periodically captures "snapshots" of the data stored in the NameNode. In the event of a failure, it can serve as a substitute for the NameNode.
3. **DataNode:** Multiple per cluster, storing file contents fragmented into blocks (default size 64KB). This intricate architecture ensures efficient, distributed, and fault-tolerant processing of Big Data in various industries.

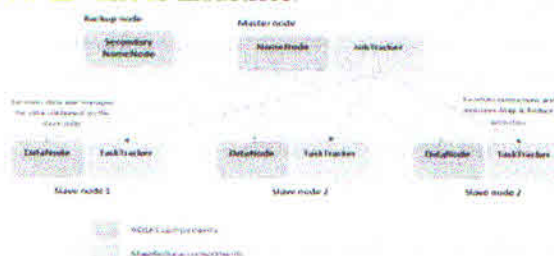


Fig. 4. General Architecture

V. Map Reduce Concept

In the MapReduce framework, Java serves as the primary environment for developing programs meant to operate on YARN. Although Java may not be the simplest language for this purpose, it provides flexibility, albeit with the need to manage packages and class paths. Within the MapReduce paradigm, data exchange between Map and Reduce functions occurs in the form of pairs (key, value):

Key: This can encompass any type of data, such as an integer or text. **Value:** Similarly, this can represent any type of data.

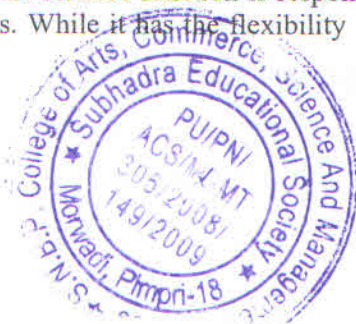
Both Map and Reduce functions accept input and emit pairs of this nature.

A. Map: The Map function processes an input pair and has the freedom to generate any number of output pairs: zero, one, or more. The input and output types are adaptable, offering significant flexibility in Map function design. Typically, Map pairs are structured as follows:

- The value, often text, denotes a row or an n-tuple from the file under processing.
- The key, typically an integer, indicates the position of this line in the file.

YARN initiates a Map instance for each row of each file in the data set to be processed. Each instance handles the row assigned to it, processing the data and generating output pairs as specified. This approach allows for efficient and parallelized processing of data across multiple instances, contributing to the scalability and speed of the overall MapReduce job.

B. Reduce: The Reduce function is responsible for handling a collection of input pairs generated by Map instances. While it has the flexibility to produce any number of output pairs, it typically yields



just one pair in most cases. A key aspect is that all input pairs processed by a Reduce instance share a common key. YARN initiates a Reduce instance for each unique key generated by Map instances, providing only the pairs with matching keys. This property facilitates value aggregation. Generally, Reduce involves processing the values, such as aggregating all values or determining the maximum among them. When crafting a MapReduce solution, careful attention must be paid to the keys and values necessary for effective processing. Reduce tasks receive a list of pairs with identical keys and generate a pair containing the desired outcome. This resulting pair can retain the same key as the input.

C. Steps for a MapReduce Job:

1. **Input Data Preprocessing:** This step may encompass activities like file decompression to prepare the data for further processing.
2. **Splitting:** The data is divided into manageable and structured blocks, typically represented as pairs (key, value), such as rows or tuples.
3. **Mapping:** The map function is applied to all pairs (key, value) derived from the input data, generating additional pairs (key, value) as output based on specified operations.
4. **Shuffling & Sorting:** Data undergoes redistribution to ensure that pairs produced by Map instances with identical keys are grouped together on the same machines, facilitating subsequent processing.
5. **Reducing:** Pairs sharing the same key are consolidated or aggregated to yield the final output, synthesizing information from the mapped data to derive meaningful results.

a) Schema Explanation:

1. **Data Location Inquiry:** Initially, YARN consults the NameNode to locate the data, which may involve decompression if necessary, utilizing the respective DataNodes.
 2. **Splitting Phase:** The construction of pairs (tuple number, tuple) occurs to be fed into Map tasks.
 3. **Creation of Map Processes:** YARN sets up Map processes on each machine containing a portion of the data, subsequently providing them with pairs from their respective datasets.
 4. **Execution of Map Tasks:** Each Map task analyzes its assigned data, potentially generating pairs as output. Tasks may involve operations like string-to-number conversion or calculations.
 5. **Sorting Pairs Leaving Map:** YARN sorts pairs leaving the Map phase based on their keys and forwards them to the machine executing the relevant Reduce task for that specific key.
 6. **Execution of Reduce Tasks:** Reduce tasks receive a list of pairs sharing the same key and perform value reduction operations (such as max, sum, avg). They emit only the final reduced value.
- This step-by-step MapReduce process ensures efficient and parallelized processing of large datasets, offering a scalable solution for handling Big Data effectively.

b) Schema:

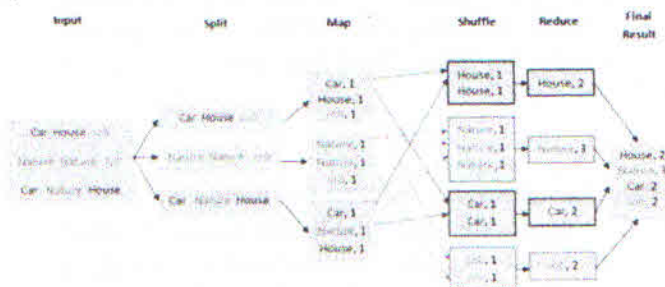


Fig. 5. Map Reduce word count process

VI. Map Reduce Concept

YARN (Yet Another Resource Negotiator), also referred to as MapReduce 2.0 (MRv2), surpasses MapReduce and is seamlessly integrated with the Hadoop Distributed File System (HDFS), offering operating system-like functionalities tailored for Big Data analytics applications. This architecture facilitates concurrent execution of multiple applications and improves data management throughout its lifecycle. YARN accommodates diverse workloads including batch, interactive, and real-time processing.



By maintaining compatibility with MapReduce's Application Programming Interface (API), transitioning to YARN typically only necessitates recompilation of existing applications. The primary distinction lies in the division of resource management (RM) and task or application control (AM) into separate daemons. The AM, functioning as a framework with a dedicated library, negotiates resources with Node Manager (NM) to execute and monitor tasks effectively.

YARN serves as a robust mechanism for orchestrating jobs across a cluster of machines. It empowers users to launch MapReduce jobs on data stored in HDFS while monitoring their progress and retrieving program messages (logs). Additionally, YARN is capable of relocating processes from one machine to another in case of failure or when progress is deemed too sluggish, ensuring optimal job execution and resilience.

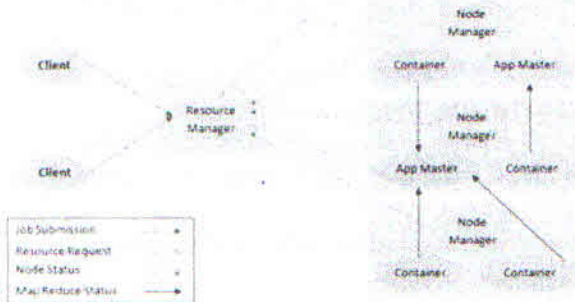


Fig. 6. General Architecture

Resource Manager (RM): The central daemon of YARN, managing resource assignments (CPU/Memory) for applications. It comprises a scheduler responsible for allocating resources to running applications and an Application Manager overseeing App Masters in the cluster. The Application Manager ensures the restart of application masters on different nodes in case of failure.

Node Manager (NM): The slave daemon of YARN, responsible for monitoring containers, tracking resource usage, and reporting to the Resource Manager. NM also monitors the status of the node on which it is running.

Application Master (AM): There is only one Application Master per application, negotiating resources with the Resource Manager and collaborating with the Node Manager. It manages the life cycle of the application, acquiring containers from the Resource Manager's scheduler and contacting corresponding Node Managers to initiate individual tasks. YARN's evolution from the Hadoop architecture addresses the complexity of the Job Tracker and its multitude of roles. By decoupling Hadoop from Map Reduce, YARN not only enhances scalability but also opens the door to new frameworks beyond Map Reduce. This allows Hadoop to accommodate a broader range of needs, providing a platform for various data processing paradigms beyond the traditional Map Reduce model. The redefined roles and architecture of YARN contribute to better flexibility and efficiency in managing diverse workloads in the Big Data ecosystem.

VII Conclusion

Big Data encompasses the vast collection of numerical data generated through the utilization of new technologies for personal and professional purposes. The process of analyzing this data to unveil hidden patterns, market trends, customer preferences, and other valuable insights, ultimately aiding in making informed decisions, is known as Big Data Analytics. This field has experienced rapid growth, extending its reach to unexpected industries and evolving into an industry of its own. Big Data comprises an expansive array of numerical data generated across various spheres, driven by advancements in technology for personal and professional applications. The practice of scrutinizing this data to uncover concealed patterns, market dynamics, customer preferences, and other valuable insights, aiding in informed decision-making, is termed Big Data Analytics. This discipline has witnessed exponential growth, permeating unexpected sectors and evolving into a distinct industry. However, the scrutiny of data within the Big Data realm may raise concerns regarding privacy and intrusiveness.

Analytics, a pivotal aspect of data science, involves the process of posing inquiries and extracting insights. Business Intelligence (BI) facilitates decision-making, whereas Data Analytics revolves



around querying data to glean insights. Analytics tools play a crucial role in forecasting, offering insights into future occurrences. Conversely, BI tools translate these forecasts into a comprehensible language, facilitating effective decision-making.

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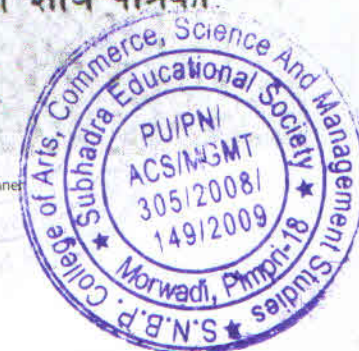
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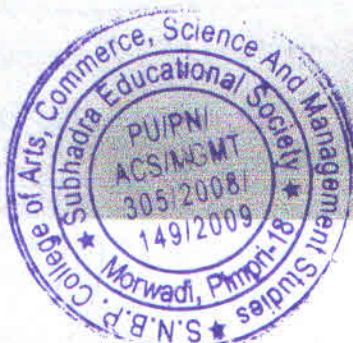
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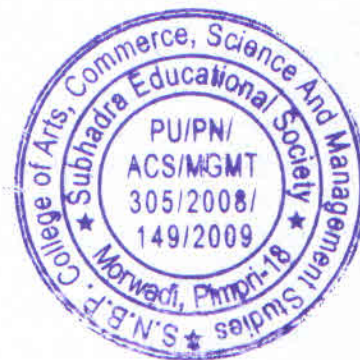


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EXPLORATORY STUDY OF SUPERBRAIN YOGA – A SIMPLE EXERCISE TO MAXIMIZE ACADEMIC PERFORMANCE

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Abstract:

As Master Choa Kok Sui says, the Body is a living battery that requires constant recharging. This is done through different means, especially through the transference of Life Energy. One of the simplified techniques is MCKS Superbrain Yoga which energizes and activates the Brain. Master Choa Kok Sui explains that the Superbrain squat when done correctly moves energy trapped in the basic and sex chakras through the physical body's other major energy centers and finally up into the crown chakra or crown energy center that controls the pineal gland and overall brain health. As the energy moves upward and fills the heart's energy center, the student is filled with love and experiences inner peace or calm. When the energy moves up further into the throat and ajna energy centers, the student's intelligence and creativity are enhanced. Once the energy gets up to the forehead and crown chakras, "it is transformed into subtle pranic energy, which is utilized by the brain for its proper functioning," writes MCKS (p 52). Educators recognize that students learn best when they are relaxed, not anxious, and when they have a fair degree of self-confidence coupled with full attention or focus. Master Choa Kok Sui adds: "Other benefits from the practice of Superbrain Yoga are greater psychological stability and also greater ability to regulate the sex drive, especially for teenagers" (p 52). After performing the simple, yogic exercise, he explains that one's "energy centers and aura are brighter. Prolonged practice of the Superbrain Yoga makes the practitioner, in general, smarter and more psychologically balanced."

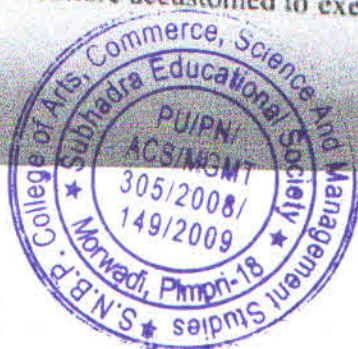
Keywords: Superbrain Yoga, Pranic energy, Academic performance

1) Introduction:

As Master Choa Kok Sui says, the Body is a living battery that requires constant recharging. This is done through different means, especially through the transference of Life Energy. One simplified technique is MCKS Superbrain Yoga which energizes and activates the Brain. Superbrain Yoga gradually awakens the latent powers within us while involving internal alchemy. This simple squat exercise offers benefits not just for young students, but also for adults seeking brain wellness into their senior years and patients with Attention Deficit Disorder (ADD), Attention Deficit Hyperactivity Disorder (ADHD), Down Syndrome, Alzheimer's, or other development challenges and cognitive delays seeking normalcy and cures.

Based on the research of Dr. Joie P. Jones of the Dept. of Radiological Sciences at the University of California, the exercise works using the body's energy centers which absorb, digest, and distribute energy to different parts of the body. These primary energy centers are major acupuncture points. Acupressure energy points for the brain, eyes, forehead, mouth, ovaries, parotid, temples, and testes congregate around the area of the ear affected by pressure from the exercise. In addition, the finger pads used in the exercise stimulate neuropathways into the brain by activating acupuncture points on the earlobes. According to Dr. Jones, after doing the exercise, an EEG scan shows the right and left hemispheres of the brain have synchronized.

When done correctly, the Superbrain Yoga exercise helps the energy trapped in the lower energy centers move up through the physical body's other major centers. As the energy travels upwards, it passes through the practitioner's heart center and fills it with feelings of calm and inner peace. When the energy moves up further into the throat and beyond, the practitioner's intelligence and creativity are improved. Other benefits include regulation of the sex drive, which is especially important for teenagers. We are a culture accustomed to exercising to get fit, but with the power of the Superbrain



Yoga squat, we can now become brighter in the process! The prolonged practice of Superbrain Yoga makes the practitioner, in general, smarter and more psychologically balanced. Superbrain Yoga transforms or internally alchemizes the energies from the lower energy centers into higher, subtler energies. These energies are then utilized by the upper energy centers. When those centers are highly energized, they energize the brain so it can function with greater efficiency and effectiveness. Superbrain Yoga not only energizes and activates the brain, but also assists in balancing the energies of the heart, throat, ajana, forehead, and crown energy centers. (For detailed information on the 11 major energy centers, their location, and function please refer to "Miracles Through Pranic Healing" by the same author)

2) **Research Question:**

Due to the higher use of social media like free internet, Facebook, what's up, twitter, Instagram, etc. Students are always in a state of explorer & divergent state of mind. Many more challenges they are facing simultaneously like family life, social media, school organizational culture & facing stress. When they need to focus, they neither concentrate on academics nor their physical, mental, and social health, so this research leads to the exercise of superbrain squat for their well-being & progress.

Is superbrain yoga effective in experiencing academic and behavioral problems in school-going children?

3) **Aim and Objectives of the study:**

The study will be conducted to evaluate the effects of the Superbrain Yoga experiencing academic and behavioral problems.

- i) To determine the improvement in academic performance.
- ii) To evaluate the psychological well-being of teachers and students
- iii) To access the student's attendance during the practice.

4) **The hypothesis of the study:**

- i) There will be a significant improvement in performance after superbrain yoga in academic performance.
- ii) There will be significant improvement in performance after superbrain yoga in student attendance.
- iii) Superbrain yoga has a differential effect on both male & female students.

5) **Significance and scope of the study:**

The effect of Superbrain Yoga on people with severe ailments such as cancer, sexually transmitted diseases (STD's), and severe heart conditions, is unknown. Any form of physical exercise should not be undertaken without first consulting a medical doctor.

SuperBrain Yoga is a scientifically validated method that will help you energize your brain and enhance its sharpness and clarity. It's a simple technique that proposes to increase intellectual capacity and sharpen both memory and concentration.

This practice is based on the principles of subtle energy and ear acupuncture. Basically, SuperBrain Yoga allows energy from your lower chakras—or energy centers—to move up to the forehead and crown chakras. When this happens, this energy is transformed into subtle energy, which is utilized by the brain to enhance its proper functioning.

6) **Some of the benefits of SuperBrain Yoga:**

- i) It energizes and activates the brain by synchronizing Alpha brain waves.
- ii) It reduces psychological stress and improves psychological stability.
- iii) It results in greater intelligence and creativity.
- iv) It promotes the proper functioning of the brain.

Best of all, SuperBrain Yoga is really easy to learn and you can do it in just three minutes a day. SuperBrain Yoga is essentially a form of acupressure and breathing technique used to balance both



hemispheres of the brain and bring energy up to the brain. The exercise is easy to learn, takes only a few minutes to do and can be done by almost anyone, anywhere.

7) **Material and Method**

i) **Study Area:**

This study was conducted in Shri Annasaheb Dange Shaikshanic Sankul, Ashta, Sangli where the place researcher got students and teachers of Engineering college, Medical college, Marathi School, Sainik School, Ashram Shala, students from education college. From each sector 370 (out of a population size of 10000) students, and 234 teachers (out of a population of 600 teachers) will be selected for training and administration. (ref: As per sample size calculation table: www.research-advisors.com)

ii) **Study Design:**

The study design is a quasi-experimental study design in which data is collected before and after training. Pre-test & post-test study designs will be selected. In the study area Shri Annasaheb Dange Shaikshanic Sankul, Ashta approximately 10,000 people and students are working which researcher selected a sample size of 550 people. The sampling method is a random selection method.

iii) **Inclusive Criteria: Students of the age group between 13 to 18 - Standardized Test:**

The Gates Mac Ginitie Standardized Test will be used to evaluate the effectiveness of this study. The interval between the Gates Tests was eight months. The Gates Mac Ginitie Reading Inventory was used to regulate the effectiveness of the program. It is administered each September and May to monitor:

- Grade level progress
- Ascertain which students are reading on grade level
- Identify students for individual diagnosis in reading and vocabulary
- Organize students into instructional groups.

iv) **Assessment criteria:**

- a) Academic Performance
- b) Students' attendance Performance
- c) Assessment of questionnaire from the students
- d) Assessment of questionnaire from the teachers

v) **Statistical Analysis:**

The data is analyzed with paired t-tests. After the training and practice Immediate Memory test and Concentration test will be conducted.

8) **Flow Chart of the study:**

SENSITIZING & TRAINING OF TEACHERS ON SUPERBRAIN YOGA



RANDOM SELECTION OF STUDENTS



ACADEMIC AND ATTENDANCE PRE TEST SCORES



INTRODUCTION AND PRACTICE OF YOGA FOR 3 MONTHS



POST TEST SCORES OF ACADEMIC & ATTENDANCES



QUESTIONNAIRE TO STUDENTS AND TEACHERS



STATISTICAL ANALYSIS

Chart No. 1



How to Practice Super Brain Yoga: Step-by-Step Instructions:

9) Ideally, this exercise should be done in the morning. Face the sunrise. This form of yoga should be done in the morning so that your concentration and stress relief will apply throughout the whole day. Follow these seven steps:

i) Remove all jewelry and stand up straight. Place your tongue on the roof of your mouth right behind your teeth (as if you were about to say "La"). Leave it there throughout the exercise.

ii) Take your left hand and cross your upper body to hold of your right earlobe with thumb and forefinger. Make sure that the thumb is in front.

iii) Now take your right hand across your upper body to hold of your left earlobe. Again, make sure that the thumb is in front. At this point you're pressing both earlobes simultaneously. Make sure your left arm is close to your chest and inside your right arm.

iv) Inhale through your nose and slowly squat down to the ground.

v) Hold your breath and do not exhale until you start making your way back up to a standing position.

vi) Repeat this squatting action between 15 and 21 times. Remember to keep holding your earlobes and to keep your tongue touching the roof of your mouth throughout the entire exercise. You may not notice a change immediately, but after a few weeks, an improvement in concentration should become apparent.

10) Testing of Hypothesis:

Pilot Study: With the pilot study of 30 students we got the results as follows,

Hypothesis 1:

H₀: There will not be a significant improvement in performance after superbrain yoga in student's attendance

H₁: There will be significant improvement in performance after superbrain yoga in student's attendance

Here researcher used the paired 't' Test for Attendance:

Table 1: paired 't' test

Null Hypothesis	t-value	Degree of freedom	L. O. S.	p-value	Decision
H ₀	4.10565	80	0.05	1.990064	Reject the hypothesis

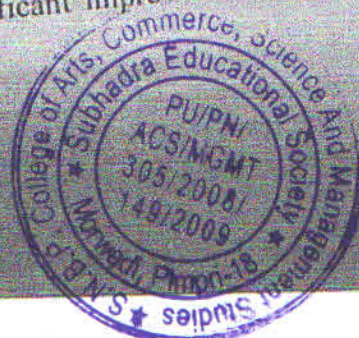
(Source: SPSS 17, 2009 version, Primary Data)

From above, the researcher rejects the hypothesis and we conclude that There was a significant improvement in performance after superbrain yoga in student attendance at a 5 percent level of significance.

Hypothesis 2:

H₀: There will not be a significant improvement in performance after superbrain yoga in academic performance.

H₁: There will be significant improvement in performance after superbrain yoga in academic performance.



Here researcher used the paired 't' Test for Attendance:

Table 2: paired 't' test

Null Hypothesis	t-value	Degree of freedom	L. O. S.	p-value	Decision
H ₀	2.92 211	80	0.0 5	1.99 006 4	Reject the hypothesis

(Source: SPSS 17, 2009 version, Primary Data)

From above, researchers reject the hypothesis and we conclude that There was a significant improvement in performance after superbrain yoga in student's academic performance at a 5 percent level of significance.

Hypothesis 3:

H₀: Superbrain yoga does not have any differential effect on both male & female students.

H₁: Superbrain yoga has a differential effect on both male & female students.

Here researcher used the paired 't' Test.

Table 3: paired 't' test

Null Hypothesis	t-value	Degree of freedom	L. O. S.	p-value	Decision
H ₀	1.15 133	80	0.0 5	1.99 006 4	Reject the hypothesis

(Source: SPSS 17, 2009 version, Primary Data)

From above, the researcher rejects the hypothesis and we conclude that Superbrain yoga has not any differential effect on both male & female students' performance at 5 percent level of significance.

11) Discussion:

Attendance of no. students after training were more than before training. Hence there is a significance difference in attendance before and after training. The test score of students was less before training and it was increased after the training. Hence there is a significant difference in Test Score before and after training. Monkey Ladder Test Score of students was less before training and it was increased after the training. Hence there is a significance difference in Monkey Ladder Test Score before and after training

12) Benefits of Superbrain Yoga:

According to our Master Choa Kok Sui

- It energizes and activates the Brain
- It increases the inner peace
- Reduces psychological stress and gives greater psychological stability
- Greater intelligence and creativity
- Regulates the sex drive
- Partial cleansing and energizing effect on chakras and auras
- Transformation of the lower energies into higher energies
- Proper functioning of the brain
- It increases the flow of pranic energies within the body
- Prolonged practice makes the practitioner in general, smarter and psychologically balanced
- Spiritual growth

Academic Changes of Pilot Study

- 13) Test scores improved.
- Students moved from anxiety to tests, to exhibiting confidence
- Students verbally noted the difference in test scores and the struggle in performing the tests when they did not do the physical exercises in the other classes.
- The students continue to meet with academic success, which is moving teachers to continuously restructure their academic groups

Behavioral Changes in Pilot Study

- 14) A number of students refused to participate, but the majority were highly enthusiastic and requested exercises when they noted changes in the environment.
- Students were noticeably uncomfortable during the hip rolls.
- A small number of students laughed, this tempered involvement according to the level of performance of their peers.
- A number of students accepted the program in their minds but found it difficult at times to complete exercises in the classroom with full focus.
- Due to a rotating schedule the exercises were not performed at the same time each day.
- Exercises were combined with the intent of activating the energy within the body and with the energizing and activation of the brain.
- Majority of students participating credited the exercises to their improved states of learning.
- Students continuously commented on the positive sensation they experienced when energizing and activating the brain.
- Students who fully participated enjoyed the program and credited it for their improved test scores.
- Students who were not in the class wanted to participate in the program.

15) Results:

The results of this study include an increase in the performance scores on the standardized test, improved shifts in the academic sections, and an increase in student participation in and out of the classroom. A higher level of engagement in higher-order thinking skills and positive observational differences was noted in the emotional responses of the students.

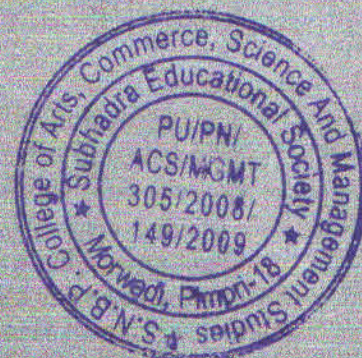
16) Conclusion:

From this study, we conclude that there is a positive relationship and significant improvement in the academic and behavioral performance of a middle school adolescent by using Superbrain Yoga. The Superbrain Yoga designed by Grand Master Choa Kok Sui provides the students, with a tool for success when learning new materials, preparing for tests, and setting academic goals. Attendance of a number of students after training was more than before training. Hence there is a significant difference in attendance before and after training. Test Scores of students were less before training and it was increased after the training. Hence there is a significant difference in Test Scores before and after training. Monkey Ladder Test Score of students was less before training and it was increased after the training. Hence there is a significant difference in Monkey Ladder Test Score before and after training.

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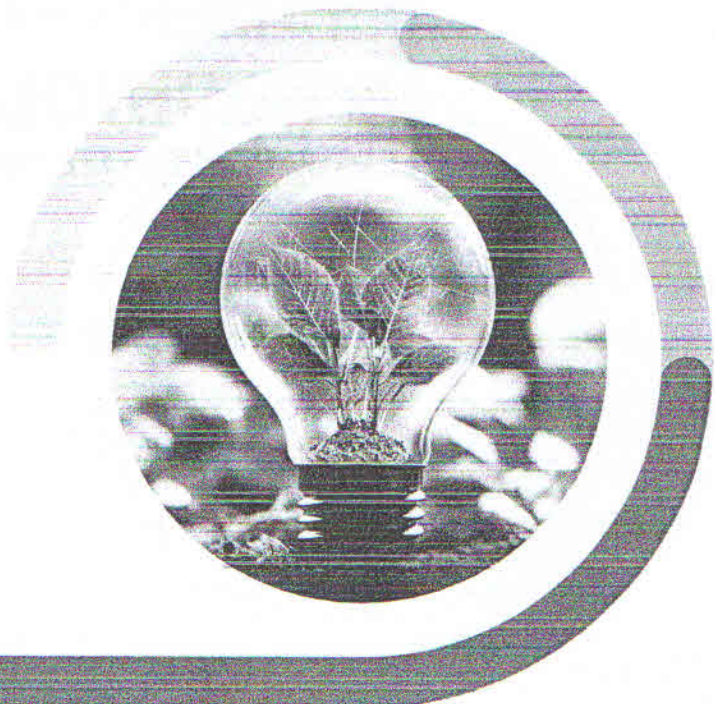
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Digital Transformation: A Future Need

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ABSTRACT

Changes in consumer behaviour and technological advancements have changed the entire business scenario and created new business challenges. The epidemic crisis brought new ideas to companies. Many organizations recognize and find new ways of doing business and reinventing their business strategies. IT plays an important role in digitalization and change, and no one is exempt from this. Digital transformation will rely on the company's unique resources and needs. In today's competitive business and digital age, digitalization and transformation have become important for all businesses. Companies need to adapt to the rapid changes brought by technology and establish a balance between customer needs and satisfaction. Digital transformation requires significant changes in organizational management and acceptance of technology. The success of a digital transformation initiative depends on understanding the context, decisions, context, and drivers. This article examines the context, setting, culture, and products of digitalization affecting organizations. This study is a comprehensive and comprehensive document showing the decisions, concepts, and effects of digitalization. Research demonstrates an understanding design, process, and traditional and digital techniques.

Keywords: Digital, Technology, Strategy, Transformation and Success.



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EFFECTIVE PROJECT MANAGEMENT WITH AN IOT

Mrs. Sushma Pingale, Mrs. Gauri Shirude, Assistant Professor, SNBP College of Arts,
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Abstract-Internet of Things (IoT) is one of the main indications in project management for the technology enhancement. It is a great relationship between project management and IoT by mutual understanding of project team and implement the project with great accuracy and faster. Nowadays to develop project management, project managers are supposed to do careful planning, designing, management and use of IoT in projects. Researcher found that IoT can offer significant benefit in project management including cost reduction, increase efficiency and improve communication. With the analysis of the different articles from other researcher's works, the authors are enabled to acquire detailed information about the implementation of IoT in the project management. This paper represents the impact of IoT on project management in project based organizations. A qualitative method of research was adapted to structure interview of 18 selected participants and identifies benefits and challenges of using IoT in project management. Also some feature recommendation and solution for implementing and managing IoT system is highlighted in this research studies.

Keywords: Internet of Things (IoT), Project Management, Mutual Understanding, Technology.

I. INTRODUCTION

A. Internet of Technology

The term IoT or Internet of Things integrates everyday "things" with the internet. It is the collective network of connected devices and the technology which provides communication between devices and the cloud, as well as between the devices themselves to share data and automate tasks. Due to inexpensive computer technology and high bandwidth telecommunication, nowadays billions of devices are connected to the internet. This means everyday devices like smart home appliances, vacuums, cars, and machines can use sensors to collect data and respond intelligently to user. The base of IoT system is the real-time collection and analysis of data. The smart devices, IoT applications and Graphical User Interface (GUI) are three components of IoT system. To improve business efficiencies, IoT is used in several industries such as manufacturing, retail, healthcare, transportation and other enterprises etc. In industrial IoT, Industrial devices, from sensors to equipment give business owners detailed, real-time data that can be used to improve business processes. They also gives insights on supply chain management, logistics, human resources, and production which leads to decrease costs and increase business revenue. In future, IoT will become increasingly tremendously in our daily routine.

B. Project Based Organization

A project specifically focuses on one task or outcome. It is vast becoming an important approach to organize work in many firms either in small scale or large scale. It could be for internal development of any organization or for a client or customer. To utilize these business opportunities, many companies make arrangement for projects to work according to client or customer needs. After deployment of project, the client or customer perform acceptance testing gave feedback and the team works according to it requirement. Historically, every team in project management, have team leader or project manager who can decide to work on project with his team members. The team leader or project manager is responsible for the overall qualitative outcome of the project. He ensures that team expertise members of projects have access of right functionality. The project manager's responsibilities are to choose team members, assign tasks to them, and monitor the performances. The team members further divided into groups executes all the plans and do all the work. Project will need to handle in different ways; it can be traditional, IT project, hardware or software. There are different phases of any project such as communication, planning, execution, monitoring &

controlling and closure. Project manager or team manager should be involved in all phases as shown in fig.1

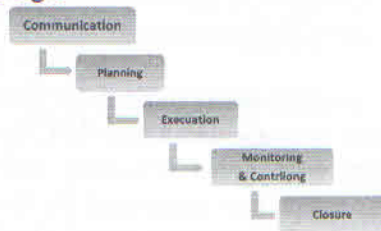


Figure 1: Phases of software development

Project manager use various ways to do planning and execution of projects and review should be taken time to time as project finalized on time, within budget and wider scope. This process of planning, monitoring and executing the progress of project is called project management. As IoT technology is rapidly growing, project manager must deeply understand this development. Initially, project management methodologies used different models in developing advanced projects such as Waterfall and Agile models. And now, we have IoT projects, where it provide real time data and help project manager to take better decisions, utilize resources, and improve project quality and it helps to automate project tasks.

II. REVIEW OF LITERATURE

Different opinions from several authors help to provide the important concepts of Internet of Things, current trends in this project based organization and both the managerial as well as the technical challenges being faced in such projects.

For successful deployment of IoT-based products and services, the top five technologies that are essential such as radio frequency identification (RFID), wireless sensor networks (WSN), Internet of Things (IoT) and middleware, cloud computing and IoT application software. This study is highlighted by Vlad HurTOI (2020) in IOT project management

A literature review by M. Bakker(2017) focuses on five phases of an IoT project and analyses technical and managerial challenges occurs in these five phases. Also this study carries out some options to justify the investment in such projects. Additionally, this article introduces a conceptual model of IoT applications where challenges in implementing IoT in project management, especially in terms of information sharing and collaboration, monitoring and control, and business analytics aspects are highlighted.

Somayya Madakam,(2015) mentioned an introduction of Internet of Things, IoT architectures, different technologies and their socio-economic impacts, this study highlighted the requirements for implementation of IoT projects and their components This can help an enterprise in understanding the concept, search for the right tools and coming up with a solid business case, and a project management plan. This paper gives an idea about the technical and management areas, which need to be worked on from both organization and IoT projects. This review provides more insight into the IoT world and how stakeholders are receiving this technology interruption.

Internet of Things (IoT) and changing face of project management research by Prasher Vikram (2018) is an excellent article highlighting IoT technology in project based organization. In this article, author identified most important challenges being faced in IoT products development based on a mix of quantitative research, and then also suggests the solution to overcome this problem.

Percudani & Batrawi (2017) discussed that in any project based organization, IoT and project management are two close parameters, they also explained the challenges, obstacles, and advantages of IoT in PMO. The article also considered one of the most important elements of any organization or business, people, fixating on project managers and how the role of a project manager is affected in the innovative project oriented organizations.

The Internet of Things (IoT) provides many benefits for organizations but like other technology adoption, it may also introduce risks and opportunities. P. Brous, M. Janssen, and P. Herder (2020) analyze implementation in project management and insights into IoT advantages and disadvantages.

Also they highlighted necessary changes to the organization processes and system to overcome unexpected risks and ensures that IoT fits the organization puposes.

Jyotsna Gabhane, Shradha Thakare, and Monika Craig (2017) presented various problems and challenges in IoT as well as IoT-based smart home systems. They highlighted some solutions to overcome those problems and challenges.

According to Cisco survey, about 75% of IoT projects are this issue having a negative impact on several industries which are falling less confident in investing money in IoT business as is seen as a risky business.

Seamless connectivity is a key requirement of any IoT system. Means it requires anytime, anywhere by anyone and anything to provide intelligent services including identifying, sensing, networking, processing and execution capabilities. This concept is brought by Čolaković, A., & Hadžialić, M. (2018) in the article.

M. Elkhatab, A. A. Hosani, I. A. Hosani, and K. Albuflasa (2020), discusses improving Project Risk Management in agile projects in different sectors and analyzes if a hybrid approach adopted can deliver better results in project risk management in an agile environment. And it was concluded that agile projects will have a positive impact on project success.

III. RESEARCH METHODOLOGY

The present study falls under research method which can be divided into two categories of qualitative and quantitative research. Qualitative research depends on studying and observing event before concluding it. Researchers can use several qualitative research methodologies include case study research, grounded theory, etc. whereas quantitative research methodologies collect and analyze the numerical data, which includes surveys, interviews, experiments, and observations.

In this research, quantitative research methodology is used. Structured interviews on questionnaires were used to collect qualitative data implementing the use of IoT in project management. This research paper focuses on establishing the impact of IoT in project management and this is determined by collecting the data from interviews. The participants selected for an interview based on various factors in terms of at least 4-5 years of experience and professional background in project management. In this structured interview, interviewers have a predetermined set of questions, and it allows a more in-depth exploration of the interviewee's thoughts and experiences on IoT implementation in project management.

IV. RESULT ANALYSIS

The interviews were conducted among 25 people; only 70% cooperated throughout the interview and answered all questions. All eighteen participants agreed that any project is divided into five phases. In the project planning phase, 65% of respondents believed that IoT implementation in this phase helped and guided staff throughout the project. Also, manager gave a real time update on the progress of project to stakeholders during planning. In the execution phase, 60% of interviewees agreed that implementation of IoT improved effectiveness, efficiency, and productivity. Almost all respondents agreed that the benefits of IoT can be detected by the overcome at this stage. In the closing phase of the project, all respondents indicated that it is important to collect and store the data in this stage as it will acts as a reference in future.

TABLE 1

PARTICIPANTS

Number of	25
Participants	
Participants that responded	18
Participants that do not responded	7

TABLE 2
DETAILS OF PARTICIPANTS

Sr No.	Designation	Professional Experience	Mode of Interview	Duration
1	Project Manager	Above 14	Phone	40 mins
2	CEO	Above 15	Physical	45 mins
3	CEO	Above 16	Physical	40 mins
4	Senior lecturer	Above 2	Skype	25 mins
5	Project Manager	Above 18	Phone	15 mins
6	Senior lecturer	Above 19	Zoom	45 mins
7	Senior lecturer	Above 6	Zoom	20 mins
8	Senior lecturer	Above 21	Zoom	30 mins
9	Senior lecturer	Less than 3	Physical	70 mins
10	Professor	Above 23	Phone	45 mins
11	Professor	Above 9	Ms Team	50 mins
12	CEO	Above 35	Google Meet	60 mins
13	Project Manager	Above 14	Phone	35 mins
14	Project Manager	Above 17	Zoom	40 mins
15	Project Manager	Above 20	Skype and Phone	35 mins
16	Senior lecturer	Above 8	Physical	55 mins
17	Senior lecturer	Above 12	Phone	20 mins
18	CEO	Above 29	Google Meet	30 mins

V. BENIFITS OF IOT IN PROJECT MANAGEMENT

With an advanced technology, IoT will fundamentally change the speed of project implementation. Previously, an old data is stored in a traditional way which takes a lot of time to store. But by using Internet of Things, this data is stored in a centralized location and can be easily available and is useful for current and future projects. The Internet of Things helps project managers and stakeholders to monitor and manage project activities in real time. This monitoring is done through display showing all the steps which will be useful to manage project quickly. There is much equipment that uses different sensors to monitor the needs for maintenance throughout the project implementation

process that will help to reduce the risk to project. IoT ensures continuous flow of data which automates business system and execute the project with IoT. Project manager can prepare smart devices which will assist him to prepare the reports quickly that help to communicate the data fast.

VI. CHALLENGES OF IOT IN PROJECT MANAGEMENT

The adoption and implementation of new technology is always difficult. However it is reasonable to consider the impact of IoT technology in corporate world is transforming change in which a company makes significant changes or innovation is a faster. But these new updates will influence all the activities such as products, policies and practices. In IoT based project management organization, standardization is

also a key problem which represents the first technical issue related with IoT implementation. Since IoT is a series of interconnected devices and networks, any software or hardware (devices) failure will leads to failure opportunities and inconveniences. Since many IoT devices are mostly focused on connectivity not on the security. So they are easily hacked by attackers. Therefore, accessibility, secrecy, authenticity and authorization are major requirements of IoT based project management. The implementation of IoT requires a high technology and services from any organizations point of view, mostly a huge storage place to store the data and uninterrupted flow of data. The cost of implementing such storage systems is high and ability to handle such quantity of data should be organized on a cloud.

VII. FUTURE RECOMMENDATION

The following are some research recommendations to implement IoT in effective project management:

- To introduce and implement IoT in project management, the regulatory authority plays an important role. To establish regulation and framework in project management, all project team members and stakeholders must follow the regulatory authority. Accordingly, the regulatory authority should facilitate to protect the big data of project by setting security policies for collected data during the different project stages through the Internet of Things, and to protect it from unauthorized access. So, it is recommended that the regulatory authority to prepare the guidelines for security and privacy of data or information for the project and show positive impact of an IoT on project management in terms of reduced cost, resources to monitor and execute the project.
- It is essential to have a clear understanding of the goals and objectives of the project before implementation starts. As per project requirement, research and select the most appropriate IoT technology.
- Considering the data security and privacy manage the data collected by IoT devices carefully.

VIII. CONCLUSION

The result of research methodology showed that IoT impacts project management in project-based organizations in every project stage. Since IoT implementation have a positive impact on project management by increasing project quality and reducing risks. This study also presented an overview of the challenges that the project manager and stakeholder may be facing in implementation of IoT in projects. Hence we emphasis the e-future recommendation to implement IoT in effective project management.

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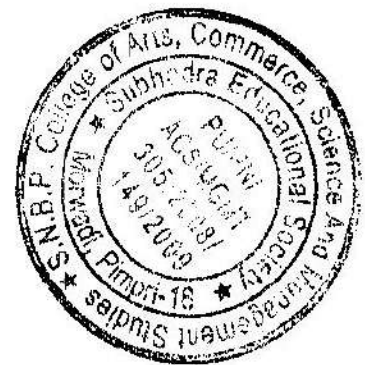
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DIGITALIZATION IN TEACHING AND LEARNING: A COMPREHENSIVE STUDY

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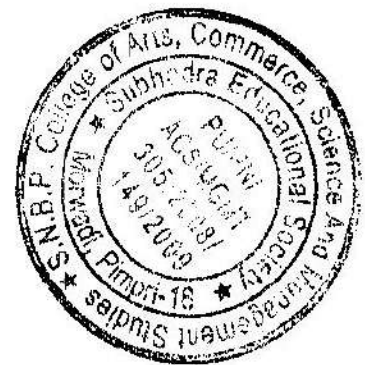
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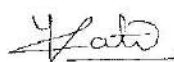
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**International Seminar on
Global Trends in Electronics
(Embedded System and Power Electronics)
(ISGTE-2025)**



On 11th April 2025 at 1.30 PM (Online Mode)

Google meet link: <https://meet.google.com/wzz-mvop-bfe>

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मध्य भारती

मानविकी एवं समाजविज्ञान की द्विभाषी शोध-पत्रिका

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EFFECTIVE PROJECT MANAGEMENT WITH AN IOT

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Abstract-Internet of Things (IoT) is one of the main indications in project management for the technology enhancement. It is a great relationship between project management and IoT by mutual understanding of project team and implement the project with great accuracy and faster. Nowadays to develop project management, project managers are supposed to do careful planning, designing, management and use of IoT in projects. Researcher found that IoT can offer significant benefit in project management including cost reduction, increase efficiency and improve communication. With the analysis of the different articles from other researcher's works, the authors are enabled to acquire detailed information about the implementation of IoT in the project management. This paper represents the impact of IoT on project management in project based organizations. A qualitative method of research was adapted to structure interview of 18 selected participants and identifies benefits and challenges of using IoT in project management. Also some feature recommendation and solution for implementing and managing IoT system is highlighted in this research studies.

Keywords: Internet of Things (IoT), Project Management, Mutual Understanding, Technology.

I. INTRODUCTION

A. Internet of Technology

The term IoT or Internet of Things integrates everyday "things" with the internet. It is the collective network of connected devices and the technology which provides communication between devices and the cloud, as well as between the devices themselves to share data and automate tasks. Due to inexpensive computer technology and high bandwidth telecommunication, nowadays billions of devices are connected to the internet. This means everyday devices like smart home appliances, vacuums, cars, and machines can use sensors to collect data and respond intelligently to user. The base of IoT system is the real-time collection and analysis of data. The smart devices, IoT applications and Graphical User Interface (GUI) are three components of IoT system. To improve business efficiencies, IoT is used in several industries such as manufacturing, retail, healthcare, transportation and other enterprises etc. In industrial IoT, Industrial devices, from sensors to equipment give business owners detailed, real-time data that can be used to improve business processes. They also gives insights on supply chain management, logistics, human resources, and production which leads to decrease costs and increase business revenue. In future, IoT will become increasingly tremendously in our daily routine.

B. Project Based Organization

A project specifically focuses on one task or outcome. It is vast becoming an important approach to organize work in many firms either in small scale or large scale. It could be for internal development of any organization or for a client or customer. To utilize these business opportunities, many companies make arrangement for projects to work according to client or customer needs. After deployment of project, the client or customer perform acceptance testing gave feedback and the team works according to it requirement. Historically, every team in project management, have team leader or project manager who can decide to work on project with his team members. The team leader or project manager is responsible for the overall qualitative outcome of the project. He ensures that team expertise members of projects have access of right functionality. The project manager's responsibilities are to choose team members, assign tasks to them, and monitor the performances. The team members further divided into groups executes all the plans and do all the work. Project will need to handle in different ways; it can be traditional, IT project, hardware or software. There are different phases of any project such as communication, planning, execution, monitoring &

controlling and closure. Project manager or team manager should be involved in all phases as shown in fig.1

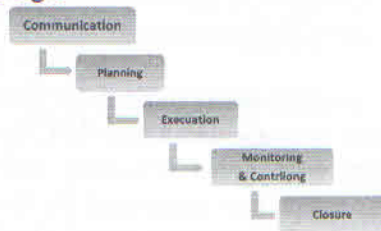


Figure 1: Phases of software development

Project manager use various ways to do planning and execution of projects and review should be taken time to time as project finalized on time, within budget and wider scope. This process of planning, monitoring and executing the progress of project is called project management. As IoT technology is rapidly growing, project manager must deeply understand this development. Initially, project management methodologies used different models in developing advanced projects such as Waterfall and Agile models. And now, we have IoT projects, where it provide real time data and help project manager to take better decisions, utilize resources, and improve project quality and it helps to automate project tasks.

II. REVIEW OF LITERATURE

Different opinions from several authors help to provide the important concepts of Internet of Things, current trends in this project based organization and both the managerial as well as the technical challenges being faced in such projects.

For successful deployment of IoT-based products and services, the top five technologies that are essential such as radio frequency identification (RFID), wireless sensor networks (WSN), Internet of Things (IoT) and middleware, cloud computing and IoT application software. This study is highlighted by Vlad HurTOI (2020) in IOT project management

A literature review by M. Bakker(2017) focuses on five phases of an IoT project and analyses technical and managerial challenges occurs in these five phases. Also this study carries out some options to justify the investment in such projects. Additionally, this article introduces a conceptual model of IoT applications where challenges in implementing IoT in project management, especially in terms of information sharing and collaboration, monitoring and control, and business analytics aspects are highlighted.

Somayya Madakam,(2015) mentioned an introduction of Internet of Things, IoT architectures, different technologies and their socio-economic impacts, this study highlighted the requirements for implementation of IoT projects and their components This can help an enterprise in understanding the concept, search for the right tools and coming up with a solid business case, and a project management plan. This paper gives an idea about the technical and management areas, which need to be worked on from both organization and IoT projects. This review provides more insight into the IoT world and how stakeholders are receiving this technology interruption.

Internet of Things (IoT) and changing face of project management research by Prasher Vikram (2018) is an excellent article highlighting IoT technology in project based organization. In this article, author identified most important challenges being faced in IoT products development based on a mix of quantitative research, and then also suggests the solution to overcome this problem.

Percudani & Batrawi (2017) discussed that in any project based organization, IoT and project management are two close parameters, they also explained the challenges, obstacles, and advantages of IoT in PMO. The article also considered one of the most important elements of any organization or business, people, fixating on project managers and how the role of a project manager is affected in the innovative project oriented organizations.

The Internet of Things (IoT) provides many benefits for organizations but like other technology adoption, it may also introduce risks and opportunities. P. Brous, M. Janssen, and P. Herder (2020) analyze implementation in project management and insights into IoT advantages and disadvantages.

Also they highlighted necessary changes to the organization processes and system to overcome unexpected risks and ensures that IoT fits the organization puposes.

Jyotsna Gabhane, Shradha Thakare, and Monika Craig (2017) presented various problems and challenges in IoT as well as IoT-based smart home systems. They highlighted some solutions to overcome those problems and challenges.

According to Cisco survey, about 75% of IoT projects are this issue having a negative impact on several industries which are falling less confident in investing money in IoT business as is seen as a risky business.

Seamless connectivity is a key requirement of any IoT system. Means it requires anytime, anywhere by anyone and anything to provide intelligent services including identifying, sensing, networking, processing and execution capabilities. This concept is brought by Čolaković, A., & Hadžialić, M. (2018) in the article.

M. Elkhatab, A. A. Hosani, I. A. Hosani, and K. Albuflasa (2020), discusses improving Project Risk Management in agile projects in different sectors and analyzes if a hybrid approach adopted can deliver better results in project risk management in an agile environment. And it was concluded that agile projects will have a positive impact on project success.

III. RESEARCH METHODOLOGY

The present study falls under research method which can be divided into two categories of qualitative and quantitative research. Qualitative research depends on studying and observing event before concluding it. Researchers can use several qualitative research methodologies include case study research, grounded theory, etc. whereas quantitative research methodologies collect and analyze the numerical data, which includes surveys, interviews, experiments, and observations.

In this research, quantitative research methodology is used. Structured interviews on questionnaires were used to collect qualitative data implementing the use of IoT in project management. This research paper focuses on establishing the impact of IoT in project management and this is determined by collecting the data from interviews. The participants selected for an interview based on various factors in terms of at least 4-5 years of experience and professional background in project management. In this structured interview, interviewers have a predetermined set of questions, and it allows a more in-depth exploration of the interviewee's thoughts and experiences on IoT implementation in project management.

IV. RESULT ANALYSIS

The interviews were conducted among 25 people; only 70% cooperated throughout the interview and answered all questions. All eighteen participants agreed that any project is divided into five phases. In the project planning phase, 65% of respondents believed that IoT implementation in this phase helped and guided staff throughout the project. Also, manager gave a real time update on the progress of project to stakeholders during planning. In the execution phase, 60% of interviewees agreed that implementation of IoT improved effectiveness, efficiency, and productivity. Almost all respondents agreed that the benefits of IoT can be detected by the overcome at this stage. In the closing phase of the project, all respondents indicated that it is important to collect and store the data in this stage as it will acts as a reference in future.

TABLE 1

PARTICIPANTS

Number of	25
Participants	
Participants that responded	18
Participants that do not responded	7

TABLE 2
DETAILS OF PARTICIPANTS

Sr No.	Designation	Professional Experience	Mode of Interview	Duration
1	Project Manager	Above 14	Phone	40 mins
2	CEO	Above 15	Physical	45 mins
3	CEO	Above 16	Physical	40 mins
4	Senior lecturer	Above 2	Skype	25 mins
5	Project Manager	Above 18	Phone	15 mins
6	Senior lecturer	Above 19	Zoom	45 mins
7	Senior lecturer	Above 6	Zoom	20 mins
8	Senior lecturer	Above 21	Zoom	30 mins
9	Senior lecturer	Less than 3	Physical	70 mins
10	Professor	Above 23	Phone	45 mins
11	Professor	Above 9	Ms Team	50 mins
12	CEO	Above 35	Google Meet	60 mins
13	Project Manager	Above 14	Phone	35 mins
14	Project Manager	Above 17	Zoom	40 mins
15	Project Manager	Above 20	Skype and Phone	35 mins
16	Senior lecturer	Above 8	Physical	55 mins
17	Senior lecturer	Above 12	Phone	20 mins
18	CEO	Above 29	Google Meet	30 mins

V. BENIFITS OF IOT IN PROJECT MANAGEMENT

With an advanced technology, IoT will fundamentally change the speed of project implementation. Previously, an old data is stored in a traditional way which takes a lot of time to store. But by using Internet of Things, this data is stored in a centralized location and can be easily available and is useful for current and future projects. The Internet of Things helps project managers and stakeholders to monitor and manage project activities in real time. This monitoring is done through display showing all the steps which will be useful to manage project quickly. There is much equipment that uses different sensors to monitor the needs for maintenance throughout the project implementation

process that will help to reduce the risk to project. IoT ensures continuous flow of data which automates business system and execute the project with IoT. Project manager can prepare smart devices which will assist him to prepare the reports quickly that help to communicate the data fast.

VI. CHALLENGES OF IOT IN PROJECT MANAGEMENT

The adoption and implementation of new technology is always difficult. However it is reasonable to consider the impact of IoT technology in corporate world is transforming change in which a company makes significant changes or innovation is a faster. But these new updates will influence all the activities such as products, policies and practices. In IoT based project management organization, standardization is

also a key problem which represents the first technical issue related with IoT implementation. Since IoT is a series of interconnected devices and networks, any software or hardware (devices) failure will leads to failure opportunities and inconveniences. Since many IoT devices are mostly focused on connectivity not on the security. So they are easily hacked by attackers. Therefore, accessibility, secrecy, authenticity and authorization are major requirements of IoT based project management. The implementation of IoT requires a high technology and services from any organizations point of view, mostly a huge storage place to store the data and uninterrupted flow of data. The cost of implementing such storage systems is high and ability to handle such quantity of data should be organized on a cloud.

VII. FUTURE RECOMMENDATION

The following are some research recommendations to implement IoT in effective project management:

- To introduce and implement IoT in project management, the regulatory authority plays an important role. To establish regulation and framework in project management, all project team members and stakeholders must follow the regulatory authority. Accordingly, the regulatory authority should facilitate to protect the big data of project by setting security policies for collected data during the different project stages through the Internet of Things, and to protect it from unauthorized access. So, it is recommended that the regulatory authority to prepare the guidelines for security and privacy of data or information for the project and show positive impact of an IoT on project management in terms of reduced cost, resources to monitor and execute the project.
- It is essential to have a clear understanding of the goals and objectives of the project before implementation starts. As per project requirement, research and select the most appropriate IoT technology.
- Considering the data security and privacy manage the data collected by IoT devices carefully.

VIII. CONCLUSION

The result of research methodology showed that IoT impacts project management in project-based organizations in every project stage. Since IoT implementation have a positive impact on project management by increasing project quality and reducing risks. This study also presented an overview of the challenges that the project manager and stakeholder may be facing in implementation of IoT in projects. Hence we emphasis the e-future recommendation to implement IoT in effective project management.

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CHATGPT : AN EVOLUTION IN EDUCATION

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Abstract—

A machine learning tool called as chatGPT(Generative Pretrained Transformer) can generate realtime answers to questions and queries. It was developed by an AI research center in America known as OpenAI, an Artificial intelligence tool using large language models in November 2022. This paper explores the advantages and disadvantages of the use of ChatGPT for research and Teaching. According to the document, ChatGPT have few benefits including an ability to create learning assessments,improve instructions, to provide virtual personal training etc. There are dangers of wrong information, biased evaluationof education, concerns about academic integrity and overreliance on expertise. This paper will provide a better way to use ChatGPT for education

Keywords— ChatGPT; benefits; risks; education; Artificial Intelligence

I. INTRODUCTION

With the fast growth of science and technology and the global economy of the internet, artificial intelligence (AI) has had a huge impact on lots of industries as well as education. Artificial intelligence can promote progress and creativity in the learning environment in many ways (Zhai, 2022).ChatGPT (Generative Pretraining Transformer) is a new artificial intelligence application that can be used in education. American Artificial Intelligence Company OpenAI developed the chatbot ChatGPT. ChatGPT's user base has been increased by more than 1 million people per week since its launch on November 30, 2022 (Mollman, 2022). The large language model (LLM) ChatGPT can generate appropriate responses and carry out beautiful conversations (Deng and Lin, 2022). Three versions of ChatGPT are available:

- 1.ChatGPT (a free version),
- 2.ChatGPT Plus (a premium version),
3. G PT-4 (an upgraded version) (OpenAI,n.d.).

ChatGPT in education can help to create tests, articles, translations etc. It allows users to ask questions socially and answer those questions, collect information and interact with the system (Şok, 2023). According to BaidooAnu and Ansah (2023), such a model can also be used to highlight the importance of writing on almost any topic, from a single sentence to a general research statement, which is widely considered satisfactory or almost convincing. Similarly, Atlas (2023) believes that ChatGPT and other languagescan be used in many situations such as writing services, language acquisition, research, and management and can be useful for higher education. Therefore, it can be argued that ChatGPT has the strength to be a useful tool for education and research.

Numerous scholars have contended that ChatGPT has important drawbacks in addition to its many potential educational benefits (Baidoo-Anu & Ansah, 2023; Cotton et al., 2023; Gordijn & Have, 2010). According to a research by Mogali (2023), during the initial assessment, ChatGPT's current version did not consistently provide correct answers to questions about anatomical facts. It follows that there are advantages and disadvantages to this cutting-edge AI tool's existence.

This article tries to analyze the advantages and disadvantages of using ChatGPT in research and teaching, drawing on secondary sources. It starts by outlining the main advantages that ChatGPT can provide, then goes on to discuss any concerns that could arise from using ChatGPT at first. Recommendations for using ChatGPT effectively for research and education are provided at the end of the article.

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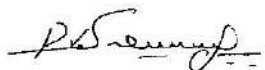


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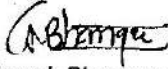



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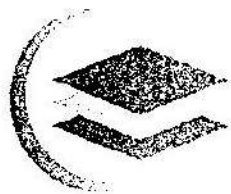
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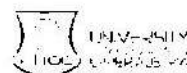
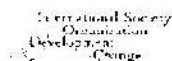


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7.HR as Catalyst for Change Management and Employee Engagement of Manufacturing Industries.

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It is truly said that nothing is permanent in this world except change. Change is the sign of liveness, presence and growth. In corporates for survival and growth of business new learning and upgradation of skills is unavoidable. Apart from type of organization and nature of business change is important. To survive in the national and international market employees should learn new skills. Learning organizations are the life blood of successful economy. Those who are easily adjusted with change can become successful in the world. Change management is the core responsibility of HR Manager for organizations. Manufacturing Organizations need to update in terms of technology, knowledge and quality of their products. Quality products having zero defects are the need of time. After globalization quality control techniques are implemented in Manufacturing Sector in India. It includes ISO, 5 s Kaizen, Just In Time, Quality Circles etc. Companies are investing part of their profits in training, skill enhancement programs and change management in the organizations. However, in entire process of Change Management HR is acting as Change Agent called catalyst; who changes the attitude and mindset of employees without changing his own personality traits. Dynamic Managers and Influential HR is very important asset for the organizations during entire process of change management.

(Key words : Catalyst, Change Agent, Chage Management, Employee Engagement, Manufacturing Industries)

Introduction :

Strong wave of Liberalization, Privatization and Globalization resulted in need of upgradations in skills of employees. To upgrade ones knowledge, skills etc is a change process. In order to implement this change successfully HR plays important role. The results of change may be either good or bad. But IIR Manager plays important role in implementation of change. The impact of implementation of change in the organizations is sustainable growth of business.

Change generally occurs in organizational structure, roles of different existing and new hobs, techniques of production etc HR plays important role in planning, organizing, controlling change in the organization. Many a times training decisions are taken after training need analysis to implement change. In order to motivate employees, retain them at workplaces during the process of change role of HR Manager is important.

It is said that technology upgrades every minute in the world. In order to survive in the global market change is unavoidable. Technological development is the major concern of every country now a days. Artificial Intelligence, Robotics has entered in many fields like medical science, defence, teaching and learning, automobile sector etc. Manufacturing Industries are not exception for the same. Those organizations which shown positive response for the change have survived successfully in global market. Learning Organizations play important role in change management. Similarly, role of HR as a leader, change agent, motivator, co partner in the entire change management process is crucial.

Objective of the Study :

1. To highlight role of HR in Change Management Process in organizations.
2. To find out technique of Change Management.
3. To know the different factors affected by change.
4. To know barriers in the process of Change Management.

Literature Review :

Change is the need of time. It is necessary for businesses to implement change successfully. Transformation occurs due to influence of HR Strategy. It is quite common to resist the change. This is due to human nature. In the entire process of Change Management Top Level Managers play important role. Like Top Level Managers HR needs to identify need for change. To develop tools, techniques etc HR plays important role. HR is acting as leader, catalyst i.e. change agent in the entire process of change management. HR is also acting as mentor, supporter, guide, leader during the process of change. Many practical evidences are available for the same. This is because human beings are difficult to mould for change. Attitude, nature, leadership qualities etc are difficult to change. Developing skills of employees, their abilities are important in the entire change management process. Top Management should support and sponsor change by providing monetary and non monetary support. However, to convince the employees for change is the responsibility of HR Manager only.

The first important step in Change Management is clear communication with those who will be affected by change. The entire strategy of Change Management should be planned. Top Management support and many a times sponsorship is required for Change Management. Also, top management should provide the required resources for Change Management.

Barriers in Change Management :

1. Lack of Support from Top Management.
2. Inadequate planning
3. Less Support from Top Management in terms of resources

Research Methodology :

The Primary Data was collected from employees working in Manufacturing Industries in Pune City. The core area of research was employees working in Heating ventilation and Air Conditioning Companies. Total data collected was 118 employees. Being Employee Engagement as a topic of my research; the data collection will be helpful. The scope of study was Employees working in Heating, Ventilation and Air Conditioning Companies located in Pune City.

DATA COLLECTION AND ANALYSIS

Age Group :

	Frequency	Percent	Valid Percent	Cumulative Percent
less than 30	56	45.2	45.2	45.2
35-40	28	22.6	22.6	67.7
40-50	30	24.2	24.2	91.9
50 and above	4	8.0	8.0	100.0
ValidTotal	118	100.0	100.0	

Fig: 1.1

	Frequency	Percent	Valid Percent	Cumulative Percent
Male	82	40.3	40.3	40.3
Female	36	59.7	59.7	100.0
Valid Total	118	100.0	100.0	

Fig: 1.2 Gender *One--way Anova*

ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Have you being involved in change management process					
Total	.376	4	.094	1.250	.294
Between Groups	8.804	117	.075		
At what level was the change?					
Total	9.180	121			
Between Groups	13.647	4	3.412	6.646	.000
Within Groups	60.058	117	.513		
What was the approach used to communicate and implement the change?					
Total	73.705	121			
Between Groups	1.409	4	.352	1.618	.174
Within Groups	25.476	117	.218		
Were you involved in the decision making of the change?					
Total	26.885	121			
Between Groups	2.491	4	.623	2.629	.038
Within Groups	27.714	117	.237		
Were you provided with the training adapt to the ?					
Total	30.205	121			
Between Groups	1.994	4	.499	2.044	.093
Within Groups	28.539	117	.244		
Was there an impact on your motivation and morale?					
Total	30.533	121			
Between Groups	.645	4	.161	1.349	.256
Within Groups	13.986	117	.120		
Was the HR department involved in the implementation of the change?					
Total	14.631	121			
Between Groups	13.268	4	3.317	4.742	.001
Within Groups	81.846	117	.700		
Were the change Groups implemented successfully?					
Total	95.115	121			
Between Groups	10.767	4	2.692	4.409	.002
Within Groups	71.437	117	.611		
Total	82.205	121			

Fig: 1.3 Anova table

INTERPRETATION

I. ONE WAY ANOVA

The fig 1.3: shows the results of Anova. The various parameters of change management were analysed based on age to check the acceptance of change in the organization. The results reveal that there exists a difference in the adoption of change due to age of the employee at different levels of the organization (F -value=6.646, $p \leq 0.05$), involvement of the employee in the planning phase of the change (F -value=2.629, $p \leq 0.05$), involvement of HR department in the implementation of the change (F -value=4.742, $p \leq 0.05$), and the successful implementation of change and its impact (F -value=4.409, $p \leq 0.05$). Whereas, no significant difference between the age and statements like witnessing and participating in any change in the organisation (F -value=1.250, $p \leq 0.05$), approach used to communicate and implement the change (F -value=1.618, $p \leq 0.05$), training/guidance required to adapt to the change (F -value=2.044, $p \leq 0.05$), and impact on employee motivation and morale (F -value=1.349, $p \leq 0.05$).

II. ROLE OF HR IN CHANGE MANAGEMENT

The following information can be inferred from the frequency analysis:

1. Changes in team assignments and roles and responsibilities are more common in occurrence when compared to organization level changes.
2. Organizations prefer a top-down approach to implementation of change as it makes control and follow-up action easier. It also shows the involvement and dedication of the management towards the implementation of the change to the employees. Communication should be from top to down.
3. 55.2% of the employees were aware of the involvement of HR department in the implementation of change and believe that their involvement has a positive impact on the implementation of change. This awareness can also be contributed to the fact that 66.7% of the employees believe that the HR department was able to identify their training needs in respect to the change and provide it to ensure smooth change management.
4. There is a high level of involvement of employees in the planning phase of the change as 44.8% of the respondents were involved during the decision making process of change.

III. KEY COMPETENCIES IDENTIFIED FOR HR Manager as CHANGE AGENT

1. Active Nature
2. Good Listener
3. Analytical skills
4. High Emotional intelligence
5. Adaptable to change
6. Mentoring and Counselling skills
7. Negotiation and communication skills

CONCLUSIONS

Change is unavoidable part of any organization. HR Manager being change agent helps the organization manage the transit. When HR plays the role of a change agent, it is possible to manage change successfully since it takes into consideration the organization's greatest asset – its Human Capital. A change agent is a person who has the necessary knowledge and skill to plan and drive the implementation of the change. The role of HR is that of a change agent (top level).

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11. Work From Home Policy and Innovative Methods of Employee Engagement of Manufacturing Companies located in Pune City.

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Abstract :

The Covid – 19 Pandemic resulted in transformation of many Human Resource Functions. One of them is Employee Engagement and Leadership. The challenging task of Employee Engagement becomes more complex as HR Manager has to manage remote teams of employees. Organization Development plays important role in sustainable Leadership Development. Effective Team Building Ideas have been introduced for remote workers. The level of employee commitment towards organization goals can be called employee engagement. Work From Home Policy affected employee productivity and engagement level also. Company can easily retain engaged employees and develop their leadership qualities. Also, highly engaged employees are more productive and innovative. The absenteeism level of engaged employees is also low. The innovative employee engagement strategies are applied for Hybrid Working Employees also. However, better communication and feedback system helps to get employees review of productivity level. Some Companies also provide remote work allowance and office equipment to employees.

Key Words : Employee Engagement, Work From Home Policy, Communication, Feedback system, Leadership Development.

Introduction :

Work From Home of Remote Working is not a new concept. In many European Countries the concept is followed since last fifteen to twenty years. It is due to extreme weather conditions. People cannot leave their homes for months. Internet played important role here. Desk work of employees made them easy. However, due to Covid-19 Pandemic many employees shift their focus on traditional office working set up to work from home. The term employee engagement is related with productivity level. Employee Engagement builds up loyal and motivated work force in the organization. They are the pillars of organization. Resulting in Leaders for the organization. In fact, objectives of employers to raise productivity and employees to gain better benefits can be achieved due to employee engagement. The career can be build up by working remotely. The research studies by various researchers shown that by 2005, seventy percent of the professionals are likely to do Work From Home.

Employee Engagement :

The term Employee Engagement was first introduced in 1990 by Researcher named Kahn. It is a positive approach of employees towards their work and commitment of employees for achieving organizational goals. Effective Communication between employer and employees is the key of successful implementation of employee engagement policy. The productivity of organizations can be increased due to effective implementation of employee engagement. From HR point of view, Employee Engagement increases loyalty, job satisfaction levels. Constant Communication and well being of employees can be the motivator for employees.

Research Framework :

The major objective of the paper is to give guidelines through framework of employee engagement for employees working from home. The framework of this paper is based on the systematic study of the Secondary Data. Literature Review of the existing articles related to the topic has been done. Also, a primary data is collected from Employees working in Manufacturing Companies.

Objectives :

1. To know effects of work from home on Employee Engagement.
2. To find out Innovative Methods of Employee Engagement for Manufacturing Companies.

Research Design :

Sources Of Data :

Secondary Data collected for the Research Paper. The innovative methods of employee engagement resulting in better leadership have been found. The Secondary Data is collected from research articles, blogs, journals, online news paper articles which helped in providing insight into effective employee engagement.

Review Of Literature :

Employee Engagement is the vital driver in all organizations including Public Sector and Private Sectors. Employee are the most important asset of every organization. Engaged employees have an impact on productivity and financial performance. It is the commitment of the employees while performing their jobs. The term employee engagement is based on concepts like job satisfaction, organization behavior etc. Employee productivity and efficiency can be improved by implementing

Employee Engagement Policy. There is a significant level of differences in employee engagement on the basis of experience, age, employee position in organization hierarchy. Employee Engagement Policy if implemented properly results in increased productivity, retention, client trust and profitability. Managers should give appropriate training to employees for improving knowledge and skills.

The term Employee Engagement first introduced by William A Kahn in 1990. Employee plays three types of roles during their work context. Those are behavioral, cognitive, and emotional components which affect employee performance. Leadership gives proposed directions for the job performance. Employees can be connected with social media, communication through social media had played important role in communication system. Organizations can achieve a desirable state of engaged workforce, sustaining this state is next step. Both employees and organizations remain dynamic in this case.

Definition of Employee Engagement :

Many Management Scientist from 1990 defined the term Employee Engagement in different words. Fact Sheet (2014) defined the term : " Employee Engagement is a critical idea for HR, experts, since it is a result pointer which gives confirm on the soundness of the administration atmosphere and confirmation of how well different segments of the associations procedures, including HR forms, are working in connection to representatives recognition around the mental contract between every worker and the association "

According to Forbes " Employee Engagement is the passionate duty the representative has to the association and objectives "

Factors in Employee Engagement :

1. Charity
2. Dedication
3. Recognition
4. Responsibility
5. Standards
6. Teamwork

Employee Engagement can be classified as Engaged, Not Engaged, Actively Dis Engaged.

Engaged Employees :

Those are passionate employees who perform well in the organization. They are also innovative, always speak positively for the organization. They are also innovative, always speak positively for the organization. They work for long term career in the organization.

Not Engaged :

They contribute little to the organization. They are not passionate for their jobs. They look for short term career in the organization.

Actively Dis Engaged :

Those are unhappy employees at work. They can cause great damage to the organization.

Findings of the study ::

The six dimensions of Employee Engagement are :

1. Leadership and Culture
2. Work Satisfaction
3. Work Relationship
4. Employee Wellbeing
5. Employee value propositions
6. Personal and Professional Growth

For today's Corporates both Employee Job Satisfaction and Employee Engagement are significantly important. Higher Productivity and Lower Absenteeism are observed in case of engaged employees. It minimizes recruitment expenses. Engaged employees give higher service, higher client satisfaction, increased sales, higher level of earnings, higher investors profits.

Carnegie Dale and MSW focused Sustainable Leadership and Employee Engagement with following features :

1. Enthusiasm : Employees are passionate about work
2. Empowered : Employees are approved to do the work their way
3. Inspired : Employees are encouraged by their leaders
4. Confident : Employees are sure that they can achieve superiority
5. Engaged Employees result in :
 - i) Higher service, excellence and efficiency
 - ii) Higher client satisfaction
 - iii) Increased sales
 - iv) Higher level of earnings

Higher investors profits 2.2 Drivers of Employee Engagement and Leadership : As per researchers opinions and review of papers employers can find out loyalty in terms of employees attitude, behaviour and work performance. Employee Engagement is the level of commitment and involvement the employees had towards their organization. The attributes of employee engagement find out during the study were organizational culture, career planning, incentives,

organizational support, motivation in the work, efficient work environment, flexible work hours, work life balance, paid holidays, team works, training and career opportunities, equality in treatment etc. Following are the details about Drivers of Leadership and Employee Engagement :

1. **Open Communication System :** Open Communication System is important for communicating all important messages to the employees. Important communication should be passed on to the employees at all levels.
2. **Trust and Respect :** The trust on employees is another concern. Employer can achieve his goals with these two parameters.
3. **Decision Making Power :** The Decentralization of authority and responsibility is important at all levels. It will improve employees commitment and loyalty with the organization.
4. **Teamwork :** At all levels in the organization teams should be inspired with organizational vision , mission and objectives. Teams are the backbones of every organization. Good teamwork can achieve organizational goals clearly.
5. **Progressive HR Practices :** The HR Managers should implement HR Practices like training and development, career development opportunities, performance management system etc. The better performing employees are assets for the organization. They should be promoted at higher positions.
Recognition and reward , motivation : The employees whose performance is better should be recognized at all levels. They should be rewarded with monetary and non
6. **monetary benefits.** Those employees are valuable assets for the organization.
7. **Satisfaction and involvement :** Employee job satisfaction and involvement matters are key towards organizational success. The satisfied employees are more productive and better performer than others.

Employee Engagement is a human resource (HR) concept that describes the level of enthusiasm and dedication a worker feels toward their job. Implementation of employee engagement improves productivity of the company, and feel employees that their efforts make a difference. Employee engagement can be linked to job satisfaction and morale. Employees are more likely to be productive and higher performing. Employers can foster employee engagement through effective communication, offering rewards and discussing career advancement, keeping employees informed about the company's performance and providing regular feedback.

Through employee engagement , everyone works together to achieve their professional and personal as well as organizational goals. Effective internal communication, consultation with employees and employee representation are all important elements in employee engagement.

Multidimensions of Employee Engagement :

Bakker and Demerouti (2007)

1. **Vigour :** High level of strength and psychological resilience
2. **Devotion :** Devotion is associated when you are characterized with ones work
3. **Absorption :** Characterized by mentally their at work, showing better organizational performance

Effects of Employee Engagement :

1. Higher productivity
2. Effect on Company performance

Results of Employee Engagement :

1. Higher Productivity & better performance
2. More and more job satisfaction

Importance of Employee Engagement for Leadership Development :

1. Engaged employees are more productive and customer focused, less likely to leave their organization immediately.
2. The more employee engagement less attrition rate is observed
3. Due to employee engagement performance of the employees, creativity , loyalty, innovation can be optimized.
4. Leadership, effective management, open two way communication, pay and benefits , fair and equal treatment , career development are important.
5. Engaged employees can assist the organizations to achieve its mission, vision, objectives, implement its strategy and generate significant business results.

E.g. Lenovo India has a work atmosphere incorporated in a manner that personnel get the possibilities to refresh themselves. The company has a fun effort club and simple endeavours like nominating an employee of the month and celebrating their birthdays which hand to hand boost employee morale.

Conclusion :

Employee Engagement resulting in Leadership For the Employer :

1. Engaged Employees are more productive and customer focused, less likely to leave their organization immediately.

2. The more Employee Engagement less attrition rate is observed.
3. Due to employee engagement employee performance, creativity, loyalty, innovation can be optimized.
4. Leadership, effective management, open two way communication, pay and benefits, fair and equal treatment, career development are important.
5. High performing workforce can be developed through employee engagement. Better output can be generated through this workforce
6. The loyal and satisfied pool of customers can be build up due to employee engagement
7. The organization becomes profitable organization
8. Better communication system can be build up and employee reporting and communication can be improved
9. Company brand image can be improved
10. Organization becomes successful in the market by developing goodwill in the market

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मध्य भारती

एशिया एवं सुमानविज्ञान की द्विभाषी शोध-पत्रिका

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THE STUDY OF BALANCED SCORECARD AND HR SCORECARD IN EMPLOYEE ENGAGEMENT OF MANUFACTURING INDUSTRIES.

Swati Inamdar Research Scholar SNBP College of ACS & MS, Pimpri, Pune.
Dr Anand Gaikwad Suryadatta Institute of Business Management and Technology.

Abstract:

The term Balanced Scorecard is used in Organizations with four different Objectives:

1. Financial Performance of Organization
2. Customer Satisfaction Level
3. Quality Management System
4. Infrastructure of Company, Organization Culture and Learning approach of Employees

However, human resources have their utmost importance in all functions of organization. Without highly skilled and better performing employee strength the strategic objective of organization growth will not be achieved. Every successful organization is backed up with efficient and highly performing employees. Human resource scorecard is the Performance Assessment method. It decided Key Performing Indicators and performance evaluation methods of Human Resource. The Researcher tries to focus on the relationship between Balanced Scorecard, HR Scorecard and Employee Engagement. The Researcher has used Secondary Data Collection Method.

Key words:

Balanced Scorecard, HR Scorecard, Employee Engagement, Key Performance Indicators

Introduction :

The Balance Scorecard Model was developed by Dr David Norton and Dr Robert Kaplan of Harvard Business School. The Balanced Scorecard is a popular concept all over the world now a days. All important departments like Marketing, Finance and HR are dependent on each other. More investments in Finance department may result in more advanced products. Marketing Department may need to take extra efforts to sell their product and ultimately, HR Manager needs to hire intelligent and experienced manpower to sell the product and give after sells service to customer. The concept of HR Scorecard is more popular in manufacturing industries due to its unique nature of alignment of Strategic Objectives with HR Objectives.

Research Objectives of Study :

1. To study relationship between Balanced Scorecard and HR Scorecard
2. To study Human Resource Engagement Perspective of HR Scorecard
3. To study usefulness of HR Scorecard in Manufacturing Sector Literature Review :

The Balanced Scorecard Concept was developed in early 1990's by Dr Kaplan to judge the performance of each department like finance, marketing, Human Resources etc. Apart from traditional performance appraisal tool, new Human Resource Scorecard Concept is a valuable performance measuring tool. Balanced Scorecard aligns organization goals with all Human Resource Goals. Employee Motivation results in higher or lower productivity. The productivity of employees depend on employee wellbeing, employee development, different Human Resource Practices, Task Identity etc

Human Resource activities provides its focus on long term vision and mission formulation. Organization needs to perform continuous valuation of all its resources. Human Resource Score Card focuses on human resource competency, Human Resource Engagement and Human Resource Performance. Human Resources are considered as important valuable asset of the organization.

Research Methodology :

The researcher has done the Research on the basis of Secondary Data. The main source of information was available journals and research papers.

THE IMPACT OF SOCIAL MEDIA IN EMPLOYEE ENGAGEMENT OF MANUFACTURING ORGANIZATIONS IN PUNE CITY

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Abstract

All the business activities in the world are characterized by features like cut throat competition, business and job uncertainty. This is the era of virtual organizations and businesses all over the world becomes more and more Digitalized. Organizations are focusing on strategies of employee engagement on virtual platform.. The research paper focused on Human Resources Managers and employees working in Manufacturing Companies under Heating Ventilation and Air Conditioning Companies. The study contributes to the effectiveness of Social Media in implementing Employee Engagement of Heating Ventilation and Air Conditioning Companies (HVAC) of Pune City.

Key Words: Social Media, Heating Ventilation and Air Conditioning Companies. Employee Engagement, Pune City.

1. Introduction:

Employee Engagement is a human resource (HR) concept that describes the level of enthusiasm and dedication a worker feels toward their job. Implementation of employee engagement improves productivity of the company, and feels employees that their efforts make a difference. Employee engagement can be linked to job satisfaction and morale. Employees are more likely to be productive and higher performing. Employers can foster employee engagement through effective communication, offering rewards and discussing career advancement, keeping employees informed about the company's performance and providing regular feedback.

2. Literature Review :

Through employee engagement, everyone works together to achieve their professional and personal as well as organizational goals. Effective internal communication, consultation with employees and employee representation are all important elements in employee engagement.

Importance of Employee Engagement:

1. Engaged employees are more productive and customer focused, less likely to leave their organization immediately.
2. The more employee engagement less attrition rate is observed



3. Due to employee engagement performance of the employees, creativity, loyalty, innovation can be optimized.
4. Leadership, effective management, open two way communication, pay and benefits , fair and equal treatment , career development are important.

Employee Engagement is the level of commitment and involvement an employee has towards their organization and its values. An engaged employee is aware of business context and works with colleagues to improve performance within the job.

Engagement is the ability and willingness to contribute to the success. By contributing extra time, brainpower and energy.

Employee engagement describes employee's emotional and intellectual commitment to their organization and its success.

Employee Engagement enriches everyone in the workplace. It is necessary for all employees, leaders, organizations and customers. In engagement, people employ and express themselves physically, cognitively and emotionally during role performance. An engaged employee gives his company his 100 percent. Employee Engagement is a powerful retention strategy.

Through employee engagement everyone works together to achieve their professional, personal and organizational goals. Effective internal communication, consultation with employees and employee representation are all important elements in employee engagement.

Benefits of Employee Engagement for the Employer:

1. Engaged Employees are more productive and customer focused, less likely to leave their organization immediately.
2. The more Employee Engagement less attrition rate is observed.
3. Due to employee engagement employee performance, creativity, loyalty, innovation can be optimized.
4. Leadership, effective management, open tow way communication, pays and benefits, fair and equal treatment, career development are important.

3. Research Methodology

Social Media is the Platform for Employees where they can connect with each other on Digital Mode and can exchange information and share views. HR Manager has to keep the track of Employee Engagement.

Research Methodology: The Primary Data is collected from Employees working in Heating Ventilation and Air Conditioning Companies and using Digital Platform like Whats app, Facebook etc. for Sales Improvement and exchange of information purpose. Survey has been conducted.

Research Objectives:

1. To find out the role of Social Media in Employee Engagement.
2. To know methodology to create Social Media Strategy



3. To explore the advantages and disadvantages of Social Media as an Employee Engagement Tool.

Data Collection:

The non random method of sampling is used in the data collection. The sample size selected was 65 employees from two Companies from total population of 105 employees. The two Companies LG and Kirloskar Chillers Private Ltd were focused for the research purpose.

Data Analysis: Statistical Methods are used for data analysis. ANOVA Test is used for analysis of data.

Hypothesis for the study:

H0: The effectiveness of Social Media cannot be measured for Employee Engagement.

H1: Employees use both Social Media Effectively for Employee Engagement.

ANOVA Test is used for above Hypothesis. The sample size of each group is 5. The data below resulted from measuring the difference in using different social Medias for three different groups. The three social Medias were replicated 5 times.

Level 1	Level 2	Level 3
6.9	8.3	8.0
5.4	6.8	10.5
5.8	7.8	8.1
4.6	9.2	6.9
4.0	6.5	9.3
5.34	7.72	8.56

Means:

The resulting ANOVA table is

Source	SS	DF	MS	F
Treatments	27.897	2	13.949	9.59
Error	17.452	12	1.454	

Total 45.349 14

Correction

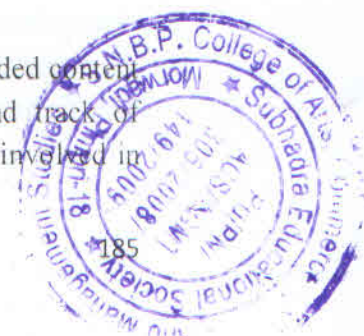
Factor 779.041 1

The test statistic is the F value of 9.59.

Since the statistic is much larger than the critical value, we reject the null hypothesis of equal population means and conclude that there is a statistically significant difference among the population means. The p-value for 9.59 is 0.00325, so the test statistic is significant at that level.

4. Findings:

Social Media is one of the business tactics which employees can use to share branded content by their Social Media Profiles. These contents can be divided in tools and track of employee's performance can be kept. The research proved that employees can be involved in



social media for reaching markets. It also shows employees pride and industry expertise. Employees safely share contents about the organization with their followers. Following are the findings which shows that how to get an employee engagement Social Media Strategy.

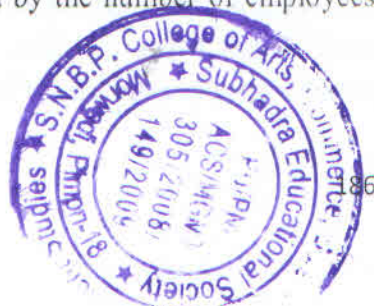
1. Company can send an Employee Survey - According to Edelman Trust Barometer, 73 % of employees expect themselves to be involved in planning at their jobs. The teams of employees wanted different contents. It shows that the content which employees wanted to share differs according to departments and regions.
2. Company should provide right content to the right employees – When the FMCG Company Sodexo launched Employee Engagement program they started with the executive team and senior leaders. The company designed the content for stakeholder to reach. The Company became successful reaching 7.8 million people. They got high value contract also.
3. Company should provide plenty of content - Initially company can send one or two contents in a day. Employee Engagement contents can better promotes their program. The contents can be informative blog posts, job listings or industry news.
4. Company can run a Social Media contest - Prizes can be a motivator. Incentive Program will be one of the important program,
5. Company can get employees involved in product launches - The creative teams for content preparation are important contributors. When Company's Launch Campaign content is ready to go. It can send an internal announcement. The commitment provides details about the launch and also campaign – specific incentives for the team members is also offered.
6. Company can share Company Swag - Number of Manufacturing Company provides their employees with branded company. Shirts, Jackets, Stickers, Coffee Mugs etc. are used as promotional items. It shows their workplace pride both in real life and on social life.

By using above methods Company can share Promotional Contents. Following are the methods for helping engage employees on social media.

1. Amplify: Whenever company's new social content is ready for posting, can add it to Amplify. The contents can be divided into topics so that employees have easy access for the right contents of their choices. Employees can log on easily. All types of Internal Communication can be sending with the help of Amplify.
2. Workplace by Facebook: Workplace by face book is a tool used by many of the world's leading business. It is one of the important communication resource for employee engagement program, the new events and happenings can be shared by this tool.
3. Hot suite Analytics: It is the unique tool by which one can understand employees sharing habits as well as the impact of the content shared.

The important metrics to track are as follows:

1. Adoption Rate – The number of active employees divided by the number of employees who signed up.



2. Sign up Rate – The number of employees who signed up divided by the number of employees invited to participate.
3. Share Rate – The number of shares divided by the number of active users
4. Number of Clicks – Total number of clicks from employee engagement content
5. Goal Completions- The total number of employees who took the desired action on the content developed (like signed up for a newsletter, number of people made a purchases etc.)
6. Total Traffic – The total number of visits to your website from the content shared.

5. Conclusion:

Social Media is now a day's important tool for Employee Engagement. Organizations can use Facebook, Integra, What sapetc. as a tool for creating Social Media Strategy. Due to Digitalization Social Media is found to be an important tool in Employee Engagement.

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4. A Study Effectiveness Of Employee Engagement In Automobile Industry During Covid-19. Anil Karuk, Kle Society's Institute Of Management Studies And Research, Hubli Prof Aruna Battur, Assistant Professor, Kle Society's Institute Of Management Studies And Research, Hubli Isbn :978-93-83302-47-5. Published In Sdimd International E Conference On Adopting To The New Business Normal – The Way Ahead December 3-4, 2020, Mysuru, India



SUSTAINABLE HR PRACTICES OF EMPLOYEE ENGAGEMENT UNDER WORK FROM HOME POLICY IN MANUFACTURING COMPANIES LOCATED IN PUNE CITY.

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Prof Dr Anand Gaikwad Professor and Ph D guide at Suryadatta Institute Of Management and Mass Communication, Bavdhan, Pune .

Abstract : After Covid -19 Pandemic new culture in Corporate World developed. It is remote working. Many employees were asked to do remote working due to lockdown situation in the world. Manufacturing Companies are not exception for that. All the employees were asked to do work from home initially after lockdown situation. However, it becomes challenge for employer to keep track of the employees working as direct communication and meetings with employees were not possible. Microsoft teams, Google Meet, Zoom became common platforms for the employees to connect with each other. Employers developed new methodologies of employee engagement. After pandemic also some employees prefer to do work from home and it becomes a new work culture in the organization.

Key words : Work from home, employee engagement, remote working, manufacturing companies.

Introduction : Everyone works together to achieve their professional and personal as well as organizational goals. Effective internal communication, consultation with employees and employee representation are all important elements in employee engagement.

Importance of Employee Engagement :

1. Due to employee engagement performance of the employees, creativity , loyalty, innovation can be optimized.

2. Leadership, effective management, open two way communication, pay and benefits , fair and equal treatment , career development are important.

Employee Engagement is the level of commitment and involvement an employee has towards their organization and its values. An engaged employee is aware of business context and works with colleagues to improve performance within the job.

Engagement is the ability and willingness to contribute to the success. By contributing extra time, brainpower and energy.

Employee engagement describes employees emotional and intellectual commitment to their organization and its success.

Literature Review :

Engaged Employees :

Those are passionate employees who perform well in the organization. They are also innovative, always speak positively for the organization. They are also innovative, always speak positively for the organization. They work for long term career in the organization.

Not Engaged :

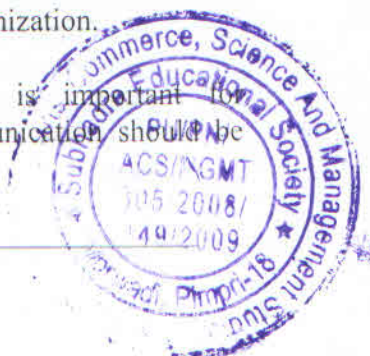
They contribute little to the organization. They are not passionate for their hobs. They look for short term career in the organization.

Actively Dis Engaged :

Those are unhappy employees at work. They can cause great damage to the organization.

Drivers of Employee Engagement :

1. Open Communication System : Open Communication System is important for communicating all important messages to the employees. Important communication should be passed on to the employees at all levels.



2. **Trust and Respect :** The trust on employees is another concern. Employer can achieve his goals with these two parameters.
3. **Decision Making Power :** The Decentralization of authority and responsibility is important at all levels. It will improve employees commitment and loyalty with the organization.
4. **Teamwork :** At all levels in the organization teams should be inspired with organizational vision , mission and objectives. Teams are the backbones of every organization. Good teamwork can achieve organizational goals clearly.
5. **Progressive HR Practices :** The HR Managers should implement HR Practices like training and development, career development opportunities, performance management system etc. The better performing employees are assets for the organization. They should be promoted at higher positions.
6. **Recognition and reward , motivation :** The employees whose performance is better should be recognized at all levels. They should be rewarded with monetary and non monetary benefits. Those employees are valuable assets for the organization.
7. **Satisfaction and involvement :** Employee job satisfaction and involvement matters are key towards organizational success. The satisfied employees are more productive and better performer than others.

Meaningfulness : Meaningfulness refers to the purpose behind the work. An employee who understands the ways in which a company's product or service benefits society and identifies as an important personality in the organization.

Scope of the Research : The research is done on the basis of Secondary Data collected from research papers published related to my research topic.

Research Problem Statement :

Work From Home is a normal concept in IT Industry. However, after covid – 19 work from home becomes a new culture in all the industries. People learned new things by working from their homes. Employee Engagement becomes a challenge for HR Managers. They find new methods of employee engagement in online mode.

Research Objectives :

1. To apply concept of employee engagement in Companies.
2. To know work from home culture .
3. To identify techniques of employee engagement under work from home policy.

Research Methodology :

The Researcher has reviewed Research Papers on Employee Engagement and Work From Home Policy published in different Journals as a part of Literature Review. The findings of the study are explained herewith supporting to the Research Topic.

Findings :

The Research Papers are studied with the objectives. To understand employee engagement practices in Automobile Industry. The study was done on the basis of Secondary Data. The research was done for finding performance of highly engaged employees at workplace. Engaged employees are happy and productive workforce of organization. It results in business success. Better implementation of employee engagement results in more profit, productivity, customer satisfaction, innovation, health and safety, low sickness and absence , reduced turnover. The authors have focused on loss of employee engagement.

The ten C's of employee engagement discovered by author are as follows :

Outcomes of Employee Engagement :

1. Employee Satisfaction
2. Productivity
3. Retention
4. Profit



Research Gap : Due to Covid 19 Work From Home was introduced. Employees started work remotely. Employers need to encourage companies faced issues of computers, internet access, tools at home etc. People faced social isolation, stress management and time management. Is it possible for companies to introduce permanent work from home policy ? in manufacturing companies.

New trends in Employee Engagement in Indian IT Sector are :

1. Communication, appreciation, rewards, recognition and care are important for employee engagement
2. Open communication system is important
3. Social media is a tool for Internal Communication
4. Blogs for imparting informal dialogues are also important
5. Collaboration with academic institutions & world class universities
6. Women Empowerment and appreciation programs
7. Fitness Programs and workshops
8. Rewards and recognition
9. Family get togethers
10. Corporate Social Responsibility Programs
11. Strong company culture

Research Gap : Managers should give quality time for employees. Insecurity of jobs is the most common reason for employees who leave the jobs. There is need for research for manufacturing companies. Manufacturing companies also have new trends in employee engagement.

Literature Review of 40 Research Papers had been done by the Researcher. Following remarkable things have been found about Employee Engagement Concept :

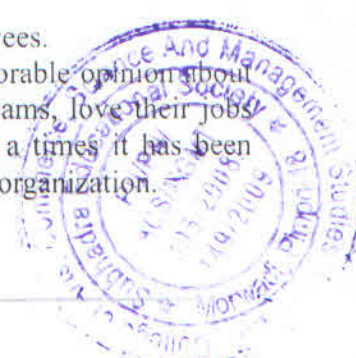
Engaged Employees care about their work and about the performance of the company. They feel that their efforts make a difference. An engaged employee is in it more than a paycheck and may consider their well being linked to their performance and thus instrumental to their company's success. Employee Engagement is related to the level of job satisfaction and improving morale of the employees. It has been observed that engaged employees are more productive and higher performing.

Tesla, Inc. (TSLA) faced high number of injuries at its Fremont Car assembly plant. They used transparent communication as an employee engagement strategy for improvement in safety of employees. The founder and CEO Elon Musk, informed employees that he wanted every injury should be reported to him, without exception so he could understand exactly what was needed to avoid accidents. As a result number of accidents have been reduced by more than 50% in 2019 compared to 2018, according to company's blog post.

The four essential components of employee engagement are enablement, energy, empowerment and encouragement for creating engaged workplace etc. It shows that Employee Engagement is having functional relationship between organization and its employees. Engaged Employees work more dedicatedly for the organization. In order to implement Employee Engagement Successfully many Employers use Following Strategies :

1. They choose the right person for right job in fact best employee for each position they choose.
2. Employers follow open and clear communication system.
3. Employers collect employee feedback many a times.
4. Employers deliver Wellness Programs.
5. Employers promote recognition system for the employees.
6. Employers encourage team building activities for the employees.
7. Employers provide professional development opportunities to the employees.

According to view of many HR Managers highly engaged employees have favorable opinion about their workplace. They feel quite connected with their jobs, responsibilities, teams, love their jobs very much. They also have positive feelings about their organization. Many a times it has been observed that those employees ready to take extra efforts for the success of their organization.



It has been observed that employees who are engaged are having concern for their work, they are having deep sense of commitment for the organization. They always talk positively about their organization. To engage employees is a key human resource skill.

It has been observed that the concept of Employee Engagement was first time found by William A Kahn in 1990. The term engagement can be mixed up with motivation, organizational commitment and job satisfaction (Kunte & Rungruay, 2018). Before 1990's the term employee engagement was quite general.

Major Findings of the Study :

If proper incentives provided to the employees they feel proud of themselves.

They committed to going to the extra mile to achieve business success. Engaged employees absenteeism reduced. He becomes self motivated, productivity ultimately improves.

More than 90% companies started Work From Home Program including Manufacturing Companies. The common issues faced by employees initially is getting computers, internet access and tools at home.

However, Work From Home Policy has its negative effects on employees like including social isolation, stress and time management. Many companies have started employees learning and development by E Learning method. They tried to connect with employees working remotely. Many companies have connected with their employees on Google Team, Microsoft Teams, Zoom etc. Daily time sharing meeting were conducted.

Employee Engagement can improve organizational behavior of employees. Ultimately, productivity of employees also improves. If employees have supportive leadership they can be successfully empowered and engaged to achieve organizational goals. It has been observed that employee engagement and work excellence were closely related. Engaged employees are most of the time excellent in their work.

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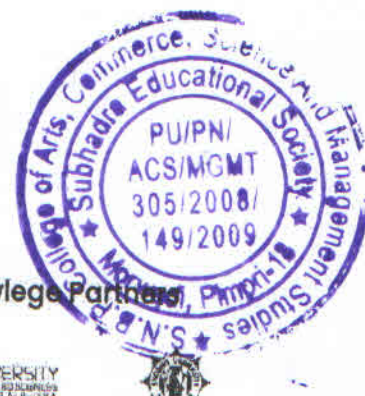
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9.A Study on Comprehensive Analysis of Payroll Management Practices in Modern Organizations"

Ruchira Pawar

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Abstract-

Payroll management is a critical function within organizations, directly influencing financial accuracy, employee satisfaction, and regulatory compliance. This study provides a comprehensive analysis of payroll management practices in modern organizations, focusing on the challenges, innovations, and impacts of evolving technologies and regulatory frameworks. The research explores traditional and technology-driven payroll systems, examining their efficiency, cost-effectiveness, and adaptability to changing workforce dynamics, including remote work and the gig economy. Key challenges, such as compliance with labor laws, data security, and employee trust, are addressed, alongside the opportunities presented by automation, artificial intelligence, and block chain technologies. Through a mixed-method approach involving case studies, surveys, and interviews, the study evaluates the effectiveness of current payroll practices in achieving organizational goals while enhancing employee experience. The findings highlight the growing importance of integrating advanced payroll solutions to streamline operations, ensure compliance, and foster a positive work environment. This research contributes valuable insights for HR professionals, finance managers, and policymakers aiming to optimize payroll systems in an era of rapid technological and regulatory change.

Introduction

Payroll management plays an indispensable role in the functioning of modern organizations. As a core element of human resource and financial operations, payroll systems are not merely about calculating salaries but extend to tax compliance, benefits distribution, and employee financial well-being. In the contemporary business landscape, where organizations operate in dynamic and complex environments, the importance of robust and efficient payroll practices cannot be overstated. Payroll inaccuracies or inefficiencies can disrupt employee trust, incur financial penalties, and tarnish an organization's reputation. Hence, the need for a comprehensive understanding of payroll management practices has grown significantly in recent years.

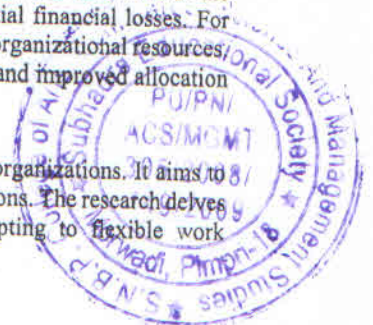
The evolution of payroll management reflects broader transformations in business operations, particularly the digitization of administrative processes. Historically, payroll management was a manual process, labor-intensive, and susceptible to human error. However, advancements in technology have revolutionized this critical function, with automated systems, cloud-based platforms, and artificial intelligence (AI) now integral to payroll operations. These innovations have improved accuracy, enhanced efficiency, and allowed organizations to adapt to the increasing complexity of regulatory frameworks across jurisdictions. This technological shift also underscores the growing interdependence between payroll management and data security, as organizations are tasked with safeguarding sensitive employee information.

Moreover, the advent of globalization has added new dimensions to payroll management. As organizations expand across borders, they must navigate a labyrinth of varying tax laws, labor regulations, and cultural expectations. This complexity is further exacerbated by the rise of remote work, which has blurred geographic boundaries and introduced unique challenges in ensuring compliance and consistency in payroll practices. Thus, effective payroll management requires a deep understanding of both local and international regulations and the ability to adapt to a diverse workforce.

Employee satisfaction and engagement are also closely tied to payroll efficiency. Timely and accurate payroll processing fosters trust and demonstrates organizational reliability. Errors in payroll can lead to dissatisfaction, decreased morale, and higher turnover rates, ultimately affecting organizational productivity. Conversely, well-managed payroll systems that provide transparency and support employee needs contribute positively to workforce motivation and retention. This underscores the strategic importance of payroll as a tool for enhancing employee experience and achieving organizational goals.

In addition to its operational importance, payroll management has significant financial implications. It is often one of the largest expenditures for organizations, and inefficiencies in payroll processes can lead to substantial financial losses. For instance, overpayments, non-compliance penalties, and missed tax deadlines can significantly strain organizational resources. On the other hand, streamlined payroll practices can lead to cost savings, better financial planning, and improved allocation of resources.

This study seeks to provide a comprehensive analysis of payroll management practices in modern organizations. It aims to explore how technology, globalization, and changing workforce dynamics are shaping payroll operations. The research delves into the challenges organizations face, such as regulatory compliance, data security, and adapting to flexible work



arrangements. It also examines the opportunities presented by advancements in payroll technology and the adoption of best practices that enhance efficiency and accuracy.

The first section of the study focuses on the historical development of payroll management, tracing its evolution from manual processes to the adoption of automated systems. Understanding this progression provides valuable context for appreciating the current state of payroll operations and the factors driving their transformation. The second section examines the role of technology in payroll management, highlighting innovations such as AI, machine learning, and block chain. These technologies have redefined payroll processes, enabling organizations to handle vast amounts of data with precision and speed.

The third section addresses the challenges associated with payroll management in a globalized economy. Organizations operating in multiple countries must comply with diverse regulations, which often change frequently and unpredictably. The study discusses strategies for navigating these complexities and emphasizes the importance of local expertise and global payroll solutions. The fourth section explores the impact of remote work on payroll management. With more employees working from different locations, organizations face new challenges in tax compliance, currency conversion, and ensuring equitable compensation.

Another critical area of focus is the intersection of payroll management and data security. As payroll systems become more digitized, they are increasingly vulnerable to cyber threats. Protecting sensitive employee information is paramount, and this study examines the measures organizations can take to enhance cyber security and build employee trust. The final section of the study highlights best practices in payroll management, drawing insights from organizations that have successfully optimized their payroll processes. These practices include regular audits, investing in employee training, and leveraging advanced payroll software.

This research is particularly relevant for HR professionals, payroll managers, and organizational leaders who play a pivotal role in shaping payroll strategies. By providing a holistic understanding of payroll management, the study aims to equip these stakeholders with the knowledge and tools needed to address current challenges and capitalize on emerging opportunities. Additionally, the findings will contribute to the academic discourse on human resource and financial management, offering new perspectives on the evolving nature of payroll operations.

The significance of this research extends beyond its practical applications. Payroll management serves as a microcosm of broader organizational trends, reflecting shifts in technology, workforce dynamics, and regulatory landscapes. By examining payroll practices, this study provides insights into how organizations adapt to change and balance efficiency with compliance and employee satisfaction. It underscores the interconnectedness of payroll management with other organizational functions and highlights its strategic importance in achieving long-term success.

In conclusion, payroll management is a vital aspect of modern organizational operations, encompassing a range of functions that extend beyond salary calculations. Its evolution mirrors the broader trends of digital transformation, globalization, and workforce diversification. This study's comprehensive analysis of payroll management practices aims to shed light on the challenges and opportunities organizations face in this domain. By exploring technological advancements, regulatory complexities, and best practices, the research seeks to provide actionable insights that enhance payroll efficiency, accuracy, and strategic value. Ultimately, this study contributes to a deeper understanding of how payroll management can drive organizational success in an increasingly complex and competitive business environment.

Review of Literature

The field of payroll management has undergone significant transformation over the decades, influenced by advancements in technology, globalization, and shifting workforce dynamics. A comprehensive understanding of payroll practices requires an exploration of existing literature that highlights key developments, challenges, and best practices. This section provides a detailed review of relevant studies and frameworks that shape the understanding of payroll management in modern organizations.

1. Evolution of Payroll Management

Historically, payroll management relied on manual processes that were time-consuming and error-prone. Early research by Collins and Smith (1998) emphasized the limitations of traditional payroll systems, including inefficiencies and high operational costs. The emergence of computerized payroll systems in the late 20th century marked a turning point. Studies like those by Johnson (2002) highlighted the adoption of basic software solutions that automated calculations and reduced errors. These developments laid the foundation for modern payroll systems, characterized by advanced technologies and integrated functionalities.



2. Technology and Payroll Management

The role of technology in payroll management has been a focal point in contemporary research. Advances in automation, artificial intelligence (AI), and cloud computing have revolutionized payroll operations. Kumar and Gupta (2015) examined the impact of cloud-based payroll systems on organizational efficiency, noting improved accessibility, real-time processing, and cost-effectiveness. Similarly, Wang et al. (2018) explored the integration of AI in payroll systems, emphasizing its potential to enhance accuracy, detect anomalies, and streamline compliance processes. These studies underline the transformative impact of technology on payroll practices, enabling organizations to adapt to complex regulatory environments and diverse workforce needs.

3. Globalization and Payroll Management

Globalization has introduced new challenges and opportunities in payroll management. Organizations operating across multiple jurisdictions must navigate varying tax laws, labor regulations, and cultural expectations. A study by Harris and Lee (2016) highlighted the complexities of managing global payroll, including currency fluctuations, tax compliance, and cross-border employee benefits. The research suggested adopting global payroll solutions and leveraging local expertise to address these challenges. Additionally, Tan and Chan (2019) examined the impact of international assignments on payroll systems, emphasizing the need for flexible and scalable solutions to accommodate global mobility.

4. Remote Work and Payroll Complexities

The rise of remote work, accelerated by the COVID-19 pandemic, has further complicated payroll management. Studies by Smith et al. (2020) identified key challenges, such as determining tax jurisdictions for remote employees, managing multi-currency payrolls, and ensuring compliance with location-specific regulations. Research by Patel (2021) highlighted the importance of leveraging technology to address these issues, including geolocation tools and automated compliance checks. These findings underscore the need for organizations to adapt their payroll practices to support a geographically dispersed workforce.

5. Employee Satisfaction and Payroll Efficiency

Payroll accuracy and timeliness are critical to employee satisfaction and organizational trust. A study by Meyer and Allen (2010) demonstrated the correlation between payroll efficiency and employee retention, emphasizing that payroll errors can lead to dissatisfaction, decreased morale, and increased turnover. Recent research by Chen et al. (2022) explored the role of payroll transparency in enhancing employee trust, advocating for systems that provide clear and accessible information about salary calculations, deductions, and benefits.

6. Data Security and Payroll Management

As payroll systems become increasingly digitized, data security has emerged as a critical concern. Studies like those by Roberts (2017) have highlighted the vulnerabilities of digital payroll systems to cyber threats, including data breaches and identity theft. The research emphasized the importance of implementing robust security measures, such as encryption, multi-factor authentication, and regular audits. Similarly, a report by the International Data Corporation (IDC) in 2020 stressed the role of compliance with data protection regulations, such as the General Data Protection Regulation (GDPR), in ensuring the security of payroll information.

7. Best Practices in Payroll Management

Literature on best practices in payroll management provides valuable insights for organizations seeking to optimize their operations. Key recommendations include conducting regular audits (Thomas, 2019), investing in employee training (Nguyen, 2020), and adopting integrated payroll software (Davis and Clark, 2021). These practices aim to enhance accuracy, ensure compliance, and improve overall efficiency. Additionally, research by Singh and Roy (2022) highlighted the benefits of aligning payroll strategies with broader organizational goals, such as sustainability and diversity initiatives.

8. Regulatory Compliance in Payroll Management

Compliance with labor laws and tax regulations is a cornerstone of effective payroll management. A study by Martinez and Lopez (2018) explored the challenges of navigating complex regulatory environments, particularly in regions with frequently changing legislation. The research emphasized the importance of staying informed about legal updates and leveraging compliance tools to mitigate risks. Similarly, Johnson and Smith (2020) examined the role of payroll professionals in ensuring adherence to legal requirements, advocating for continuous education and collaboration with legal experts.



9. Impact of Artificial Intelligence and Machine Learning

Emerging technologies such as AI and machine learning have introduced new possibilities for payroll management. Research by Li and Zhang (2021) investigated the use of machine learning algorithms to predict payroll anomalies and identify potential fraud. The study concluded that these technologies could significantly enhance accuracy and reduce administrative burden. Additionally, Kumar et al. (2023) examined the role of AI-powered chatbots in addressing employee payroll queries, highlighting their potential to improve responsiveness and reduce workload for HR teams.

10. Future Trends in Payroll Management

The future of payroll management is shaped by ongoing technological advancements and evolving workforce expectations. A report by Deloitte (2021) predicted increased adoption of blockchain technology to enhance transparency and security in payroll processes. Similarly, research by McKinsey & Company (2022) emphasized the growing importance of personalized payroll solutions that cater to diverse employee needs, such as flexible payment options and tailored benefits packages. These trends highlight the need for organizations to remain agile and forward-thinking in their approach to payroll management. The literature on payroll management provides a wealth of insights into the evolution, challenges, and opportunities associated with this critical organizational function. From the adoption of advanced technologies to the complexities of global operations, existing research underscores the importance of strategic and efficient payroll practices. This review serves as a foundation for understanding the key themes and developments in payroll management, paving the way for further exploration and innovation in the field.

Parameter's Payroll System, Compliance and Legal Framework, Employee Compensation Structures, Technology Integration, Operational Efficiency, Challenges and Risks, Employee Satisfaction ,Comparative Analysis

Research Methodology

The study here is conducted to achieve the objectives. The study design used here is the exploratory in nature and the questionnaire is well structured. A sample of 50 employees are taken for the research. The area covered is the PCMC area of Pune district.

The Data is divided into Primary and Secondary sources. Primary Data is Questionnaire which is collected directly from the employee. It is self design questionnaire which is structured . Where as the secondary data is collected from the internet, Books, Material, Journals.

The range of each question is from 5 to 1 i.e 5 - Strongly Agree, 4 – Agreed, 3- Neutral, 2- Disagree, 1- Strongly Disagree

Data Analysis and Interpretation

Table :- 1

Does the organization maintain records as per government norms?

Response	No of answer received	Percentage
Strongly Agree	25	50
Agreed	9	18
Neutral	12	24
Disagree	2	4
Strongly Disagree	2	4

As per the data given in table no 1 .50% Responded strongly agree with the statement. Whereas 18% just agree and rest 4% who Strongly Disagree &Disagree

Table :- 2

Do you get market based pay?

Response	No of answer received	Percentage
Strongly Agree	0	0
Agreed	15	30
Neutral	10	20
Disagree	25	50
Strongly Disagree	0	0

As per the data given in table no 2 .30% Responded agree with the statement. Whereas 10 were neutral and rest 25% are Disagreeing .

Table :- 3

Does your organization provide the medical and health insurance services?

Response	No of answer received	Percentage
Strongly Agree	28	56
Agreed	16	32
Neutral	4	8
Disagree	2	4
Strongly Disagree	0	0

As per the data collected it tells us that 56% respondent had strongly agree and 32% employees just agree with it where as 8% & 4 % strongly disagreed & disagreed.

Table :- 4

Does the company maintain accurate records ?

Response	No of answer received	Percentage
Strongly Agree	28	56
Agreed	16	32
Neutral	5	10
Disagree	1	2
Strongly Disagree	0	0

As per the table no 4 the data collected shows that 56% employees strongly agree with it were as 32 % employees disagree with it

Table :- 5

Do they check attendance on daily basis?

Response	No of answer received	Percentage
Strongly Agree	12	24
Agreed	38	76
Neutral	0	0
Disagree	0	0
Strongly Disagree	0	0

agreeing basis.

As the table shown 24 % employees are strongly with the statement that attendance is checked on daily Where as 76 agree with the statement.

Table :- 6

Are all salaries and wages paid by warrant?

Response	No of answer received	Percentage
Strongly Agree	16	32
Agreed	4	8
Neutral	24	48
Disagree	6	12
Strongly Disagree	0	0

As per the data collected it tells us that 32% employees strongly agreed and 8% employees just agreed with it .where as 48% & 12 % strongly disagreed & disagreed.

Table :- 7

Does maintenance problem arise when record the data ?

Response	No of answer received	Percentage
Strongly Agree	33	66
Agreed	10	20
Neutral	7	14
Disagree	0	0
Strongly Disagree	0	0

As per the data given in table no 7 .66% Employees strongly agree with the statement that maintenance problem rises the record of the data. Whereas 20% just agree and rest 14% were Neutral

Table :- 8



Are you satisfied with current payroll process?

Response	No of answer received	Percentage
Strongly Agree	28	56
Agreed	16	32
Neutral	6	12
Disagree	0	0
Strongly Disagree	0	0

As per the data collected it tells us that 56% employees strongly agreed and 32% employees just agreed with it .where as 12% neutral.

Table :- 9

Is existing payroll process maintained accuracy and privacy ?

Response	No of answer received	Percentage
Strongly Agree	20	40
Agreed	25	50
Neutral	5	10
Disagree	0	0
Strongly Disagree	0	0

As per the observation it is found that 40% Strongly agreed with the statement and 50 % just agreed with it and rest were 10% were neutral.

Table :- 10

Do you agree if any changes occurred in present payroll

process?

Response	No of answer received	Percentage
Strongly Agree	10	20
Agreed	30	60
Neutral	10	20
Disagree	0	0
Strongly Disagree	0	0

As per the table no 10 it has been observed that 20% employees strongly agree with the statement where as 60 % Agreed and 20 % were neutral .

Findings of the study

- As per the statement mentioned in table no 1 the organization maintain records as per government norms 50% Responded strongly agree with the statement. Whereas 18% just agree and rest 4% who Strongly Disagree & Disagree.
- As per the data given in table no 2 . 30% Responded agree with the statement. Whereas 10 were neutral and rest 25% are Disagreeing .
- As per the data collected it tells us that 56% respondent had strongly agree and 32% employees just agree with it where as 8% & 4 % strongly disagreed & disagreed.
- As per the table no 4 the data collected shows that 56% employees strongly agree with it were as 32 % employees disagree with it
- As the table shown 24 % employees are strongly agreeing with the statement that attendance is checked on daily basis. Where as 76 agree with the statement.
- As per the data collected it tells us that 32% employees strongly agreed and 8% employees just agreed with it .where as 48% & 12 % strongly disagreed & disagreed.
- As per the data given in table no 7 .66% Employees strongly agree with the statement that maintenance problem rises the record of the data. Whereas 20% just agree and rest 14% were Neutral
- As per the data collected it tells us that 56% employees strongly agreed and 32% employees just agreed with it .where as 12% neutral.
- As per the observation it is found that 40% Strongly agreed with the statement and 50 % just agreed with it and rest were 10% were neutral.
- As per the table no 10 it has been observed that 20% employees strongly agree with the statement where as 60 % Agreed and 20 % were neutral .



Conclusion

This study on the comprehensive analysis of payroll management practices in modern organizations highlights the critical role payroll systems play in ensuring organizational efficiency, compliance, and employee satisfaction. The findings emphasize that payroll management is no longer a mere administrative task but a strategic function that integrates with broader human resource and financial management practices.

The research underscores the following key points:

1. **Technological Advancements:** Modern organizations are increasingly adopting **cloud-based payroll systems** and **AI-driven solutions** to enhance accuracy, reduce errors, and ensure compliance with legal and regulatory frameworks. Automation and integration with HR and accounting systems have significantly improved efficiency and reduced processing time.
2. **Compliance and Security:** Compliance with labor laws, tax regulations, and data protection policies remains a top priority for organizations. The study reveals that companies investing in secure payroll management software are better equipped to handle audits and legal challenges.
3. **Outsourcing Trends:** Payroll outsourcing has emerged as a cost-effective and scalable option, especially for small and medium-sized enterprises (SMEs). It allows organizations to focus on core activities while ensuring payroll accuracy and compliance.
4. **Employee Satisfaction:** Timely and error-free salary payments, tax processing, and benefits administration contribute to improved employee morale and trust. Transparent payroll systems also foster a sense of fairness and accountability within organizations.
5. **Challenges and Future Scope:** Despite advancements, challenges such as **cybersecurity risks**, **system integration issues**, and **legislative changes** remain. Organizations need to continually evaluate and upgrade their payroll systems to address these concerns.

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5

The Meticulous Exploration of Multidimensional Poverty in India

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Research Paper - Management

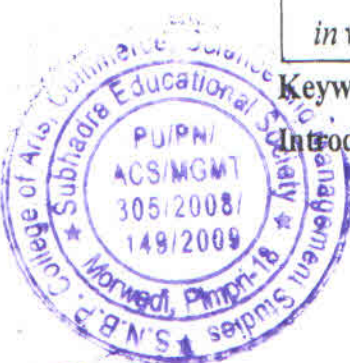
ABSTRACT

The poverty is one of the major social issues in India. It affects a substantial part of the Indian populace. Poverty is the state of not having sufficient material belongings or income for a person's basic need. Poverty may include social, political and economic, elements. Outright poverty is the complete lack of basic personal needs, such as food, clothing, and housing. Poverty is almost not having adequate money to meet rudimentary needs including food, clothing and accommodation. Conversely, poverty is much more than just not having abundant money. The World Bank Organization labels poverty in this way: "Poverty is hunger". One of the principal problems of poverty in India is the country's hasty population growth. As a result, there is a high rate of illiteracy, poor health-care facilities, and a lack of financial belongings. Additionally, the high population progress rate has an influence on distinct income, making separable income much lower. Poverty refers to a condition in which a person leftoversdisadvantaged from the basic requirements of life.

Keywords: Poverty, Social, India, Political, Accommodation, Hunger, Population.

Introduction

India has dealt with an extended history of colonization that led to the spread of





wealth and resources for generations. Although this question is a part of India's past, the heritage of uneven trade endures to put monetary pressure on India's deprived citizens. Also, like many economies of the world, social inequality makes it almost impossible for people who live in scarcity to climb out of it alone.

Poverty in India is a result of various overlapping factors, covering a long history of social and economic concerns. The social problems include a caste system that grounds discrimination among the citizens of India. People who are born into certain socio-economic clusters or ethnicities can find it more problematic than others to access education, healthcare, and employment openings. Economic issues include a history of commercial pressure from foreign countries which marks the economy of India sensitive to external markets which are beyond its control.

Over the last several decades, India has become one of the wildest developing economies in the world. But even with this remarkable progress, poverty in India endures to be a massive problem. A small fraction of people in India have benefitted from this growth, while the vast mainstream still fights to meet their rudimentary daily needs. This bias is exacerbated by a long-standing social caste system in India that excessively affects women and children.

Reasons of poverty In India

1. Population Growth

High population growth will have numerous consequences like poverty, unemployment, standards of living, a bigger gap between the rich and the poor, lesser resources, larger manipulation of natural resources. It will have adverse influence on development. At one end high population progress rate is one of main causes of poverty in India. High population below poverty line adds to high level of illiteracy, poor health care amenities and poor entrance to financial possessions. Hence high population progression affects the per capita income and makes per capita income even lower.

2. Low Productivity in Agriculture

A main reason for poverty is poor productivity in the farming sector. The reason for low productivity is diverse. Chiefly, it is because of disjointed and segmented landholdings, lack of capital, illiteracy about new technologies in farming, the use of old-





style methods of crop growing, depletion during storage, etc. The environment of India is highly untrustworthy as both droughts and unexpected floods can cause enormous crop losses and brutally impact productivity and farmer's income. Even moistened land needs help with issues like insufficient water supply, flooding irrigation, and poor drainage. Indian agricultural workers lack skills due to low incomes, lack of proper accommodation facilities, low standard of living, absence of social awareness, lack of appropriate education etc. Most of the farmers in India are poor and do not have adequate money for land expansion.

3. Social Inequality

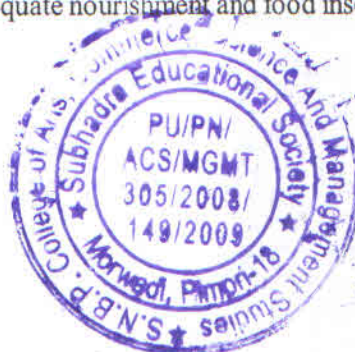
Poverty is when people don't have sufficient money for the adequate necessities to sustain themselves. Inequity refers to the unsatisfactory delivery of income or wealth which marks in some people consuming more than others. Poverty can be defined as the state of not having ample income or material belongings such as food, clothing, and housing to fulfill person's basic requirements. Poverty remains one of the India's greatest social and economic challenges, notwithstanding its increasing economy. In India, poverty is measured on a methodology planned by the planning commission named the Tendulkar methodology. This highlights measuring poverty in terms of consumption or spending over a certain time of period. Further, every state in India has its own poverty threshold which regulates the population living below the poverty line.

4. Unemployment and Underemployment

Reasons of joblessness include slow population growth, economic growth, and insufficient employment planning. Actions to address unemployment and underemployment focus on high financial growth, growing investment, rural development, rural industrialization, education and skill development. Joblessness often causes poverty, as people without jobs have no consistent income source. In turn, poverty, by stripping people of indispensable assets and opportunities can reduce them unemployable due to a lack of proper skills and education, thus continuing their unwaged status.

5. Lack of Access to Social Services

Scarcity is associated with negative circumstances such as substandard accommodation, inadequate nourishment and food insecurity, inadequate child care,





absence of access to health care, insecure neighborhoods, and under resourced schools which unfavorably impact our nation's children. People who struggle from poverty have no access to enough food, good clothing, medical services and a hygienic environment. The absence of these basic requirements leads to poor health. Most of them even suffer from malnutrition, and they don't even have ample money to visit a doctor.

5. Low Rate of Economic Development

The low rate of economic growth demonstrates that Government has fewer funds to spend on public initiatives. These fuels divide rich-poor and gross inequalities in resource distribution. Understanding of income for development becomes scarce and the Government is forced to resort to increased borrowing. Economic progression has helped in the decrease of poverty, to make it clear that there is a strong link between economic development and poverty reduction. Economic growth inspires people to send their children to schools in the expectation of getting better economic returns from education.

6. Historical, Economic and Social Factors

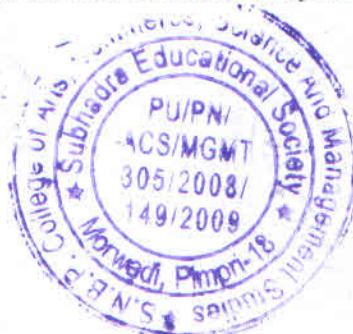
In India Poverty is currently a serious socio economic concern. Poverty may generate and contribute to corruption, illnesses, bribery, lack of education, unemployment, spousal abuse, parental troubles, drug usage, and other undesirable behaviors. The historic reason is the low level of financial growth under the British colonial administration. Unsatisfactory distribution of land and other resources, low growth rate of incomes, less job opportunities, failure in promotion of economic development and population control continued the rotation of poverty.

7. Inadequate Healthcare Infrastructure

Due to the high prices of the accessible services, every person in the country is incapable to pay for it. People with an inferior economic background borrow money when they need private health facilities. Reserved services boost practices for profit. Cheaper alternatives are available in the government-owned hospitals,

8. Unequal Distribution of Wealth and Resources

Global stratification refers to the imbalanced distribution of wealth, prestige, power, resources, and impact among the world's nations. Put more simply, there is an exciting difference between the richest and poorest nations. As the rich become richer and the





poor become poorer, the gap between their standards of living increases rapidly. This disparity is leading to a deficiency of basic resources, such as adequate health care and education in Indian.

9. Increasing Crime Rate

Poverty in India has been found to have a fundamental effect on criminality rates. Two self-governing shocks to domestic income, namely the decrease in import tariffs and rainfall differences, have been shown to increase the occurrence of property crimes and violent crimes. One of the mainsponsors to the high crime rate in India is poverty, which leads to harassment and drives people to involve in criminal activities. In addition, religious tensions, social inequality, and gender discrimination can also contribute to the possibility of criminal behavior.

10. Political Factors

The British colonization and rule over India about two centuries have produced damaging harm to the nature of Indian economy. India, which was once a topmost producer, has been reduced to a giant market. Considerable natural possessions of the country were used to advantage British funds and a lot of wealth was tapped off to the nation of the rulers. They also abridged various classes of people such as farmers, potters, artisans, weavers, etc. to their current state of poverty.

Strategies to Improve Poverty in India

Alleviating poverty in India is a multilayered challenge that needs a wide-ranging approach encompassing socio-economic and political strategies. With a population of over 1.3 billion people, India is home to a noteworthy portion of the world's disadvantaged population. Undertaking scarcity in India requires innovative and supportable solutions that address the originsources of deprivation while empowering individuals and communities. From beleaguered welfare programs and comprehensive economic policies to savings in education and healthcare, a range of plans can play aessential role in thrilling millions out of poverty and nurturing a more equitable society. By binding the communal efforts of government, civilian society, and the private sector, India can embark on a transformative expedition towards a future where every distinct has the opportunity to flourish and grow.





1. Economic Empowerment

Encouraging entrepreneurship and providing access to microfinance can authorize individuals to produce income and boost themselves out of scarcity. Government-sponsored programs like the National Rural Livelihood Mission (NRLM) enable this by offering financial help and skill enlargement exercise.

2. Investment in Education

Education plays a vital role in flouting the cycle of scarcity. By enlightening access to quality education, mainly for downgraded communities, individuals can obtain the skills required for better job opportunities and higher profits. Government initiatives like the Sarva Shiksha Abhiyan (SSA) emphasis on universalizing basic education to safeguard every child have access to schooling.

3. Rural Infrastructure Development

Improving infrastructure in rural areas, such as roads, irrigation systems, and access to clean water and sanitation, can boost agricultural productivity and create employment opportunities. This enhances rural livelihoods and reduces dependency on low-paying jobs, thus contributing to poverty reduction. Government initiatives like the Pradhan Mantri Gram Sadak Yojana (PMGSY) focus on connecting rural areas through all-weather roads, fostering economic development.

4. Implementation of Poverty Alleviation Programmes

The policy for poverty alleviation is fundamentally two fold. Firstly, an effort should be taken to offer greater opportunity for the poor to contribute in the growth process by concentrating on definite sectors, which offer such opportunities. Secondly, poverty alleviation and social sector programmes; Swarnajayanti Gram Swarozgar Yojana (SGSY), National Food for Work Programme, Sampoorna Grameen, Rural Housing – Indira Awaas Yojana (IAY), Rozgar Yojana (SGRY), Pradhan Mantri Gramodaya Yojana (PMGY), Rural Employment Generation Programme (REGP), Pradhan Mantri Gram Sadak Yojana (PMGSY) Prime Minister's Rozgar Yojana (PMRY), should be implemented.

5. Digital Inclusion

Leveraging technology, predominantly digital platforms and mobile banking, can





improve financial presence and access to facilities for underserved populaces. Initiatives like the Digital India campaign aim to bridge the digital platform and divide by endorsing extensive internet access and digital literateness. Additionally, inventions such as Aadhaar, India's biometric identification system enable targeted delivery of welfare benefits, ensuring they influence the intended recipients more professionally and evidently.

6. Improve Community Relations to Overcome Crimes

There are several ways to increase safety in your area. These comprise getting to distinguish your neighbors and cumulative surveillance around your house and corporate. Volunteer window viewers can report doubtful activity in your community and you can also become one. You can also link with a prevailing organization. People who stay home more frequently may become "window watchers" and report distrustful activity in the area. You can also interpret crime anticipation materials into different languages; hold crime anticipation reasonable at your local church, school, or community center, and use business and communal administrations as partners.

Conclusion

In India the scarcity is categorized by an unembellished deficiency of basic provisions including food, clothing, and accommodation it is said to be as Scarcity. It is repeatedly considered by social demotion, a lack of opportunity for personal growth, and a lack of access to the incomes and facilities essential to preserve a reputable quality of living. Rapid social growth, slow economic improvement, unemployment, income inequality, price upsurges, political contemplations, and social issues are some of the reasons of poverty in India.

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USE OF TECHNOLOGY IN PHYSICAL EDUCATION & SPORTS

Mr. Danish Sohail Sayyed¹

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Abstract

The purpose of this study was to use of technology in our Physical Education & Sports, it covers in theory and practical. It improved the performance of learning sports skills in both theoretical and practical activities. Technology has the capacity to make physical education instruction easier and more successful while also giving teachers important information they can utilize for advocacy. In order to record students' opinions about motor learning and physical education, teachers can also record video interviews. Rapid advancements in electronic technology have had a significant impact on global educational systems. Physical educators may now assess and enhance their students' physical skills using a variety of methods thanks to technology, especially mobile technology. Video analysis, wearable technology, gaming systems, virtual classrooms, physical education apps, monitors, and trackers are all on the list.

Keyword: *Technology, Virtual Education, Digital Platform, and Physical Education.*

I. INTRODUCTION

This study's objective was to investigate the theoretical and practical use of technology in our physical education & Sports. It improved the way that sports skills were learned through both theoretical and practical exercises. Technology has the capacity to make physical education instruction easier and more effective while also giving teachers important information they may utilize for advocacy. In order to record students' opinions about motor learning and physical education, teachers can also record video interviews. Rapid advancements in electronic technology have had a significant impact on global educational systems. Physical educators may now assess and enhance their students' physical skills using a variety of methods thanks to technology, especially mobile technology. Video analysis, wearable technology, gaming systems, virtual classrooms, physical education apps, monitors, and trackers are all on the list.

Technologies have improved education, increased tools, content, and techniques, and altered the dynamic between students, teachers, and discipline knowledge, particularly in the last 10 years. The world's educational systems have been significantly impacted by the rapid advancements in electronic technology.

Technology utilization has a significant impact on the mediation process between the discipline and the learner, altering the manner that knowledge is acquired and fostering met cognition and intrinsic motivation. In regard to the key disciplinary themes, the two most significant technologies utilized in schools—video recording and personal computers—have caused a knowledge reset and given rise to new areas of intervention in each subject.

¹ Department of Physical Education, SNBP College of ACS & MS. Pimpri.



II. INFORMATION AND COMMUNICATION TECHNOLOGY

It was determined that making full use of educational technology can help with bottleneck issues in physical education and optimize the integration of theory and practice in colleges' and universities' physical education programs. This is in addition to helping with the design, development, utility, assessment, and management of sports teaching training processes and teaching training materials, which aid in the formation of college students' personal qualities. After a few years of development, modern education technology in the physical education discipline has achieved outstanding achievements that have attracted unprecedented attention from sports teachers and researchers.

Achieving a meaningful methodological implication for curriculum development and dispelling the myth that information and communication technologies (ICT) are an external factor—particularly in the context of physical education—represent the great educational challenge. To fully utilize ICT for the management of education, professional development, and lifelong learning, specific training that emphasizes empowerment is necessary.

III. RECENT TECHNOLOGY IN PHYSICAL EDUCATION & SPORTS

The development of motor skills, or physical literacy, follows a series of interconnected stages and is a crucial qualitative component of teaching physical education. Students find it stimulating when technology is used to teach physical education. It helps to track kids' development, spot areas where their repertoire of motor abilities is lacking, and boost their sense of physical self-efficacy. Physical educators may now assess and enhance their students' physical skills using a variety of methods thanks to technology, especially mobile technology. Video analysis, wearable technology, gaming systems, virtual classrooms, physical education apps, monitors, and trackers are among the items on the list.

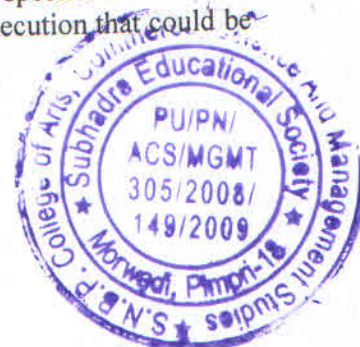
A) VIDEO ANALYSIS

One of the instruments used in qualitative assessment is video analysis. It is a useful tool for keeping track of learning progress and helps students feel more competent. Therefore, the psychological aspects and their connections to motor skills are called into question. For example, the motor task can be analyzed, learning can be compared throughout the year with different teaching philosophies, student performance can be compared, motor sequences can be disassembled and reassembled to identify errors and understand learning objectives, and complex combinations of motor sequences can be created. In the context of sports, video analysis is the methodical review of video recordings in order to assess player performance, team chemistry, and the potency of tactics used during a match. In order to obtain insights not evident in real-time, this procedure entails recording game or practice film and analyzing the visuals, frequently in slow motion or frame by frame, using specialist software.

VIDEO ANALYSIS TECHNOLOGY

The foundation of contemporary sports video analysis is rooted in multiple technological developments:

- **Slow-Motion Playback:** This allows coaches and players to examine specific moments in great detail, making it easier to spot nuances in technique or tactical execution that could be missed at normal speed.



- **Multiple-Angle Views:** By utilizing footage from various angles, analysts can get a comprehensive view of the game, providing a fuller understanding of player positioning, movements, and the spatial dynamics of the team.
- **Data Integration:** Modern video analysis software can integrate with other data sources, such as player tracking systems, to combine video footage with performance metrics. This integration, which combines quantitative data and visual analysis, provides a more comprehensive picture of an athlete's performance.

B) MOBILE APPLICATION

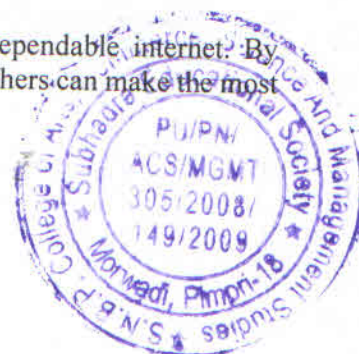
The integration of mobile applications in physical education & sports can be used to effectively manage, grade, reflect, assess, and challenge both students and physical education teachers. With technological advances occurring at a rapid pace, using technology in education may improve learning, motivation, and lifetime fitness. All in all, technology integration in the gymnasium can be used to enhance student learning and engagement. Since almost everyone owns a smartphone, physical education teachers can make good use of these gadgets to motivate their pupils to exercise and work out. When there are clear educational benefits, teachers should support students' usage of mobile phones and applications, even if they probably won't enjoy having their students glued to their devices throughout class. There are a ton of applications available that can be used; some measure movements and provide dietary guidance, while others improve sports like basketball. Applications that analyze images and videos can be used to study sports movements, which will ultimately lead to the improvement of physical abilities. These days, a variety of phone apps are available that measure motions and provide dietary recommendations. A few clicks will get students access to vital information about their diet and level of fitness. The majority of those apps are free, which is the nicest part. Although several applications demand monthly or other payments, the health advantages of knowledgeable exercise and nutrition plans may make the expense justifiable.

MOBILE APPLICATIONS

- BaM Video Delay — Bust a Move video delay provides the user with quick visual feedback based on the delay setting.
- V1 Digital Coaching System — Real-time or slow-motion video analysis and feedback, along with drawing tools.
- ClassDojo — allows the instructor to securely use instant messaging to connect with both parents and students.
- Teachers.io — An application designed for organization that allows educators to publish announcements, assignments, grades, and syllabus.
- Hudl Technique — For immediate feedback, record a skill and study it in slow motion.
- Seconds — Custom timers with a large display
- Interval Timer — Custom timer for interval training and station work.
- Scoreboard — Digital scoreboard.
- Smart Sports — This program can monitor statistics, league standings, team strategies, and game schedules; it works best when used in conjunction with the sport education model.

C) ONLINE VIDEOS

Streaming videos is now easier than ever thanks to quicker and more dependable internet. By encouraging their pupils to watch online videos and demonstrations, PE teachers can make the most



of this technological advancement. PE teachers won't have any trouble finding movies that meet the needs of every kid because to the wealth of knowledge that is readily available online. Educators must use caution while selecting movies, though. It is imperative for educators to ensure that the movies they use are suitable for the students' age and grade level. Teachers can also encourage their students to make their own instructional films of any workout they are passionate about completing in order to promote greater learning. Compared to having students sit and view videos that are already on the internet, this is more engaging.

In as early studies found that people generally remembered:

- 10% of what they read
- 20 % of what they hear
- 30% of what they see
- 50% of what they see and hear

Online videos can be used in physical education to enhance the learning process in a number of ways. The next section will examine some of the various instructional video formats that physical education instructors nationwide utilize.

Examples of Using Videos In PE

Part 1: Movement Demonstration: Students can visually see a few good repetitions of the air squat.

Part 2: Coaching Instruction and Breakdown: Students can listen and watch our instructor breakdown both with visual and auditory cues the different pieces of the air squat.

D) VIRTUAL CLASSES

Being "physically active" is only one aspect of physical education. Since learning is still ongoing, students are required to have discussions with their professors about what they are learning, what they are finding difficult, and other information that will help them grasp the material at a deeper level. In order to gain a better knowledge, effective learning requires two-way communication where students can participate in conversation and dispute the teacher's ideas. A lot of classrooms have already begun utilizing the internet by setting up websites or blogs for their students. A classroom website can be a useful tool for facilitating contact amongst students using PE tactics, working on extracurricular activities, or promoting discussion after class. Using video chat apps like Skype and Hangouts to invite visitors into your classroom is another fantastic method to take use of virtual connectivity. Additionally, instructors can encourage students to participate in web quests designed to foster purposeful inquiry or online courses covering fitness principles, exercise, and nutrition. Students can voice their ideas regarding their activities in virtual courses. They are also helpful in helping students improve their communication and writing abilities. They help kids become more media-savvy and develop their creative thinking.

E) GAMING SYSTEMS

Video games have the power to alter pupils' perceptions of physical activity and competition. They pique their curiosity about how video games could be used in physical education while also



appealing to their passion of gaming. They're also a terrific way to keep youngsters moving during inclement weather.

Many physical education centers already use interactive video games like Dance Revolution, Wii Fit, and Wii Sports, which can be very helpful in encouraging students to be more active. They yield outcomes that are comparable to those of outdoor physical exercise and provide a sensible substitute for working out in inclement weather. Teachers of physical education can readily capitalize on students' passion for video games to encourage interest in the subject.

When gaming systems are used in gym lessons, students can transform an activity that is typically linked with inactivity into a productive one. They keep pupils interested and involved, which they can carry over into their homes.

F) MONITORS AND TRACKERS

Applications for mobile phones (apps) and wearable technology (wearables) that monitor sedentary and physical activity patterns may help people adopt healthier habits.

Teachers must be aware of what their students can and cannot do because not every kid has the same physical capabilities. It is important to adapt a program to a particular student's body, thus heart rate monitors have become critical for assessing students' physical stamina and in setting realistic and reasonable goals for them.

Pedometers, in addition to heart-rate monitors, have become a vital instrument in physical education. They track steps really well and with great reliability. Even when a student is not working out or exercising, they are still able to monitor their level of activity. Aside from that, pedometers function even when used for household tasks and errands.

Additionally, a pedometer can serve as a helpful reminder for students to maintain walking if their step count is low. It helps pupils focus on their objectives and become more conscious of their progress.

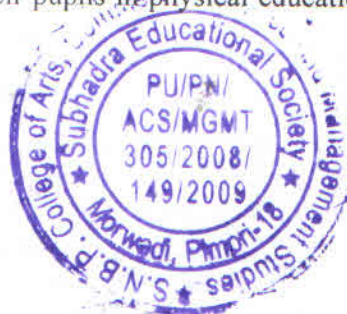
G) SMART WATCHES

As a step counter, smart watches are a fantastic substitute for conventional pedometers. Although they cost more, they have additional features. Students can access and listen to their favorite music on certain smart watches, for instance, while exercising. Some models come with apps that may track sleep duration, record moods, and remind pupils to take any medications they may be taking. Along with their speed, certain smart watches can record pupils' jogging distance.

The high cost of smart watches is one of their drawbacks. Additionally, the more features they have, the more expensive they get. This basically means that, even while smart watches are useful in physical education classes, not every kid will fit one, and teachers should be aware of it.

IV CONCLUSION

Physical education & sports programs have been positively reorganized by technology in general. Teachers can set individualized and realistic goals for their pupils in physical education by using



tools like video analysis, applications, online videos, monitors, smart watches, and trackers. Students felt more involved and dedicated to physical activity as a result, which is crucial for forming good habits. Teachers that teach physical education & sports use and access technology to improve their students' classroom learning. Physical education & sports currently need a lot more attention from the latest technological advancements to improve both fieldwork and classroom instruction.

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Dr. Anand Kumar Shukla is an Assistant Professor and holds a Ph.D. in Education. He is a committed and engaging Professor / H.O.D. bringing exceptional lecturing skills and expertise in Education, Management, and Research. He is also a highly motivated and engaged individual. He is gifted in the engagement and guidance of students with 12+ years in postsecondary education. Dr. Anand Kumar Shukla has a strong research background in the field of Education. He has the ability to handle multiple projects simultaneously with a high degree of efficiency. He has completed his M.Tech in Education in the year 1998 and later on pursued his master's in Architecture in the year 2014. He completed his Ph.D. in Education in the year 2017.



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An Effective Teaching Technique for Improving Education Mathematics

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Abstract:

In the present research paper, we intend to talk about our technology-enhanced, interconnected and student oriented approach towards in teaching field, which we implemented every step of the course of our deep expertise in teaching informatics or knowledge management and mathematics at learning educational institutions. Establishing a student-oriented, active engagement surrounding to our objective instead of a conventional centered around the instructor one. Collaboration in learning, adaptive learning, exploratory learning, an experimental strategy, studies and survey of the basic elements in our education. It contains can be recognized a difficult and mystical subject, it takes unique and engaging research material and is concentrated on the effective application of current innovation. For students to achieve an extensive knowledge and appreciation of mathematics, effective teaching strategies are essential. Since mathematics teaching techniques to deconstruct tricky concept and create an enjoyable place to learn.

Keywords:

Collaboration in learning, adaptive learning, exploratory learning, an experimental strategy, research based guidance, a holistic approach.

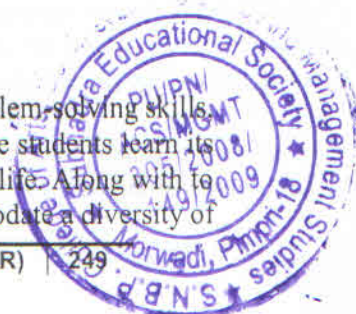
Introduction:

In present days, Teachers are facing an immense challenge to teach a student because of the amount of availability of data or information in various platforms like internet based sources, websites, electronic sources, AI technologies. A conceptual form of mathematical fundamental statements makes mathematics teaching a very tough process. For many students, conceptual thought is quite tough. Consequently, in order to help students overcome their fear, teaching strategies must grab to their focus on mathematics. Though many students struggle to see how mathematical fundamental concepts relate to day today life, mathematics can show in human understanding of the world.

Besides, it is important to understand that learning is not only acquisition of knowledge and skills but also a social process [Hodges and Moore, 2020]. In this research paper we can learn in which method we improve our teaching techniques in mathematics will more effective and students easily accept it. Most of the methods require teachers not only to organize the material and educational goals for the learning process, but also to model and moderate the interactions between students and between students and teachers. These extra efforts are worth it because the interactions have a positive influence on the learning outcomes as discussed in [Bernard, 2009].

Main Part:

Teaching mathematics is successful learning for understanding students problem-solving skills and appreciation of the subject. Since several areas depends on mathematics, trying to sure students learn its concepts can have a extensive effect on their success in both educational and professional life. Along with providing data, successful teaching techniques also address student participation, accommodate a diversity of



learning choices, and establish a positive atmosphere for learning. This introduction assesses a number of techniques that can improve the teaching of mathematics, including distinctive instruction, active learning, technological integration, and real life applications. Teachers can improve mathematics Simplicity, Satisfaction and Significance (i.e.3s) for all learners by using these techniques. For students to gain an extensive knowledge and appreciation of mathematics, effective teaching strategies are vital. Although mathematics can be viewed as a tricky and conceptual subject, it takes intensive and interesting teaching techniques to simplify tricky concepts and create a positive atmosphere for learning. The students need to be very good at reasoning properly. Social interactions between study participants in an educational atmosphere are highlighted by active teaching, along with student actions keeping with their own individuals study advancement, the creation of a flexible study schedule which fulfills their needs, the creation and arrangement of a variety of study materials, and the use of alternative teaching methods. All of them need to be supportive in the teaching of mathematics arithmetic, calculations, theorem and in making study materials easier for students who trouble. The research objective was to examine the measure of change that should occur in the math student using the active teaching method, according to the RTI model (Response to Intervention) (Eylon & Linn, 1988; Fischbein, 1997).

Effective teaching techniques in mathematics education are vital for student understanding and are interesting. Here are several well-planned and practical methods:

1) Traditional Learning:

In educational institutes, traditional teaching techniques are still frequently utilized. In the traditional method of teaching mathematics, a teacher or other professional educator assists the class as they work through a curriculum of mathematical principles. What is visible when entering a classroom where traditional techniques are applied? Students are typically seated so that everyone can see the teacher in front of the class. It is evident that the major role belongs to the teacher. When teaching a new idea, he or she makes sure to make a connection between it and the ideas the students have already mastered. Typically, the instructor works on a brief series of examples and explains the idea on a black or white board. Among traditional methods of teaching, learning and evaluation in Mathematics are explanation and exercise.

• Explanation learning:

Explanation is a method of teaching, learning and assessment. it is also called the affirmative or expository approach. It is a traditional method of oral communication that consists in transmitting a sufficiently large volume of knowledge (Cojocariu, 2004). The explanation of topics and the key elements of multiple processes through logical reasoning play a vital role in the teaching and learning of mathematics. for example, or the step-by-step disclosure of the algorithms for solving equations (Jinga, 2019).

• Exercise learning:

Exercise is an effective technique of specifically repeating of an activity with the goals of skilltraining, boosting knowledge, and building intellectual capacity [Cojocariu 2004]. Students practice the divisibility rules by working on tasks like writing the first 8 multiples of 4 on the board and in their notebooks. Circle the numbers in the provided sequence that divide precisely by 2. Students will respond to the question, "What is the last digit of the chosen numbers?" after completing the exercises. They will be informed that any number that ends with an even number is precisely divided by two. Students formulate the 2 divisibility criterion and record it in their notebooks. Similar to this, the laws for divisibility by 3, 5, and 10n, respectively, are laid forth utilizing the exercises, explanation, and exposition. Students perform exercises at the blackboard that fluctuate in difficulty.

2) Active Learning:

Active learning can be defined as the use their ideas with their peers and instructors Bonwell and Eison, 1991; Meyers and Jones of student-centered strategies that engage students in doing activities/problems, thinking and writing about what they are learning, and/or sharing, 1993; Armbruster et al., 2009; Andrews and Frey, 2015). To have intellectually engaged students and promote understanding, teachers must be aware of different learning styles, beyond the logical verbal (Borromeo-Ferri, 2012). According to Krutetskii (1976), there are three learning styles related to reasoning, which emerge when students solve problems:

- (1) Analytic, people who prefer using logical-verbal, mathematical, numbers, and symbolic language in their non-visual solution techniques,



(2) Visual (or geometric), people who prefer the use of graphical solution methods, choosing graphical-pictorial schemes, involving graphic representations (figures, diagrams, and images), and

(3) Harmonic (or integrated), those who have no specific preference for logical-verbal or graphical-pictorial representations.

Following are some types and characteristics of active learning:

• **Problem-Based Learning (PBL):**

Students are given real-world problems to solve, which encourage creative thinking and implementation of mathematical concepts.

• **Collaborative Learning:**

Group work promotes students to discuss and solve problems together, which improve their understanding through peer interaction.

• **Contextual Learning:**

Connect mathematical concepts to real-world situations to make them more applicable and interesting for students.

• **Encouraging Mistakes as Learning Opportunities:**

Create a secure atmosphere where students feel comfortable making and learning from mistakes.

• **Deep Exploration of Concepts:**

Analyze the 'why' behind mathematical processes, not just the 'how.' Motivate students to learn basic concepts of mathematics.

• **Use of Multiple Representations:**

Teach concepts through different representations (e.g., graphical, numerical, algebraic) to improve understanding.

• **Growth Mindset:**

Encourage a growth mindset by hard work and determination rather than inherent ability.

• **Ongoing Training:**

To stay current on new teaching techniques and innovation in technology, teachers should frequently participate in professional development program such as faulty development program.

• **Peer Collaboration:**

Collaborate with other teachers to share best practices and resources. Applying these techniques can create a more dynamic and effective teaching atmosphere, helping students to not only learn mathematics but also to understanding its value and applications.

• **Holistic approach:**

Here, the concept of holistic education The learning of mathematics can help students build the full potential of individuals in a teaching atmosphere that is enjoyable, exciting, representative, and ethical through experience in interacting with the teaching atmosphere.

In that way, we build up our teaching techniques in mathematics effectively.

Conclusion:

In this paper, we have presented some theoretical concepts and real outcomes about effective technique of teaching mathematics in education field, which we believe as most effective, on the base of our knowledge, observations and experience. We focused at students-oriented techniques, based on the latest technologies. The main focus of teaching current days is to encourage the crucial, mathematical and innovative thoughts and develop skills of life-long learning abilities. Our students need to be prepared to meet the difficulties of the rapid advancement of technologies in the online world. To reach this goal, it is necessary to apply a combination of the traditional and active learning techniques. The teachers responsibility is to choose

the proper combination of techniques which is most suitable for their students. This is an extremely difficult task that has to be performed with the full involvement and responses of the students.

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