XII National Conference on

Business Transformation & Sustainable Innovation: An Edge to the Global Circular Economy

(BTSI 2024)

7–9 August 2024

Organized by

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Preface

In the 21st century, businesses face profound challenges and transformative opportunities as the global economy shifts toward more sustainable and circular models. With pressing concerns such as environmental degradation, resource scarcity, climate change, and the increasing demand for social equity, organizations worldwide are being called to rethink their operations, strategies, and goals. These challenges require business leaders to focus not only on profitability but also on embracing innovation and sustainability to ensure long-term resilience and contribute positively to the global community.

The concept of the circular economy—where resources are reused, recycled, and regenerated—has gained significant traction as a viable solution for fostering sustainable growth. Unlike the traditional linear model of "take, make, dispose," the circular economy emphasizes maintaining the value of products, materials, and resources in the economy for as long as possible. In this evolving landscape, businesses must reinvent their operations to close the loop on resource usage, reduce waste, and create value while minimizing environmental harm. As we progress in a rapidly changing world, embracing the principles of the circular economy is no longer just a choice; it is a business imperative.

BCIPS invited research papers around the theme, "Business Transformations and Sustainable Innovations: An Edge to the Global Circular Economy." The Conference aimed to explore current issues, trends, challenges, and opportunities in management and education. Another purpose of the National Conference was to bring together researchers, academicians, and corporate professionals to discuss various aspects of management and education.

The theme focused on the integration of sustainable innovations that drive the circular economy forward. With technological advancements, changing regulatory environments, and evolving consumer demands, organizations have unprecedented opportunities to reshape their business models. This edited volume brings together thought leaders, industry experts, and academic scholars to explore how sustainable innovations can foster business transformations that support the principles of the circular economy.

As Peter Drucker, the father of modern management, famously stated, "The best way to predict the future is to create it." In the face of unprecedented challenges, businesses have the opportunity—and the responsibility—to shape a future that balances economic success with environmental and social sustainability. The global business landscape is undergoing rapid transformation, and companies that proactively embrace sustainable innovations are poised to lead the way in the transition to a circular economy. The risks of environmental collapse, resource depletion, and inequality are compounded by the opportunities to create a more sustainable and inclusive future. The responsibility now lies with businesses to integrate sustainability into their core strategies, ensuring that the next wave of growth is both environmentally and socially responsible.

The rapid pace of technological innovation plays a crucial role in enabling sustainable transformations. Emerging technologies like artificial intelligence, blockchain, the Internet of Things (IoT), and advanced materials science are reshaping industries and enabling more efficient resource management. For instance, companies are now leveraging IoT sensors to track energy use and waste production in real time, leading to more informed decision-making and improved sustainability metrics. At the same time, advancements in 3D printing and material recycling are creating new opportunities for closed-loop production, reducing reliance on virgin materials and minimizing waste.

Moreover, sustainability is becoming increasingly important for both consumers and investors. Research shows that 66% of global consumers are willing to pay more for sustainable brands, and ESG

(Environmental, Social, and Governance) factors are increasingly influencing investment decisions. Business leaders must recognize that sustainability is not a passing trend but a strategic approach that can unlock long-term value. As the global economic and regulatory landscape becomes more focused on sustainability, businesses that fail to adapt risk being left behind.

This book aims to provide a comprehensive overview of the dynamic forces shaping business transformations in the context of the circular economy. It explores key themes such as innovation in product design, circular supply chains, waste reduction strategies, green technologies, and the role of policy in driving sustainable business practices. Through contributions from academia, industry experts, and policymakers, this volume offers valuable insights into the practical challenges and opportunities faced by businesses striving to integrate sustainability into their core operations.

We would like to extend our sincere gratitude to all the contributors whose expertise, research, and ideas have enriched this publication. Their insights are invaluable in advancing the discourse on sustainable innovations and business transformations. We are grateful to Dr. Rajnish Ratna, Professor, Faculty of Management Studies, Gopal Narayan Singh University, Former Professor at GDEU, Royal University of Bhutan; Dr. Saurav Agarwal, Director General, Economic Council of India; Prof. AK Saini, Dean at USMC, GGSIPU & Professor at USMS, GGSIPU; Mr. Ajay Kumar Gupta, Former Director, Indian Council of Social Science Research (ICSSR), Govt. of India; Prof. Gagandeep Sharma, Professor, University School of Management Studies (USMS), GGSIPU; Prof. Ravichandran, Investigator, Sectoral Reforms Mission, Govt. of India, Professor and Dean, Jamia Hamdard University, New Delhi; Dr. Vandana Ahuja, Director, Symbiosis Institute of Business Management, Noida; Dr. Sheetal Chadda, Associate Professor, JIMS Rohini, New Delhi; Dr. Kamal Upreti, Associate Professor, Christ University; Dr. Kamaljit Kaur, Global Business Management Program Coordinator, TRIOS College—Business, Technology & Healthcare, Canada; Mr. Damy Oluseye, Program Head, Healthcare Leadership, TRIOS College—Business, Technology & Healthcare, Canada; Mr. Roomi Tinani, Program Head, Project Management, TRIOS College—Business, Technology & Healthcare, Canada; Mr. David Fox, Program Head, Business, TRIOS College—Business, Technology & Healthcare, Canada; Mr. Kavin Kumar Kandasamy, CEO, Proclime Carbon Projects, Carbon Trade & Climate Investments; Prof. Monika Arora, Professor, Amity University, Manesar, Haryana; Mr. Matteo Borghi, Deputy Director, Research Division, Organisational Behaviour and Leadership, Henley Business School, England, United Kingdom; Dr. Sachin Kumar Mangla, Associate Dean & Professor, Jindal Global Business School, O.P. Jindal Global University, Haryana; Prof. Dr. Dileep Kumar M., Founding Vice Chancellor, Hensard University, Nigeria, TEDx Speaker; Prof. Durgesh Tripathi, Professor, University School of Mass Communication (USMC), GGSIP University.

We also extend our heartfelt thanks to the faculty and staff of BCIPS for their unwavering support and encouragement throughout this endeavor. Lastly, we would like to express our gratitude to the publisher for their collaboration in bringing this book to fruition.

Conference Coordinating Team

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The Impact of Artificial Intelligence in the Supply Chain Performance for Textile Industry

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Abstract

The aspiration to wear the latest fashions, maintain style, and appear modern is a universal phenomenon. With the advent of globalization, individuals' awareness and knowledge of fashion and high-quality apparel have intensified. Consequently, textile and garment manufacturing companies face substantial demand pressures, necessitating the expansion of their production capacities, the refinement of their processes, and the enhancement of their efficiencies. Global enterprises are increasingly utilizing artificial intelligence and its various applications to optimize their operations. This research investigates the effect of artificial intelligence and its significant role in three component of supply chain performance viz. demand forecasting, sales forecasting, and order process management. This is an empirical study based on India's textile sector. A five-point Likert scale questionnaire was developed to collect data. The study concludes that artificial intelligence has a major impact on textile companies' order processes, demand forecasting, and sales forecasting.

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Keywords: Artificial Intelligence, Supply chain, Textile Industries, Demand Forecast, Sales Forecast

INTRODUCTION

AI continues to have an enormous impact on supply chain management. AI could assist supply chain management organizations track and forecast shipping needs on an enormous level. (Rahimi & Alemtabriz, 2022). This area of computer science focuses on giving robots human-like functionality by integrating data into them. This leads to a variety of outcomes, including the ability to recognize speech, solve problems, learn, plan ahead, and make decisions. Artificial intelligence and decision-supporting systems are desperately needed in the supply chain networks involved in the production of textiles. All businesses in the textile industry are driven to expand their supply chains as robustly and responsively as possible in order to be efficient and successful in offering the best value to the customers, given the fast-growing trend of globalization and international collaboration. Given that the supply chain network is made up of several businesses that turn raw materials into completed goods before sending them to distributors and the end customer. (Blanchard, 2021).

Intelligent automation is becoming increasingly prevalent in the apparel industry owing to rising customer awareness and demand for high-quality apparel. Cloth manufacturing sectors are increasingly implementing robotic methods for enhancing production efficiency and product quality. (Nayak & Padhye, 2011).

The textile industry is shifting away from high-volume production. In addition to scale production, recent efforts have prioritized quality improvement, cost reduction, effective data management, and just-in-time manufacturing. This is due to increased worldwide competitiveness. (Nayak & Padhye, 2018).

The process used in the production of clothing has expanded and undergone numerous technological advancements over time. Global technological breakthroughs in this field have resulted in the employment of robotics or artificial intelligence, as well as computerized equipment for designing and pattern manufacturing, 3D scanning, and transportation systems. The use of artificial intelligence and its other branches to the transportation of materials to enhance productivity is the most recent and significant development in the textile industry. Automated sewing technology has also been developed. (Bongomin et al., 2020).

The primary objective of this research is to investigate the significance of artificial intelligence in the apparel and textiles supply chain as they pertain to demand forecasting, order process management, sales forecasting, and other areas.

LITERATURE REVIEW

Waheed & Khalid (2019) studied the impact of use of artificial intelligence in fashion, design and textile. He concluded that the three sectors' sustainability is significantly impacted by evolving technology in a positive way, and integrating these tools benefits both the environment and human health. He. et al (2021) studied the influence of artificial intelligence on cotton qualities of yarn. The study observed that with the help of artificial intelligence quality of cotton increases significantly. Raut & Singh (2020) studied the use of artificial neural network to detect fabric flaws. the study observed that artificial neural network helps in saving time and decrease in human error and being economically beneficial. Saxena (2020) studied the impact of artificial intelligence yarn mass, yarn production and yarn fabrics. The study observed that artificial intelligence has a positive significant impact on higher product quality, and increased efficiency with improved parameterisation and economic recovery.

Mediavillaa M. A., et al., (2022) observed that manufacturing organizations may strengthen the overall resilience of their supply chains by using accurate demand forecasts. The accuracy of demand forecasting methods is greatly increased by using AI techniques either by alone or in conjunction with statistical techniques. Zhu, X., et al., (2019) observed that an assortment of forecasting methods in a bid to investigate the body of research from an artificial intelligence standpoint, especially with regard to big data machine learning and its application to emergency resource prediction. Benkachcha et al., 2014 argued that demand forecasting, a crucial supply chain management function, is one of the AI applications' most notable achievements. Kantasa-Ard et al., (2021) argued that future demand projection helps in effective planning of supply chain activities and operations thereby reducing shipping delays, stocks, and operating costs. Bhadouria & Jayant, (2017) observed numerous advantages and benefits to accurate forecasting like reduced risks that strengthens the and the supply chain. Nguyen, T. (2023) argued that AI has played significant improvements to the growth of numerous industries and fields. AI substantially improves the accuracy of predictions. Numerous AI-based forecasting methods have been created and put forth. They supply useful information to a range of stakeholders, among them investors, managers, customers, and decision-makers.

Biswas. B et al., (2023) argued on the success of mathematical prediction modeling in sales forecasting using artificial intelligence. Baba & Suto, (2000) observed that popular Artificial Intelligence technology, Artificial Neural Networks (ANNs), can be used to get the best sales estimate for a product for a company. Sohrabpour, V., et al., (2021) observed that one of the most significant problems in supply chain and manufacturing management is sales forecasting and its impact on several organizational levels accounts for its significance.

RESEARCH METHODOLOGY

The design and presentation of this paper are exploratory and descriptive with a quantitative research approach. Literature review was used for the understand the elements of AI, demand forecasting, sales forecasting and order process management. structured questionnaire with a 5-point Likert scale was used for data collection. Purposive sampling technique was used for selecting the samples.

Objectives of the Study

1. To study and examine the effect of artificial intelligence in demand forecasting, sales forecasting and order process management in textile industry.
2. Propose and validate a conceptual model

Hypothesis

- *H1:* Artificial intelligence have a significant effect on demand forecasting
- *H2:* Artificial intelligence have a significant effect on sales forecasting
- *H3:* Artificial intelligence have a significant effect on order process management

Exploratory Factor analysis, with the help of SPSS Ver.25, was used for finding the internal consistency and reliability of scale. KMNO and Bartlett's test of sphericity was used for sample adequacy and further Factor analysis. Principal component analysis was used for dimension reduction. With the help of Onyx software Confirmatory factor analysis was done, measurement model was developed, model fit indices were obtained, construct validity was established, hypothesis tested and structural equation model estimated.

Conceptual Model

This study proposes a conceptual model as shown in Figure 1.

DATA ANALYSIS

Reliability Analysis

Cronbach's Alpha was used for measuring internal consistency and reliability between items (Bujang, M. A. et. al. 2018). Table 1 shows the Cronbach's Alpha values for each variable. In a Cronbach's alpha analysis, a score of 0.7 or above is considered good, that is, the scale is internally consistent. As per the Cronbach's Alpha Values given in Table 1, all the values are greater than .7, which indicates the sufficient measure of internal consistency and reliability between items.

Factor Analysis

Kaiser-Meyer-Oklin Measure of Sampling Adequacy test and Bartlett's Test of Sphericity were done to find the correlation between data and suitability of data for further factor analysis. Table 2 gives the KMO and Bartlett's test scores. According to the values calculated in Table 2, KMO value is more than 0.5 and Bartlett's test of Sphericity is less than 0.05. Hence, the data can be further used for doing Principal Component Analysis.

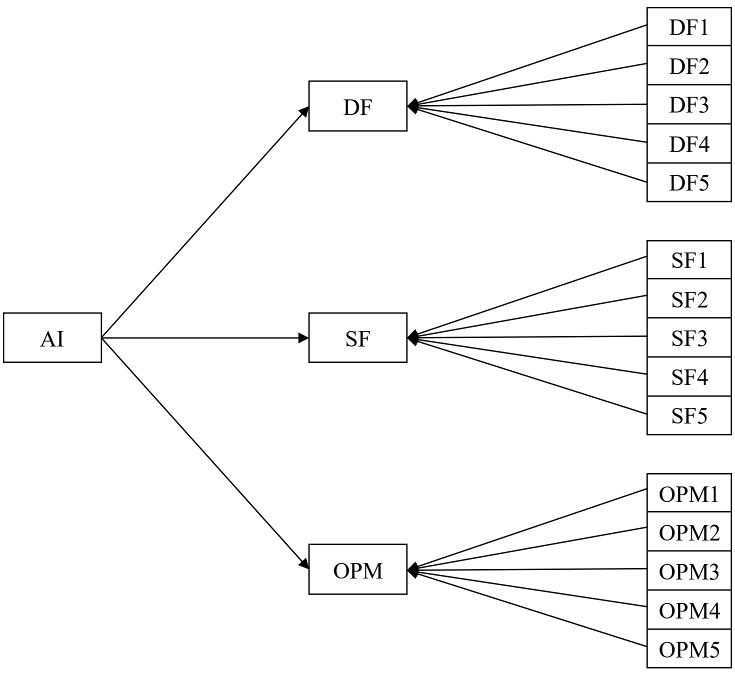

Figure 1. Conceptual model.

Table 1. Cronbach's alpha values.

Variable	Cronbach's alpha	No. of items
Demand forecasting	.831	5
Sales forecasting	.905	5
Order management system	.878	5
Overall	.942	15

Table 2. KMO and Bartlett's test score.

Kaiser – Meyer – Oklin Measure of Sampling Adequacy		.954
Bartlett's test of sphericity	Approx. Chi-Square	5296.092
	df	105
	Sig.	.000

Table 3. Rotated component matrix.

Items	Component		
	Sales forecast	***Demand forecast***	***Order process management***
SF2	0.819		
SF4	0.762		
SF5	0.757		
SF3	0.716		
SF1	0.671		
OM4		0.752	
OM1		0.727	
OM5		0.707	
OM2		0.674	
OM3		0.62	
DF2			0.813
DF1			0.774
DF3			0.727
DF5	0.581		
DF4		0.522	

Principle Component Analysis

It is a data reduction method, which is generally used to transform large set of variables into a smaller ones. Table 3, Rotated Component Matrix, shows the factor loadings. It is observed that two items of demand forecast have a cross loading on sales forecast and order management system hence, the two items DF4 and DF5 were deleted from further study.

Confirmatory Factor Analysis

CFA was performed on five items of sales forecasting, five items of order process management system and three items of demand forecasting. Table 4 gives the standardized regression weight of items on the variables. It is observed that in variable virtual classroom the item VC4 and VC5 had long values below .4, hence the two items were removed from the study. In all the cases the loading value is above .4. In CFA large sample size is used hence, a small factor loading can be significant statistically (Cheung et al., 2023: Stevens, 2002). Loading values above .4 or .5 are also adequate if other items have higher loading values to support composite reliability and average variance extracted (Ismail et al., 2020)

Measurement Model Fit

For measurement model fit, a minimum of RMSEA, CFI and SRMR indices should be reported (Klin, 2015). Table 5 gives the estimated values of the model fit. It is observed that in all the model fit indices the estimated value is within the required value. The RMSEA estimated value is below .08 (Awang, 2012; Xia & Yang, 2019) the SRMR estimated value is equal / below .08 (Cho et al., 2020), the CFI estimated value is above .9 and the TLI value is above .9 (Byrne, 1994; Sander & Fuente, 2022). The results indicate a good fit model. To achieve the model fit two items ITS4 and ITS5 were removed from the study. Figure 2 gives the path diagram.

Table 4. Standardized regression weight.

Variable	Item	Loading value
Sales forecasting	SF1	0.76
	SF2	0.86
	SF3	0.83
	SF4	0.83
	SF5	0.78
Demand forecasting	DF1	0.82
	DF2	0.8
	DF3	0.74
Order process management	OM1	0.67
	OM2	0.85
	OM3	0.81
	OM4	0.71
	OM5	0.8

Table 5. Individual category model fit indices.

Name of the index	Estimated value	Required value
RMSEA (df corrected)	.063	< .08
SRMR (covariance only)	.03	< .08
CFI (to independent model)	.97	> .9
TLI (to independent model)	.96	> .9

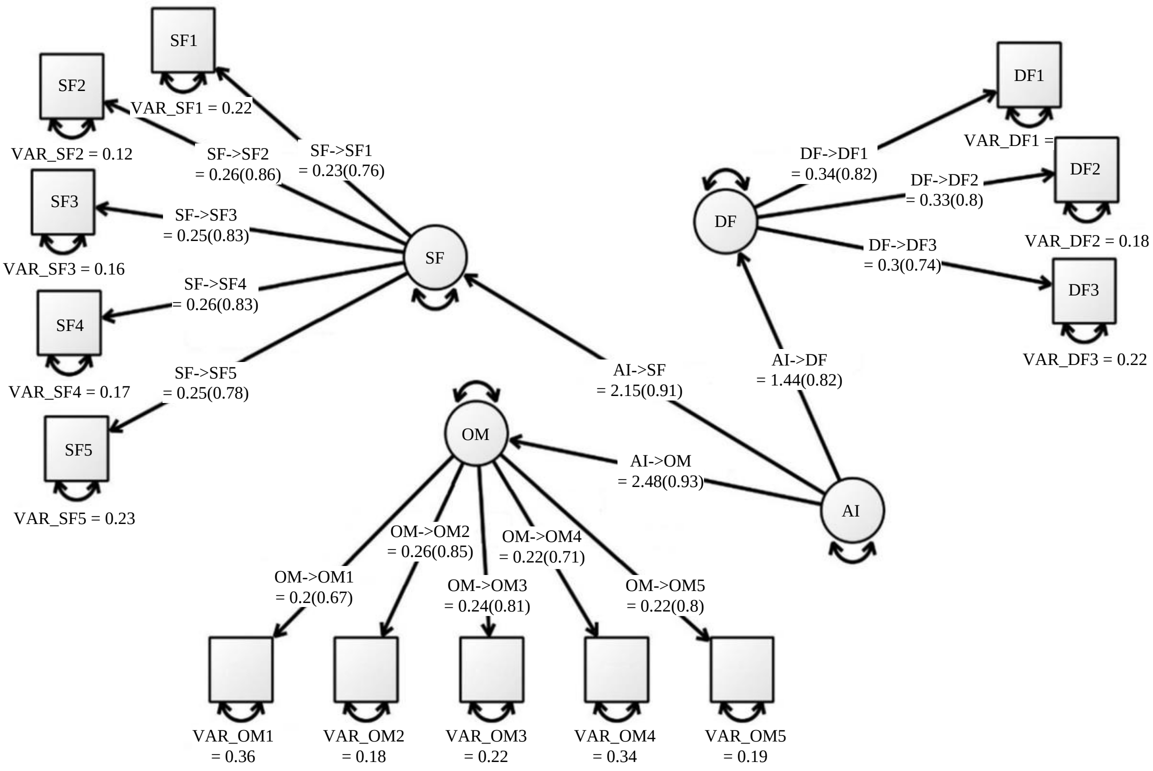

Figure 2. Path diagram.

Table 6 gives the Z score for the relationship between the variable and the items and between the variables. It is observed that in all the cases the Z score is above 1.95 at 95% confidence level which indicates that the items and the variables have a positive significant relationship (Olugboyega & Windapo, 2023).

Table 6. Z score.

Path name	Estimate	Standard error	Z score
AI->DF	1.444214	0.126087	11.4541
AI->OM	2.482376	0.342464	7.248573
AI->SF	2.148621	0.242983	8.842675
DF->DF1	0.34324	0.023256	14.75903
DF->DF2	0.32559	0.022722	14.32911
DF->DF3	0.300317	0.021236	14.14209
OM->OM1	0.203674	0.025903	7.862872
OM->OM2	0.25872	0.030945	8.360622
OM->OM3	0.239566	0.029042	8.248886
OM->OM4	0.221383	0.027906	7.93304
OM->OM5	0.221412	0.027012	8.196795
SF->SF1	0.233343	0.022576	10.33601
SF->SF2	0.25513	0.024367	10.47041
SF->SF3	0.247171	0.02335	10.58561
SF->SF4	0.25791	0.024695	10.44376
SF->SF5	0.251491	0.024463	10.28043

Construct Validity

Convergent Validity

Table 7 gives the values of composite reliability and average variance extracted. It is observed that the composite reliability in all the cases is above .6 which is considered acceptable (Hair at. al., 2019). The value of the average variance extracted is above .5 (Hair at. al., 2019) which is accepted. In one case the average variance extracted is .38. However, if the composite reliability is above .6 then the convergent validity of the construct can be adequate even if the average variance extracted is below .5 (Fornell & Larcker, 1981; Ates & Çoban, 2022). The findings validate the convergent reliability of the scale.

Discriminant Validity

The discriminant validity of the scale was validated with the help of Fornell and Larcker's criteria which states that the square root of average variance extracted from a construct should be larger than the correlation between it and another construct (Ismail et al., 2020). was Table 8 gives the values of square root of the average variance extracted from a construct and the correlation between the constructs. It is observed that in all the cases the square root of the average variance of a component is higher than the correlation between the component. The results validate the discriminant validity.

Table 7. Composite reliability and average variance extracted.

	Composite reliability	Average variance extracted
SF	0.906678	0.66068
DF	0.830094	0.62
OM	0.879074	0.59432

Table 8. Correlation values between the variables.

	SF	DF	OM
SF	*0.812**		
DF	0.75	*0.787**	
OM	0.751	0.749	*0.77**

**Square root of average variance extracted*

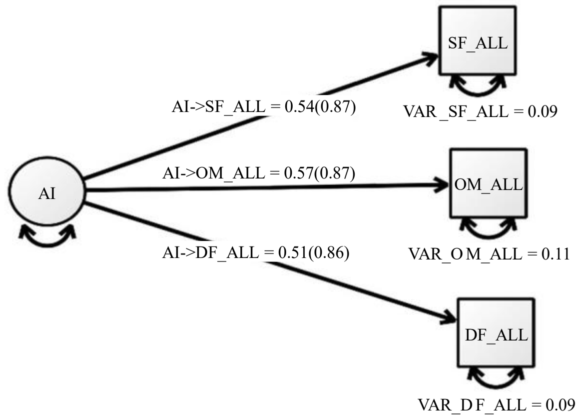

Figure 3. Path model of artificial intelligence and Sales forecasting, Demand forecasting and Order process management.

Table 9. Parameter estimates of structural equation model of artificial intelligence.

Path name	Estimate	Standard error	Z score
AI->DF_ALL	0.508722	0.020921	24.31675
AI->OM_ALL	0.566559	0.023247	24.37134
AI->SF_ALL	0.537286	0.021996	24.42617

Table 10. Test result for the hypothesis.

Hypothesis	Path co-efficient	Z score	Result
H1	0.87	10.01	Supported
H2	0.86	13.12	Supported
H3	0.87	11.82	Supported

Hypothesis Testing

The regression model as shown in Figure 3 shows the influence of Artificial Intelligence on Personalised learning, virtual classroom and intelligent tutoring system. Table 9 gives the estimate, standard error and the Z score. It is observed that in all the relationships, the Z score is above 1.95 with a positive r value which indicates that the artificial intelligence have a positive significant influence on Personalised learning, virtual classroom and intelligent tutoring system (Olugboyega & Windapo, 2023). Tavble3 X gives the results of hypothesis testing.

CONCLUSION

The study was undertaken to find the effect of artificial intelligence in supply chain performance within textile industries. The three components of supply chain performance - demand forecasting, sales forecasting and order process management - were measured with five element each. This study concludes that within textile industries the use of artificial intelligence has a significant effect on demand forecasting, sales forecasting and order process management. This study is in line with the past studies on effect of artificial intelligence on demand forecasting, sales forecasting and order process management. This study can encourage textile companies who have not yet implemented or are not using artificial intelligence for demand forecasting, sales forecasting and order process management.

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Controlling Network Devices from a Mobile Phone Using the Aware Framework

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Abstract

This paper explores the concept of controlling network devices from a mobile using the AWARE (Advanced Wireless Access and Resource Efficiency) framework, with a focus on ensuring robust security. The increase of mobile technology has empowered people to handle and watch networked networks remotely, enhancing flexibility and convenience. However, this convenience introduces significant security challenges. The AWARE framework provides a structured approach for wireless communication and resource management, which is leveraged to facilitate secure mobile control of network devices. This involves the integration of advanced encryption techniques, user authentication mechanisms, and secure communication protocols to protect against unauthorized access and datathe system ensures that simply certified users can control and access network resources from their mobile devices, thereby preserving the integrity and confidentiality of the network The paper discusses the architecture and planning of this system, its security features, and potential applications, highlighting the balance between usability and security in mobile-controlled network environments.

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Keywords: Network devices, Mobile technology, AWARE framework, Security Protocols, Encryption and Authentication

INTRODUCTION

With numerous wireless technologies like IEEE 802.11, Bluetooth, Wi-Fi, 3G and WLAN handheld devices are frequently in close, interactive communication. Many environments, including offices, conference rooms, automobiles, hotels and classrooms, already contain many laptops and computerized appliances, the smart houses of the future are going to have embedded computation.

Scope of Proposed Project

Predict the scene, you've left home or office and you've unnoticed to turn your PC off, your nearby power company will be dancing with joy and your colleague might come to your work area to see that work you've been seeing or working on. What to do? Do you turn around and go all the way back? Well, presently we don't want that, since you can really turn off your computer (and a entire part more) by reasonable clicking on the mobile phone. There's nothing to do in all kind of this stuff. We only require an proposed application to closed down your machine, we are fairly one tab absent to closing the computer down or execute another operations like playing getting to records, getting still screen shots, ceasing the diverse applications that are running on the Computer.

Purpose

The main aim of this project is to create such a software system which could be used as a remote control device for the PC. This software can be used to open and close various resources such as Music, Services, Applications and Data Files and it can also control who is accessing the PC via still pics taken as screenshots and live video footage of the remote computer.

Previous Options Available

There is also the windows utility called remote desktop which allows to remotely connect to a computer/PC in the network, after getting logged in to the computer, the screen of the computer appears on the machine from where people are connecting. Once the connection is made people are able to use the PC like their own PC and people are interacting with the PC with the keyboard and the mouse. But this windows utility is completely different from my project as it do not connect the machine but still can control the resources to lock and unlock them

Proposed Solution

Based on the proposed solution it will write an application in java but there will be two part of it one is server component and other one is client system. The client is predominantly the mobile application that has been developed using Java & Android is in our mobile phone and the server is in a machine or laptops. The proximity of all the equipment is creating a communication between them through the Wi-Fi and makes it easier for the person handling the computer to operate the machines.

SYSTEM ARCHITECTURE

The current application is developed on the 3-Tier Architecture.

Tier 1

The Client Tier has the Presentation Logic, it also includes simple control and user input validation. This application is also called as a thin client. It is the android application. Android is specifically a Linux kernel-based mobile operating system that is intended primarily for use with touch screen devices.as equipment, for example, smart telephones and tablet computers was initially created by Android Specifically, Inc. Android came with the creation of the Open Handset Alliance in 2007. A group of companies focused on the hardware and software platforms as well as telecommunications that aims at promoting mobile standards.

Tier 2

The Middle Tier is also called as Application Server, that provides the business, the processes logic and data access which has been written in JSP and .Net. .NET Framework is a software framework developed by Microsoft that runs majorly on Microsoft Windows. It has a big library and provides language interoperability across several programming languages. Programs written for .NET Framework environment, known as the Common Language Runtime (CLR)

Tier 3

The Database provides the business data. SQL Server is Tier-3, which is also the database layer and it provides efficient solutions for the major database issues.

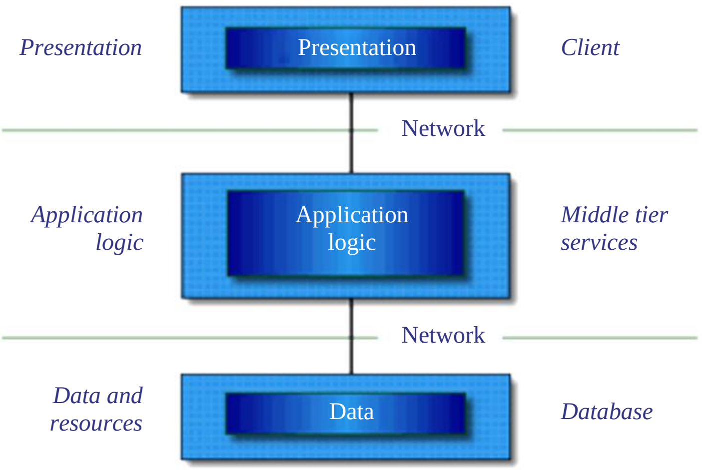

Figure 1. Project design and implementation.

SYSTEM DESIGN

Designing has been the most important phase of the software development. It requires efficient planning and thinking from part of the system designer. Designing the software means to plan how will the various parts of software going to achieve a desired goal Coding and Testing which are required to form the software Diagram depicting the scene.

SYSTEM MODULES

Module 1: Client Application

This is the module which provides the software to be installed in the cell phone of the user. This module deals with designing the look of the application as seen by the user on his/her cell phone. It displays all the features that are available to the user and also provide the access to them by connecting with the back-end of the application. The client application is packaged in the form of jar files. The mobile device acting as a client should be Wi-Fi enabled and java compatible. The client module runs on the device where it runs to remote control the PC by accepting an IP address which then connects to our server application.

Module 2: Server Application

At the server side they are given a GUI to make it easy for them. The creation of the server application is in the form of a jar file and this is installed on the PC. The PC should also install Java Run time environment and wireless sensor in order to be connected to the network. The project provided You the opportunity to manage the basic operations of utilizing assorted programs by operating the Mobile Phone. The flow of the request moves as follows:

- When the mechanism of the IP address of the machine is given in the client application the request is transferred over the server which connects the phone to the requested machine.
- At the server side the request is processed by a JSP page.
- The JSP page forwards it to the database which is refreshed on regular intervals by a .Net program running in the background.

The request is processed and required action is taken by the .Net program running in the background. Confirmation message is sent to our android phone that the request has been executed successfully.

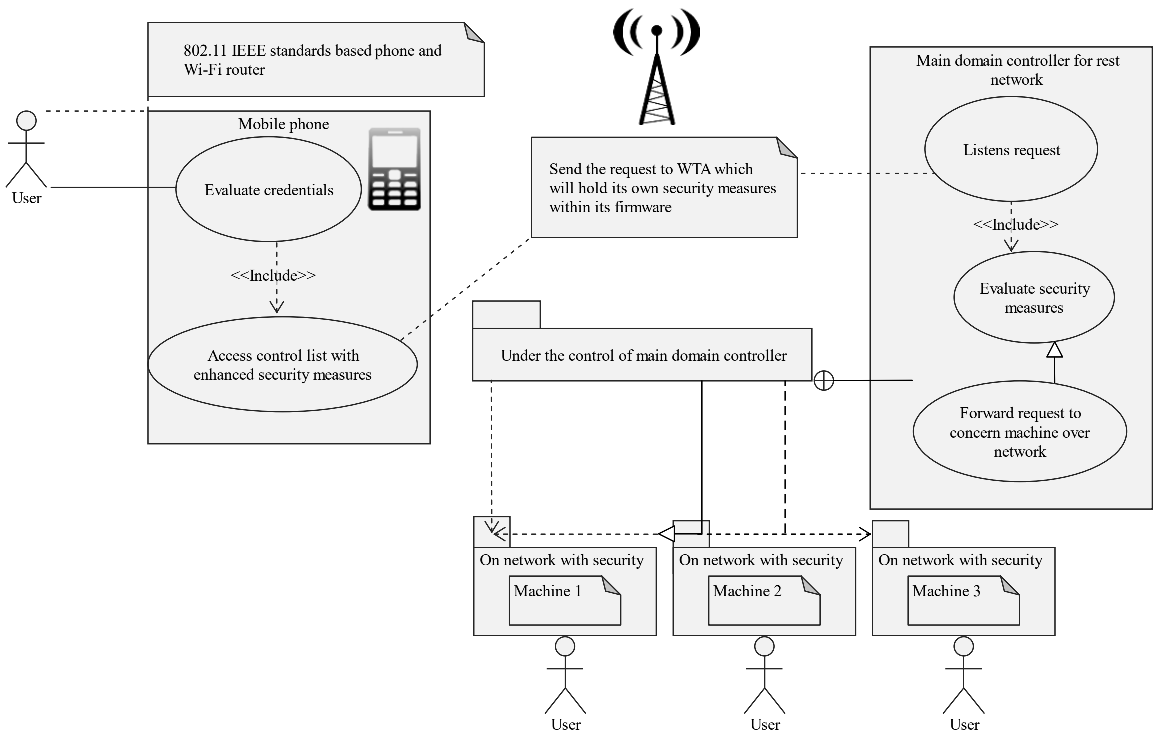

Figure 2.

SOFTWARE REQUIREMENTS

- Android 2.3.1 [Ginger Bread] (Almost all phones released since 2009)
- Android Tool Kit
- Android Virtual Device
- Apache Tomcat 6.0 [Web Application Server] Sql-Server or MySql
- Operating System Windows 7, Windows Server 2008

HARDWARE REQUIREMENTS

- *Processor:* Intel C2D 2.4 GHz
- *RAM memory:* 2 GB
- *Hard Disk:* 10 GB
- Wi-Fi enabled device (mobile phone, tablets, pads etc.)

CONCLUSION

We developed a system that helps us to control the machine across the network from an android phone anywhere and anytime. This system also provides secure transfer information via an encryption and decryption algorithm at the client and server side. Thus, the application available remotely provides mechanism to access features like opening web browser, seeing and stopping running processes, getting still screen shots of remote system, playing and stopping music system, accessing files system, getting live video footage of the remote system. This application helps to provide anywhere anytime access of remote machine over a secured connection and also acts as an intruder detection system whenever the user is not around.

Future Scope

The project has a vast future scope as many more features and characteristics can be added to enhance its utility and make it much better and easier for use. Some of the enhancements can be:

- Security issues can be resolved by adding a stronger encryption-decryption algorithm at equally both the server and user end for secure sending of data an information over the network.
- Faster streaming of the live video footage can be added.
- Voice transfer along with images can also be added to help provide a channeled communication medium and intruder detection system.
- Mechanism to download data files onto our mobile systems can also be provided to ease at the end of the user.
- The application can also be provided with functionalities of Bug reports and submission facility in case there is any abnormal failure in the software.
- Safe Mode facility can be included consequently as to recover the system in case the software hangs out or has abnormal crashes or errors.

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Canada and the Circular Economy: Business Transformation and Sustainable Innovation, An Edge to the Global Circular Economy

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Abstract

One significant aspect of the challenges to sustainability and the circular economy in Canada relates to the size of the country, its population density, the location of its economic drivers, as well as its international trade practices. That is, the supply chain and its role in the circular economy in Canada will be addressed. Finally, Canada is a world leader in many areas of health care. However, many of the challenges which will be discussed regarding the circular economy are also challenges in terms of access and equity of health care in Canada. Equity is particularly challenging given the numerous northern, rural and remote communities in Canada, the relatively few numbers of large centers of healthcare excellence in Canadian cities, but also the, in particular, reversing dark histories in terms of treatment of Indigenous Canadians. Engaging and collaborating with the Indigenous populations and communities is at the core of almost any policy in Canada and is particularly so with respect to health care.

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Keywords: Sustainability, circular economy, climate change, supply chain, healthcare

INTRODUCTION

Sustainable Development Impact Meetings 2022-2023 WEF

To make progress on the Sustainable Development Goals and build momentum on specific issues ahead of the 27th UN Framework Convention on Climate Change (COP27) and the World Economic Forum Annual Meeting 2023 in January. The meetings addressed four areas, each underscored by the challenge of responding to climate change, namely: increasing climate action; accelerating industry transformation; shaping resilient economies and societies; and advancing regional and global cooperation. Underscoring the high-level of engagement, more than 400 business leaders and 80 public figures, including four heads of state and government, five heads of international organizations and 21 foreign affairs ministers, participated.

Several measures were agreed, and initiatives launched during the meetings. The first ministerial meeting of the High Ambition Coalition to End Plastic Pollution was held; Ecuador became the first Latin American country to join the Forum's Global Plastic Action Partnership; the Forum signed a letter of intent with the UN Food and Agriculture Organization to strengthen collaboration on tackling the global food crisis; the First Movers Coalition launched its Finance Pillar; the Food Innovation Hubs network was created; and a report produced by the Climate Trade Zero initiative presented 25 key climate technologies for trade ministers to prioritize and advance climate action. In addition, the Education 4.0 Alliance aligned on a framework to identify innovative collaborations between the private sector and schools and launched a call for Education 4.0 Lighthouses.

Building on the findings of the Global Gender Gap Report 2023, leaders identified paths to restore women's labour force participation and reinforce the positive momentum of women's representation in senior leadership. Sector transition strategies were launched to accelerate decarbonization in the steel, aluminum and ammonia industries, aligned with 1.5°C-compliant strategies backed by 60 companies from multiple sectors. The Forum, International Energy Agency and other partners launched the Cost of Capital Observatory to foster clean energy projects in developing economies. And UpLink, the open innovation platform of the World Economic Forum, announced the winners of the Innovative Funds for our Future challenge, 17 investment funds with a portfolio focusing on start-up and scale-up ventures that strive to advance the Sustainable Development Goals.

CANADA, SUSTAINABILITY AND CIRCULAR ECONOMY

Canada is an enthusiastic participant in numerous international environmental and sustainability initiatives, at the federal, provincial/territorial, and even municipal levels. Different parts of the Canadian governments and industries have voluntarily implemented, or are in the process of implementing domestic policies and strategies to continually reduce the country's environmental footprint. The current Liberal Government has pursued a very pro-sustainability strategy domestically and internationally, with varied results. Examples include, but are not limited to:

1. The "*Healthy Environments and a Healthy Economy*" federal initiative focuses both on environmental goals and economic hopes: clean air, clean water, and long-term secure jobs through five pillars:
   i. *Making the Places Canadians Live and Gather More Affordable by Cutting Energy Waste*
   ii. *Making Clean, Affordable Transportation and Power* Available in Every Community
   iii. *Continuing to Ensure Pollution isn't Free and Households Get More Money Back* through, through quarterly carbon pollution pricing payments which will continue to rise through to the year 2030
   iv. *Building Canada's Clean Industrial Advantage* creating performance standards, investments and incentives for Canadian businesses to cut pollution and move to a cleaner economy
   v. *Embracing the Power of Nature to Support Healthier Families and More Resilient Communities* by, for example planting 2 billion trees and better managing, conserving and restoring natural spaces, cutting pollution, cleaning the air, and creating jobs for tree planters, technicians, nursery growers, field biologists, urban planners while also protecting land and oceans through its ban on single-use plastics
2. The *Pan-Canadian Framework* developed with provinces territories and in consultation with Indigenous peoples outlining 50 concrete measures to reduce carbon pollution
3. Adoption of the *Paris Agreement* under the *United Nations Framework on Climate Change* to keep the global average temperature to well below 2 degrees Celsius above pre-industrial levels and undertaken efforts to limit temperature increase even further to 1.5 degrees Celsius
4. Adoption of the United Nations *2030 Agenda for Sustainable Development*
5. Incorporating high environmental standards in trade agreements, including the *Canada-European Union Comprehensive Economic and Trade Agreement*, the *Comprehensive and Progressive Agreement for Trans-Pacific Partnership*, and the *Canada-United States-Mexico Agreement*
6. Co-founding the *Ministerial on Climate Action* with the European Union and China
7. Co-founding the *Powering Past Coal Alliance* with the United Kingdom, which now includes more than 100 members
8. The ratification of the *Kigali Amendment* to the *Montreal Protocol*, which aims to gradually reduce hydrofluorocarbons

However, it is also important to understand that the term "circular economy" is a new-ish term in Canada which has been interpreted as having different definitions, reflecting the sectors applying the term. For this reason, in a seminal report by the Council of Canadian Academies in 2021, entitled "Turning Point", an expert panel tried to settle on a description of the circular economy that was more broadly applicable. Fundamentally, the Expert Panel of the Council of Canadian Academies emphasized that the circular economy is not the "end goal", but a journey that incorporated concrete steps and key targets. This interpretation is intended to underscore that the evolving nature of sustainability, and the circular economy across industries and geography, and as the economy grows and shifts. It also reflects, in the Canadian context and in my opinion, that concrete steps and key targets are more realistic for certain industries and gain increased engagement.

INITIATIVES, PROGRESS AND COMPARISON OF CANADA WITH G7 MEMBERS

Canada is making significant growth towards integrating sustainability and the circular economy into its national policies and initiatives. The circular economy, which focuses on reducing waste, reusing resources, and creating sustainable economic opportunities, is becoming a key strategy for addressing environmental challenges like climate change, pollution, and biodiversity loss.

Canada's Initiatives and Progress

The Government of Canada has launched several initiatives to support the circular economy. Key efforts include the:

- *Zero Plastic Waste Strategy*, which aims to reduce plastic pollution and increase recycling rates.
- *Canada-wide Action Plan on Zero Plastic Waste*, which focuses on product design, recycling capacity, and public awareness.
- *Canada's Greening Government Strategy* seeks to make government operations low-carbon and resilient by incorporating circular economy principles.

For example, Quebec and British Columbia are leading the way with active circular economy strategies. Several provinces are implementing extended producer responsibility (EPR) programs, which hold manufacturers accountable for the lifecycle of their products. Local governments are also developing zero waste and circular economy plans with support from organizations like the National Zero Waste Council and Recyc-Québec

Comparing to G7 Nations

Compared to other G7 nations, Canada is making notable progress but still has room for improvement. While Canada has taken a leadership role in global initiatives such as the Ocean Plastics Charter and the Global Alliance on Circular Economy and Resource Efficiency (GACERE), the overall circularity rate remains relatively low. For instance, only 8.6% of materials extracted from the Earth are cycled back into the economy. Countries like Germany and Japan have higher circularity rates due to more established recycling infrastructures and robust policy frameworks supporting the circular economy. The European Union, in particular, has been at the forefront with comprehensive circular economy action plans and stringent waste management regulations.

Canada's approach to sustainability and the circular economy, especially in comparison to other G7 nations, highlights several key points.

1. *Sustainability initiatives and performance:* Canada has actively participated in the G7 Clean Energy Economy Action Plan, focusing on reducing emissions through trade policy, establishing resilient global supply chains, and promoting clean energy technologies. These efforts include pursuing trade policies that account for embedded emissions, supporting the diversification and resilience of clean energy supply chains, and promoting sustainable public procurement practices. Canada is also committed to advancing climate policies such as carbon pricing, regulations, and incentives.
2. *Economic progress and challenges:* However, economic progress related to sustainability has been mixed. According to the Fraser Institute, economic growth and productivity in Canada, as well as in other G7 countries, have stalled due to high taxes, increased regulation, and significant government spending.
3. *OECD report insights:* The OECD Economic Survey of Canada 2023 notes that Canada has made strides in certain areas of sustainability but still faces challenges in maintaining consistent economic growth and improving productivity. The report emphasizes the need for better policy frameworks to address these issues and leverage sustainable economic practices more effectively

4. *Comparative performance:* In comparison to other G7 nations, Canada's efforts in promoting a circular economy and sustainability are commendable but not without criticism. The G7 has struggled with maintaining high productivity growth and improving living standards. Countries like Ireland and Estonia, though not part of the G7, have outpaced G7 countries in terms of productivity growth and per-person GDP, suggesting that there is room for Canada and its G7 counterparts to improve their economic policies and sustainability practices

CANADA SUPPLY CHAIN CHALLENGES AND SUSTAINABILITY

There are many supply chain in Canada. These challenges are Regulatory are classified into:

1. *Regulatory and policy challenges*: These challenges are due to inconsistent regulations across provinces and territories and lack of a national policy framework.
2. Vast terrain and economic and financial constraints
3. High cost

Despite of all these constraints several Canadian companies are committed to sustainable practices for example Maple foods, Teck Resources.

1. *Maple Leaf Foods* has set a high standard in the food industry by becoming the first major carbon-neutral food company globally in 2019. And the company took strict actions to have the sustainable development solutions such as Carbon neutrality, setting ambitious goals and commitments, improving energy efficiency, reducing waste and increase recycling, sustainable sourcing and employee and stakeholder engagement. The company became the first company to become the first major carbon- neutral company.
2. *Teck resources*, a mining company also implemented several mining practices such as sustainable mining practices, setting clear sustainability goals, water management, reducing green house emissions. A notable example of Teck's sustainability efforts is the Elk Valley water Quality Plan. The plan was developed to address concerns about selenium and other contaminants from coal mining operations affecting local waterways. Teck invested in advanced water treatment technologies, including facilities designed to remove selenium and nitrate, significantly reducing these substances and protecting the local ecosystem and water quality.

SUSTAINABLE HEALTHCARE: NAVIGATING CHALLENGES AND OPPORTUNITIES

Healthcare contributes significantly to environmental impact, with the sector responsible for approximately 4.4% of global greenhouse gas emissions (Health Care Without Harm, 2019). Sustainable practices in healthcare can lead to improved public health outcomes and reduced operational costs.

The COVID-19 pandemic highlighted the need for resilient and sustainable healthcare systems capable of withstanding global crises (World Health Organization, 2020). The SDGs, particularly Goal 3 (Good Health and Well-being) and Goal 13 (Climate Action), emphasize the need for sustainable and resilient healthcare systems (United Nations, 2015).

Canada's "Healthy Environment and a Healthy Economy" plan aims to achieve net-zero emissions by 2050, with specific strategies for healthcare sustainability (Government of Canada, 2020).

1. *Reducing healthcare facility emissions*
   i. Implementing energy-efficient technologies in hospitals and clinics, such as LED lighting, energy-efficient HVAC systems, and smart building technologies (Canada Green Building Council, 2021).
   ii. Retrofitting existing healthcare facilities to improve energy efficiency and reduce emissions.
2. *Sustainable healthcare supply chains*
   i. Encouraging the use of environmentally friendly and sustainable medical products and supplies (Canadian Coalition for Green Health Care, 2020).
   ii. Implementing green procurement policies that prioritize suppliers with sustainable practices.
3. *Waste reduction and management*
   i. Promoting recycling and proper waste segregation within healthcare facilities to minimize waste sent to landfills.

   ii. Implementing programs for the safe disposal and recycling of medical and hazardous waste.
4. *Water conservation*
   i. Installing water-efficient fixtures and systems in healthcare facilities.
   ii. Implementing water recycling and rainwater harvesting systems to reduce water consumption.
5. *Green transportation*
   i. Encouraging the use of electric or hybrid vehicles for medical transport and staff commuting (Sustainable Development Technology Canada, 2020).
   ii. Providing infrastructure for bike commuting and public transportation access to healthcare facilities.
6. *Education and training*
   i. Providing training and resources for healthcare professionals on sustainable practices and environmental stewardship.
   ii. Integrating sustainability into healthcare education curricula

SUSTAINABILITY, HEALTHCARE CHALLENGES AND HOW THEY ARE ADDRESSED

Supply Chain

- *Challenge:* Traditional healthcare supply chains often rely on single-use plastics and non-sustainable products, contributing to significant waste and environmental impact.
- *Addressing the challenge: Example:* The University Health Network (UHN) in Toronto has implemented a green procurement policy that prioritizes the purchase of environmentally friendly products, such as reusable medical supplies and biodegradable packaging (UHN, 2020).

Utilities Optimization

- *Challenge:* Healthcare facilities are among the most energy-intensive buildings, with high demands for heating, cooling, and lighting.
- *Addressing the challenge: Example:* Vancouver General Hospital has implemented energy-efficient technologies, including LED lighting, advanced HVAC systems, and building automation systems, resulting in a 20% reduction in energy consumption (VGH, 2019). Energy efficiency initiatives across Canadian hospitals have collectively saved approximately $50 million in energy costs annually (Canada Green Building Council, 2021).

Waste Reduction and Management

- *Challenge:* The healthcare sector generates a significant amount of waste, including hazardous and non-hazardous materials.
- *Addressing the challenge: Example:* The Nova Scotia Health Authority has implemented a comprehensive waste management program that includes recycling, composting, and safe disposal of hazardous waste, reducing landfill waste by 40% (Nova Scotia Health Authority, 2018).

SO WHAT? NOW WHAT?

The Circular economy and how it integrates with Canada's other sustainable commitments and environmental policies must be determined. Federal, Provincial/territorial and Municipal governments, private sector, Indigenous people must get in-sync adopt approaches to standard measurement and metrics for the Circular economy in the Canadian context. Canadian post -secondary education and non-profits must play larger role in pursuing new ideas , developing and testing new technologies and approaches to recycling and sustainability. The realities of Canada must be a part of concrete steps and timelines for the Canadian circular economy. It is a long journey and uncertainties and resistance on the part of business communities must be expected

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Changing Global Landscape and New World of Work: Contours for Sustainable Business

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Abstract

The global business landscape is undergoing profound transformations driven by economic shifts, technological advancements, environmental changes, and evolving social dynamics. These changes are reshaping the world of work, compelling businesses to adopt new strategies to remain competitive and resilient. The article explores how these global trends are influencing the contours of sustainable business practices. It delves into the economic impacts of globalization and trade policies, the transformative role of digital technologies and automation, and the urgent need for climate action and regulatory compliance. Furthermore, it examines the rise of remote work, the gig economy, and the critical importance of diversity and inclusion in the workplace. This study employs a quantitative data analysis approach which is gathered from global economic reports, trade policy analyses, and industry-specific technological adoption rates.

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INTRODUCTION

The global business landscape is undergoing rapid and profound transformations, driven by interconnected forces of technological innovation, demographic shifts, and escalating environmental challenges. These transformations are not merely altering the traditional paradigms of industry and commerce but are also reshaping the very fabric of work and organizational dynamics worldwide. Concurrently, the imperative for sustainability has emerged as a cornerstone for future-proofing businesses, compelling organizations to rethink their strategies and operations in alignment with environmental stewardship and social responsibility.

The convergence of these trends—technological advancement, demographic evolution, and sustainability imperatives—marks a pivotal moment in the evolution of global business practices. Understanding and navigating these dynamics are crucial for businesses aiming to not only survive but thrive in an increasingly complex and competitive global environment.

At the forefront of this transformation are rapid technological advancements, including artificial intelligence (AI), automation, and digitalization. These innovations have revolutionized production processes, supply chain management, and customer interactions, fundamentally reshaping industry landscapes and altering the skills required in the workforce. Automation, for instance, has streamlined operations, increased efficiency, and enabled new business models, while AI has enhanced predictive analytics and decision-making capabilities, paving the way for data-driven strategies and personalized customer experiences.

Simultaneously, demographic shifts are redefining the composition and expectations of the global workforce. The rise of millennial and Gen Z employees, characterized by their digital nativism and emphasis on purpose-driven work, is prompting organizations to reassess traditional hierarchical structures and embrace more flexible, inclusive work environments. Moreover, aging populations in many regions are extending career trajectories and altering retirement patterns, necessitating strategies for knowledge transfer and talent retention.

Amidst these changes, the urgency of environmental sustainability has intensified. Heightened awareness of climate change, resource scarcity, and environmental degradation has compelled businesses to adopt sustainable practices across their operations—from responsible sourcing and energy efficiency to waste reduction and carbon neutrality. Beyond regulatory compliance, sustainability has become a strategic imperative for enhancing brand reputation, attracting conscientious consumers, and mitigating operational risks associated with environmental impacts.

One of the most profound shifts in the world of work has been the widespread adoption of remote work and flexible work arrangements. Accelerated by technological advancements and further catalyzed by global events such as the COVID-19 pandemic, remote work has transformed traditional office dynamics, enabling geographically dispersed teams, promoting work-life balance, and reducing carbon footprints associated with commuting. This paradigm shift necessitates new approaches to leadership, team collaboration, and organizational culture, emphasizing digital connectivity, virtual communication tools, and agile management practices.

OBJECTIVES

The objective of the study is to explore and analyze the intersection of technological advancements, demographic shifts, and sustainability imperatives in the context of global business transformations and evolving work dynamics.

LITERATURE REVIEW

The intersection of global transformations, evolving work dynamics, and sustainability imperatives has garnered significant attention in academic literature and business discourse. This literature review synthesizes key findings and perspectives from existing research, highlighting trends, challenges, and opportunities pertinent to understanding the contours of sustainable business in the contemporary global context.

Technological Advancements and Business Transformation

Technological innovation, particularly advancements in AI, automation, and digitalization, has reshaped industries and business operations worldwide. According to Gupta and George (2020), AI and machine learning algorithms are revolutionizing decision-making processes, optimizing supply chain management, and driving efficiencies across various sectors. These technologies not only enhance productivity but also enable predictive analytics, personalized customer experiences, and agile business models (Roberts et al., 2019).

Furthermore, digital transformation has accelerated the shift towards virtual work environments and remote collaboration, facilitating geographically dispersed teams and reducing traditional workplace boundaries (Chui et al., 2018). This digital shift is crucial for organizations adapting to the new normal of remote work and flexible arrangements, necessitating investments in digital infrastructure and cybersecurity measures (Bughin et al., 2021).

Demographic Shifts and Workforce Dynamics

The evolving demographic landscape, characterized by the rise of millennial and Gen Z cohorts, has profound implications for organizational culture and talent management strategies (Ng et al., 2018). Younger generations prioritize purpose-driven work, environmental stewardship, and social responsibility, influencing corporate strategies towards sustainability and ethical practices (Twenge et al., 2010). Concurrently, an aging workforce poses challenges related to knowledge transfer, succession planning, and healthcare costs, prompting organizations to adopt inclusive policies and age-diverse workforce strategies (Pitt-Catsouphes et al., 2015).

Environmental Imperatives and Sustainable Business Practices

The urgency of environmental sustainability has become a critical driver of business strategy, influenced by regulatory pressures, consumer expectations, and reputational risks (Delmas & Toffel, 2008). Sustainable business practices encompass a wide range of initiatives, from renewable energy adoption and carbon footprint reduction to circular economy principles and ethical supply chain management (Schaltegger et al., 2018). Firms integrating sustainability into their core strategies not only mitigate environmental impacts but also enhance operational efficiency, reduce costs, and improve brand loyalty (Russo & Fouts, 1997).

Moreover, corporate social responsibility (CSR) initiatives are increasingly linked to financial performance and stakeholder value creation, underscoring the business case for sustainability (Aguinis & Glavas, 2012). Effective CSR strategies involve transparent reporting, stakeholder engagement, and alignment with United Nations Sustainable Development Goals (SDGs), reflecting broader commitments to societal well-being and sustainable development (Dyllick & Muff, 2016).

The New World of Work: Remote Work and Organizational Adaptation

The COVID-19 pandemic has accelerated trends towards remote work and flexible work arrangements, reshaping organizational structures and employee expectations (Bartik et al., 2020). Remote work offers opportunities for cost savings, increased productivity, and improved work-life balance, yet it also presents challenges related to virtual team collaboration, employee well-being, and maintaining organizational culture (Kochan et al., 2020).

Organizations embracing remote work strategies must invest in technology infrastructure, cybersecurity protocols, and leadership capabilities to support virtual teams effectively (Peters et al., 2021). Moreover, flexible work policies can enhance talent attraction and retention, accommodate diverse workforce needs, and promote inclusivity (Golden et al., 2021).

RESEARCH METHODOLOGY

This research employs a comprehensive methodology to investigate the intersection of the evolving global landscape, the dynamics of the new world of work, and the strategic imperatives for sustainable business practices. The study begins with a systematic review of relevant literature from academic journals, industry reports, and governmental publications to establish a foundational understanding of key themes such as technological advancements, demographic shifts, and environmental sustainability. This literature review informs the identification of trends, challenges, and opportunities shaping contemporary business practices. Additionally, multiple case studies are analyzed to provide empirical insights into how leading organizations across different sectors are implementing sustainable business strategies amidst global transformations and evolving work dynamics. These case studies are selected to illustrate best practices, innovative approaches, and measurable outcomes in sustainability initiatives. Data collection method includes qualitative analysis of textual sources where applicable, to examine metrics related to sustainable performance, environmental impact mitigation, and organizational resilience. The findings from this integrated approach are synthesized to develop actionable recommendations for businesses seeking to navigate and thrive in a complex and dynamic global environment while advancing sustainable development goals.

CONCLUSION

Businesses navigating these transformations must adopt agile strategies, embrace digital innovation, prioritize environmental sustainability, and foster inclusive workplace cultures to thrive in an increasingly complex and competitive environment. Future research should continue to explore emerging trends, evaluate the long-term impacts of remote work and sustainability initiatives, and develop frameworks for sustainable business practices that integrate economic, environmental, and social dimensions.

In conclusion, the research has illuminated the profound transformations occurring in the global business landscape and the evolving dynamics of work, driven by technological advancements, demographic shifts, and heightened environmental awareness. These interconnected forces underscore the imperative for businesses to embrace sustainability as a core strategic priority. By integrating sustainable practices such as renewable energy adoption, circular economy principles, and inclusive workplace policies, organizations can not only mitigate environmental impacts but also enhance operational efficiencies, foster innovation, and build resilient business models. The COVID-19 pandemic has accelerated trends towards remote work and digital transformation, presenting both challenges and opportunities for organizational adaptation. Moving forward, business leaders must prioritize agility, stakeholder engagement, and ethical stewardship to navigate uncertainties and capitalize on the economic, social, and environmental benefits of sustainable business practices. This research contributes valuable insights for businesses aiming to navigate the complexities of a rapidly changing global landscape while contributing positively to sustainable development goals and ensuring long-term competitiveness.

This conclusion summarizes the key findings and implications of the research, emphasizing the importance of sustainability in business strategies amidst global transformations and highlighting actionable recommendations for business leaders and policymakers.

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A Study on Sovereign Green Bonds: Booster to India's Sustainable Development—"Let's Nurture the Nature So That We Can Have a Better Future"

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Abstract

A sustainable development requires financial sources for procuring funds. India pledged in COP21 (21st Conference of the Parties) to reduce its greenhouse gas (GHG) till 2030. The pledge gives birth to a new financial debt instrument called Sovereign Green Bonds (SGrB), which comes under the head of Sustainable Green Finance. The funds generated through SGrB are usually utilized in environment friendly and low-carbon projects like usage of Renewable Energy, Management of Waste, Improvement of Water, Green Infrastructure, and Energy Efficiency. It has been studied from different sources that in last decade green bonds have played a vital role in financing the environmental friendly projects in India. The contribution in issuing the Green Bond's by public and private insttutions is a booster for India's sustainable development. This paper highlights about the rapid growth of green bond market in India in last 10 to 12 years. The secondary sources are used to collect the data i.e. from RBI, SEBI, IFC, DEA and World Bank websites, journals, news articles (other sources are also considered). The study does suggest that the contribution of companies in issuing green bonds has grown in last decade in India and presently among the emerging economies India is at first position in issuing green bonds, where China stood on the second position.

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INTRODUCTION

India becomes one of the most extreme weather affected countries. As per the weather report sated by the Meteorological Department of India, India experienced its hottest February in 2023, since 1901. Extreme weather events like this are becoming frequent and are expected to get worse due to climate change.

The carbon intensity of India's economy has a direct impact on global emissions because India has become the world's most populated country with nearly 1.5 billion nationals, In 2021, India's greenhouse gas emissions (GHG) amounted to some 3.9 billion carbon dioxide (CO2), making India the world's third largest emitter after China and the United States. As per the year 2023 report of CCPI (Climate Change Performance Index 2023), India rose two spots to rank 8th in 2023 and not only produced but also discharge a high rating in the greenhouse gas (GHG), with a medium for climate policy and renewable energy.

The World Bank Group and India are working together to maximize finance for climate transition and green growth. The technical assistance has been provided by The World Bank for Sustainable Finance and ESG (Environmental, Social and Governance) and advisory services not only for establishing but also for the growth of the sovereign green bond program in India for instance, World Bank loan facility is available for the development of green infrastructure, IFC helps in mobilizing local currency investments and advisory services to establish public-private partnerships and attract private capital. (World Bank Blog June 12, 2023)

According to the reports published, Indian issuers raised nearly $43 billion by issuing climate bonds/green bonds from January 2014 to March 2023

MEANING OF GREEN BOND (INDIAN INSTITUTE OF BANKING AND FINANCE)

A green bond is a type of fixed-income and debt instrument that is specifically intended to procure funds for climate and environmental projects. In 21st century, green bonds are also known as climate bonds, but the two terms are not always synonymous.

1. Climate bonds specifically finance to those projects that reduce carbon emissions or alleviate the effects of climate change.
2. While green bonds represent to those instruments which are related to projects with a positive environmental impact like energy efficiency, pollution prevention, sustainable agriculture, fishery and forestry, river protection and globally acceptable bionetwork, pollution free transportation and water, and sustainable water management. Bonds also generate funds for the development and enhancement of environmental friendly technologies and for the betterment of climate change.

Green bond is different from other fund generating financial instruments because the issuer pledges to use the amount raised through green bond is purely towards financing the green projects. In this year's Union Budget, the Finance Minister announced a ₹35,000 crore allocation for priority capital investments under the Ministry of Petroleum and Natural Gas, aimed at supporting energy transition, net-zero targets, and energy security. She later clarified that this funding is not classified as a subsidy. She explained that the allocation prioritizes two main goals: transitioning from fossil fuels to renewable energy and ensuring sufficient strategic reserves are maintained. There are two objectives of allocating money to energy security and transition:

1. To make a transition from fossil fuel to renewable energy.
2. To make sure that our reserves are all filled up adequately," she had said

LITERATURE REVIEW

Table 1.

S.N.	Author/s name and year	Title of the paper	Journal and publisher	Research methodology	Findings
1.	Dr. Mahadev Kharade (2021)	Green Finance for Sustainable Development- study on the Indian context	PJAEE, 18 (10) (2021)	1. Descriptive nature 2. Secondary data taken from various official reports published by the Government of India, public and private sector institutions and banks in India.	India should focus on domestic investors and on foreign investors too. Because mixed financing will be helpful in reducing the overall cost of capital.
2.	Abhilash, Sandeep S. Shenoy, Dasharathraj K. Shetty, Lumen Shawn Lobo, and Subrahmanya Kumar N	Green Bond as an Innovative Financial Instrument in the Indian Financial Market: Insights From Systematic Literature Review Approach	SAGE Open April-June 2023: 1–15	The review employed a Systematic Literature Review (SLR) method for analysis.	The author(s) did not receive any financial assistance for the research, writing, or publication of this article.
3.	Dr. D. Thirumala Rao, G. Santoshi	A study on green bonds in india – need of the hour	2021 IJRAR December 2021, Volume 8, Issue 4	This study is based on the secondary sources which was collected from reputed journals, articles and official websites of RBI and SEBI.	In today's context, environmental protection is a top priority. Funding is crucial for investing in eco-friendly projects. Green bonds are still in the early stages of development in India. These green initiatives come with high initial costs, while many of their cost-saving benefits are realized only in the long term.

4.	World Bank	India Sovereign Green Bond: Financing Climate Action and Resilient Growth	Global Climate Risk Index 2021	Case Study	

OBJECTIVE OF THE STUDY

1. To learn about the framework of green bonds and the utilization of Green Bond funds.
2. To analyze the difference between green bonds issued by India and China in selected period.
3. To study the growth of Green Bonds from Indian perspective.
4. To study the need for issuing Sovereign Green bond in India.
5. To list the organizations in India and China issuing maximum Green Bonds.

DISCUSSIONS FROM REPORTS

- According to reports, the share of green bonds issued by the top five players has continued to decline for the third straight year, suggesting that a growing number of companies are entering the green bond market. In 2022, the top five green bond issuers in India accounted for 62% of the total share.
- The report further highlighted that India saw a record high of $9.5 billion in annual issuance of labeled and unlabeled green bonds in 2021. However, the number of green bonds issued in the electricity sector in 2022, both in dollars and rupees, dropped dramatically. This decline was attributed to tighter monetary policy, which raised bond yields and made the rupee less valuable relative to the US dollar.
- Until 2021, medium-term bonds with a five- to ten-year maturity dominated the market. However, in 2022, shorter- and longer-term bonds gained prominence. The majority of these bonds have fixed maturity dates. Many issuers took advantage of low borrowing rates in 2021, refinancing their debt through bonds with call options, which allow for early redemption.
- Government issuers including IREDA, NHPC, and NTPC have taken a more cautious approach to issuing green bonds, preferring medium-term bonds with fixed coupon rates and maturity dates. Conversely, private companies have developed more flexible structures including call options, zero-coupon bonds, and coupon rates linked to external benchmarks like lending rates.
- The report noted that in 2022, bond issuers specified a wider range of uses for the proceeds in bond prospectuses, indicating an increasing tendency of using bonds for commercial purposes. This gives issuers more choice in how they use their funds, but it also raises questions about possible "greenwashing."
- Bondholders showed a preference for collective action clauses, which allow for changes to the core terms of the bonds through collective agreement. Common restrictions placed on issuers included limitations on cash distributions, asset sales to protect cash flow, and consolidations with other entities to safeguard against governance issues.
- Predictions by the forecast have established an increase of 33% in payments on existing green bonds in 2023, when compared with the last two years. That would pave the way for comfort for issuers with the recent rise in interest rates and a massive fall of the value of Indian rupees in 2022. New products including green bond indexes and mutual funds have also been introduced, and enhanced regulatory monitoring of the green bond market is a result of the increased engagement of sovereign and quasi-sovereign issuers.

HISTORY OF GREEN BONDS IN INDIA

In 2015, Yes Bank became the first institution in India to issue a Green Bond. Yes Bank successfully raised Rs. 1645 crores by issuing three tranches of green bonds, with contribution from the International Finance Corporation, the private sector arm of the World Bank (Business Today Jul 22, 2022). Subsequently, the IFC traded these bonds on the London Stock Exchange, bringing significant global visibility to Yes Bank’s bonds. This paved the way for other Indian corporates to issue offshore Green Bonds (IFC, Washington D.C., August 3, 2015). By December 2022, the total value of Green Bond issued by Indian entities reached $19.17 billion, accounting for approximately 3.8% of India's total outstanding corporate bonds (The Economic Times Feb 10, 2023).

Ghaziabad made history in April 2021 by being the first municipality in India to launch a Green Bond. Later, in February 2023, the Indore Municipal Green Bond was listed on the National Stock Exchange (NSE) (The Economic Times, February 10, 2023).

SOVEREIGN GREEN BOND IN INDIA

The Green Bond related projects has received support from sovereign states throughout the world. In 2016, Poland became the leader by releasing the first sovereign Green Bond. Countries like Belgium, France, Nigeria, Indonesia, and others, contributed to the global green bond market's worth of $1 trillion by 2020 (World Bank, November 2022). The Reserve Bank of India (RBI) releases Sovereign Green Bonds (SGrBs) in India on behalf of the national government. The fact that the RBI fully supports and regulates these bonds is one of their main benefits (Department of Economic Affairs, 2022).

During her Union Budget speech on February 1, 2022, for the 2023 financial year, Finance Minister Nirmala Sitharaman announced that the Indian government was developing strategies and a legal framework for issuing sovereign green bonds to raise funds for green infrastructure projects. The government announced its plan for the SGrB issue at the beginning of 2024. It planned to raise ₹16,000 crore in two installments of ₹8,000 crore each, on January 25 and February 9, 2023. These bonds have five- and ten-year maturities, and their respective cut-off yields are 7.10% and 7.29%. They are referred to as "SGrBs" in the Indian market. Both of these yields are marginally lower than those of comparable government securities (Ministry of Finance, February 6, 2023). The funds raised are earmarked for public sector projects that reduce carbon emissions.

On January 25, 2023, the government successfully sold its first tranche of SGrBs worth ₹8,000 crore, at yields lower than similar government bonds. The RBI auctioned ₹4,000 crore of five-year bonds with a coupon rate of 7.1% and another ₹4,000 crore of ten-year bonds with a coupon rate of 7.29%.

THE SGrB LEGAL FRAMEWORK

As per the framework, the funds procured from Sovereign Green Bond will be utilized in the projects that align with India's carbon emissions reduction objectives. These goals include

- Achieving net-zero emissions by 2070,
- By 2030, reduce the emissions intensity of GDP by 45% (compared to 2005 levels),
- By 2030, up to 50% increase the share of non-fossil fuel energy resources.

"Panchamrit," a five-step climate action plan and throws some light on how the SGrB will play a crucial role in securing the necessary funds to achieve these objectives was also announced by honorable Prime Minister of India Mr. Narendra Modi.

India uses the ICMA (International Capital Market Association) guiding principles to establish their Green Bond framework because of not having proper litigation. The SGrB Framework has the four key components suggested by the ICMA which are as follows.

Utilization of Funds

Government of India will use the proceeds raised from the SGrB to finance and refinance expenditure (in parts or whole) for eligible green projects falling under 'Eligible Categories' defined in Table.

Excluded Projects

- Exploration, development and production of fossil fuel; where constructional activities and improvements are undertaken or where fossil fuels are the main source of fuel.
- Generation of nuclear power
- Burning of waste

Table 2.

Category of green project	**Environmental objective**	**Eligibility criteria**
Renewable Energy	Climate change mitigation, achieving Net Zero	• Investment in projects related to energy generation and storage, such as solar, wind, biomass, and hydropower. • Promote the adoption and consumption of renewable energy resources.
Energy Efficiency	Climate Change Mitigation	• Developing and implementing energy-efficient systems for government premises and property. • In support of public lighting upgrades, like replacing the use of incandescent bulbs with LED ones. • Low carbon structures in building. • Efforts to reduce grid electricity losses.
Clean Transportation	Climate Change Mitigation	• Develop EV charging stations and provide incentives on vehicles. • Electrify the public transportation system, including safety improvements.
Climate Change Adaptation	Climate resilience	• Activities designed to strengthen infrastructure against the effects of climate change. • Investing in Early Warning and Climate Monitoring Information systems.
Water and Waste-Ecosystem sustainable management	Climate Change Mitigation	• Encourage the use of water conserving irrigation techniques. • Installation and upgrade of treatment and wastewater release. • Water resources management. • Developing flood defense systems.
Pollution Control	Climate Change Mitigation Environment protection	• Controlling greenhouse gas emissions, preventing waste, and managing air pollution. • Waste management, recycling, and waste reduction projects. • Soil remediation and projects related to waste-to-energy that are energy- and emission-efficient.
Green Buildings	Climate Change Mitigation	Green building projects that meet local, national, or international standards or certifications for environmental performance.
Sustainable Management of Living Natural Resources and Land Use	Natural Resource Conservation	• Projects in agriculture, animal husbandry, fisheries, and aquaculture. • Reforestation initiatives are part of the sustainable management of forestry. • Organically certified farming schemes.
Conservation of Terrestrial and Aquatic Biodiversity	Conservation of Biodiversity	• Programs aimed at saving the biodiversity with the protection of endangered species with. • Protection of ecosystems and habitats.

Source: RBI,
Note: It must be noted that every institution and nation may have a unique definition or set of criteria for what is considered a green bond.

- Industries involved in alcohol, weapons, tobacco, gambling, or palm oil.
- Renewable energy projects that produce energy from biomass using feedstock sourced from protected areas.
- Projects related to Landfill
- Hydropower plants larger than 25 MW

Process for Project Evaluation and Selection

The process for project evaluation and selection will be as follows:

- All sovereign green bonds issued by the government will be issued under the SGrB Framework.
- A Green Finance Working Committee (GFWC) has been constituted by the Ministry of finance, chaired by chief Economic Advisor, some relevant line ministers and Government of India to administer and legalized the decisions on issuance of SGrB;

- The GFWC will assess the list of proposed green projects for compliance with the SGrB Framework and compatibility with green goals; and
- The Ministry of Finance will further advise the Reserve Bank of India on the amount of qualifying green expenditures for which the proceeds from green bonds may be used once the Finance Bill has been passed.

Management of Proceeds

In a very first step the fund generated by issuing SGrB will be deposited to the CFI as per the regular treasury policy and after that the CFI will allocate funds to qualified green projects. The Ministry of Finance shall maintain a complete 'green register' including the details of the green bond issuance, funds generated and allocations made to eligible projects with information i.e. summary of the project details, allocation of proceeds to each project, expected climate impact and the extent of unallocated proceeds, both aggregate as well as project-wise; and will also maintain a separate account to ensure the accountability.

The Public Debt Management Cell (PDMC) will be responsible for tracking the use of proceeds in accordance with existing debt management guidelines and ensuring that funds are allocated to approved green expenditures. Unallocated proceeds (if any) will be carried forward to successive years for investment in eligible green projects only and all the allocations will be made within a span of two years from the date of issuance.

Reporting

Finally, to ensure transparency in terms of allocation of proceeds, an allocation report shall be prepared and will be updated yearly until the full allotment of funds is completed. The Comptroller and Auditor General will have the power to audit the report on fund allocation. The annual report is expected to consist of the following:

1. Green bond issuance related information
2. List of eligible financed projects and type of expenditure (tax, subsidies etc.)
3. Ensuring that the eligible procedures align with the stated objectives.
4. Description and status of implementation of funded projects.
5. Total amount of funds generated, total amount allocated and total amount unallocated (if any)
6. Assumptions
7. Expected impact of the projects in quantitative indicators:- indicating reduction in carbon intensity, other environmental benefits and, where possible, social co-benefits.

The table given below summarizes the green bonds issued by India and China from 2015 to 2024, along with the difference between the amounts issued by each country.

Table 3.

Years	Green bonds issued by India	Green bonds issued by China	Difference
2015	₹86,99,14,47,500.00	₹1,07,13,47,83,626.00	₹-20,14,33,36,126.00
2016	₹1,22,82,55,00,000.00	₹27,41,58,69,04,980.00	₹-26,18,76,14,04,980.00
2017	₹2,45,64,29,28,750.00	₹2,30,61,88,49,175.00	*₹15,02,40,79,575.00*
2018	₹76,47,39,75,000.00	₹3,60,81,97,60,501.00	₹-2,84,34,57,85,501.00
2019	₹1,84,66,10,97,175.00	₹2,45,33,72,72,110.00	₹-60,67,61,74,935.00
2020	₹73,09,24,68,750.00	₹2,92,48,35,79,811.00	₹-2,19,39,11,11,061.00
2021	₹3,85,39,64,92,309.00	₹9,14,17,03,50,263.00	₹-5,28,77,38,57,954.00
2022	₹2,13,40,00,00,000.00	₹5,41,40,58,17,370.00	₹-3,28,00,58,17,370.00
2023	₹8,09,88,78,14,87,500.00	₹23,03,85,45,420.00	*₹8,09,65,74,29,42,080.00*
2024	₹53,06,34,47,000.00	₹71,41,94,90,802.00	₹-18,35,60,43,802.00
Total	*₹8,24,30,32,88,43,984.00*	*₹26,79,29,36,65,452.00*	*₹7,97,51,03,51,78,532.00*

IMPLICATIONS AND CONTRIBUTIONS

Data supplied for Green Bonds in India and China:

- *Total India-issued Green Bonds:* ₹82,430,328,843,984.00
- *Total China Green Bonds:* ₹2,679,293,665,452.00
- *Difference (India- China):* ₹79,751,035,178,532.00

This figure reflects the total number up to which India issued more Green Bonds than China during the studied periods. Until 2022, it was second in the release of green bonds, whereas China took the first position, but after releasing SGrB in 2023, the Indian position grabbed the first place, and India outsmarted China, which was previously at the second position.

DATA ANALYSIS AND RESULT

Green Bonds from Indian Perspective

Maximum Bonds issued by the Organization in India Year Wise Data

DISCUSSION

It has been studied from the above data that there is a significant growth of issuing green bonds in India in the year 2016, 2017, 2019, 2021 and 2023. In 2023 we can see the maximum growth just because of issuing the SGrB by the Indian Government. Before 2023 the private organizations and some public organizations were issuing their own green bonds but in 2023 when Indian government issued its own sovereign bonds it not only boost the Indian bond market and but also sustainable development in India.

Table 4.

Years	Green bonds issued by India	Difference	%
2015	₹86,991,447,500.00	-	100
2016	₹122,825,500,000.00	*₹35,834,052,500.00*	41.19
2017	₹245,642,928,750.00	*₹122,817,428,750.00*	99.99
2018	₹76,473,975,000.00	₹-169,168,953,750.00	-68.87
2019	₹184,661,097,175.00	*₹108,187,122,175.00*	141.47
2020	₹73,092,468,750.00	₹-111,568,628,425.00	-60.42
2021	₹385,396,492,309.00	*₹312,304,023,559.00*	427.27
2022	₹213,400,000,000.00	₹-171,996,492,309.00	-44.63
2023	₹80,988,781,487,500.00	*₹80,775,381,487,500.00*	37851.63
2024	₹53,063,447,000.00	₹-80,935,718,040,500.00	-99.93

Source: Climate Bonds Initiative

Table 5.

Years	Company	Amount (in INR)	%
2015	Export Import Bank of India (EXIM Bank)	₹41,759,675,000.00	48.00
2016	Axis Bank, GreenKo Group	₹83,525,500,000.00	68.00
2017	L&T Infrastructure Finance Company Ltd and Indian Railway Finance Corporation	₹108,467,125,000.00	44.16
2018	State Bank of India	₹58,473,975,000.00	76.46
2019	Indian Renewable Energy Development Agency Ltd	₹86,500,000,000.00	46.84
2020	Renew Power	₹64,739,043,750.00	88.57
2021	Indian Railway Finance Corporation, Yarrow Infrastructure Private Limited and Renew Power	₹237,289,986,250.00	61.57
2022	Avaada Solarise Energy Private Limited and Vikas Telecom Private Limited	₹126,400,000,000.00	59.23
2023	RBI (Sovereign Green Bonds)	₹80,846,730,800,000.00	99.82
2024	Rural Electrification Corporation Limited (REC)	₹32,063,447,000.00	60.42

Green Bonds from China Perspective

Maximum Bonds Issued by the Organization in China Year Wise Data

The above data represents that there is a significant growth of issuing green bonds in China in the year 2016, 2018, 2020, 2021 and 2024. In 2016 we can see the maximum growth, and in 2023 there is a maximum decline in the issuance of green bonds in China which gives China a biggest blow in comparison to India and makes India move one step upward.

Sovereign Green Bonds- Full Auction Results

Table 6.

Years	Green bonds issued by China	Difference	%
2015	₹107,134,783,626.00	-	100
2016	₹2,741,586,904,980.00	*₹2,634,452,121,354.00*	2459.01
2017	₹230,618,849,175.00	₹-2,510,968,055,805.00	-91.59
2018	₹360,819,760,501.00	*₹130,200,911,326.00*	56.46
2019	₹245,337,272,110.00	₹-115,482,488,391.00	-32.01
2020	₹292,483,579,811.00	*₹47,146,307,701.00*	19.22
2021	₹914,170,350,263.00	*₹621,686,770,452.00*	212.55
2022	₹541,405,817,370.00	₹-372,764,532,893.00	-40.78
2023	₹23,038,545,420.00	₹-518,367,271,950.00	-95.74
2024	₹71,419,490,802.00	*₹48,380,945,382.00*	210
Total	*₹2,679,293,665,452.00*		

Table 7.

Years	Company	Amount (in INR)	%
2017	Industrial and Commercial Bank of China (Luxembourg)	₹171,328,671,410.00	74.29
2018	Industrial and Commercial Bank of China (London Branch)	₹129,127,179,050.00	35.79
2019	China Construction Bank	₹129,127,179,050.00	52.63
2020	China Development Bank and China Construction Bank	₹215,415,947,100.00	73.65
2021	China Development Bank	₹633,559,999,050.00	69.30
2022	China Development Bank	₹311,020,363,170.00	57.45
2023	Huadian New Energy Group Corporation Limited	₹23,038,545,420.00	100.00
2024	Huadian New Energy Group Corporation Limited	₹69,115,636,260.00	96.77

Table 8.

Auction results		New GOI SGrB 2028	New GOI SGrB 2033
I.	*Notified amount*	₹4000 Crore	₹4000 Crore
II.	*Underwriting notified amount*	₹4000 Crore	₹4000 Crore
III.	*Competitive bids received*		
	(i) Number	96	170
	(ii) Amount	₹13525 Crore	₹19367 Crore
IV.	*Cut-off price/yield*	-	-
		7.10%	7.29%
V.	*Competitive bids accepted*		
	(i) Number	32	57
	(ii) Amount	₹3993.124 Crore	₹3948.646 Crore
VI.	*Partial allotment percentage of competitive bids*	81.62%	22.15%
		(11 Bids)	(23 Bids)

Auction results		New GOI SGrB 2028	New GOI SGrB 2033
VII.	*Weighted average price/yield*	100	100
		(WAY: 7.1000%)	(WAY: 7.2900%)
VIII.	*Non-competitive bids received*		
	(i) Number	2	4
	(ii) Amount	₹6.876 Crore	₹51.354 Crore
IX.	*Non-competitive bids accepted*		
	(i) Number	2	4
	(ii) Amount	₹6.876 Crore	₹51.354 Crore
	(iii) Partial Allotment Percentage	100% (0 Bids)	100% (0 Bids)
X.	*Amount of underwriting accepted from primary dealers*	₹4000 Crore	₹4000 Crore
XI.	*Devolvement on primary dealers*	NIL	NIL

Source: RBI Report Dated January 25, 2023

LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

While the current study builds upon Sovereign Green Bonds and its knowledge base, there are a few limitations that should be noted. Firstly, this study used secondary data available at different official sites like RBI, SEBI, IFC, DEA, World Bank and more. Secondly, future studies should consider a wider range of comparison including more countries. Thirdly, future research could collect data of various countries in order to collect views and their efforts towards protecting environment through Green Bonds. Fourthly, the data taken into account for this study is only includes two countries i.e. India and China of the duration between 2015 to 2024. As a result, this study is limited in terms of generalizability because the study is based on two countries data. More data can be collected expanding the duration of study and by including more countries. The above limitations that were identified in this study led the researchers to encourage further research in this domain for developing further from the growing literature of Sovereign Green Bonds. Much more there remains to be discovered about the phenomenon of Green Bonds and their connection with sustainability.

ABBREVIATIONS

COP21: 21st Conference of the Parties
GHG: Green House Gases
SGrB: Sovereign Green Bonds
SGrF: State General Reserve Fund
EWM: Extended Warehouse Management
RBI: Reserve Bank of India
SEBI: Security Exchange Board of India
IFC: International Financial Corporation
DEA: Drug Enforcement Administration
CCPI: Climate Change Performance Index

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Marketing Strategy of Airport Lounges and Customer Satisfaction Across Indian Metrocities and Sentimental Analysis Using NVivo in Airport Food and Services Industry

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Abstract

Purpose: *This study tells us about the marketing strategy and sentimental analysis of the airport lounges across metrocities. The research objectives are to identify the marketing strategy and thematic analysis.* ***Design/methodology/approach****: This is qualitative research. In this study, we collected reviews from social media using NVivo software, and the data we gathered from consumer comments was analyzed using NVivo software for sentimental and thematic analysis. The data was gathered from consumers who provided feedback on the service quality of airport lounges in major cities across India.* ***Findings****: In this research, we have identified about the sentimental analysis of the customers who uses airport lounges and marketing strategy of credit cards swiped in airport lounges as well as how the marketing strategy works at airport lounges that accept credit cards.* ***Originality:*** *This is the first Study on sentimental analysis and thematic analysis in the Airport lounges across Indian metro cities.*

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Keywords:

INTRODUCTION

The amenities that visitors might anticipate at a lounge can differ greatly. At its most basic, an airport lounge will typically offer a roomier and more peaceful place to sit than the terminal gate. Even on popular travel days, some lounges can still get rather full, so make sure to check them out in advance to get a sense of how crowded they might be. The majority of lounges include food of some kind, from simple snack selections to elaborate dinner alternatives. These are often in the form of a buffet, while some upscale lounges include waitstaff-served sit-down meals. A premium drink selection is another feature of many lounges. This might be an open bar in premium lounges, a cash bar or an honour bar. For passengers making a connection after an extremely lengthy journey, lounges with their own private facilities are particularly enticing. Some even offer showers and changing areas. Others provide child play areas, massages and spa services in certain upscale clubs, as well as workspaces such as conference rooms, cubicles, and desks for working. Given the variety of amenities available at airport lounges and the fact that visitors can select from a number of lounges at any given airport, it's advisable to conduct some advance research before choosing which lounge to visit. By doing this, you may prevent hopping between lounge workstations and make sure the one you choose will live up to your expectations. Additionally, keep in mind that lounge access provided by a first- or business-class ticket is typically only valid prior to boarding the final flight of the itinerary. There are arrival lounges, but most of them won't let you enter before you leave the airport after your final leg of travel. After entering a lounge After you're seated and comfortable, don't waste any more time on the phone, and always use headphones or earbuds when listening to audio. Recognize and appreciate the wish of others for a serene and quiet atmosphere. In addition to complimentary meals, several lounges also sometimes give out free alcoholic beverages. Free beverages are undoubtedly a good perk, but only to a reasonable extent. Booking a business or first-class ticket is often the easiest way to enjoy the amenities of an airport lounge, however there are other options as well. These rates nearly invariably include access to the airline's applicable lounges or, in the event that the airline does not have a lounge, access to partner airline or alliance lounges, especially on long-haul flights. But purchasing expensive tickets isn't the only way in. The majority of airlines provide loyalty programmes that allow regular travelers to accumulate elite status points, which unlock lounge access. This benefit is frequently extended to owners of premium airline-branded credit cards as well as third-party credit cards with a travel theme, such as the Chase Sapphire Reserve or the American Express Platinum card.

OBJECTIVE

- To focus on the marketing strategy of the Airport lounges and how it works.
- To study the sentimental analysis of the customers using credit cards and debit cards and their experiences in airport lounges.
- To study the thematic analysis using customer feedbacks about the airport lounges and their services.

REVIEW OF LITERATURE

1. Jennifer Rowley (1999). “The retail experience in airport departure lounges: reaching for timelessness and placelessness”. In this research study, the author addresses airport lounges, which play an important role in establishing timeless and placeless environments through servicescape, retail outlets, and customer experience, thereby changing marketing messages and communication within these places.
2. Bee-Lia Chua (2017). “Investigating the key drivers of traveler loyalty in the airport lounge setting” Researchers discussed Functional congruity, joy, well-being perception, brand identity, and satisfaction are key determinants of traveler loyalty at airport lounges, according to the study.
3. Hyeon-Cheol Kim, (2016). “Understanding Airline Travelers’ Perceptions of Well-Being: The Role of Cognition, Emotion, and Sensory Experiences in Airline Lounges”. In this study, the author explained how understanding travelers’ opinions of well-being at airline lounges is important for marketing efforts. Cognitive and sensory experiences play important roles in increasing satisfaction and revisitation intentions.
4. Sanghyeop Lee (2017). “Shaping and enhancing airport lounge experiences: The application of brand personality and image congruity theories”. Airport lounges can enhance customer experiences by focusing on brand personality, self-congruity, and functional congruity, leading to increased satisfaction and revisit intentions among patrons.
5. C. N. Vanitha (2023). “Sentimental analysis using machine learning in Twitter dataset”. Sentimental analysis is the process of detecting emotions and opinions from feedback, such as tweets, using machine learning algorithms.
6. Supriya S. Nala Wade (2023). “An Empirical Study on Sentimental Analysis using Deep Learning”. An Empirical Study on Sentimental Analysis using Deep Learning.
7. Pachipala Yellamma (2023). “An E-Commerce Product Feedback Review Using Sentimental Analysis”. Sentimental analysis is used to analyze customer feedback and understand their sentiment towards a product or service.
8. Prem Suryakant Chougle et al (2023). “Twitter sentimental analysis”. The paper discusses the effectiveness of linguistic features in identifying the sentiment of Twitter messages using the Apache Storm framework. It mentions sentiment analysis as a step in the process of analyzing the sentiments of tweets.
9. Haibo Feng et al (2023). “A Detailed Survey on Sentimental Analysis on Social Media”. The paper discusses the importance of sentiment analysis on social media and its applications in various fields such as economy and healthcare.
10. Prashant Upadhyaya (2022). “Food Items Prediction Using Sentimental Analysis.” The research paper utilizes sentimental analysis to predict food item opinions, aiding customers in decision-making and assisting shopkeepers in enhancing products based on feedback.

SIGNIFICANCE

Travellers are becoming more and more aware of the advantages of lounges. Nowadays, a lot of airlines provide lounge access to customers who are travelling in luxury cabins or as part of their loyalty programmes. Additionally, practically all banks provide their clients with credit or debit cards with free lounge access. Because they only have one player in the market, monopoly enterprises face little to no competition. Monopolistic businesses see lower average costs as a result of economies of scale. These businesses are typically market leaders and either alone or major participants. India's largest airport service aggregator Dream Folks Services Ltd is engaged in improving airport experiences for travellers by employing a technology-driven platform and offers services like lounges, food and beverage, transit hotels, and many more. As the government of India promotes the UDAN plan, which concentrates on airports in Tier 2 and Tier 3 cities, it is projected that Dream Folks market growth will accelerate as passenger volume and industry expansion are promoted. s the government of India promotes the UDAN plan which concentrates on airports in Tier 2 and Tier 3 cities, it is projected that Dream Folks market growth will accelerate as passenger volume and industry expansion are promoted.

RESEARCH METHODOLOGY

In this Research We have taken interviews of 50 customers and their feedbacks who have experienced Airport lounges in different Airports of Metropolitan Cities across India like Delhi, Bombay, Kolkata and Chennai and also Bangalore how they have used their credit cards and debit cards for their lounge access respectively. A fee of 2 Rupees in INR and 25 Rupees is deducted for Visa cards and master cards respectively. Here different lounges in Indian have different types of access like credit and debit for various banks. Here are the list of 10 Travellers from whom we have collected the data and what cards they used for the respective airport lounges and what cards are valid.

Main Features: Drinks, Food (Buffet), Wi-Fi, Comfy Seats

After taking the customer feedback of 50 customers who have accessed the airport lounges the interviews and feedbacks were run through auto code in Nvivo software. The results were obtained and sentimental analysis and reviews of the customers were studied.

Table 1.

S.N.	Travellers in airport lounge	Destination travelled	Debit card/credit card
1	Uday Chauhan	Delhi, Indira Gandhi International Airport	SBI Wealth Card.
2	Paramjeet Singh	Delhi, Indira Gandhi International Airport	HDFC Millennia Debit Card
3	Anshuman Dutta	Kolkata, Subhash Chandra Bose International Airport	ICICI Coral Plus Debit Card
4	Parul Banik	Kolkata, Subhash Chandra Bose International Airport	SBI Platinum International Debit Card
5	Akshita Jain	Mumbai Chhatrapati Shivaji Maharaj International Airport	Axis Priority Debit Card
6	Ankur Wadia	Mumbai Chhatrapati Shivaji Maharaj International Airport	IndusInd World Exclusive Debit Card
7	Sonam Bajwa	Chennai Kamaraj Domestic Terminal Airport.	HDFC Easy Shop Platinum Debit Card
8	V Akash	Chennai Kamaraj Domestic Terminal Airport.	SBI Wealth Card.
9	Paromita Das	Kempegowda International Airport	ICICI Bank Sapphiro Debit Card
10	Nachiket Alluhwalia	Kolkata, Subhash Chandra Bose International Airport	SBI Platinum International Debit Card

Table 2.

Codes	Number of coding references	Number of items coded
Reviews on airport	350	1
Reviews on airport - Mixed	4	1
Reviews on airport - Negative	4	1
Reviews on airport - Neutral	265	1
Reviews on airport - Positive	77	1

Sentimental Analysis on the Customer Feedback about Airport Lounges

Here in this research, we have studied about the sentiments of the customer. Less than 5 has rated for very negative. More than 5 have rated moderately negative. More than 40 has rated moderately positive. More than 35 is very positive.

Comparison by Number of Sentiment Coding Reference

From this chart, we can observe that grey part is referred as neutral feedback of customers. Aqua marine colour is positive. Rust colour as Negative feedbacks and Yellow colour is Mixed feedback. So from this observation we can find that majority has opted for neutral and there are more positive reviews about the services of airport lounges.

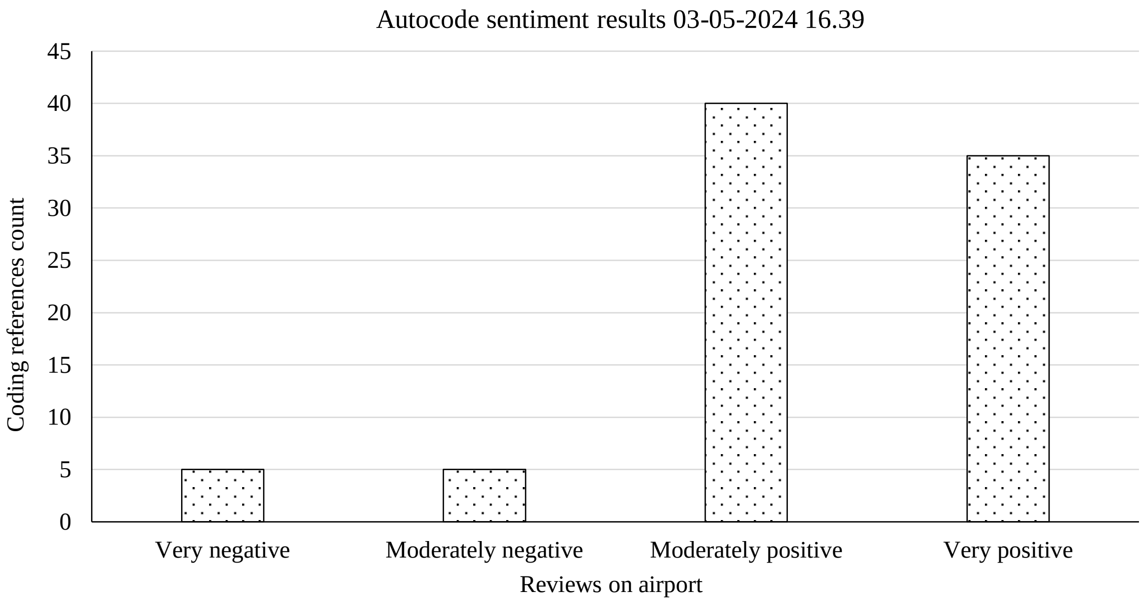

Figure 1.

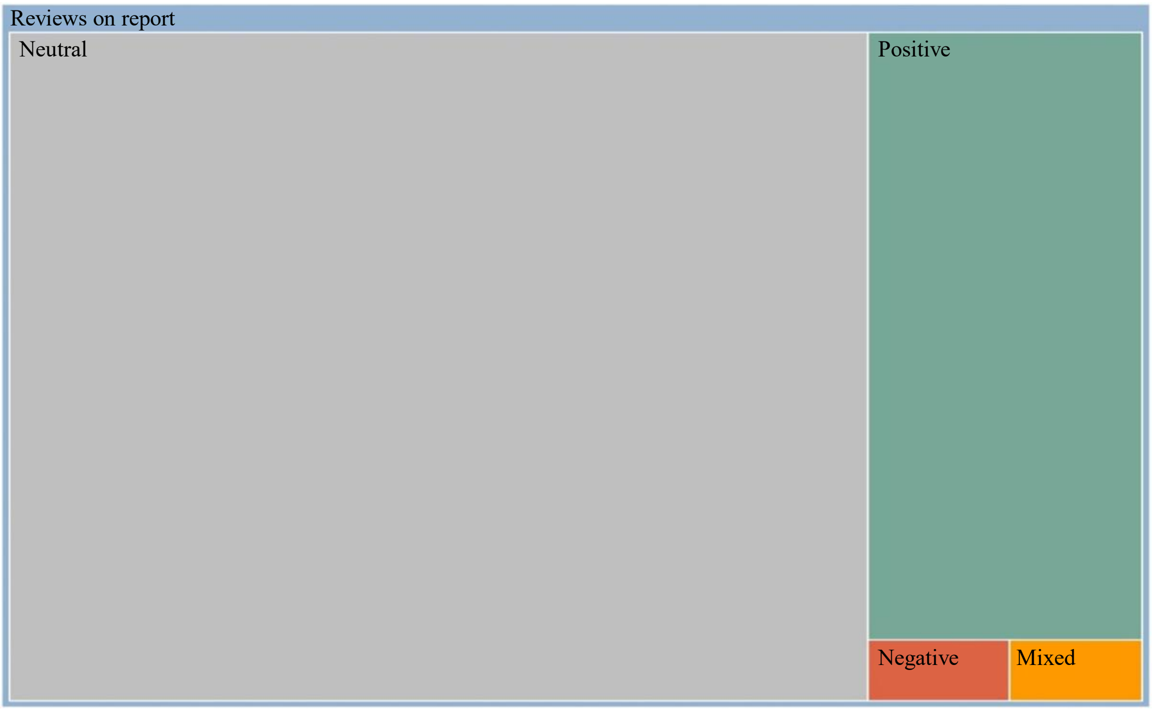

Figure 2.

Figure 3.

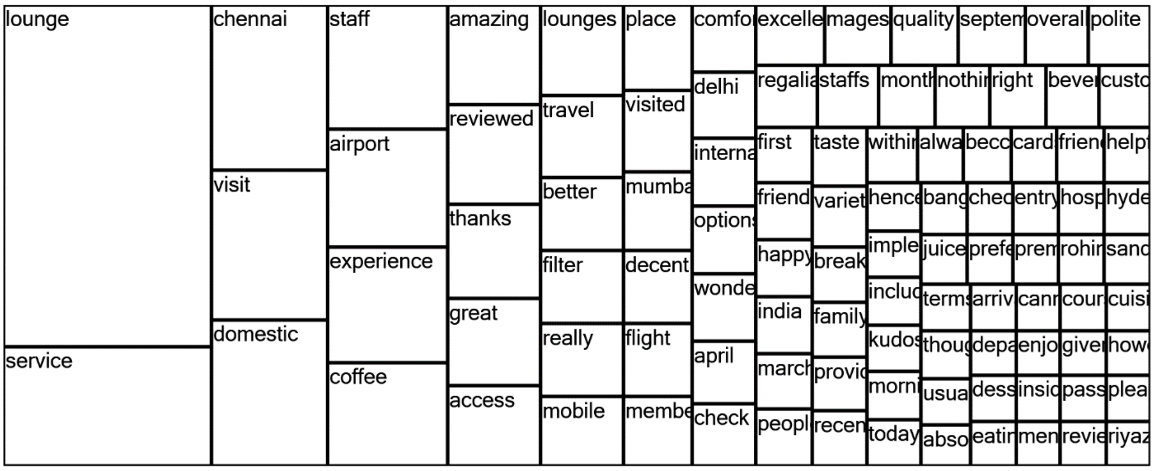

Figure 4.

Table 3.

Type of card	Charges
VISA Debit Card	Rs. 2 for each card holder
Master Debit Card	Rs. 25 for each card holder

Word Frequency

Here in the word frequency the more number of words used are visit, services, staff lounge, Chennai, domestic. some good words and positive feedbacks were used like really amazing, better experience, great airport, thanks, travel and so on. From this thematic analysis we can find out that more positive feedback reviews.

Tree Map

FINDINGS AND DISCUSSION

Facilities at Plaza Premium Lounge at Delhi Airport (T3 Domestic)

Services and Facilities

- Wifi: Yes, very good speed.
- Food: Yes

- Ambiance: Plush interiors and well spacious (but crowded recently)
- Recharge station: Yes
- Complimentary access on: MasterCard, Priority Pass, Diners Club, Visa.

Facilities at Travel Club Lounge Location at Kolkata Airport

It has 2 lounges Irish house and Travel Club.

Kolkata Airport, Terminal 1, Airside, Domestic Departures, Mezzanine Level.

Services and Facilities

- Air conditioning
- Beverages (non-alcoholic)
- Disabled access
- Flight information monitor
- Newspapers/magazines
- Television
- WiFi

Mumbai Airport has 2 lounges Travel Club and Oasis

Table 4.

Travel club facilities	Oasis club facilities
Disabled access	*Disabled access*
TV	TV
Internet	Internet
No smoking	No smoking
Refreshments	Refreshments
Air Conditioning	Air Conditioning
Alcohol	Alcohol
Newspapers/magazines	Newspapers/magazines
Flight information	Flight information
Digital card accepted	*Digital card accepted*
Fax	Wi-Fi
Wi-Fi	

Chennai Kamraj Domestic Terminal Airport

Facilities

- Beverages (charges for alcoholic drinks)
- Digital card accepted
- Disabled access
- Flight information monitor
- Internet/Wi-Fi
- Newspapers/magazines
- TV
- Separate smoking area outside the lounge

After taking interviews and feedbacks we have found out about the facilities available in different airport lounges in Delhi, Kolkata and Chennai from the respective customers.

CONCLUSION

After studying the sentimental analysis and thematic analysis of the customer feedback of the airport lounges we have analyzed there is more positive feedback regarding the services of the airport lounges across Indian metro cities. Delhi airport has good food, ambiance, a recharge station, and good spacious lounge access. Kolkata airport has 2 lounges Irish house and a travel club and both the lounges offers good food services. It has good facilities like Air Conditioning, Beverages (non-alcoholic) Access, Flights, Newspapers/Magazines, Television, and good wifi. Mumbai airport has 2 lounges travel club and Oasis Club as well as Chennai airport with same types of facilities in the lounge access. Travelling is a joyful experience and also a part of knowledge for every student, Employees, expatriates and soul seekers. This research tells us about the sentiments of the feedback of the customers and their emotions and feedback. From this services of food and services we can help out to reach people about the services of the airport lounges and joyful experience and enhance customer retention.

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A Study on the Comparative Analysis of Buying Behaviour of Consumers Towards Beauty Brands: Sugar Cosmetics and Colorbar

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Abstract

Purpose*: Understand consumer behavior in the beauty industry, focusing on Sugar Cosmetics and Colorbar, with objectives including loyalty evaluation, scrutinizing determinants influencing choices, and determining market positions.* ***Design/Methodology/Approach****: Utilize descriptive research, combining primary data from questionnaires and secondary data from published research papers for comprehensive analysis.* ***Findings:*** *Provide actionable recommendations for strategic decision-making, emphasizing the need to adapt to evolving consumer preferences for sustained success in the dynamic beauty industry.* ***Research Limitation:*** *Acknowledge potential constraints such as small and possibly non- representative sample, regional bias, time constraints, response bias, varying data accessibility, external factors beyond the study's scope, and subjectivity in recommendations.* ***Practical Implications:*** *Guide strategic decisions, optimize market positioning through targeted marketing, and foster lasting customer relationships for Sugar Cosmetics and Colorbar in the dynamic beauty industry.*

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Keywords: Beauty brands, consumer buying behavior, comparative analysis, sugar cosmetics, colorbar.

INTRODUCTION

Gone are the days when beauty and skincare were only limited to a specific gender. It has become a universal trend embraced by people of all genders. People from all walks of life are joining the self-care craze, and a firm commitment to celebrating diversity and spreading inclusivity throughout the beauty realm. In the words of Coco Chanel, the founder of the french luxury Chanel brand, “Beauty begins the moment you decide to be yourself.” As we unravel the stories behind Sugar Cosmetics and Colorbar, we aim to uncover how these brands empower individuals to express their unique identities through the prism of beauty. The project becomes a narrative that celebrates authenticity, reflecting the transformative power of cosmetics beyond mere products.

In the glamorous world of Beauty and Personal Care (BPC), the spotlight shines on powerhouse brands: Sugar Cosmetics, and Colorbar. These industry giants are the brainchild of visionary businesswoman Vineeta Singh and businessman Samir Modi who is also the executive director of Godfrey Phillips India. It's their captivating fusion of affordability, a youthful demographic that reigns supreme, making their ascent truly remarkable. Moreover, the unwavering obsession with beauty, relentless media exposure, and an open door to regional brands, all converging to create a dazzling Indian cosmetic market.

Sugar Cosmetics, with its empowering tagline “Rule The World, One Look At a Time!!”, embodies the spirit of individual expression and confidence. On the other hand, Colorbar embraces a philosophy of gender neutrality and celebrates diversity. With Bollywood royalty Jacqueline Fernandez as the first-ever Brand Ambassador, Colorbar positions itself as a brand that champions the birthright of everyone to express themselves uniquely. Ranveer Singh, the charismatic Bollywood maven, lending his star-studded aura to Sugar Cosmetics, elevating the brand to new heights.

Both brands strategically engage in impactful campaigns. For instance, Sugar Cosmetics, with its *#BeYourOwnMuse* initiative, celebrates International Women's Day, encouraging self-expression and empowerment. Meanwhile, Colorbar's *#choosewisely* campaign focuses on establishing itself as the world's best, offering 100% non-toxic nail lacquer. Apart from beauty consciousness, the patriotic enthusiasm of "Make in India" has sparked a remarkable shift in what consumers prefer. It encourages the use of indigenous resources, labour and expertise to boost the economy, create employment opportunities, and reduce dependency on imported products. Moreover, consumers nowadays demand skincare and hair care products with flawless resumes: they want them to be all-natural, cruelty-free, and passionately dedicated to ethical sourcing, production, and packaging.

Unveiling the answer to how these brands charm their way into everyone's hearts, so basically they mastered the art of influencer marketing. Samir Modi, the driving force behind Colorbar,carved out a niche for Colorbar by repositioning the brand as a more exclusive yet affordable product. Modi launched Twenty Four Seven, India's first 24-hour retail store chain. Modi marketed the retail chain as a one-stop shop for daily and general necessities. Sugar Cosmetics, on the other hand, took a daring twist. They gathered an army of more than 1000 devoted fans, each wholeheartedly endorsing their products. Regional influencers added an authentic touch, while platforms like Share Chat, Moj, and Chingari joined forces with YouTube and Instagram to create a symphony of marketing innovation. This was no mere marketing strategy; it was a mesmerizing narrative of transformation and empowerment, where beauty meets consciousness in the most inspiring way.

In an era where the beauty and skincare narrative transcends traditional gender norms, embracing individuals from all walks of life, a universal trend of self-care has emerged. Gone are the days when beauty was confined to a specific gender; today, people from diverse backgrounds ardently partake in the self-care craze. The beauty realm has evolved into a celebration of diversity and inclusivity, reflecting a global commitment to breaking gender stereotypes and fostering a space where everyone feels seen and celebrated.

As the beauty landscape undergoes this transformative shift, two powerhouse brands stand out in the glamorous world of Beauty and Personal Care (BPC): Sugar Cosmetics and Colorbar. Founded by visionary businesswomen Vineeta Singh and Samir Modi, respectively, these industry giants symbolize a fusion of affordability and a youthful demographic that reigns supreme. Their ascent in the competitive beauty industry is not merely marked by business acumen but also by a deep understanding of changing consumer dynamics and a commitment to inclusivity.

As we delve into the comparative analysis of consumer buying behavior towards Sugar Cosmetics and Colorbar, we navigate through the intricate layers of the beauty industry's evolution. The industry is not only shaped by visionary leaders like Samir Modi, Vineeta Singh but also by the changing perceptions of consumers who now demand skincare and hair care products with impeccable credentials—natural, cruelty-free, and ethically sourced.

The journey of Sugar Cosmetics and Colorbar is not merely a tale of product offerings; it is a captivating narrative of transformation and empowerment. Both brands have harnessed the power of influencer marketing to charm their way into the hearts of consumers. Samir Modi, the force behind Colorbar, repositioned the brand as an exclusive yet affordable product, launching India's first 24-hour retail store chain, Twenty Four Seven. On the other hand, Sugar Cosmetics embarked on a daring path, mobilizing an army of more than 1000 devoted fans and partnering with regional influencers to add an authentic touch to their narrative.

In this exploration of consumer behavior, we draw insights from demographic analysis, scrutinize the impact of online availability, and dissect the factors influencing buying decisions. As we unravel the intricate dance between consumer expectations and brand strategies, this analysis not only contributes to the body of knowledge in the beauty industry but also provides actionable insights for Sugar Cosmetics and Colorbar. The study serves as a roadmap for these brands to refine their strategies, strengthen market positions, and navigate the ever-evolving landscape of consumer preferences in the beauty industry.

In the vibrant tapestry of the beauty industry, where trends emerge, evolve, and dissipate in the blink of an eye, understanding the intricate nuances of consumer behavior stands as a crucial linchpin for brands seeking sustained success. This study embarks on a comprehensive journey, conducting a Comparative Analysis of Buying Behavior of Consumers towards two formidable entities in the beauty realm—Sugar Cosmetics and Colorbar. As these brands navigate the ebb and flow of consumer expectations, market dynamics, and industry trends, deciphering the intricacies of why consumers choose one over the other becomes not only insightful but imperative for strategic decision-making.

The beauty industry, known for its dynamic nature, is a kaleidoscope of diverse preferences, aesthetic sensibilities, and personal inclinations. Against this backdrop, understanding the multifaceted layers of consumer choices and purchase patterns becomes paramount for beauty brands striving to establish and maintain their foothold in a competitive marketplace. Sugar Cosmetics and Colorbar, recognized for their distinct approaches to product development, branding, and market positioning, serve as compelling subjects for this comparative exploration.

The research objectives of this study are threefold: firstly, to evaluate the depth of customer loyalty elicited by Sugar Cosmetics and Colorbar; secondly, to dissect the determinants shaping consumer choices between these two beauty juggernauts; and thirdly, to discern which company currently holds a stronger market position. Through the fusion of primary data collected via meticulously crafted questionnaires and secondary data sourced from published research papers, this study endeavors to weave together a comprehensive narrative that goes beyond the surface- level understanding of consumer preferences.

As we unravel the layers of consumer behavior towards these beauty brands, we delve into demographic analyses, dissecting the age groups, gender dynamics, and income brackets that define the target audience. Beyond mere statistical revelations, this analysis seeks to decode the story behind the numbers—why certain demographics are drawn towards Sugar Cosmetics while others find resonance with Colorbar. Through interpretative pie charts and graphs, we aim to bring to life the mosaic of consumer demographics that shapes the canvas of the beauty industry.

Further illuminating the canvas, we explore the various channels through which consumers receive information about beauty brands. From the powerful realm of social media to the enduring influence of celebrity endorsements, we decipher the multifaceted pathways that lead consumers to the allure of Sugar Cosmetics and Colorbar. This exploration underscores the shifting landscape of brand discovery and emphasizes the dynamic nature of consumer preferences in an era where digital channels play an increasingly dominant role.

The subsequent sections of this analysis delve into the granular details of buying habits, brand preferences, and the impact of online availability on consumer decisions. By scrutinizing the factors that weigh heavily in the minds of consumers when making beauty-related choices, we uncover not only what captures their attention but also what compels them to make a purchase.

In essence, this Comparative Analysis of Buying Behavior of Consumers towards Sugar Cosmetics and Colorbar is not merely a statistical exercise; it is an exploration of the intricate dance between consumer expectations and brand strategies in the beauty industry. As we journey through the findings and interpretations, we aim to provide actionable insights for both Sugar Cosmetics and Colorbar—insights that can guide strategic decisions, inform marketing endeavors, and foster a deeper connection with the ever-discerning consumer base in the ever- evolving world of beauty.

In the contemporary beauty landscape, characterized by its ever-evolving trends and dynamic consumer preferences, the competition among cosmetic brands for market dominance has intensified. Within this vibrant milieu, two formidable contenders stand out with their distinctive approaches, captivating a diverse audience—Sugar Cosmetics and Colorbar.

Originating from the visionary perspective of a committed entrepreneur, Sugar Cosmetics emerged as a trailblazer in the beauty industry. Founded by Vineeta Singh, the brand encapsulates a spirit of innovation and affordability. Vineeta Singh's strategic vision has propelled Sugar Cosmetics into the hearts of beauty enthusiasts, offering a compelling fusion of quality, trendiness, and accessibility. The brand's journey signifies a narrative of transformation and empowerment, where beauty converges with consciousness in an inspiring amalgamation.

On the other side of the cosmetic spectrum, Colorbar unfolds its narrative with a unique charm under the guidance of Samir Modi. The driving force behind Colorbar, Samir Modi, strategically repositioned the brand, infusing exclusivity with affordability. The inception of Twenty Four Seven, India's first 24-hour retail store chain, underscored Modi's commitment to making Colorbar a one-stop destination for daily necessities. The brand's commitment to diversity, quality, and an unwavering obsession with beauty has carved a distinct niche in the Indian cosmetic market.

As we delve into the intricacies of consumer behavior towards these iconic brands, this comparative analysis aims to unravel the factors influencing the choices of beauty enthusiasts. Exploring the roots of Sugar Cosmetics and Colorbar, we embark on a journey to understand not just their origin stories but also how these narratives have shaped their identities in the competitive beauty arena. Through a detailed examination of consumer preferences, buying patterns, and market positions, this study endeavors to provide valuable insights that will contribute to the ongoing dialogue in the beauty industry.

LITERATURE REVIEW

Shruti Shukla (2023) This research paper delves into the dynamic landscape of the cosmetics and personal care industry in India, highlighting the rapid growth and significant revenue generation. Focusing on the case of 'Kay Beauty,' a successful cosmetic brand by Katrina Kaif in partnership with Nykaa, the study explores the impact of influencer marketing on the purchase decisions of female consumers aged 18-30. Despite the rising prominence of influencers in social media, particularly in the beauty and lifestyle sectors, the research finds that while influencer marketing effectively enhances brand awareness, it has limited influence on actual product purchases. The study emphasizes the enduring impact of factors such as brand trust and product cost on consumer decisions, concluding that while influencer marketing contributes to heightened awareness, it may not always translate into tangible effects on purchasing behavior.

Anindita Audhkhasi (2022) This paper explores the diverse factors influencing women's consumer behavior in the growing Indian cosmetic industry. Employing an intersectional perspective, it analyzes the impact of psychological, social, and economic influences, particularly focusing on how heteronormative beauty norms shape cultural expectations. The research highlights the nuanced nature of cosmetic purchase patterns, considering factors such as color, caste, race, and religion, while assessing the industry's inclusivity. It unveils how the cosmetic industry exploits women's insecurities, leading to gender-based pricing practices and contributing to social inequalities. The conclusion emphasizes the intricate relationship between women and their cosmetic consumption, acknowledging diverse experiences and identities. The study also sheds light on limited consumer awareness about raw materials and environmental aspects, with price often driving preferences.

S. Lakshmi Prabha, et.al, (2022) Over the past two decades, a significant shift in consumer behavior has been observed, marked by a preference for products based on health benefits rather than traditional factors like color, size, and taste. This transformation is attributed to increased consumer awareness of organic products and their associated benefits. This research paper focuses on studying the buying behavior of 100 working women in Madurai towards organic cosmetic products. The findings indicate an overall increase in consumer buying behavior for organic cosmetics, with a positive attitude towards purchase intention. Motivations behind this shift include concerns for the environment, health, lifestyle, product quality, and subjective norms. The study underscores the evolving consumer behavior, driven by environmental consciousness and a growing preference for eco-friendly and organic products in response to awareness of environmental degradation and related issues.

Dr. Reena Malik, et.al, (2020) This study delves into the factors shaping Indian consumers' attitudes toward organic cosmetics within the booming personal care and cosmetics industry. With a sample of 150 organic product users, the research employs statistical analyses, including Pearson Chi-square test and Regression analysis. The results emphasize the significant influence of environmental awareness, skin safety consciousness, and word of mouth on consumer attitudes toward organic cosmetics. The study also explores the impact of consumer characteristics, such as gender, on factors like price considerations, skin protection, and natural fragrance in the decision to purchase organic cosmetic products. The conclusion highlights the evolving consumer landscape in India, driven by changing lifestyles, increased disposable income, and a heightened awareness of organic and cosmeceutical products.

Geeta Kumari (2019) This research paper investigates market segmentation and buying behavior of customers for health care products in Chandigarh, India. The study finds that a significant portion of respondents (41.7%) is influenced by advertising and media strategies, while 40% disagree on product usability due to the lack of a full product range within a single company. Additionally, 61.7% express excitement about new products driven by inner curiosity. The conclusions highlight the importance of fast-moving consumer goods in today's world, emphasizing its recession-proof nature and its significant role in creating job opportunities in India. Regression analysis indicates a 21.3% variation in respondent age, demonstrating the impact of market segmentation dimensions, such as new product awareness, buying interest in new branded products, area-wise product availability, advertising effects, marketing strategies, and product quality diversification, on the buying behavior of customers using hair care products in the market.

M. Suresh Babu (2019) This paper aims to explore the general factors influencing consumer behavior towards cosmetics. Living in a society where perceptions often hinge on appearance, the cosmetics industry plays a crucial role in individuals' lives, whether directly or indirectly. The paper provides an overview of how people are swayed towards cosmetics, delving into the intricate details of the influencing factors. While the concept may be complex, it holds significance for efficient marketing. Consumer behavior encompasses actions, reactions, and responses concerning the products and services they seek. Factors such as personality, perception, attitude, and learning, alongside elements like product, price, physical attributes, advertising, and societal influence, collectively shape consumer behavior. The cosmetic and beauty product range in India has seen significant expansion, with domestic competitors meeting international demands.

Sonia Bajwa, et.al, (2019) This study delves into the multifaceted qualitative factors influencing consumers' perceptions and behavior towards purchasing counterfeit cosmetics. Factors such as status display, affordability, value consciousness, occupational prestige, novelty seeking, abrasion behavior, cognitive satisfaction, and conspicuous consumption contribute significantly to the prevalence of counterfeit cosmetics. Non-price determinants emerge as strong impulsive drivers in consumer decision-making for counterfeit cosmetics, despite the associated risks. The conclusion underscores the active role of consumers in non-deceptive counterfeit behavior, suggesting that ethical values and restrictions on promotional tools could mitigate this trend. The study advocates for stringent measures against retailers displaying counterfeit products, particularly in malls and showrooms, and emphasizes the need for policy intervention to address the accessibility of counterfeit cosmetics on dubious online platforms catering to price- sensitive consumers.

S. Poornima, (2018) This article emphasizes the significance of understanding consumer preferences, particularly buying patterns and behavior, for the success of businesses in the cosmetic industry, with a focus on personal care products. It acknowledges the heightened consumer consciousness regarding appearance, beauty, and grooming, influenced by awareness of Western cosmetic products and brands. The main objective is to investigate the impact of attitude on cosmetics buying behavior, highlighting consumers' perception of cosmetics as a necessary part of their routine life. The conclusion underscores the competitive nature of the modern market, emphasizing the pivotal role of consumers. It suggests that marketers, especially in the growing cosmetic industry in India, should align their strategies with factors influencing purchase decisions, including consumer attitudes, perceptions, and learning habits. Quality is identified as a paramount consideration for consumers when purchasing cosmetics, often guided by the advice of beauticians. Overall, the article provides insights for marketers aiming to navigate the dynamic landscape of consumer preferences in the cosmetic sector.

Ligo Koshy, et.al, (2017) This study explores the factors influencing consumers' purchasing decisions for face care products, focusing on college students in Pathanamthitta district, Kerala. With a sample size of 200, the study employs a self-designed questionnaire and the Garrett Ranking technique. Findings reveal that female consumers prioritize brand name, ingredients, and advertisements, in that order, while male consumers emphasize brand name, advertisements, and price. The majority of respondents spend less than 500 INR on face care products. Notably, both male and female consumers attribute significant importance to advertisements in their purchase decisions. The study aligns with existing research, indicating a trend among face care product consumers toward branded items, emphasizing the impact of marketing and brand recognition in this consumer segment.

Kruti Bhatt et.al, (2017) This study investigates consumer buying behavior towards cosmetics in Navsari city, Gujarat, with a focus on understanding the factors influencing purchase decisions. Utilizing a sample of 100 respondents and employing both primary and secondary data, the research employs statistical tools such as one-sample t-test, frequency analysis, and multiple response analysis. The results highlight quality as the most crucial factor in cosmetic purchases, providing valuable insights for marketers in crafting effective marketing strategies. The study identifies Vaadi Herbals and Just Herbs as the most preferred cosmetic brands in Navsari city. As the cosmetic industry continues to grow in India, understanding consumer attitudes, perceptions, and learning habits becomes imperative for marketers. The findings emphasize the significance of quality and the influence of beautician recommendations in shaping consumer preferences, affirming the perception of cosmetics as an essential part of routine life.

Abdullah Bin Junaid, et.al, (2013) This study investigates the consumption behavior and attitudes of young females aged 15 to 35 in Delhi/NCR towards cosmetics, emphasizing various marketing variables influencing their choices and decision-making processes. The research extends its focus to understand the impact of customer decision-making in purchasing dermaceutical products in the region. Conducted through questionnaires and analyzed using SPSS version 16, the study reveals valuable insights into the cosmetic market dynamics. Notably, as the income levels of female consumers rise, so does their expenditure on cosmetic products. The findings underscore a growing awareness of cosmetic products, with a significant preference for those made from natural ingredients, indicating a burgeoning market for herbal cosmetic products. The study suggests a strategic opportunity for the herbal cosmetic industry to capitalize on this preference by introducing new herbal brands and further capturing the evolving cosmetic market in Delhi/NCR.

NEED OF THE STUDY

1. *Competitive advantage:* Identifying and analyzing the factors influencing consumers' choices between Sugar Cosmetics and Colorbar can help these brands gain a competitive advantage by tailoring their strategies based on consumer preferences.
2. *Brand positioning:* The study aids in assessing how consumers perceive and position Sugar Cosmetics and Colorbar in the beauty market, allowing brands to refine their positioning strategies.

3. *Marketing strategy:* Tailoring marketing strategies based on the comparative analysis can optimize promotional efforts, focusing on elements that resonate more with the target audience for each brand.
4. *Customer retention:* Understanding what influences consumer loyalty and repeat purchases helps in developing strategies to retain customers, fostering long-term relationships with the brand.
5. *Decision-making insights:* Providing insights into the decision-making process of consumers can assist marketers in creating targeted campaigns and messages that resonate with their audience.

To conclude, a comparative analysis of buying behavior towards Sugar Cosmetics and Colorbar is crucial for brands to stay competitive, relevant, and responsive to the dynamic preferences of consumers in the beauty market.

RESEARCH METHODOLOGY

Research Objectives

1. To evaluate customer loyalty for Sugar Cosmetics and Colorbar Cosmetics.
2. To examine the determinants of consumer choice between Sugar Cosmetics and Colorbar Cosmetics.
3. To determine which company holds the strong position in the market

Sample Size

204 respondents

Type of Research

Descriptive research

Sources of Data Collection

Both primary and secondary data were collected. Primary data was collected through questionnaires while secondary data was collected through published research papers.

Data Statistics

Table 1.

Total number of forms sent	204
Number of respondents	204
Missing observation	NIL
Actual number of respondents	204
Age group	Age 18-35
Tools used	Google Forms
Time period of study	4 months

Research Tools and Techniques

1. Questionnaire
2. Excel

DATA ANALYSIS

Customer feedback about feedback about their preference and buying patterns and behaviour towards beauty brands speci Sugar cosmetics and Colorbar is as follows. Understanding and interpreting responses through graphs.

Interpretation: As per the responses, we found that 73.5% of respondents are of the age group 18–24 and 19.1% of the respondents are of age group 15–18 and very few responses from age group 24–45.

Interpretation: As per the responses, we found that 59.3% of respondents are Females and 40.2% of the respondents are Males and very few responses from prefer not to say people.

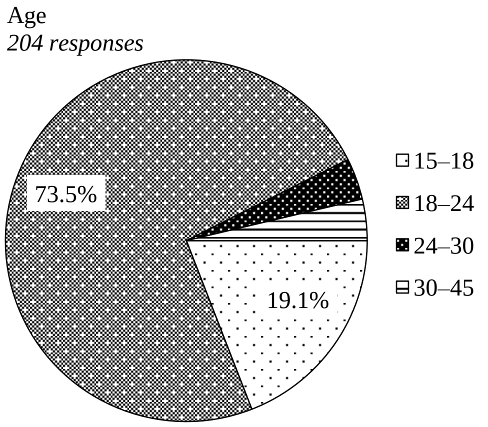

Figure 1. Showing age groups of the customers.

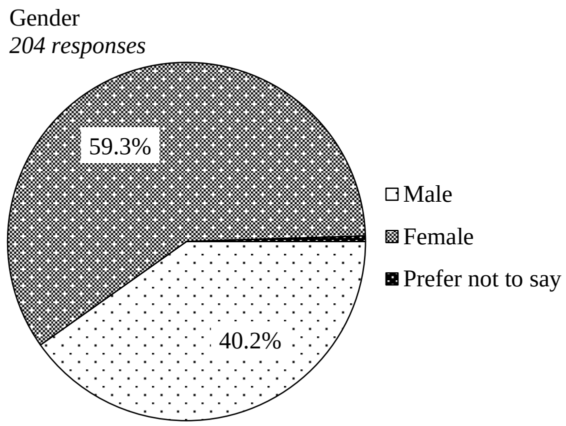

Figure 2. Showing gender groups of customers.

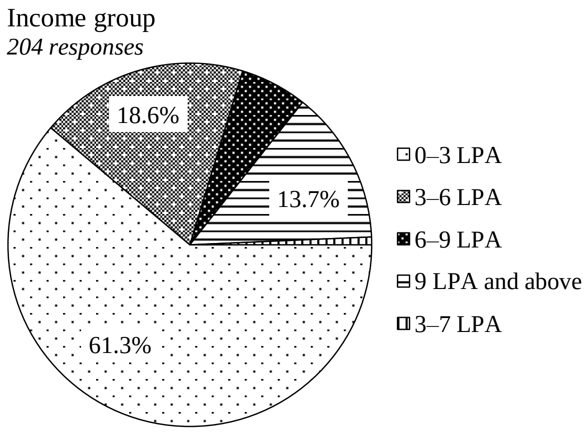

Figure 3. Showing income groups of customers.

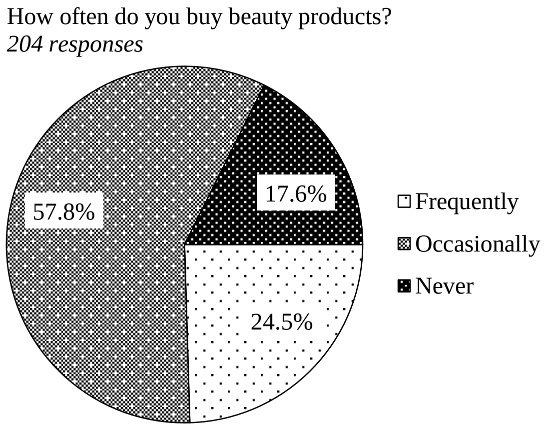

Figure 4. Showing buying habit of customers.

Interpretation: As per the responses, we found that most of the respondents i.e. 61.3% are of 0-3 LPA income group and 18.6% of the respondents fall under 3-6 LPA income group and the rest are earning more than 6 LPA.

Interpretation: The responses clearly state that 57.8% of the customers buy beauty products frequently and 24.5% of the customers purchase beauty products occasionally and the rest are not buying any product. As to increase the company's sales and revenues, both sugar cosmetics and colorbar can target the occasional customers and try to approach the never buying customers so that they are forged to buy that product.

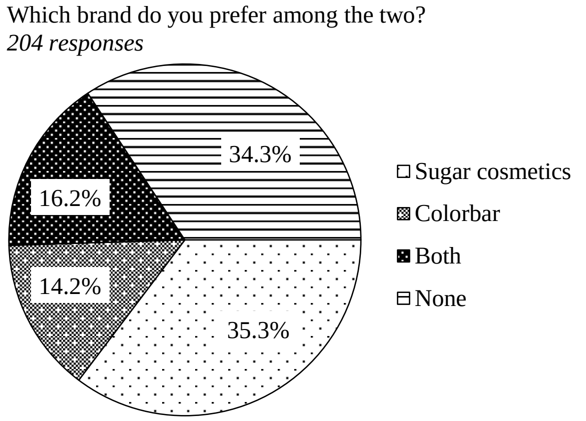

Figure 5. Showing preference of customers between the brands Sugar Cosmetic and Colorbar.

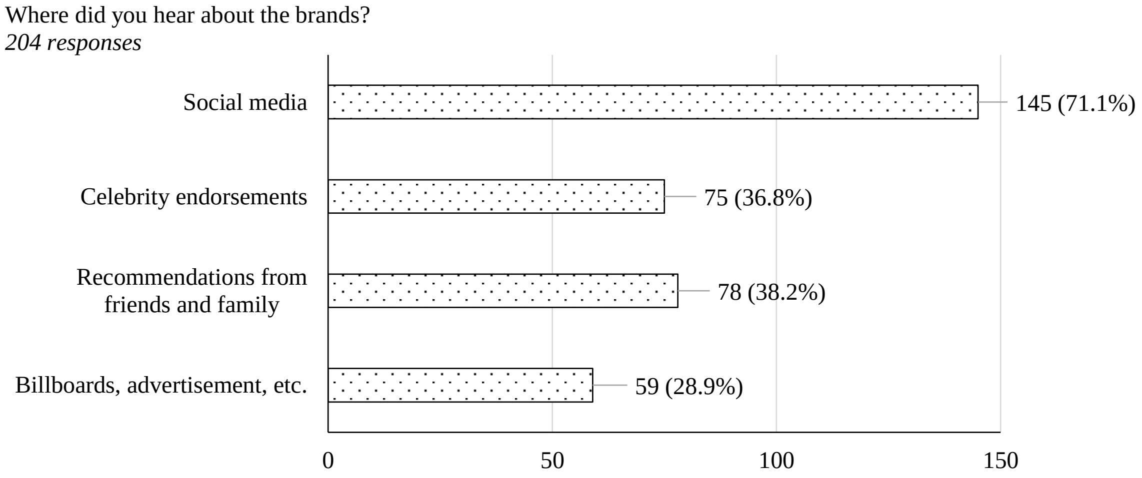

Figure 6. Showing customers' information source.

Interpretation: As per the responses, Sugar Cosmetics has a higher customer base than Colorbar i.e. by 20.9%. Although 16.2% customers buy both brands and there are some customers who prefer to buy other brands i.e. 34.3% or they are not preferring to buy beauty products.

Interpretation: As per the responses, a noteworthy 71.1% of respondents are immersed in the beauty landscape through Social Media, highlighting its influential role in brand discovery. Additionally, Celebrity Endorsements significantly contribute, with 36.8% citing them as sources of brand awareness. Equally impactful are Recommendations from friends and family, influencing 38.2% of respondents. Surprisingly, traditional channels like Billboards and advertisements persist, capturing the attention of 28.9%. This diverse interplay of influences shapes the journey of discovering renowned beauty brands like Sugar Cosmetics and Colorbar, emphasizing the dynamic nature of consumer preferences in the ever-evolving beauty industry.

Interpretation: As per the responses, we found that a remarkable 80.9% of respondents prioritize Quality when choosing a beauty product, underscoring the paramount importance placed on product excellence. Notably, 48% value their Previous Purchase Experience, indicating a significant reliance on personal satisfaction. Price follows closely as a deciding factor for 38.2% of respondents, emphasizing the balancing act between quality and affordability. Brand Value holds sway for 29.1%, reflecting a conscious alignment with trusted brands. Surprisingly, the trendiness factor, associated with Social Media, takes a backseat with a percentage of [percentage], suggesting that enduring product qualities weigh more heavily than fleeting trends in the minds of consumers.

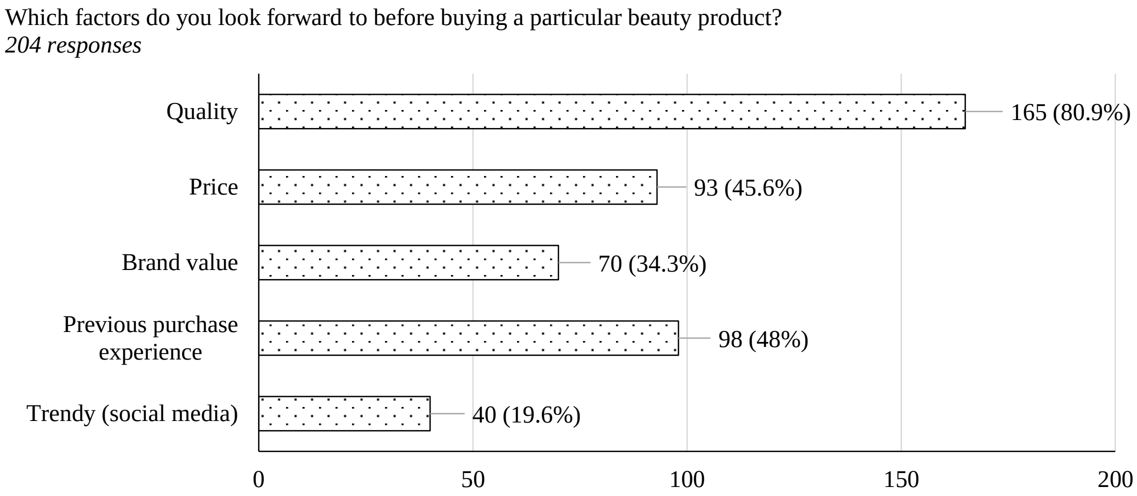

Figure 7. Showing factors affecting buying behavior of customers.

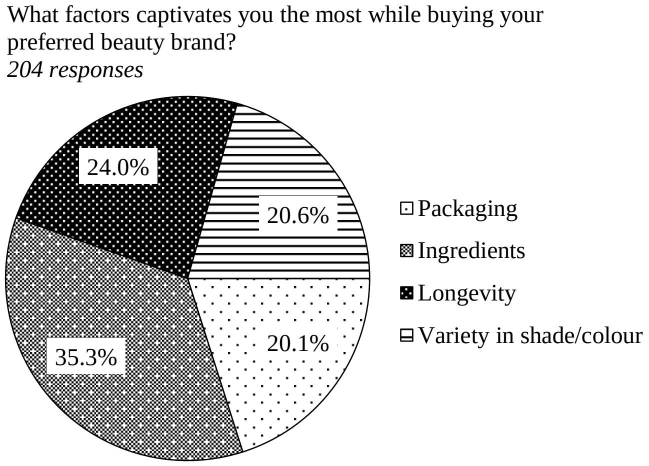

Figure 8. Showing factors which attracts the customers.

Interpretation: As per the responses, we found that a remarkable percentage of respondents prioritize their preferred beauty brand based on a combination of factors. While 35.3% emphasize the allure of Ingredients, indicating a keen focus on the formulation and composition, a substantial 24% value the Longevity of the products. Variety in Shade/Color attracts 20.6%, showcasing the importance of a diverse range.

Interestingly, Packaging holds sway for 20.1% of respondents, underlining the significance of visual appeal and first impressions. It's noteworthy that the percentages across these factors are relatively close, suggesting a nuanced balance sought by consumers. This indicates that the decision-making process is intricate, with individuals weighing multiple aspects such as formulation, durability, aesthetic presentation, and variety when selecting their preferred beauty brand.

Interpretation: As per the responses, we found that a substantial 60.3% of respondents are significantly influenced by the online availability of beauty products, underscoring the pivotal role that digital accessibility plays in shaping consumer behavior. This majority suggests a growing dependence on the convenience and ease of online shopping platforms for acquiring beauty items.

Conversely, 9.8% of respondents indicated that online availability does not impact their buying behavior. This minority suggests a segment of consumers who may still prefer traditional brick- and-mortar avenues or are less swayed by the online presence of beauty products.

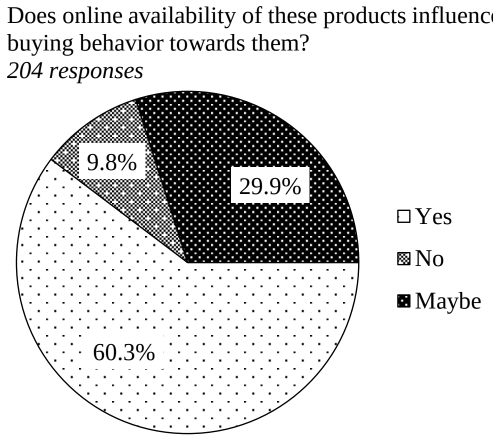

Figure 9. Showing impact of online availability of product.

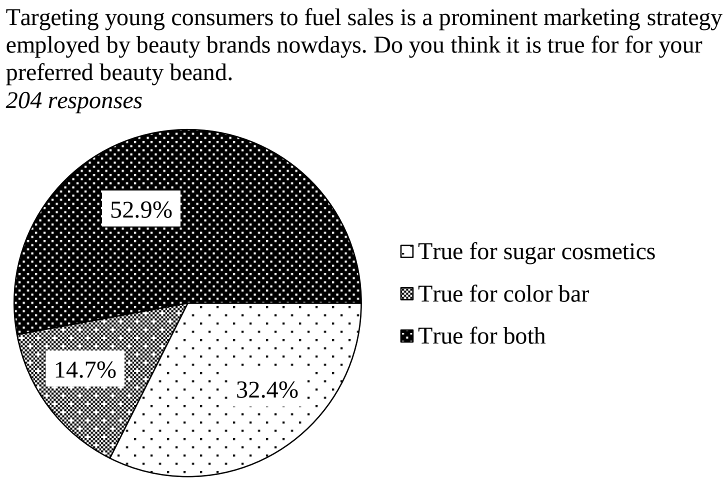

Figure 10. Showing the relevance of the strategy towards both the brands.

Interestingly, the category labeled as “Maybe” denotes a level of ambiguity among respondents, hinting at a potential shift in purchasing behavior based on specific circumstances or the nature of the product. This uncertainty could be influenced by factors such as brand reputation, exclusive online offers, or the urgency of the purchase.

In essence, the dominance of the “Yes” responses suggests a digital transformation in the beauty retail landscape, where the online availability of products plays a pivotal role in steering consumer preferences and purchasing decisions. As technology continues to reshape the consumer experience, understanding and adapting to this shift in behavior becomes increasingly critical for beauty brands aiming to stay relevant in the evolving marketplace.

Interpretation: As per the responses, we found that a remarkable percentage of respondents hold the belief that targeting young consumers to drive sales is a prominent marketing strategy employed by beauty brands. Interestingly, a significant 52.9% of respondents feel that this strategy holds true for both Sugar Cosmetics and ColorBar, suggesting a widespread perception that both brands actively engage in marketing efforts geared towards the younger demographic.

Further analysis reveals that 32.4% believe this strategy is specifically true for Sugar Cosmetics, indicating a recognition of Sugar Cosmetics' emphasis on capturing the interest of younger consumers. On the other hand, 14.7% attribute this strategy to ColorBar, highlighting a comparatively lower association with targeting the youth market.

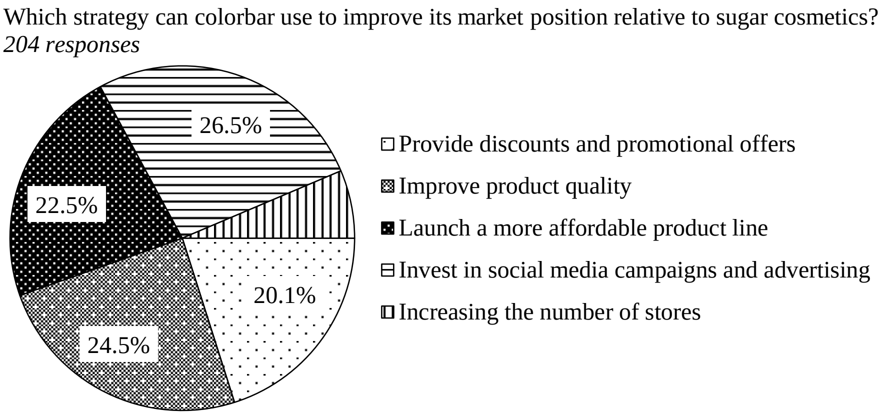

Figure 11. Showing which strategy can help the most to colorbar to improve its market position.

This data suggests that a substantial portion of the audience perceives the importance of youth- centric marketing in the beauty industry, with a majority recognizing both Sugar Cosmetics and ColorBar as brands actively employing this strategy. Understanding these perceptions is crucial for these renowned beauty brands as they continue to navigate the dynamics of consumer preferences and market positioning.

Interpretation: As per the responses, we found that a remarkable percentage of respondents have distinct opinions on strategies that ColorBar could employ to enhance its market position relative to Sugar Cosmetics.

The majority, with 26.5%, advocate for an increased focus on social media campaigns and advertising. This suggests a recognition among respondents that a robust digital presence and strategic promotional efforts could elevate ColorBar's visibility and appeal to a broader audience.

Improving product quality resonates with 24.5% of respondents, indicating a belief that enhancing the inherent quality of ColorBar's offerings could be a key factor in gaining a competitive edge. Quality is often a crucial determinant in the beauty industry, influencing consumer loyalty and positive word-of-mouth. Launching a more affordable product line is suggested by 22.5% of respondents, highlighting a potential opportunity for ColorBar to cater to a wider consumer base by diversifying its pricing strategy.

Providing discounts and promotional offers, while a valid approach, is recommended by 20.1% of respondents. This signifies an awareness among the audience that competitive pricing strategies and attractive promotions can be effective in capturing consumer attention and driving sales.

Interestingly, a smaller percentage (6.4%) suggests increasing the number of stores, indicating that respondents may not perceive physical store presence as the primary avenue for improving ColorBar's market position relative to Sugar Cosmetics.

In conclusion, these varied responses underscore the complexity of strategic considerations for ColorBar. Balancing product quality, pricing, promotional activities, and digital outreach will be crucial for ColorBar to navigate and enhance its market position in comparison to Sugar Cosmetics.

Interpretation: As per the responses, the future outlook for Sugar Cosmetics among participants is predominantly positive. A substantial 43.6% of respondents express a strong likelihood of continuing to use Sugar Cosmetics in the future, suggesting a notable level of satisfaction and loyalty among a significant portion of the user base. Additionally, 27.5% of respondents remain uncertain about their future usage, indicating a segment that may be open to exploring alternatives or is influenced by factors yet to be determined.

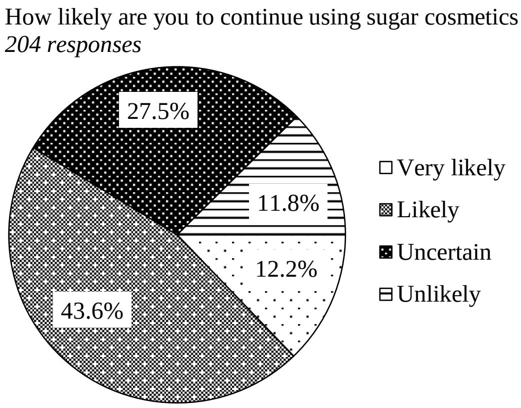

Figure 12. Showing Prediction of future sales of Sugar Cosmetics.

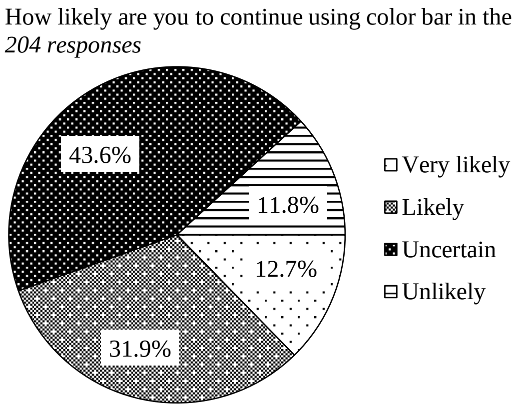

Figure 13. Showing Prediction of future sales of Colorbar.

On the contrary, 17.2% express a very high likelihood of continued usage, reinforcing a core group of enthusiasts who are firmly committed to the brand. Conversely, 11.8% express some level of uncertainty or reluctance, signaling a smaller portion of respondents who may be considering alternatives or have reservations about their future usage of Sugar Cosmetics.

Hence, while a considerable portion of respondents demonstrates a positive inclination towards continuing with Sugar Cosmetics, a segment remains uncertain, and a smaller fraction expresses some level of uncertainty or potential shift in brand preference. Understanding these sentiments is essential for Sugar Cosmetics to continually enhance customer satisfaction and address any concerns that may impact future brand loyalty.

Interpretation: As per the responses, the future usage outlook for Colorbar among participants presents a mixed sentiment. Notably, 31.9% of respondents express a likelihood of continuing to use Colorbar in the future, indicating a substantial portion of the user base that remains positively inclined towards the brand.

However, a significant 43.6% express uncertainty about their future usage, highlighting a sizable segment that may be open to exploring alternatives or is currently undecided about their long- term commitment to Colorbar.

On the positive side, 12.7% express a very high likelihood of continued usage, demonstrating a dedicated group of users who are strongly committed to the brand. Conversely, 11.8% express an unlikely future usage, indicating a smaller but notable portion of respondents who may be considering alternatives or have reservations about continuing with Colorbar.

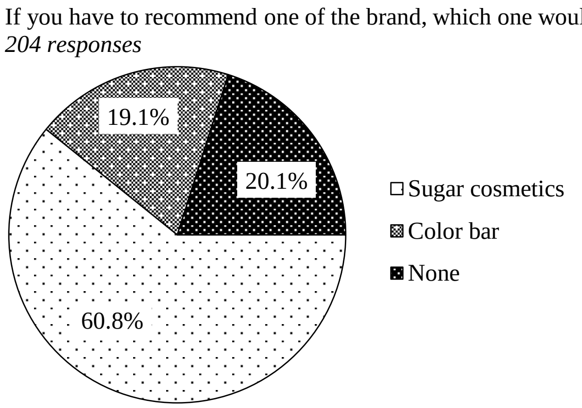

Figure 14. Showing which brand is more recommended among customers.

Hence, while a considerable portion of respondents express a positive outlook towards continuing with Colorbar, a significant segment remains uncertain about their future usage. Addressing this uncertainty and continuing to deliver on customer expectations will be crucial for Colorbar to enhance brand loyalty and maintain its position in the market.

Interpretation: This illustrates recommendations for cosmetic brands, with Sugar Cosmetics being the most suggested at 60.8%, followed by Colorbar at 19.1%. A notable 20.1% of customers did not recommend any specific brand.

FINDINGS

- *Age demographics:* The majority (73.5%) of respondents belong to the 18–24 age group, highlighting a youthful target audience. Minimal responses from the 24–45 age group suggest an opportunity to explore strategies to engage this untapped demographic.
- *Gender distribution:* A significant 59.3% of respondents are females, emphasizing the dominance of women in the customer base. This reflects a traditional alignment of beauty product marketing while indicating potential for inclusivity efforts to cater to other gender groups.
- *Income groups:* A majority (61.3%) of respondents fall in the 0–3 LPA income bracket, suggesting that affordability is a key consideration for a large segment of customers.
- *Buying habits:* Frequent buyers constitute 57.8% of the respondents, while 24.5% purchase occasionally. This indicates a growth potential by converting occasional buyers and attracting non-buyers through targeted promotions.
- *Brand preferences:* Sugar Cosmetics has a stronger customer base compared to Colorbar by a margin of 20.9%, indicating better customer engagement or loyalty. Exploring reasons for the preference could offer insights for market positioning.
- *Information sources:* Social media is the most influential channel (71.1%) for brand discovery. Other channels like celebrity endorsements (36.8%) and recommendations (38.2%) also play a significant role, suggesting a multi-faceted marketing approach.
- *Buying behavior:* Quality (80.9%) is the most critical factor influencing purchase decisions, followed by previous purchase experience (48%) and price (38.2%). This underscores the need for maintaining product excellence.
- *Attraction factors:* Ingredients (35.3%) and product longevity (24%) are key attractions, with packaging and variety also playing significant roles. This indicates a balanced consumer emphasis on both intrinsic and extrinsic product attributes.
- *Online availability:* Online shopping significantly influences 60.3% of respondents, emphasizing the need for a robust digital presence and accessibility.
- *Brand strategies:* Youth-centric marketing strategies are perceived as effective, with 52.9% associating them with both Sugar Cosmetics and Colorbar. Sugar Cosmetics stands out with a higher individual recognition for this approach.

- *Improvement strategies for Colorbar:* Respondents recommend stronger social media campaigns (26.5%), improved product quality (24.5%), and affordable product lines (22.5%) as top strategies to enhance Colorbar's market position.
- *Future Sales for Sugar Cosmetics:* A positive outlook for Sugar Cosmetics is evident, with 43.6% of respondents indicating a strong likelihood of continued usage. Addressing the uncertainty among 27.5% can further enhance loyalty.
- *Future sales for Colorbar:* A mixed sentiment is observed for Colorbar, with 43.6% of respondents expressing uncertainty about future usage. Strategies to reduce this ambiguity are critical for sustaining brand loyalty.
- *Brand recommendations:* Sugar Cosmetics is the most recommended brand at 60.8%, followed by Colorbar at 19.1%. The non-recommendation of any brand by 20.1% indicates a potential area for improving brand differentiation.

CONCLUSION

In conclusion, the Comparative Analysis of Buying Behavior of Consumers towards Sugar Cosmetics and Colorbar has provided valuable insights into the complex landscape of the beauty industry. The research objectives were successfully addressed, examining customer loyalty, determinants of consumer choice, and identifying the market position of Sugar Cosmetics and Colorbar.

The combination of primary data collected through questionnaires and secondary data from published research papers has enriched our understanding of consumer preferences and behaviors. The demographic analysis revealed that the majority of respondents are in the age group of 18-24, predominantly female, and belong to the income bracket of 0-3 LPA. These demographics provide a clear profile of the target audience that both Sugar Cosmetics and Colorbar can tailor their marketing strategies towards.

The analysis of buying habits, brand preferences, and information sources highlighted key factors influencing consumer decisions. Quality emerged as a top priority for consumers, followed by previous purchase experience, price, and brand value. The influence of social media on brand discovery was evident, emphasizing the importance of digital presence for beauty brands.

The study also explored the impact of online availability on buying behavior, with a significant majority of respondents being influenced by the convenience of online platforms. This underscores the necessity for beauty brands to adapt to the digital transformation in the retail landscape.

The insights gained from customer feedback on strategies for market improvement provided valuable recommendations for both Sugar Cosmetics and Colorbar. The findings suggested that a focus on social media campaigns, product quality improvement, and pricing strategies could contribute to enhancing market positions.

Looking ahead, the prediction of future sales indicated a positive outlook for Sugar Cosmetics, with a substantial portion of respondents expressing a likelihood of continued usage. Colorbar, while also showing positive sentiments, has a notable segment of respondents expressing uncertainty about their future usage, indicating areas for improvement in brand loyalty.

In summary, this Comparative Analysis not only deepens our understanding of consumer behavior towards beauty brands but also provides actionable recommendations for Sugar Cosmetics and Colorbar to refine their strategies, strengthen their market positions, and foster lasting relationships with their target audience. As the beauty industry continues to evolve, staying attuned to consumer preferences and adapting strategies accordingly will be paramount for sustained success.

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Transforming Marketing: The Revolutionary Impact of Artificial Intelligence

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Abstract

The evolution of artificial intelligence (AI) has profoundly transformed contemporary corporate landscape. One of the sectors most significantly impacted by AI is marketing, where its application has greatly enhanced overall performance. The goal of the current research is to determine how AI affects marketing. Robust literature analysis was emphasised, offering a concrete understanding of AI and its applications in the market. We have utilised a qualitative research approach, incorporating semi-structured interviews with marketing professionals from different organisations across India. Thirteen marketing experts were carefully chosen as a sample size. The conclusions highlight the variables impacting AI integration as well as the benefits and obstacles during marketing, businesses' pre- and post-AI marketing plans, moral issues, and well as application of AI. The goal is to gain a modest advantage as well as enhance organisational performance by incorporating artificial intelligence (AI) into marketing duties. By recognizing research gaps, methodically and rigorously tied strategic exercise and research, and also advances strategic marketing research.

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Keywords: Artificial Intelligence, Strategic Marketing, Artificial Intelligence Marketing, Competitive Advantage

INTRODUCTION

Artificial intelligence (AI) is a widely used term that lacks a singular, precise definition. Broadly, it refers to the field dedicated to imbuing machines with intelligence. Intelligence, in this context, enables entities to operate effectively and foresee outcomes within their environment. Its computing have pivotal, continues to evolve today, and will undoubtedly shape the future.

Artificial Intelligence Marketing refers to a plan to maximizing the use of expertise and statistics in improving customer experience. With the capacity to analyse a high amount of information, AI is thus placed in a position where it can finally close a gap that existed among data discipline and implementation, where this had earlier it was next to impossible activity. Marketing includes different tactics that influence people. Over time, to achieve scale communication, channels like Facebook, YouTube, Search, and Google, which get public daily, respect digital commercial networks, there will be the application and implementation of AI. With AI's rise, the world of marketing is quickly changing and still doing the same. The rapid pace of this transition will fundamentally reshape the marketing landscape across various sector. Companies face considerable challenges in adjusting to this dynamic marketing surroundings.

Bughin et al. state that the industry landscape is revolutionizing and is poised to completely change in the near future. Despite being critical commercial applications nowadays, initiators striving to extract maximum value from it. However, there remains a scarcity of literature that integrates these two disciplines effectively (Wierenga, 2010). AI is now integrated into various business processes across multiple functional domains and operations, with marketing being considered the heart of business operations.

Artificial intelligence is taking over the modern industry surroundings and totally substituting upcoming times as well, according to Shahid and Li, 2019. Wierenga (2010) further commented that very few articles are available on the topic of AI in marketing. It has been increasingly used in marketing literature and AI.

Following this trend, the number of studies that are Scopus-indexed has also grown, though it remains below 100. The study argue that more research on the effect of AI on marketing is necessary due to the current scarcity of literature and the potential it holds for shaping marketing decisions (Martinez-López & Casillas 2013).

LITERATURE REVIEW

The dearth of marketing prose makes a try to provide a framework defining AI currently and its evolution in the future. Whereas notions and philosophies underwent research to resolve marketing-related problems quite a while ago, the pervasive use and application that are have very recently emerged.

Technological advancements have changed the surroundings significantly. Currently, AI seamlessly fits into our everyday lives with its innovations, such as chatbots, smart devices, and self-driving cars. All the innovations are aimed at understanding and serving the preferences of customers better to provide a unique consumer experience. AI is simply reflected in machines. Its importance has been a continuous debate and is now omnipresent. It has also been applied in various areas, including marketing. Not only do automated marketing strategies enhance tailored client experiences, but the implementation also pays for time and cost efficiency.

As defined by Hussain et al. (2022), we refer to computerized systems that leverage data to accomplish tasks similar to those conducted by intelligent, weak AI. Narrow AI, earlier attentive to particular activities, be it application in an independent vehicle, whereas strong AI recommends a device having consciousness and intelligence across the board, if not all, in various domains. Some even refer to artificial intelligence, which, if it were ever to exist, would essentially imply that even computers can be better than humans.

RESEARCH METHODOLOGY

For this study, we employed a qualitative study methodology, fundamentally using exploratory research, which is applied to study causes, viewpoints, and perceptions. It is one of the best decisions because the objective is to discover the perception of marketing experts about the impact of AI. To gather information, the study will consult primary as well as secondary sources. In order to get primary data for the study and address the research topics, the researcher employed the interview technique. Different types of secondary data are being used.

Interviews with marketing experts from Indian companies are conducted. Interviews with fifteen Indian marketing specialists were conducted with a sample size of fifteen participants. The researcher employed purposive sampling, whereby participants were included in the study with a specific purpose in mind.

The principal requirement for study inclusion was that participants must be employed by a company whose marketing department uses artificial intelligence. This was justified by the idea that marketers with first-hand knowledge of AI deployment would be better qualified to evaluate AI's impact on marketing. A variety of open-ended questions were asked of the respondents during the interview process. But, in order to adhere to the inductive research methodology, which does not limit current hypotheses, the researcher was ready to modify the interview questions in light of the particulars. Since the study is cross-sectional in nature, information from the participants will be gathered for the past 2–3 months.

DATA ANALYSIS AND INTERPRETATION

It provides an analysis of the data that was collected from the research participants. Thirteen marketing specialists from ten distinct Indian companies were questioned in all, providing a comprehensive exploration of the interview insights:

- What factors influence the combination of AI and marketing?
- What are the important benefits of utilising AI in marketing?

Table 1.

City-Country	No. of respondents
Delhi NCR	2
Mumbai	0
Pune	2
Hyderabad	6
Bangalore	3

Table 2.

Years of experience	No. of respondents
0–2 years	4
2–5 years	1
5–8 years	3
Above 10 years	5

Table 3.

Industry	No. of respondents
FMCG	2
Automobiles	1
IT	4
Food and beverage	1
Manufacturing	0
HR management software	3
Consultancy	2

- What are the primary challenges associated with integrating AI with marketing?
- What are the ethical considerations of integrating artificial intelligence into marketing?
- How does AI contribute to your business's promotion operations?
- How does your company's marketing strategy differ before and after the implementation of AI?

Tables give an overview of the respondent profile.

Factors That Affect the Integration of AI with Marketing

The main significant component in integrating them, as per the participants is competitive pressure. Companies are experiencing drive after competitors to integrate AI into their marketing plans. One of the Respondents says, “There is a palpable urgency among competitive organisations to embed AI into the marketing process.” Whereas another participant states, the organisation's board has originated advocating integration of AI with Marketing, quoting mass media attention, modest dynamics, and digital development as the motivating factors. Respondent 3 mentioned outside rivalry burden and hype environment’s integration of AI with promoting actions. “Firms are now actively discussing this major phenomenon and leveraging it in their marketing functions,” he noted. The force from competitors significantly. Another respondent observed organisations understood clients demand from companies with superior expertise and execution, thereby feeling bound to adopt AI integrated technologies.

Artificial Intelligence's Marketing Advantages

Benefits of integrating AI into marketing, participants provided range with insights. Respondents believed integrating AI with marketing operations would significantly enhance efficiency and save time, and it is now evident that AI has indeed optimised the company's marketing processes. Respondent 8 emphasised that AI integration provides critical insights and facilitates more strategic marketing decisions. Primary benefit of adopting AI in marketing lies in the valuable insights it generates, which can be applied across various functions such as pricing and new product development. Respondent 10 stated that the foremost advantage of using AI-based software in marketing is its ability to enhance service delivery and add clients, culminating in the level of customer satisfaction.

Main Obstacles for Integrating

As per the participants, technical compatibility is the utmost challenging while integrating. To acknowledge this, Respondent 11 mentioned that the business focused on ensuring seamless integration with major CRM systems. Despite these efforts, compatibility remains a significant challenge, and the organisation continues to strive for improvement in this area. Respondent 12 also identified complex software and IT systems as substantial obstacles, underscoring the importance of addressing concerns. Few respondents indicated that primary challenge for general promoting processes after AI integration in absence of technical proficiency within the group. Additionally, it emphasised the critical role of data, noting that having robust data infrastructure is essential for AI. Consequently, data management is also perceived as one of the largest hurdles to AI integration.

AI's Ethical Implications for Marketing

According to the respondents, data is the most crucial ethical factor to consider when dealing with clients. Respondent 11 explained that to address this issue, the firm collects data anonymously, ensuring it is not linked to the users who generate it. Respondent 12 emphasised their primary objective of minimising the collection of personal data. Respondent 13 elaborated on two distinct ethical implications of artificial intelligence in marketing. She asserted that ethical issues are of paramount importance and should be meticulously evaluated.

Moreover, she highlighted the challenge faced even by the development team in understanding the rationale behind AI usage. If a corporation fails to scrutinise the unethical decisions made during AI deployment, this could become a significant obstacle. Respondent 12 further stressed the importance of transparency, stating that it is essential to disclose any ethical concerns to the consumer. Consequently, our organisation ensures that customers are informed about the type of data being collected from them.

AI Marketing Plan Before and After

The integration significantly changed the strategic direction of the company. According to respondent 7, before AI, the company was using efforts to build marketing resources and expand product portfolios. But with the introduction of AI, marketing managers shifted towards business intelligence-forecasting trends in marketing, sales, and operations-and started making decisions based on deeper insights in their business. From such information, they built predictive models, thus enabling them to make accurate forecasts of future strategies.

Respondent 5 said that AI totally changes the way a company could market itself. It simply means that, whereas traditionally it has been investing in the AI for customer service, it has actually zeroed on quality of service improvement. By that, the company has experienced very great improvements in responsiveness and greater operational efficiency. In addition, the company has future plans of further investments in AI. Ali Hassan pointed out that whereas the long-term client value market strategy and refocusing marketing efforts towards new communication channels were there before the implementation of AI, the current focus of the implementation is increasing social media reach, making interactions more personal, improving data gathering processes, improving SEO, payment optimization, and sales promotion; however, all these were done with an objective blueprint.

Application of AI to Marketing Tasks

As per the participants – it substantially increased efficacy of marketing experts and is integrated to practically critical promoting operations. They assert that AI plays a pivotal role in crafting sales and marketing tactics yield extensive enhancements in corporate performance.

Respondent 8 elaborates that AI is applied across all marketing functions, encompassing 4Ps planning and development. Respondent 12 emphasises the predominant use of AI in digital platforms, advertising, and customer relationship management. Respondent 5 highlights the extensive application of AI in digital marketing, spanning tasks like timeline of content, email marketing, social media advertising, web design, chatbots, and analytical technique.

CONCLUSIONS AND SUGGESTIONS

The aim is to examine the perspectives of marketing experts. Various methodologies employed to fulfil objective and solve matters The study commenced with an extensive literature review, provide understanding of AI and its bids in marketing, drawing insights from multiple scholarly perspectives.

Diverse responses were gathered from respondents regarding the benefits of integration. It significant advantages include enhanced efficiency, time savings in marketing operations, improved conversion rates, deeper insights into customer data, more informed marketing decisions, increased return on investment (ROI), and heightened customer satisfaction through improved service delivery. Improved data analytics and streamlined marketing operations were also highlighted as additional benefits.

When queried about the difficult attribute integrating the marketing, responses cited technical compatibility as the primary obstacle. They also emphasised the critical role of data, asserting that while essential for AI applications, its management remains a significant hurdle. Moreover, according to respondents, data emerges as the most critical ethical consideration in client interactions, underscoring the importance of responsible data handling practices in AI-driven marketing initiatives.

It has highlighted the significance in modern marketing and highlighted the myriad benefits associated with its integration. Moreover, the study has identified primary challenges, ethical considerations, and practical applications, offering firms valuable insights into implementing AI effectively in marketing strategies.

The findings provide a roadmap for businesses looking to integrate AI into their marketing efforts, emphasising the importance of addressing both the opportunities and challenges presented by AI technology. Firms are encouraged to prioritise understanding the nuances and complexities involved in AI adoption in marketing to maximise its potential benefits.

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Sustainability Marketing: Leveraging Industry 4.0 Technologies for Green Marketing Campaigns

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Abstract

This paper explores the intersection of sustainability marketing and Industry 4.0 technologies, emphasizing how these advanced technologies can enhance green marketing campaigns. Through a comprehensive literature review and analysis of case studies, this study emphasises the capacity for transformation of IoT, AI, big data, and block chain in encouraging sustainable business practices and effective marketing strategies. The findings suggest that leveraging these technologies have the potential to greatly improve the efficiency, transparency, and impact of green marketing campaigns, paving the way for a more sustainable future.

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Keywords: Sustainability Marketing, Industry 4.0, Green Marketing, IoT, AI, Big Data, Block chain

INTRODUCTION

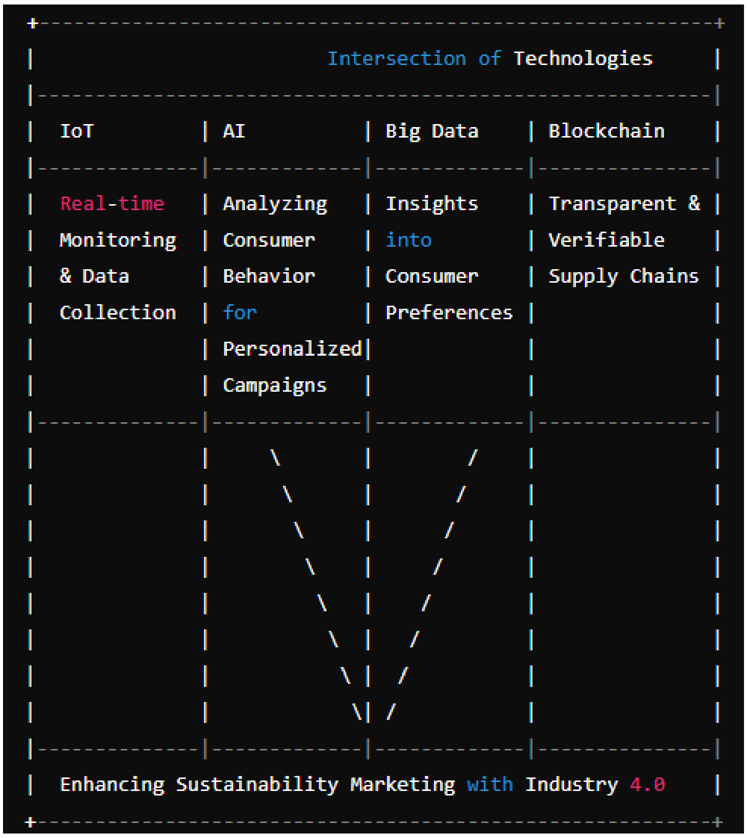
Sustainability marketing has emerged a key strategy for businesses striving to achieve this goal are to address environmental concerns and meet the Demand from customers for environmentally friendly products. Green marketing campaigns play a crucial part. in this context, promoting products and methods that minimize environmental impact. Simultaneously, the advent technologies associated with Industry 4.0, including the Internet of Things-(IoT), artificial intelligence-(AI), big-data, and block chain, has revolutionized various industries by enhancing efficiency and innovation. This paper investigates the synergies between sustainability marketing and Industry-4.0, techno can significantly amplify effectiveness of green marketing campaigns.

In parallel, the advent of Industry 4.0 technologies is transforming how companies operate. Industry 4.0, also known as the fourth industrial revolution, encompasses a range of advanced technologies, including the Internet of Things(IoT), artificial intelligence(AI), big data analytics, and block chain. These technological advancements allow unprecedented levels of data collection, connectivity, and automation, leading to significant improvements in efficiency, innovation, and decision-making across various industries.

This paper explores the intersection of sustainability marketing and Industry 4.0 technologies, proposing that these advanced technologies can significantly amplify the effectiveness of green marketing campaigns. By leveraging IoT, AI, big data, and block chain, companies can enhance the efficiency, transparency, and impact of their sustainability efforts, thereby creating more compelling and trustworthy green marketing campaigns.

OBJECTIVE OF THE RESEARCH

1. To offer a thorough overview of how Industry 4.0 technologies can be utilized in sustainability marketing
2. To analyze real-world examples of companies and integrated these techno into their green marketing campaigns
3. To investigate the potential advantages, challenges, and future trends related to this integration



Dig. 1. Enhancing Sustainability Marketing with Industry 4.0.

LITERATURE REVIEW

Sustainability Marketing and Green Marketing Campaigns Sustainability marketing involves promoting products and methods that are safe for the environment and socially responsible. Green marketing campaigns specifically focus on highlighting the environmental benefits of products and services, aiming to attract environmentally conscious consumers. These campaigns often emphasize-reduced carbon footprint, recyclable packaging, and sustainable sourcing.

The incorporation of digital technologies into manufacturing is a hallmark of Industry 4.0 technologies. and business processes, includes IoT, AI, big data analytics, and block chain. These technologies enable real-time data collection, advanced analytics, and enhanced connectivity, offering new opportunities for innovation and efficiency.

Intersection of Sustainability Marketing and Industry 4.0 Previous research has explored the potential of Industry 4.0 technologies to support sustainable practices. For instance, IoT can monitor and optimize resource usage, AI can personalize marketing messages for eco-conscious consumers, Big data analytics is able to determine sustainability trends, and block chain can ensure transparency in supply chains. This paper builds on this body of knowledge, focusing on how these technologies can be specifically leveraged for green marketing campaigns.

Artificial Intelligence (AI)-Encompasses Natural language processing and machine learning, and other technologies that enable machines to learn from data and make decisions. AI can enhance sustainability marketing by offering more in-depth understanding of the preferences and behaviour of consumers. AI systems, for example, can examine social media data to determine trends and sentiments related to sustainability, allowing companies marketing messages accordingly. Additionally, AI-driven personalization can ensure that green marketing messages resonate with individual consumers, increasing engagement and effectiveness.

Big Data Analytics -refers to the vast amounts of data generated by digital activities, which can be analyzed to uncover patterns and insights. In sustainability marketing, companies understand consumer attitudes towards environmental issues, track the effectiveness of green marketing campaigns, and identify opportunities for improvement. For example-analyzing customer feedback and purchase behavior can reveal which sustainability initiatives are most valued by consumers, guiding future marketing efforts.

Block chain: is a digital ledger that is decentralised and keeps track of transactions across several computers in a manner that ensures security and transparency. In sustainability marketing, block chain can be utilised to provide verifiable proof of a product's environmental claims. Block chain technology, for instance, can monitor a product's whole supply chain, from the procurement of raw materials to final delivery, ensuring that each step meets sustainability standards. This transparency can enhance consumer trust and differentiate brands in the marketplace.

CONCLUSION OF LITERATURE REVIEW

The literature indicates a strong potential for Industry 4.0 technologies to enhance sustainability marketing efforts. By providing transparency, enabling personalization, and driving operational efficiencies, these technologies have the potential to greatly enhance the effectiveness and credibility of green marketing campaigns. However, Businesses have to deal with issues relating to implementation, data privacy, and skills development to fully realize these benefits. Future research should explore the long-term impacts of these technologies on consumer behavior and the total effectiveness of sustainability marketing strategies.

METHODS OF RESEARCH

A qualitative approach, utilizing case studies and literature review to analyze how Industry 4.0 Technology is being incorporated into sustainability marketing strategies. Data collection involved examining academic articles, industry reports, and real-world examples of companies successfully implementing these technologies in their green marketing campaigns.

CASE STUDIES

Case Example-1

Nestlé utilizes IoT to monitor its water usage and waste production in real-time across its production facilities. By deploying smart sensors, Nestlé can track usage trends, pinpoint areas of wastage, and implement measures to optimize water consumption. The information gathered by IoT devices is used to demonstrate Nestlé's commitment to sustainability in its marketing materials, building consumer trust and enhancing brand loyalty.

Businesses can now analyse vast amounts of data and learn more about the preferences and behaviours of their customers thanks to artificial intelligence (AI). Businesses can increase the relevance and efficacy of their campaigns by using AI to customise their marketing messages to particular consumer segments. Businesses can proactively improve their sustainability strategies by using AI to predict future trends in consumer behaviour.

Case Example-2

Unilever employs AI to analyze consumer data and identify patterns related to sustainability preferences. By processing social media interactions, customer reviews, and purchase data, AI algorithms can ascertain which sustainability characteristics are most important to different consumer segments. This information enables Unilever to tailor its green marketing messages, emphasizing aspects such as recyclable packaging or ethical sourcing that resonate with its target audience. The outcome is a more engaging and effective marketing campaign that drives consumer interest and loyalty.

Analytics of Big Data Big data analytics gives businesses the capacity to process and examine sizable datasets in order to find patterns and insights. Big data in the context of sustainability marketing can assist businesses in measuring the results of their sustainability initiatives, comprehending consumer attitudes towards environmental issues, and identifying areas for improvement.

Case Example-3

Patagonia leverages big data analytics to learn more about the preferences of customers and sustainability trends. By analyzing customer feedback, sales data, social media interactions, Patagonia can identify emerging concerns among its customer base, such as the impact of micro plastics on the environment. This information guides the company's product development and marketing strategies, ensuring that its green marketing campaigns align with consumer values and address relevant environmental issues.

Blockchain technology is a perfect tool for confirming sustainability claims because it provides unmatched security and transparency. Block chain guarantees that every stage of a product's supply chain can be tracked and validated by offering a decentralised ledger of transactions. This openness strengthens the legitimacy of sustainability claims and fosters consumer trust.

Case Example-4

To make sure that diamonds are sourced responsibly and ethically, Ever Ledger tracks their provenance using a blockchain. By providing consumers with verifiable data origin and journey of each diamond, Ever ledger can market its products as both high-quality and environmentally responsible. This transparency enhances consumer trust and differentiates Ever ledger in the marketplace.

CHALLENGES AND LIMITATIONS

- High Implementation Costs is the primary challenges of integrating Industry 4.0 technologies into sustainability marketing is the high initial investment required.
- Implementing IoT devices, AI algorithms, can be expensive, particularly SMEs.
- Companies must carefully evaluate the potential ROI and consider phased implementations to manage costs.
- Information Privacy Issues Big data, AI, and the Internet of Things all require the collection and analysis of vast volumes of data, which raises questions regarding data security and privacy.
- Companies must obey data protection laws and establish strong cyber security protocols to safeguard consumer data. Building consumer trust is essential, as any data breaches or misuse of personal information can severely harm a company's reputation.
- Need for Specialized Skills Integrating Industry 4.0 technologies requires specialized skills and expertise.
- Companies may need to invest in training their existing workforce or hiring new talent with the necessary technical knowledge. This can be a big problem, especially in fields where people are looking for digital skills.
- Data Accuracy and Dependability The precision and dependability of the data gathered determine how well IoT, AI, and big data analytics work. Inaccurate or incomplete data can lead to erroneous insights and ineffective marketing strategies.
- Companies must invest in high-quality data collection and management practices to ensure the reliability of their data.

FUTURE TRENDS

Increased Adoption of Predictive Analytics use of AI in predictive analytics is expected to grow, allowing companies to anticipate future trends in consumer behavior and environmental impact. Predictive analytics enhance personalization of marketing messages, making them more relevant and engaging for consumers. Example- AI could predict a growing consumer concern about a particular environmental issue, enabling companies to proactively address this concern in their marketing campaigns.

Developments in Sensor and Internet of Things Technologies The accuracy and dependability of environmental monitoring will continue to be enhanced by developments in IoT and sensor technologies. Businesses will be able to monitor more environmental metrics in real-time with more advanced sensors, giving them more complete data for sustainability initiatives. More convincing content for green marketing campaigns and increased credibility for sustainability claims will result from this enhanced monitoring capability.

Integration of Blockchain with Other Technologies Supply chains will become even more transparent and reliable when blockchain is integrated with IoT, AI, and big data. IoT devices, for instance, can offer real-time information about a product's progress through the supply chain, and blockchain technology makes sure that this information is safely stored and unchangeable. After analysing this data, AI can offer insights and suggestions, combining intelligence, security, and transparency in a potent way.

Consumer Demand for Transparency Is Growing It is anticipated that consumer awareness and responsibility for sustainable practices will keep rising. Businesses will be better equipped to satisfy this demand and stand out in the marketplace if they use Industry 4.0 technologies to offer transparent and verifiable information about their sustainability initiatives.

CONCLUSION

Integrating Industry 4.0 technologies into sustainability marketing has the potential to greatly increase the efficacy and legitimacy of green marketing initiatives. Powerful tools for tracking and optimising environmental impact, customizing marketing messages, understanding consumer behaviour, and guaranteeing supply chain transparency are offered by IoT, AI, big data, and blockchain. To fully realise these advantages, businesses must overcome obstacles pertaining to implementation costs, data privacy, and skill development. Future developments suggest that these technologies will continue to advance, increasing their capacity to support sustainability initiatives and satisfy the rising demand from consumers for environmental responsibility. This study emphasises how crucial it is to adopt Industry 4.0 technologies in order to maintain competitiveness in a market that is becoming more environmentally conscious and to help create a more sustainable future.

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Review Study on Small Scale Industries and Indian Economy

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Abstract

Small Scale Industries (SSIs) are an integral part of the Indian economy, contributing significantly to various aspects of economic development. Characterized by their smaller scale of operations, lower capital investment, and labor-intensive nature, SSIs have played a crucial role in India's industrialization process, especially in providing employment and fostering entrepreneurship. The concept of small scale industries in India dates back to the pre-independence era, where traditional crafts and cottage industries were the backbone of the economy. Post-independence, recognizing the potential of SSIs in fostering economic growth and addressing unemployment, the Indian government implemented several policy measures to promote their development. Over the decades, SSIs have evolved, adapting to changes in the economic environment, technological advancements, and market dynamics. The study aims to analyze the impact of Small Scale Industries (SSIs) on Indian economy and efforts of government to promote Small Scale Industries (SSIs) in the country.

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Keywords: Small scale industries, growth and development, challenges and Indian government support.

INTRODUCTION

Small Scale Industries (SSIs) are pivotal to the Indian economy, serving as a crucial driver of growth, employment, and industrial diversification. These industries, characterized by their modest investment in machinery and equipment, play a unique role in fostering inclusive economic development. SSIs contribute significantly to India’s Gross Domestic Product (GDP), accounting for approximately 30-35% of the total output. They are a key source of employment, particularly in rural and semi-urban areas, where large-scale industries are less prevalent. This employment generation is vital for reducing regional imbalances, curbing rural-to-urban migration, and promoting equitable growth across different regions of the country.

Moreover, SSIs are instrumental in promoting exports, contributing nearly 45-50% to India’s total export earnings. They produce a diverse range of products, from traditional handicrafts and textiles to engineering goods and food processing items, which have a significant demand in global markets. This diversity not only strengthens India’s industrial base but also helps in building a resilient economy capable of withstanding global economic fluctuations.

SSIs are also at the forefront of fostering entrepreneurship in India. The relatively low capital requirement makes it easier for individuals to start their own businesses, thereby promoting self-reliance and innovation. This entrepreneurial spirit is further supported by government policies and initiatives aimed at providing financial assistance, improving infrastructure, and reducing regulatory burdens. Despite facing challenges like access to finance, technological obsolescence, and limited market access, SSIs have shown remarkable resilience and adaptability, often finding ways to innovate and thrive in niche markets.

The role of SSIs in the Indian economy extends beyond mere economic contributions. They are a vehicle for social empowerment, providing opportunities for women and marginalized communities, and contributing to the overall social fabric of the country. As India continues to advance towards a more digital and globalized economy, the future of SSIs holds great promise, particularly with the potential for technological upgrades and expanded market opportunities. In essence, SSIs are not just a sector within the economy; they are a backbone that supports and sustains the broader economic and social development of India.

REVIEW OF LITERATURES

According to P. Bala Subrahmanya (2017), SSIs are crucial for employment generation, particularly in rural and semi-urban areas. However, underutilization of this potential is due to poor infrastructure and limited market access. The paper recommends improvements in infrastructure and stronger linkages between small and large industries to support growth.

The study of S. Biswas and S. Roy (2010) concludes that SSIs play a significant role in India's export sector, particularly in non-traditional exports. However, challenges like inadequate marketing and lack of export-oriented training hinder their full potential. The authors suggest enhancing export promotion schemes and providing better market access for SSIs.

According to N. V. M. Das (2002), SSIs contribute to reducing regional disparities by promoting industrialization in underdeveloped regions. However, regional imbalances persist due to uneven resource distribution and government support. The paper recommends targeted policies and incentives to promote SSIs in lagging regions.

According to Study of R. R. Krishnan and R. Balasubramanian (2015), Innovation is essential for SSIs' competitiveness, but many small enterprises struggle with limited resources for research and development. The authors suggest that increasing government support for innovation through grants and collaborations with research institutions can help SSIs thrive.

A. K. Bagchi and S. Banerjee (2006) found that government policies have had mixed impacts on the growth of SSIs. While some policies, like the MSME Development Act, have been beneficial, others have not fully addressed the sector's needs. The authors recommend a more tailored approach to policy formulation to meet the diverse requirements of SSIs.

P. K. Gupta and A. P. Singh (2013) identified significant challenges faced by SSIs, including financial constraints, lack of skilled labor, and market competition. It concludes that addressing these challenges requires a multifaceted approach, including better financial products, skill development programs, and enhanced market linkages.

According to M. N. Naik and R. D. Patil (2019), the SWOT analysis concludes that SSIs have strong potential due to their flexibility and low capital requirements. However, they face significant threats from globalization and competition from larger industries. The study recommends leveraging SSIs' strengths by promoting innovation and improving access to global markets.

The study of K. K. Sinha and M. R. Rao (2011) concludes that small-scale textile industries have substantial growth potential but are currently hindered by outdated technology and regulatory challenges. The authors suggest that modernization of machinery and improved regulatory frameworks could enhance the sector's competitiveness.

According to S. Mohan and N. A. Kumar (2016), agro-based SSIs are essential for rural development and employment generation. However, these industries face challenges such as inadequate infrastructure and volatile raw material prices. The authors recommend better infrastructure, access to credit, and stable pricing policies to support the growth of agro-based SSIs.

Ramesh Golait and Kavita K. Jadhav (2012) found that while SSIs contribute significantly to GDP and employment in India, their growth is impeded by challenges such as limited access to finance and outdated technology. The authors suggest that policy reforms aimed at improving credit access and providing technological support could enhance the sector's performance.

These studies provide valuable insights into the role, challenges, and opportunities of SSIs in the Indian economy, offering conclusions that are useful for policymakers, researchers, and industry stakeholders.

RESEARCH METHODOLOGY

Objectives of the Study

1. To study the impact of SSIs on An Economy.
2. To know the Challenges facing SSIs.
3. To know the role of Government in promotion of SSIs.

Research Design

Exploratory research design is used in the study.

Data

Secondary data.

Data Sources

Ministry of Micro, Small & Medium Enterprises website, Ministry of Statistics and Programme website, Journals, Books, Magazines and Internet etc. are used to find the data related to study.

CONTRIBUTION OF SSIS IN AN ECONOMY

Employment Generation

One of the most significant contributions of SSIs is in the area of employment generation. Given their labor-intensive nature, SSIs provide employment to a large number of people, especially in rural and semi-urban areas where large industries are less prevalent. According to various studies, SSIs contribute to more than 40% of the total employment in the manufacturing sector in India. This sector not only absorbs a large portion of the workforce but also helps in reducing regional imbalances by promoting industrialization in less developed areas.

Economic Contribution

SSIs contribute significantly to the Indian economy in terms of Gross Domestic Product (GDP) and industrial output. They account for approximately 30-35% of India's GDP and contribute around 45-50% of the country's exports. The sector encompasses a wide range of industries, including textiles, handicrafts, engineering, and food processing, among others. The diversity in production not only strengthens the industrial base of the economy but also ensures a steady supply of goods to both domestic and international markets.

Regional Development and Inclusivity

SSIs play a crucial role in promoting balanced regional development by decentralizing industrial activities. By setting up operations in rural and semi-urban areas, SSIs help reduce the rural-urban divide, providing livelihood opportunities and reducing migration to urban centers. Additionally, SSIs contribute to inclusive growth by empowering marginalized communities and promoting gender equality through the inclusion of women in the workforce and as entrepreneurs.

Innovation and Adaptability

Despite their small size, SSIs have shown remarkable innovation and adaptability. They are often able to quickly respond to market changes and consumer preferences, which is crucial in a dynamic and competitive environment. SSIs are also key players in niche markets, producing specialized goods that cater to specific demands. Their ability to innovate and adapt has been particularly evident in the traditional sectors like handicrafts and textiles, where they have managed to blend traditional craftsmanship with modern design and technology.

Entrepreneurial Development

SSIs are a breeding ground for entrepreneurship. The relatively low capital requirement and smaller scale of operations make it easier for individuals to start their own ventures. This sector also serves as an incubator for entrepreneurial talent, offering a platform for learning and growth. Government initiatives, such as the Micro, Small and Medium Enterprises (MSME) Development Act and various financial support schemes, have further encouraged the growth of SSIs by providing the necessary infrastructure and financial backing.

CHALLENGES FACING SSIS

Despite their significant contributions, SSIs face several challenges. Access to finance remains a major hurdle, with many small enterprises struggling to secure credit due to stringent lending norms and lack of collateral. Technological obsolescence is another issue, as many SSIs lack the resources to invest in new technologies, hindering their productivity and competitiveness. Additionally, market access is limited, with SSIs often finding it difficult to penetrate larger markets due to inadequate marketing strategies and lack of brand recognition. The regulatory environment, while improving, still presents challenges in terms of compliance and bureaucratic hurdles.

GOVERNMENT SUPPORT AND POLICY INITIATIVES

The Indian government has implemented several schemes and support initiatives to promote the growth and development of Small Scale Industries (SSIs), also known as Micro, Small, and Medium Enterprises (MSMEs). These schemes are designed to address various challenges faced by SSIs, such as access to finance, technology, infrastructure, and markets. Below are some key government schemes and supports for SSIs in India:

1. *Prime Minister's Employment Generation Programme (PMEGP)*
   i. *Objective:* To generate employment opportunities by setting up new micro-enterprises in the non-farm sector.
   ii. *Support:* Provides financial assistance in the form of margin money subsidy for setting up new ventures.
2. *Credit Guarantee Fund Scheme for Micro and Small Enterprises (CGTMSE)*
   i. *Objective:* To facilitate credit flow to the MSME sector by providing guarantees cover to collateral-free credit extended by banks.
   ii. *Support:* Offers a credit guarantee to financial institutions for collateral-free loans up to ₹5 crore.m
3. *Micro and Small Enterprises - Cluster Development Programme (MSE-CDP)*
   i. *Objective:* To enhance the productivity and competitiveness of SSIs by developing clusters.
   ii. *Support:* Provides support for infrastructure development, technology upgradation, and setting up common facilities.
4. *Technology Upgradation and Quality Certification (TEQUP)*
   i. *Objective:* To promote technology upgradation and enhance the quality of products manufactured by MSMEs.
   ii. *Support:* Offers subsidies for implementing quality management standards, acquiring certification, and adopting modern technology.
5. *Scheme of Fund for Regeneration of Traditional Industries (SFURTI)*
   i. *Objective:* To promote cluster development for traditional industries and artisans.
   ii. *Support:* Provides support for infrastructure development, market promotion, and capacity building.
6. *National Manufacturing Competitiveness Programme (NMCP)*
   i. *Objective:* To enhance the competitiveness of MSMEs in the manufacturing sector.
   ii. *Support:* Includes various sub-schemes such as lean manufacturing, design clinics, marketing assistance, and technology upgradation.

7. *Stand Up India Scheme*
    i. *Objective:* To promote entrepreneurship among women, Scheduled Castes (SC), and Scheduled Tribes (ST) by providing loans for setting up greenfield enterprises.
    ii. *Support:* Provides bank loans between ₹10 lakh and ₹1 crore for setting up new enterprises.
8. *Market Development Assistance Scheme (MDA)*
    i. *Objective:* To support the participation of MSMEs in international trade fairs and exhibitions.
    ii. *Support:* Offers financial assistance for the participation of MSMEs in trade fairs, buyer-seller meets, and exhibitions.
9. *Interest Subvention Scheme for MSMEs*
    i. *Objective:* To reduce the cost of credit for MSMEs.
    ii. *Support:* Provides an interest subvention of 2% on incremental loans to MSMEs.
10. *Udyam Registration*
    i. *Objective:* To simplify the registration process for MSMEs and provide them with various benefits.
    ii. *Support:* Offers an easy and hassle-free online registration process, making MSMEs eligible for various government benefits, subsidies, and schemes.
11. *Zero Defect Zero Effect (ZED) Scheme*
    i. *Objective:* To encourage MSMEs to manufacture quality products that meet international standards while minimizing environmental impact.
    ii. *Support:* Provides financial support for certification and training to achieve ZED certification.
12. *MSME Samadhan*
    i. *Objective:* To address the delayed payment issue for MSMEs.
    ii. *Support:* Provides an online platform where MSMEs can file their cases related to delayed payments by buyers.
13. *Procurement and Marketing Support Scheme (PMS)*
    i. *Objective:* To enhance the marketability of products and services of MSMEs.
    ii. *Support:* Offers assistance for participation in trade fairs, exhibitions, and other marketing events, both domestic and international.
14. *Credit Linked Capital Subsidy Scheme (CLCSS)*
    i. *Objective:* To facilitate technology upgradation in MSMEs.
    ii. *Support:* Provides capital subsidy for the purchase of plant and machinery for technology upgradation.
15. *Skill Development for MSMEs*
    i. *Objective:* To enhance the skill set of workers in MSMEs to improve productivity and competitiveness.
    ii. *Support:* Provides training programs and workshops for skill development and capacity building.

These schemes are aimed at addressing various challenges faced by SSIs in India and supporting their growth and development in a competitive and dynamic market environment.

Figure 1.

FUTURE PROSPECTS

Looking ahead, the future of SSIs in India appears promising. With the advent of digitalization and Industry 4.0, SSIs have the potential to adopt new technologies that can enhance productivity and expand their market reach. The government's focus on promoting startups and innovation, along with its push for sustainable development, offers new avenues for growth. However, addressing the existing challenges related to finance, technology, and market access will be crucial in unlocking the full potential of SSIs.

CONCLUSION

Small Scale Industries are a cornerstone of the Indian economy, contributing to employment, economic growth, regional development, and social inclusion. While they face significant challenges, their role remains indispensable. With continued government support and a focus on innovation and sustainability, SSIs are poised to play an even greater role in shaping India’s economic future.

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Digital Transformation and Corporate Social Responsibility in the Tourism Business of India: A Comprehensive Analysis

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Abstract

Tourists are essential in improving the Indian economic situation by producing significant forex revenues and developing job opportunities. Modern travelling technologies, a key component of digital transformation, have dramatically boosted the tourist market, especially in India, by helping create lasting tourism and adhering to the ecological and social sustainability goals described in the 2030 Agenda. The introduction of electronic travelling innovation, a significant aspect of digital transformation, has caused a significant transformation in the tourist market, improving the treatments associated with journey companies, booking, and the total travelling experience for people. Recently, the principle of corporate social responsibility has gathered a substantial interest rate in several sectors, including the tourist field. The major purpose of this research study is to look at the features of modern Internet travelling technology, a crucial element of digital transformation, coupled with its effect on CSR in the traveller market. This evaluation discovers the crossway, shared impact, and feature of these two variables concerning the sustainability and moral conduct of the market. This research supplies considerable money by checking out the prospective benefits, problems, and results connected to fostering Internet travel innovation to boost the company's social obligation in the tourist market.

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Keywords: Digital Transformation, Tourism industry, Corporate Social Responsibility, Sustainability, Ethical practices.

INTRODUCTION

In recent times, the tourist field in India has experienced significant development, mainly thrust by growths in Internet travelling innovations plus an expanding concentration on company social duty. Online travelling innovations are substantial in the visitor sector of India as they make it possible to circulate information reliably, help with decision-making procedures, and improve client partnerships. In India, fostering Corporate Social Responsibility (CSR) has ended up being obligatory, requiring firms to commit a percentage of their earnings in the direction of tasks intended for advertising social and ecological concerns. The tourist market in India has experienced substantial development in company social obligation (CSR) research studies, with a certain focus on sustainability and calculated CSR campaigns. Integrating Corporate Social Responsibility (CSR) right into the traveller market not only boosts a country's financial, social, and social measurements but also promotes cooperation amongst business industries, public culture, and federal government bodies. For this reason, the unification of net travelling innovations and company social obligation (CSR) programs within the traveller field of India can promote lasting growth, increase risk-holder interaction, and enhance market competition. The research starts by exploring the progression of modern online travel technologies in India, stressing the increase of smart device applications, online reservation systems, and electronic advertising techniques. This research checks out the effect of these modern technologies on the research, preparation, and reservation procedures of tourists, thereby affecting the characteristics of the tourist market. Additionally, this research discovers the idea of company social duty (CSR) in the Indian tourist sector. This research looks at the varied company social obligation (CSR) techniques executed by prominent entities such as trip drivers, resort chains, and federal government firms to foster lasting tourist, ecological conservation, and area development. This research uses a thorough strategy including a literary works testimonial and a study to review the efficiency of company social duty (CSR) programs within the Indian visitor sector plus their compatibility with online travelling modern technologies. This analyzes how these campaigns add to the renovation of the socio-economic well-being of regional individuals, the conservation of social possessions, and the decrease of ecological effects connected to tourist procedures. Furthermore, the short article checks out the problems and opportunities encountered by people associated with Internet travelling modern technology into business social duty (CSR) campaigns, highlighting the significance of tactical teamwork, creative thinking, and governing support. In addition, this research intends to determine brand-new fads along with future instructions in using technology-enabled company social duty (CSR) services to advertise lasting and responsible development in India's traveller sector. This research study highlights the substantial effect of modern web travelling technologies and company social obligation on the future instructions of the visitor market in India. The Indian vacationer industry can attain lasting growth and comprehensive development by advertising the assimilation of technology-driven development and socially liable techniques, thus producing collaborative impacts.

LITERATURE REVIEW

Tourism fosters economic growth by generating employment opportunities, augmenting corporate revenue, and stimulating regional government investment in infrastructure construction and maintenance.(Humsona et al., n.d.) Tourism businesses implement various major areas of corporate social responsibility CSR programs. The principles above include the careful use of natural and cultural resources, the reduction of pollution and waste, the preservation of landscapes, biodiversity, and cultural heritage, the fair and responsible treatment of employees, suppliers, and guests, the fair use of local products and services, and the active engagement and collaboration with local communities to enhance the overall well-being of the local population. If planned and promoted well, the Internet may be a highly effective marketing tool for Small to Medium Enterprises in the tourism industry.(Mensah et al., 2020) Information and communication technology (ICT) for corporate ethical management significantly influences consumer decision-making. (Min et al., n.d.) OTA is an e-commerce company that enables consumers to acquire travel-related services directly through its website. They are intermediaries who sell travel products, hotels, automobiles, flights, holiday packages, and other items given or organized by others. Practically, online travel agencies (OTAs) have a contractual arrangement with service providers to resell their products. In this arrangement, the OTA collects consumer payment and pays the provider the net price. (Setiawan & Widanta, 2021) The utilization of online travel agencies (OTAs) within the hospitality and tourism sector is progressively increasing with digitalization.(Mollik et al., 2024) As a result of the emergence of digital technology, the Internet has emerged as the predominant source of information for travel planning. Specific channels, such as online travel agencies (OTAs), have dominated the online information landscape. Presently, consumers persist in utilizing a diverse range of online and offline channels to acquire comprehensive and personally pertinent information for their forthcoming trips. (Xiang et al., 2015) Tourism substantially impacts the environment, society, and human well-being. Tourism emerges as the exclusive industry that provides employment prospects and contributes to the economic well-being of economically disadvantaged nations. CSR, also known as Corporate social performance, corporate sustainability, and corporate social and environmental responsibility, are multifaceted and varied concepts. (Fatma et al., 2016) Corporate social responsibility CSR activities in the tourism industry encompass two primary aspects: the environment and the community. The tourism industry has increasingly recognized the importance of environmental concerns, leading to the implementation of various projects such as ecological restoration, carbon offsetting and anti-poaching efforts. To mitigate their environmental impact, companies committed to procuring and advancing carbon offsets sell them to tourism enterprises.(Madanaguli et al., 2022) Companies mainly implement corporate social responsibility strategies, but CSR initiatives are more prevalent in medium- and small-sized enterprises. In addition, it is noteworthy that international tour operators primarily prioritize philanthropic endeavours while allocating comparatively less emphasis on supply chain management, a critical factor for ensuring sustainability. (Johann, 2022) Corporate Social accountability has become increasingly crucial Within sustainable, responsible tourism.(Nicolae & Sabina, 2012) Tourism intermediaries have recently initiated the development of CSR policies, with a predominant focus on environmental initiatives among those that have demonstrated commitment to their execution.(Ibarnia et al., 2020) Although most CSR research has concentrated on fast-moving consumer items, there is an increasing body of evidence highlighting the importance of CSR tactics in the tourism sector, particularly for suppliers of tourist accommodations. A multitude of multinational hotel businesses employ comprehensive social responsibility policies.(Randle et al., 2019) Recent studies have shown significant interest in the content and narrative analysis of consumer reviews. These evaluations offer valuable insights into consumers' consumption experiences, as consumers now closely monitor corporate social responsibility (CSR) initiatives. (D'Acunto et al., 2020).

OBJECTIVES

- To understand elements of digital transformation
- To examine the process of digitalization in the tourism sector.
- To analyze the execution of corporate social responsibility
- To identify challenges and opportunities faced by tourism stakeholders

RESEARCH METHODOLOGY

This study utilized a qualitative research methodology, specifically employing a phenomenological approach to obtain a deeper understanding of the perspectives and experiences of individuals involved in the Indian tourist business about internet travel technologies and corporate social responsibility. An exploratory study is beneficial for acquiring novel perspectives and discovering emerging trends in online travel technologies and CSR practices, which are constantly evolving. The purposive sampling technique is used to pick participants from many sectors of the tourist industry, such as tour operators, travel agencies, hoteliers, government bodies, and NGOs involved in corporate social responsibility (CSR) projects. Participants have diverse experiences and perspectives about internet travel technologies and corporate social responsibility (CSR) initiatives in the Indian tourist business. Thematic Analysis is used to discern repetitive themes and patterns within interview transcripts. Coding is used to categorize responses and obtain meaningful insights into the operation and impact of internet travel technology and corporate social responsibility (CSR) in the Indian tourism sector. Triangulation is used as a research tool to enhance the credibility and reliability of study findings by confirming data obtained from interviews and document analysis.

RESULTS AND DISCUSSIONS

Influence of Digital Transformations on Tourist Behavior

Our research findings demonstrate that the current condition of internet travel technology in the tourist sector in India is marked by substantial and widespread use. It has become commonplace for tour operators, hotels, and other participants in the tourist sector to integrate online booking systems, smartphone applications, and digital marketing strategies into their operations. This phenomenon indicates a growing preference among tourists for utilizing digital platforms to engage in research, plan, and book their travel experiences. The study reveals a significant impact of online travel technologies on the behaviour of tourists in India. The emergence of these technologies has fundamentally altered how individuals interact with travel services, providing them with improved convenience, increased availability, and a broader array of choices. Furthermore, the seamless integration of Internet booking systems and smartphone applications has allowed passengers to customize their vacation arrangements and quickly navigate unfamiliar destinations.

Implementation of Corporate Social Responsibility Initiatives

This study offered valuable insights into the diverse corporate social responsibility activities implemented by stakeholders in the Indian tourist industry. These initiatives encompass various areas, including sustainable tourism practices, environmental conservation efforts, community participation programs, and support for local cultural assets. Key stakeholders, including tour operators, hotel chains, and government agencies, have demonstrated a solid dedication to promoting responsible tourism and addressing social and environmental issues.

Impact of CSR activities on Environment and Local Communities

The research findings indicate that corporate social responsibility work has benefited the socio-economic well-being of local populations, the preservation of cultural assets, and the mitigation of environmental impacts associated with tourism operations. Tourism stakeholders have facilitated inclusive growth, empowered marginalized groups, and promoted environmental stewardship through community development projects, capacity-building programs, and environmental conservation measures.

Challenges and Opportunities in Integration

Despite the advancements in integrating online travel technologies with corporate social responsibility activities, several obstacles remain. The factors above encompass technological obstacles, resource limitations, stakeholder cooperation's absence, and legislative frameworks' intricacies. Nevertheless, our Analysis highlights notable prospects for improving collaboration, using inventive solutions, and tackling new challenges to optimize the beneficial effects of technology-driven corporate social responsibility activities in India's tourist industry. The report presents exemplary methods and examples demonstrating the effective incorporation of Internet travel technologies and corporate social responsibility activities in the Indian travel industry. Some examples of sustainable tourism certification programs, community-based tourism initiatives, and digital platforms that facilitate responsible travel experiences can be identified. These instances demonstrate the capacity to utilize technology to improve efficiency and expand the scope of CSR programs, resulting in favourable social, economic and environmental consequences.

CONCLUSION

This scholarly article conducted a comprehensive analysis of the intricate data about internet travel technology and corporate social accountability in the framework of the Indian tourist sector. Several noteworthy observations have emerged through examining dominant patterns, approaches, and their consequences, enabling the development of educated deductions and recommendations. The emergence of online travel technologies has substantially changed how tourists engage with the Indian tourism industry. There has been a significant proliferation of booking platforms, smartphone applications, and electronic advertising methods that have enhanced convenience and accessibility for travellers. Additionally, it has enabled tourism stakeholders to extend their reach to a broader audience and customize their offerings to match evolving consumer preferences. At the same time, the Analysis reveals a growing emphasis on corporate social responsibility initiatives within India's tourist sector as stakeholders increasingly recognize the importance of sustainability, community engagement, and environmental stewardship. Corporate Social Responsibility efforts have emerged as a crucial element within the strategic goals of various tourist businesses. These initiatives comprise a diverse array of activities, including promoting responsible tourism operations and allocating resources towards local community development projects. The efforts mentioned above align with social impact objectives and ethical corporate behaviour. Furthermore, the findings highlight the linkages between internet travel technologies and corporate social responsibility endeavours, demonstrating how technology-based approaches can advance sustainability objectives and enhance the socio-economic benefits of tourism for Indigenous communities. Examples of successful integration include using digital platforms to promote environmentally sustainable accommodations, facilitate responsible tourism experiences, and raise awareness about conservation efforts. However, despite these positive achievements, we still need to utilize the potential of this relationship fully. Obstacles to attaining equitable access and effective integration of online travel technology and corporate social responsibility initiatives in diverse contexts within India's tourism sector encompass challenges such as the digital divide, apprehensions surrounding data privacy, and resource constraints.

In conclusion, this research emphasizes the notable potential of internet-based travel technology and corporate social accountability in exerting a tremendous influence on the progress of the tourism sector in India. Stakeholders have the potential to employ technology to create tourist experiences that are sustainable, inclusive, and satisfying for both visitors and host communities. It can be achieved by adopting innovative approaches, collaborative efforts, and ethical practices. To advance, engaging in collaborative initiatives focused on addressing existing challenges and capitalizing on emerging opportunities is crucial. This involves the development of advantageous policies, initiatives aimed at improving capabilities, and partnerships involving multiple stakeholders. By adopting this strategy, the Indian tourism industry may continue to progress towards sustainable growth while also serving as a driver for the country, which plays a crucial role in both the economic progress and the preservation of its cultural and environmental assets.

Limitations

Even with the extensive investigation undertaken in this research paper, it is imperative to address numerous limitations. The study's conclusions should consider the potential influence of the sample population's characteristics, including demographics, geographical locations, and professional affiliations of participants. Despite efforts to ensure diversity in participant selection, it is conceivable that the sample may not fully encompass the entirety of players within the Indian tourist business. The responses provided by participants may have been influenced by their perceptions of socially acceptable behaviours or societal norms. The study's scope may not give a thorough analysis of all relevant factors that impact the role of internet travel technology and corporate social accountability in the Indian travel and tourism business. Various factors, such as legislative frameworks, macroeconomic conditions, and technological advancements, have yet to be thoroughly analyzed. However, they can profoundly influence the dynamics of the tourism industry.

Recommendations for Future Action

Based on the outcomes of our research, we propose recommendations to enhance the efficacy and sustainability of online travel technology and corporate social accountability endeavours in the tourist industry. The ideas include fostering partnerships among various parties, allocating money to digital literacy and capacity development programs, improving regulatory frameworks, and disseminating knowledge and education on responsible tourism practices. By implementing these recommendations, those involved in the tourist sector can gain new opportunities for sustainable and fair growth while also addressing the adverse effects of tourism on indigenous communities and the natural surroundings. Conduct comparative research across various nations or regions to analyze the discrepancies in adopting internet travel technology and CSR initiatives within the tourist sector. Insights into the cultural, legislative, and economic dynamics that shape an industry can be obtained by comparing diverse components.

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Disclosure of Interest

The researcher must reveal no conflicts of interest in this study.

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Gender and Advertising: Perceptions of Marketing and Advertising Students and Professionals1 Catarina Arnaut

Madumita Deb

Abstract

The advertising industry holds power at economic, social and cultural level around the world. Considering that advertising has frequently proven to be sexist, this study aims at identifying the perceptions of Marketing and Advertising students and professionals about gender issues in advertising, including portrayals of women and men in advertising, consequences of sexist and discriminatory advertising, issues in marketing and advertising professions, media literacy, gender equality, among others. Furthermore, a relation between the respondents' sex and their level of literacy/awareness about gender issues in advertising will be investigated. The results are discussed according to: (a) Perceptions about gender, marketing and advertising; (b) Perceptions about the relation between sexist advertising and purchase; and (c) Perceptions about gender and professions in the marketing and advertising field. Male respondents seem to display a lower level of literacy and awareness regarding gender issues in advertising.

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Keywords: Gender; marketing; advertisement; perceptions

INTRODUCTION

The advertising industry has a strong influence on an economic, social and cultural level all around the world. Kacen and Nelson (2002), referring to other authors, suggest that advertising is, on the one hand, creator and, on the other hand, a mirror of society. Advertising has an impact on its audience through the images, sounds and text used, which may be based on stereotypes (e.g. gender stereotypes, i.e. portrayals of women and men in advertising).

The way advertising is produced depends on who is producing it and, therefore, this issue should be studied. This research aims to identify and study the perceptions about gender issues in advertising of the present and future professionals of marketing and advertising areas. It is intended to find a relation between the respondents' sex and their level of awareness and literacy about these matters. The study aims to collect relevant information for gender, marketing and advertising studies and practices that can sensitize different agents (marketing and advertising schools, advertising agencies, research community and general population) and to promote a gender-sensitive approach in advertising.

GENDER, MARKETING AND ADVERTISING

Gender stereotypes are widespread and socially valued representations about how women and men should be (gender traits) and act (gender roles) (adapted CITE, 2003). Gender stereotypes have a cultural component. Hence, in spite of the fact that gender stereotypes are considered to be a universal phenomenon, Huang (1995 in Odekerken-Schöder et al., 2000) suggests that it is expected that the gender roles portrayed in the advertising of a certain country will reflect the orientation of the gender roles of that country, i.e. it is expected that a variation exists in the intensity level of gender stereotypes from one country to another.

In the last four decades, several studies on women's and men's portrayals in advertising were done (with a special focus on women's portrayals) (e.g. Rohlinger, 2002), as well as about the effects of stereotyped, discriminatory and distorted portrayals (e.g. Lafky, Duffy, Steinmaus and Berkowitz, 1996). Women and men have always been portrayed differently in advertising: women are generally represented as assuming traditional (e.g. housewives) and decorative roles, concerned about their physical appearance or are sexually objectified; men are usually portrayed as holding power, leaders, active and as businessmen. The objectification and eroticization of female and male models is popular. These trends can be recognized in printed, audio, visual advertising and, more recently, also on the Internet (e.g. Plakoyiannaki, Mathioudaki, Dmitratos and Zotos, 2008).

Considering the stereotyped and sexist portrayals that advertising has been using, as well as the power of media, the way people understand the messages conveyed in advertising should be taken into account. Thoman and Jolls (2004) sustain that the media not only shape our culture, but they are also our culture. As a result, the audience (children, youngsters, adults and elderly) should be capable of ‘filtering’ the content of the messages (textual, visual, audio) broadcasted by media. Media literacy can be defined as the knowledge of how mass media work in society, focusing on economical and organizational structures, psychological effects, social consequences and representational conventions of media (Messaris, 1998). Thoman and Jolls (2004) argue there is a pressing need for media literacy, in order to assure that citizens possess skills to make thoughtful decisions and contribute to global economy and cultural demands.

Marketing and advertising labour markets seem to share gendered unequal situations. In the last years, there has been a feminization of the marketing labour market and one may expect that women have had access to the same positions and salaries as their male counterparts. However, as Maclaran, Stevens and Catteral (1998 in Maclaran and Catterall, 2000) highlight in their study about female marketing managers, there is both a horizontal and a vertical gender segregation: women that participated in their study had become the ‘smiling face’ of marketing, but lacked the effective organizational influence and access to the main strategic decisions. Another particular gender unbalance is found in one of the most important (but also a very competitive) department of advertising agencies: the Creative Department. This department, metaphorically called ‘locker room’ and ‘boys’ club’ (due to the fact it is mainly composed of male professionals), is defined by Gregory (2009) as a place and a value associated to power and male identity, masculinities, competition, solidarity and teenage behaviour.

In relation to this masculinized and homo-social culture, there are some factors (e.g. cultural, managerial, organizational behaviour and communication practices, specificities of the advertising industry, personal characteristics, among others) that seem to affect female professionals’ opportunities to become creative directors of advertising agencies (Mallia, 2009). The masculinized nature of this context may have consequences on the advertising produced, namely the hyper-sexism of some advertising campaigns that are approved by clients who ask them (Gregory, 2009), the stereotyped portrayals of women and men, among others.

RESEARCH METHODOLOGY

Despite the findings mentioned above, the perceptions of professionals in these areas about gender-related issues have not deserved enough attention from the literature. Therefore, considering the importance of who is (or might one day be) ‘behind the advertising scene’, this research aims at answering the following questions:

1. *RQ1:* What are the perceptions of marketing and advertising students and professionals about the relation of gender and advertising?
2. *RQ2:* Is there a relation between the marketing and advertising students’ and professionals’ sex and their level of literacy and awareness about gender issues in advertising?

A quantitative research approach was used to assess the perceptions of present and future professionals of marketing and advertising about some gender issues in advertising. For this purpose, a questionnaire was created to address the main subjects of the literature review that supports this research: portrayals of women and men in advertising, consequences of sexist and discriminatory advertising, issues in marketing and advertising professions, media literacy, gender equality, among others.

The questionnaire, composed of five sections, used a 4-point-Likert scale (to avoid social desirability bias as supported by Garland, 1991) and multiplechoice answers. Socio-demographic data were collected (sex, age and occupation, current university or current job position and salary).

The questionnaire differentiated and assessed three types of perceptions: (a) Perceptions about gender, marketing and advertising; (b) Perceptions about the relation between sexist advertising and purchase; and (c) Perceptions about gender and professions in the marketing and advertising field.

Data was collected by means of a web-survey. After a pre -test, the questionnaire was sent to 22 Portuguese universities that lecture Marketing and Advertising courses (and respective courses Directors) and to 96 Portuguese Marketing and Advertising agencies/companies2. The profile of the participants and the purpose of the study were fully explained in the e -mail sent. The questionnaire was available online during approximately one month and a half in 2011. A sample of 161 respondents was obtained: 104 students3 (58 female and 46 male) and 57 professionals4 (27 female and 30 male) participated in the study. There is a quite balanced share of female and male respondents (85 women and 76 men).

A descriptive and a discriminant analysis of the data were conducted in order to: (1) summarize the main findings; (2) identify the variables that better discriminate the previously fixed groups (female and male respondents).

RESULTS

Before presenting the major findings of the study, it should be highlighted that 54% of the respondents claimed to have (had) access to gender-related contents during their university studies5 and that the same percentage of individuals are aware of the definition of 'Gender Equality' concept. A presentation and discussion of the main results will follow according to the research questions formulated for this study.

RQ1: What are the Perceptions of Marketing and Advertising Students and Professionals about the Relation of Gender and Advertising?

Perceptions about Gender, Marketing and Advertising Generally

The respondents consider that women and men advertising (53,4% 'agrees' and 18% 'fully agrees'). The majority transmits stereotyped messages about women and men (60,9% Furthermore, it was commonly accepted that advertising has an gender social roles (65,8% 'agrees' and 7,5% 'fully agrees'). More acknowledge that discrimination through marketing and advertising European and international level (39,8% 'agrees' and 20,5% 'fully respondents believes that 'eroticization' of female and male bodies is common including the respondents that 'agreed' and 'fully agreed'). In general, the respondents that the images of women and men portrayed in advertising may have negative effects on self-esteem and self-image (in spite of the visible differences between sexes, 62,6% of the 'agrees' and 'fully agrees'). Language was commonly perceived as a medium that conveys inequalities between the sexes and causes discrimination (67,7% of the respondents 'agrees' and 'fully agrees'). The respondents recognized that the fight for gender equality is not an issue that only

The Marketing and Advertising agencies/companies contacted for this study declare in their website that they provide this type of services. This was the criterion that supported the choice to request their participation in the study.

3 The investigator only received answers from students of 10 out of 22 universities.
4 It is not possible to know which agencies/companies collaborated in the study as anonymity was guaranteed in order to obtain a higher participation rate.
5 This regards only the perception of the respondents. It is not possible to state that the university courses they are attending or attended integrate gender-related contents. Therefore, the analysis takes into account the respondents' perception.

The above mentioned perceptions show that the respondents are aware of some aspects that characterize the current advertising regarding gender issues. However, other perceptions may have a role in biasing the production of non-sexist and gender -sensitive advertising. The majority of the sample considers that some strategies, e.g. using humour (to describe or exacerbate characteristics usually associated to women and men) (56,5% ‘agrees’ and 14,9% ‘fully agrees’) and social roles stereotypes (55,3% ‘agrees’ and 14,9% ‘fully agrees’), are not a form of discrimination and may be a good approach to broadcast a simple message about a product/service that will more easily capture the attention of a potential consumer. Slightly more than half of the sample considers that nowadays there are equal opportunities between women and men (59,6% including the respondents that ‘agreed’ and ‘fully agreed’).

In what media literacy is concerned, half of the respondents ‘agreed’ (52,2%) that, generally, people are able to critically analyse the messages conveyed by media. The same happens towards gender issues: half of the respondents (54%) believe that gender issues are widely known within the general population. Similarly, the majority of the respondents consider that, normally, people are able to identify gender stereotypes in advertising (74,5%). On the other hand, in general, the respondents defend that it is important to provide information to the population about the messages broadcasted by the media (64,6% including the respondents that ‘agreed’ and ‘fully agreed’). Despite this, approximately one third of the sample does not recognize the importance of providing information to the population.

Perceptions about the Relation Between Sexist Advertising and Purchase

The respondents massively agreed (72,1%) that using sexist advertising may, to some extent, influence the purchase of a product/service, but, in the end, people opt to buy it. The remaining percentage of respondents considers that: there is no relation between sexist advertising and purchase (14,3%, mostly male and professionals); no one would buy the product/service advertised with sexist contents (5%, mostly female); women would not buy the product/service advertised with sexist contents (8,1%); men would not buy the product/service advertised with sexist contents (0,5%).

Perceptions about Gender and Marketing and Advertising Professions

This was the group of questions that generated a more divergent answer behaviour. In general, slightly more than a half of the respondents believe that women and men have the same opportunities within marketing and advertising (57,8% including the respondents that ‘agreed’ and ‘fully agreed’). It should be highlighted that none of the female professional respondents fully agreed with this question. However, approximately the same percentage of respondents considers that women and men are not paid the same amount of money (54,7% of the sample that ‘agreed’ and ‘fully agreed’). This perception is in line with the literature review and the socio- demographic findings (the male professionals earn more than the female professionals of the sample and the gap is even more evident within the salaries superior to 2001€).

Corroborating the literature reviewed, roughly half of the sample agrees that the creative department is mostly composed by male professionals (47,9% including the respondents that ‘agreed’ and ‘fully agreed’). It is interesting to mention that nine professionals of the sample belong to the Creative Department, in which there is only one female respondent and four men have identified themselves as Creative Directors.

RQ2: Is There a Relation Between the Marketing and Advertising Students’ and Professionals’ Sex (Being a Woman or a Man) and Their Level of Literacy and Awareness about Gender Issues in Advertising?

Linear discriminant analysis shows that the respondents’ sex plays a relevant role in their perceptions about gender, marketing and advertising.

The findings of the discriminant analysis prove that male respondents tend to agree more with the following questions6 when compared to the female respondents: (1) In marketing and advertising

Table 1. Discriminant Analysis, Tests of Equality of Group Means and Structure Matrix.

Variable	Wilks' Lambda	F	Sig.	Std. Coefficients
Same opportunities for women and men	,824	33,887	,000	,891
Same salary for women and men	,851	27,904	,000	,809
Equal opportunities for women and men	,939	10,273	,002	,491
Critical analysis of messages conveyed by media	,961	6,399	,012	,387
Negative impact on self-esteem and self-image	,969	5,120	,025	,346

professions, women and men have the same opportunities; (2) In marketing and advertising professions, women and men earn the same salary; (3) Nowadays there are equal opportunities for women and men; (4) Generally, people are able to critically analyse the messages broadcasted by media; and (5) The images of women and men portrayed in advertising do not have a negative impact in one's self-esteem and self-image. The results (Table 1) show how the proposed variables prove to be significant as discriminators between female and male respondents. The classification results table correctly classifies 68,9% of the respondents.

IMPLICATIONS AND CONCLUSIONS

Considering the power of the advertising industry on an economic, social and cultural level and the existence of sexist advertising, the perceptions about Gender, Marketing and Advertising of 161 Portuguese students and professionals of these areas were studied. The purpose of knowing the perceptions of this specific target groups was to understand the state-of-play, to contribute to the creation of knowledge in marketing, advertising and gender studies and, consequently, to think of strategies to better intervene in the field.

Generally, the respondents of this study seem to be aware and acknowledge some of the main gender issues in marketing and advertising (e.g. different portrayals of women and men, their characteristics and their effects; influence of advertising in gender roles; use of humour and gender stereotypes in advertising, etc.). Nonetheless, the percentage of individuals that show less awareness and knowledge about the same matters is significant (approximately raging from 23% to 45% depending on the questions). Moreover, the male respondents tend to present less awareness and literacy in comparison to their female counterparts.

The evidences from the literature review (e.g. Gregory, 2009; Mallia, 2009) and the findings of this study suggest that the Creative Department is a masculinized setting. This gender unbalanced representation might have an (conscious or unconscious) influence in the sexist and discriminatory advertisements produced. As sustained by this study, male respondents tended to be less familiarized with some of the subjects and present less updated perceptions about the issues addressed. According to Mallia (2009), the lack of gender diversity is not only a problem of women or an individual problem; it is a matter of business: women are responsible for more than 80% of purchase decisions and companies that hold a higher representation of women in top management position have a better financial performance.

The majority of the respondents perceive that, in spite of the fact that sexist advertising may influence the purchase of a product/service, usually people tend to buy it. However, as suggested by Ford and LaTour (1999) and Reichert et al. (2007), advertising agencies should take into account that the more potential clients/consumers are aware of the conveyed message broadcasted by media, the more the purchase decision may be affected. Other strategies different from the ones that are en questions/variables were tested using the discriminant analysis, but only five proved to be statistically significant.

being currently used by marketing and advertising professionals may be explored. As stressed by Zawisza and Cinnirella (2010), breaking with the traditional masculine stereotypes and using non-traditional images of women (e.g. business woman) and men (e.g. househusband) may increase an advertisement's effectiveness. Therefore, new role models may be created and new strategies may be used to promote advertising free of stereotypes and to foster gender equality advocacy.

According to the findings, an investment in media literacy could be taken into account. The advertising industry may play an important role in changing mentalities and in promoting gender equality, because media are present and play an important role on people's lives (children, young people, adults and elderly). In addition, special programmes of gender-related contents in marketing and advertising could be created for students that will become future professionals in these areas. Such programmes would allow equipping students with knowledge and skills about gender contents and gender-sensitive strategies/approaches towards advertising and improve their critical judgement on sexist and discriminatory advertisements. Similarly, bearing in mind the important role of today's professionals in marketing and advertising, training programmes on 'gender in advertising' could be developed in order to make them aware of (some) gender issues in advertising and to make some of them gender equality advocates (creating new strategies towards gender-sensitive marketing and advertising).

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Impact of Artificial Intelligence in Elementary Education

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Abstract

Technology has become an integral part of our lives. With just a click we can achieve whatever we want, be it gaining access to information or taking the help of technology to make our lives easier, we can do it all. As we stepped into the era of the 21st century the innovation of Artificial Intelligence (AI) has encompassed our lives in all spheres. Within the education domain, Artificial Intelligence is emerging as a revolutionary force in transforming it across the globe. By using AI in education in India we can open doors to innovative learning experiences. The '21st International Conference on Artificial Intelligence (AI) in Education' (AIED), held in 2020, highlighted AIED as a growing field within educational technologies. Artificial Intelligence (AI) has made it possible to meet diverse student learning needs and is helping schools across the world operate more efficiently. The National Education Policy (NEP) 2020 and the National Curriculum Framework (NCF) for School Education both emphasize the importance of integrating technology and innovation in schools – to improve learning outcomes and prepare students for the future. Both highlight the importance of 21st-century skills such as Critical Thinking, Problem-solving, Creativity and Collaboration. AI can play a significant role in fostering these skills through project-based learning, interactive simulation and adaptive learning. The importance of AI development has mostly been highlighted in secondary and higher education but seldom conducted at the kindergarten level. This paper explores the usage of AI in elementary education through an empirical study using the six parameters (1) personalized learning, (2) intelligent tutoring system, (3) adaptive assessments, (4) virtual classrooms, (5) AI-powered content creation, and (6) predictive analytics.

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Keywords: Artificial Intelligence, Personalized Learning, Intelligent Tutoring System, Adaptive Assessments, Virtual Classrooms, AI-Powered Content Creation, Predictive Analytics.

INTRODUCTION

Artificial intelligence as a branch of computer science, is a combination of machine learning, algorithm development, and natural language processing (Su & Zhong, 2022). AI applications are impacting the process and systems of learning and education to a great extent (Ahmad, 2022). Due to its importance, AI has been a hot research topic generally and a growing area in education (Reid, 1995). Usually, teachers perform tasks like the development of curriculum, course planning, and student evaluation. Many tasks inside educational institutes overlap each other, for example, teaching and administrative tasks, like grading and evaluation, are different tasks usually performed by a teacher (Zawacki, 2019). A student's performance is judged by teachers on many pre-defined criteria like participation, creativity, discipline, obedience, learning speed etc.

Long & Magerko, (2020) defines AI literacy as 'a set of competencies that enables individuals to critically evaluate AI technologies; communicate and collaborate effectively with AI; and use AI as a tool online, at home, and in the workplace.'It also helps teachers in course management, classroom management, and managing attendance. It also assists teachers in making lecture notes and video lectures, and helps the students learn through virtual reality (Ahmad, S. F et al, 2022). As per the discussion paper of NITI Ayog, 2018, "AI has the potential to reach US $ 1 trillion in Indian economy by 2035."

As part of the National Education Policy (NEP) 2020 focuses on promoting skill education at an early age, the CBSE (Central Board of Secondary Education) has introduced coding and AI from classes VI to VIII onwards. In line with the programme, CBSE had earlier collaborated with Microsoft in introducing coding as a new skilling subject for class VI-VII and for class VIII-XII Data Science. subjects. Apart from this, CBSE also undertook a ‘twin initiative’ to make school students ‘AI Aware’. Under the initiative, for class VIII-X AI was introduced as an elective subject with a proper curriculum and facilitator’s handbook. Along with this, extensive teacher training is undertaken for teaching AI in schools. CBSE first introduced. AI in kindergarten and AI in secondary and higher education are very different. AI in kindergarten mainly focuses on basic concepts and simple AI activities (e.g., drawing concept maps and AI framing). However, AI in secondary and higher education mainly focuses on programming (e.g., Scratch and Google Teachable Machine), and complex concepts. Some of the ways AI is transforming education in India.

Personalized Learning

Personalised learning can help student receive targeted support in areas where they struggle and also explore their interests and talents in-depth. By fostering self-paced learning environment students can be empowered in taking ownership of their own education. Moreover, using AI in education enhances critical thinking skills and creativity by encouraging students to discover unique solutions to problems. With personalized learning, educators become facilitators guiding each student toward realizing their fullest potential. For example, online learning platform Khan Academy offers short video lessons, practice exercises, and quizzes to help people learn various subjects.

Intelligent Tutoring Systems (ITS)

By analyzing student data, ITS can identify areas of weakness, provide targeted feedback, and offer personalized recommendations for improvement. These systems continuously monitor the learner's performance, adjusting the content difficulty level and instructional strategies accordingly. Moreover, ITS have proven to be highly effective in enhancing student outcomes. By providing individualized guidance and immediate feedback, these systems empower learners to take ownership of their education, boosting their confidence levels and cultivating a sense of accomplishment. For example, SQL-Tutor-developed by ICTG (Intelligent Computer Tutoring Group) at the University of Canterbury New Zealand is the first-ever constraint-based tutor. With SQL-Tutor students learn data retrieval from databases with the help of SQL SELECT statements.

Adaptive Assessments

By utilizing algorithms, adaptive assessments provide a personalized learning experience that maximizes each student's potential. Imagine a scenario, where a student is undergoing a math assessment. The system instantly analyzes their answers, evaluates proficiency, and pinpoints areas needing improvement. It not only enables educators to gather precise data on students' understanding but also empowers learners to track their progress effectively. In the future, the use of AI in education in India will bring a significant change giving every learner an opportunity to grow at their own pace. For example, educational platforms, like Khan Academy use adaptive learning to personalize the learning experience for each student. These platforms adjust the difficulty of questions and content based on the student's performance, providing targeted support and challenges.

Virtual Classrooms

These days, with the emergence of virtual education students become more flexible, adaptive, and creative. Virtual education has removed all geographical barriers, they can be easily organized and recorded for future reference. Virtual classrooms will affect traditional classroom learning using textbooks, pens, and teachers. With the help of Education 4.0 students at remote locations can enroll in a variety of online courses using the Internet (Sharma P, 2019). The online school approved by the Government of India is the National Institute of Open Schooling established in November 1986).

AI-powered Content Creation

Machine Learning and Advanced Algorithms techniques are used in this to create high-quality educational materials. During COVID-19, universities and colleges had a significant opportunity in improving the quality of teaching materials used in the teaching and learning activities (Mathivanan, 2021). This approach has the ability to adapt the content according to student's need, which helps to bridge the gap and customize education material.

Predictive Analytics for Student Success

This helps to analyze the student data, in order to predict the future performance and find out the solutions for the content where the learner is lacking. By analyzing the data using advanced algorithms and different AI models, educators provide the support to the students accordingly.

RESEARCH METHODOLOGY

For this study empirical approach with quantitative technique was used. Literature review was undertaken to understand the ways in which artificial intelligence is used in elementary education. For the present study we focused on four aspects of elementary education viz personalized learning, virtual classroom, intelligent tutoring system, and predictive analytics and how artificial intelligence affects them. A conceptual model is proposed Figure 1 and the same is validated with the help of study. A five point Likert scale research questionnaire was designed to collect the data. The data was collected with the help of snowball sampling from elementary school teachers. A total of 278 data were collect for the present study. For the study, the following hypothesis were formulated:

- Ha1: Artificial intelligence has a significant effect on personalised learning
- Ha2: Artificial intelligence has a significant effect on virtual classroom
- Ha3: Artificial intelligence has a significant effect on intelligent tutoring system
- Ha4: Artificial intelligence has a significant effect on predictive analytics

Exploratory Factor analysis, using SPSS Ver.25, was used for finding the internal consistency and reliability of scale. KMNO and Bartlett's test of sphericity was used for sample adequacy and further Factor analysis. Principal component analysis was used for dimension reduction. With the help of Onyx software Confirmatory factor analysis was done, measurement model was developed, model fit indices were obtained, construct validity was established, hypothesis tested and structural equation model estimated.

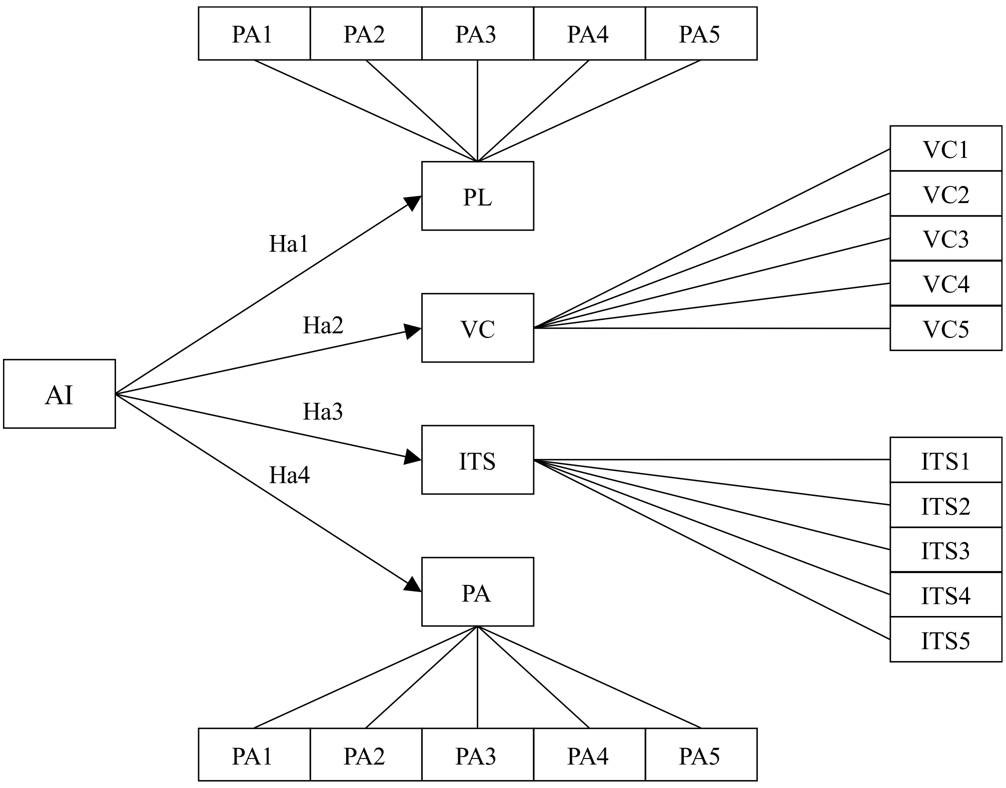

Figure 1. Conceptual model.

DATA ANALYSIS

Reliability Analysis

Internal consistency and reliability between items were measured by Cronbach's Alpha (Bujang, M. A. et. al. 2018). Table 1 shows the Cronbach's Alpha values for each category. In a Cronbach's alpha analysis, a score of 0.7 or above is considered good, that is, the scale is internally consistent. A score of 0.5 or below means that the questions need to be revised or replaced, and in some cases, the scale needs to be redesigned. As per the Cronbach's Alpha Values given in Table 1, all the values are greater than .6, which indicates the sufficient measure of internal consistency and reliability between items.

Factor Analysis

Kaiser-Meyer-Oklin Measure of Sampling Adequacy test and Bartlett's Test of Sphericity were done to find the correlation between data and suitability of data for further factor analysis. Table 2 gives the KMO and Bartlett's test scores. According to the values calculated in Table 2, KMO value is more than 0.5 and Bartlett's test of Sphericity is less than 0.05. Hence, the data can be further used for doing Principal Component Analysis.

Principle Component Analysis

All the items under each variable were analyzed with the help of PCA. In the PCA results it was observed that all the items under PA, ITS and PL had loading values above .5 hence all the items were retained for further study. Under the variable VC it was observed that two items VC2 and VC3 had factor loading below .5 and item VC1 had cross loading to another variable. Only two items VC4 and VC5 had factor loading above .5. Since, out of five items of VC three items were not correct measure of VC, thus the variable VC was removed from further study. Table 3 gives the factor loadings of various items on variables.

Confirmatory Factor Analysis

CFA was performed on five items of personalised learning, five items of predictive analytics and five items of intelligent tutoring systems. Table 4 gives the standardized regression weight of items on the variables. It is observed that in variable predictive analytics the item PA4 and PA5 had loading values below .4, hence the two items were removed from the study. In all the cases the loading value is above .4. In CFA large sample size is used hence, a small factor loading can be significant statistically (Cheung et al., 2023: Stevens, 2002). Loading values above .4 or .5 are also adequate if other items have higher loading values to support composite reliability and average variance extracted (Ismail et al., 2020).

Measurement Model Fit

For measurement model fit, a minimum of RMSEA, CFI and SRMR indices should be reported (Klin, 2015). Table 5 gives the estimated values of the model fit. It is observed that in all the model fit indices the estimated value is within the required value. The RMSEA estimated value is below .08 (Awang, 2012; Xia & Yang, 2019) the SRMR estimated value is equal / below .08 (Cho et al., 2020), the CFI

Table 1. Cronbach's alpha values for different categories.

Category	Cronbach's Alpha	No. of items
Personalized learning	.729	5
Virtual classrooms	.686	5
Intelligent tutoring system	.688	5
Predictive analytics	.824	5
Total	.859	20

Table 2. KMO and Bartlett's Test Score.

Kaiser – Meyer – Oklin measure of sampling adequacy		.749
Bartlett's Test of Sphericity	Approx. Chi-Square	616.159
	df	190
	Sig.	.000

Table 3. Factor loading.

	Components			
	PA	***ITS***	***PL***	***VC***
Predictive analytics (PA)				
PA 1	0.800			
PA 2	0.777			
PA 3	0.689			
PA 4	0.686			
PA 5	0.600			
Intelligent tutoring system (ITS)				
ITS 1		0.75		
ITS 2		0.729		
ITS 3		0.638		
ITS 4		0.586		
ITS 5		0.548		
Personalized learning (PL)				
PL 1			0.734	
PL 2			0.677	
PL 3			0.638	
PL 4			0.63	
PL 5			0.546	
Virtual classrooms (VC)				
VC 1	0.572			
VC 2				
VC 3				
VC 4				0.653
VC 5				0.557

Table 4. Standardized regression weight.

Variable	Item	Loading value
Personalised learning	PL1	0.56
	PL2	0.72
	PL3	0.45
	PL4	0.51
	PL5	0.65
Predictive Analytics	PA1	0.48
	PA2	0.76
	PA3	0.58
	PA4	0.27
	PA5	0.34
Intelligent tutoring systems	ITS1	0.52
	ITS2	0.59
	ITS3	0.81
	ITS4	0.5
	ITS5	0.45

Table 5. Model fit indices.

Name of the index	Estimated value	Required value
RMSEA (df corrected)	.064	< .08
SRMR (covariance only)	.08	< .08
CFI (to independent model)	.94	> .9
TLI (to independent model)	.91	> .9

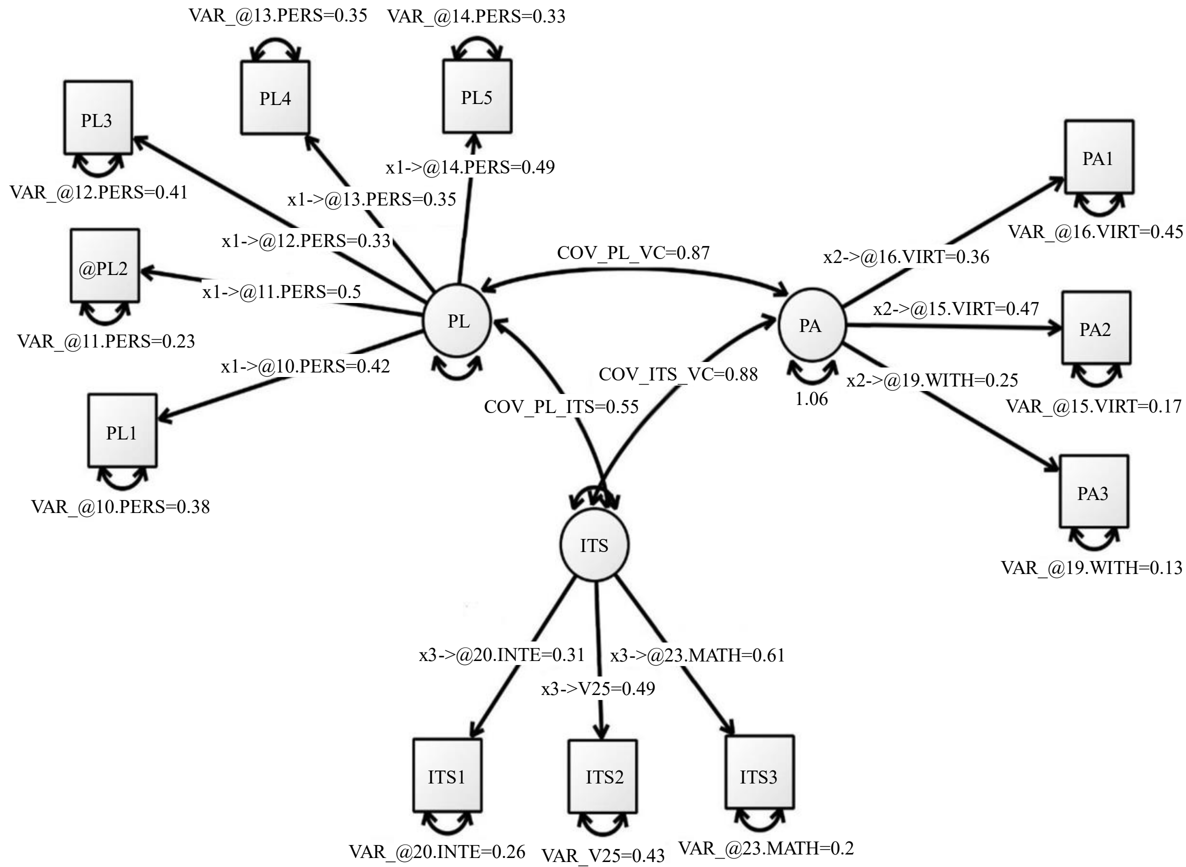

Figure 2. Path diagram.

Table 6. Z score.

Path Name	Estimate	Standard error	Z score
COV_ITS_PA	0.883434	0.104072233	8.488658
COV_PL_ITS	0.547659	0.129780664	4.219885
COV_PL_PA	0.870761	0.10439458	8.341055
PL->PL1	0.415398	0.089162642	4.658884
PL->PL2	0.495731	0.078830228	6.288585
PL->PL3	0.325378	0.08925248	3.645589
PL->PL4	0.35202	0.085707705	4.107216
PL->PL5	0.485669	0.087953439	5.521888
PA->PA1	0.47484	0.069648475	6.817663
PA->PA2	0.362951	0.088282306	4.111256
PA->PA3	0.249369	0.049707606	5.016713
ITS->ITS1	0.314243	0.07239671	4.34057
ITS->ITS2	0.606921	0.086951055	6.980034
ITS->ITS3	0.486436	0.098721769	4.927341

estimated value is above .9 and the TLI value is above .9 (Byrne, 1994; Sander & Fuente, 2022). The results indicate a good fit model. To achieve the model fit two items ITS4 and ITS5 were removed from the study. Figure 2 gives the path diagram.

Table 6 gives the Z score for the relationship between the variable and the items and between the variables. It is observed that in all the cases the Z score is above 1.95 at 95% confidence level this indicates that the items and the variables have a positive significant relationship (Olugboyega & Windapo, 2023).

Construct Validity

Convergent Validity

Table 7 gives the values of composite reliability and average variance extracted. It is observed that the composite reliability in all the cases is above .6 which is considered acceptable (Hair at. al., 2019). The value of the average variance extracted is above .5 (Hair at. al., 2019) which is accepted. In one case the average variance extracted is .38. However, if the composite reliability is above .6 then the convergent validity of the construct can be adequate even if the average variance extracted is below.5 (Fornell & Larcker, 1981; Ates & Çoban, 2022). The findings validate the convergent reliability of the scale.

Discriminant Validity

The discriminant validity of the scale was validated with the help of Fornell and Larcker's criteria which states that the square root of average variance extracted from a construct should be larger than the correlation between it and another construct (Ismail et al., 2020). Table 8 gives the values of square root of the average variance extracted from a construct and the correlation between the constructs. It is observed that in all the cases the square root of the average variance of a component is higher than the correlation between the components. The results validate the discriminant validity.

Hypothesis Testing

The regression model as shown in Figure 3 shows the influence of Artificial Intelligence on Personalised learning, predictive analytics and intelligent tutoring system. Table 9 gives the estimate, standard error and the Z score. It is observed that in all the relationships, the Z score is above 1.96 with a positive r value thid indicates that the artificial intelligence have a positive significant influence on Personalised learning, predictive analytics and intelligent tutoring system (Olugboyega & Windapo, 2023).

Table 7: Composite reliability and average variance extracted.

	Composite reliability	Average variance extracted
PL	0.717842	0.34342
PA	0.640944	0.381466
ITS	0.681178	0.424866

Table 8. Correlation Values Between the variables.

	PL	VC	ITS
PL	*0.58**		
VC	0.462	*0.61**	
ITS	0.311	0.59	*0.65**

**Square root of average variance extracted*

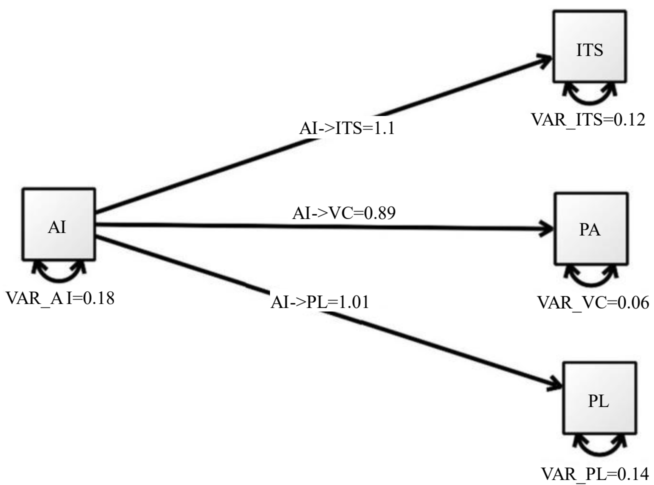

Figure 3. Path model of artificial intelligence and Personalised learning, Predictive Analytics, Intelligent tutoring system model.

Table 9. Parameter estimates of structural equation model of artificial intelligence

Path name	Estimate	Standard error	Z score
AI->ITS	1.095324	0.092618396	11.8261988
AI->PL	1.014252	0.101291144	10.0132383
AI->PA	0.890424	0.067821077	13.1290172

Table 10. Test result for the hypothesis.

Hypothesis	Path co-efficient	Z score	Result
H1	0.75	10.01	Supported
H2	0.83	13.12	Supported
H3	0.8	11.82	Supported

CONCLUSION

AI technology will be the most used tool in the field of education in near future. The use of this technology in the education field will helps teachers and students in improving the teaching and learning processes (Huang, J. et al., 2021). This study was undertaken to find the impact of AI on personalized learning (PL), predictive analytics (PA) and intelligent tutoring system (ITS) in elementary education. This study observed that AI has significant effect on PL, PA and ITS in elementary level education.

We recommend that educator should develop an AI curriculum framework and early childhood education activities as per the four level assessment (Su & Zhong, 2022) “First, assess children’s AI knowledge by using pre-test and post-test. Second, conduct observations on classroom activities using the assessment profile (Assessment Profile for Early Childhood Programs). Third, conduct teacher interviews to improve the AI curriculum design. Fourth, conduct a self-assessment questionnaire to assess children’s knowledge by themselves.”

Future Research

1. This paper explores the importance of AI in elementary education, but the same study can be replicated for middle, secondary, as well as higher education system.
2. In this study, we removed the component of virtual classroom, so we can continue this with some other factors like Adaptive Assessments, AI powered content creation and many more

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News Paper reference

1. Article on "AI in school education transforming Indian classrooms", in Education Times, Education / By Ajay Kashyap / May 10, 2024

Shaping the Indian Automobile Industry for a Global Hub

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Abstract

Manufacturing industries are considered the pillar of growth in the Indian economy. The developing nations must build pillars of growth that further contribute to the economy to make a developed country. India's globally competitive manufacturing sector has grown remarkably over the last few years. Several manufacturing industries, such as automobiles, chemicals, engineering, and pharmaceuticals, contributed to this growth. Out of these manufacturing industries, the automobile industry is one of the critical industries. India's automobile industry contributes 6.5% of its GDP, delivers 4 million employment opportunities, and participates 40% in manufacturing GDP. The main goal of this research is to analyze the growth of the Indian automobile sector, discuss the current status of this sector, and study the contribution of various government policies to make the automobile sector a global hub.

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Keywords: Manufacturing industries, growth, government policies, automobile industry, India

INTRODUCTION

The automobile industry is a significant driver of Indian economic growth and one of the booming sectors in which the country has high participation in global value chains. (Miglani,2019). The Auto industry is considered one of the most vital engines of world economic growth, assisting a vast supply chain and creating massive employment. India's automobile industry performed well in the global market. In 2022, India contributed sales of 3.8 Mn units of passenger vehicles, and its global share was 5.4%. With this, it became the 3rd largest passenger vehicle market globally. Commercial vehicles contribute around 8% of the worldwide share. India became the most significant contributor in the two-wheeler market, with sales of 16 MN units and around 30% of the worldwide share. This data depicts India's growth in the automobile sector. Domestically, this sector contributed 6.5% of the country's GDP and employed 4 million people directly and 27% indirectly by forward and backward linkages (Annual Report of Society of Indian Automobile Manufacturers; 2022-23). The Indian automobile industry was closed by 1991, but after 1991, the globalization policy was introduced, and with this, many MNCs entered the country. Indian and global manufacturers are directing their efforts to increase innovation in products, supply chains, and technologies (Krishnaveni and Vidya, (2015)). After the period of liberalization, FDI inflows rapidly increased, which further contributed to the growth of the Indian automobile industry. Many responsible factors in this growth were an efficient workforce, technology, and a well-developed auto-ancillary industry broadly accountable for this growth (Rajesh and Dileep (2013).

REVIEW OF LITERATURE

Table 1.

Author (year)	Key outcomes
Bhasker and Sarma (2013)	This study examined the post liberalisation period and discussed the contribution of various government policies and Foreign Direct Investment in the growth of Indian automobile industry. Study analysed various segments of Indian automobile industry and showed the growth trend.
Chandrasekar and Palanivelu(2018).	*This paper taken six years time frame 2012-13 to 2017-18. Different methods like mean, percentage, standard deviation, co-efficient of variation and compound annual growth rate were applied by researcher to analyse the data. Results examined that production of automobile sector increased appreciably during the study period.*

Jain and Kumar (2020)	*Study analysis exposed that the overall growth was positive in the Indian automobile industry. But currently growth rate was followed declining trend. So more progress required by following more innovation, Research and development programs and by more investment.*
Krishnaveni and Vidya (2015)	The present paper investigated the category wise production, sales and exports of Automobile industry in India. Recently India establishing market potential in different segments of automobile industry due to rise in demand as a result domestic sales, production and exports of automobile industry increased.
Miglani, (2019)	The researcher studied different policies framed by Indian Government that boosted the growth of Indian automobile industry. Study suggested innovation and large investments were must to achieve low cost advantage and for the development of indigenous technologies.
Prakash (2020)	This paper examined Government actions that boosted growth of Indian automobile industry. With different actions investment, innovation and global standards of automobile industry increased over the period. To achieve sustainability and progress of electric vehicles were major goals of this industry in future.
Rajesh and Dileep (2013)	This study analysed the contribution of Foreign Direct Investment in the growth of Indian automobile industry. Study examined the expansion in foreign direct investment since the post liberalisation phase. The results that foreign investment was the major factor contributed in the increased production of automobile sector.
Ranawat and Tiwari (2009)	This work showed the evolution of the automotive industry and identified the significant policies implemented by the Indian government that contributed in this growth path.
Sarwade (2015)	The researcher evaluated rapid growth of Indian automobile industry that served domestic and global customers. Study discussed expansion of automobile industry after the period of 1990s with the support of various Government intiatives. Study suggested more positive decisions further will create more opportunities for foreign firms and will contribute in the further expansion of automobile sector.
Shinde and Dubey (2011)	This study discussed growth trends of Indian automobile industry from 2005 to 2010. Study showed high growth in selected period. Study suggested use of latest technology, strict quality standards can boost the growth of this sector.

OBJECTIVE OF THE STUDY

1. To discuss the major Government Schemes launched in 2000's.
2. To examine the Growth of Total Passenger Vehicles, Total Commercial Vehicles, Three Wheelers and Two Wheelers after declaration of Auto policy 2002.
3. To study the Global success of Indian Automobile industry.

DATA SOURCES AND METHODOLOGY

This study gathered data from the Society of Indian Automobile Manufacturers (SIAM). This national body of automobile manufacturers established the Societies Registration Act of 1860. One of this body's primary objectives is to increase the automobile industry's contribution to the growth and development of the Indian economy. The average annual growth rate (AAGR) and compound annual growth rate (CAGR)were used to compute the growth rate and analyze the data.

DISCUSSION

The discussion section of this study is divided into three sections. The first section (5.1) explains the contribution of the Indian Government to building the automobile industry. The second section (5.2) examined the growth rates of different segments of the automobile industry, and lastly, section three (5.3) studied the global status of the Indian automobile industry.

Policy-Driven Growth of India's Automobile Sector

Different Government policies were framed after the period of liberalization to enhance the growth of India's Automobile Industry. Started from the Auto policy framed specially for the evolution of the automobile industry. Till now, the Government of India has tried to cover this specific industry in many plans to attain sustainability and to make this industry a global hub.

The above table is based upon the literature of different authors (Patra and Rao, 2016; Sarwade, 2015), and data on government policies were summarized with the help of several databases like ACE

Table 2.

Major Government Policies Regarding Automobile Industry in 2000's	• Auto policy was declared in 2002. • Auto policy allowed 100% FDI limit through automatic root. • Automobile Mission Plan 2006-2016 was launched to increase the competitiveness of Indian firms. • Second Automobile Mission Plan 2016-2026 is launched to enhance the growth of Indian firms. • NEMMP (National Electronic Mobility Mission Plan) 2020 is a mission to enhance the adoption of electric vehicles. • FAME (Faster Adoption and Manufacturing of Electric and Hybrid Vehicles in India") scheme operates under National Electronic Mobility Mission Plan. Major motive of this scheme was to encourage the electronic manufacturers. Further vision of this scheme was to transform 30% of total transportation into electric vehicles by the year 2030.

Source: Compiled by the author

EQUITY, MOSPI (Ministry of Statistics and Programme Implementation) and Ministry of Heavy Industries. With every major shift in policies made by the government of India, the Indian automobile industry has come out strongly.

Growth Path of Indian Automobile Industry

This study focused on four key segments: Passenger vehicles, Commercial Vehicles, Three-wheelers, and Two-wheelers.

Total Passenger Vehicles

Passenger vehicle segment was one of the major contributor of total automobile output. In year 2022-23 India ranked 4th largest passenger vehicle manufacturer. After the introduction of Auto policy this segment boosted its growth with 36% growth in production, 27% growth in exports and 79% growth in the exports. But over the period different economic and political conditions affected this growth of passenger vehicle segment. Further Table showed different growth rates of passenger vehicle segment.

Table 3. Total passenger vehicles (TPV) (in numbers).

Year	Production of TPV	Growth %age	Domestic sales of TPV	Growth %age	Exports of TPV	Growth %age
2002–03	723330	_	707198	_	72005	_
2003–04	989560	36.81	902096	27.56	129291	79.56
2004–05	1209876	22.26	1061572	17.68	166402	28.70
2005–06	1309300	8.22	1143076	7.68	175572	5.51
2006–07	1545223	18.02	1379979	20.73	198452	13.03
2007–08	1777583	15.04	1549882	12.31	218401	10.05
2008–09	1838593	3.43	1552703	0.18	335729	53.72
2009–10	2357411	28.22	1951333	25.67	446145	32.89
2010–11	2982772	26.53	2501542	28.20	444326	-0.41
2011–12	3146069	5.47	2629839	5.13	508783	14.51
2012–13	3231058	2.70	2665015	1.34	559414	9.95
2013–14	3087973	-4.43	2503509	-6.06	596142	6.57
2014–15	3221419	4.32	2601236	3.90	621341	4.23
2015–16	3465045	7.56	2789208	7.23	653053	5.10
2016–17	3801670	9.71	3047582	9.26	758727	16.18
2017–18	4020267	5.75	3288581	7.91	748366	-1.37
2018–19	4028471	0.20	3377389	2.70	676192	-9.64
2019–20	3424564	-14.99	2773519	-17.88	662118	-2.08
2020–21	3062280	-10.58	2711457	-2.24	404397	-38.92
2021–22	3650698	19.22	3069523	13.21	577875	42.90
2022–23	4578639	25.42	3890114	26.73	662891	14.71
CAGR	9.18%		8.46%		11.15%	

Source: Computed by Annual Report of SIAM

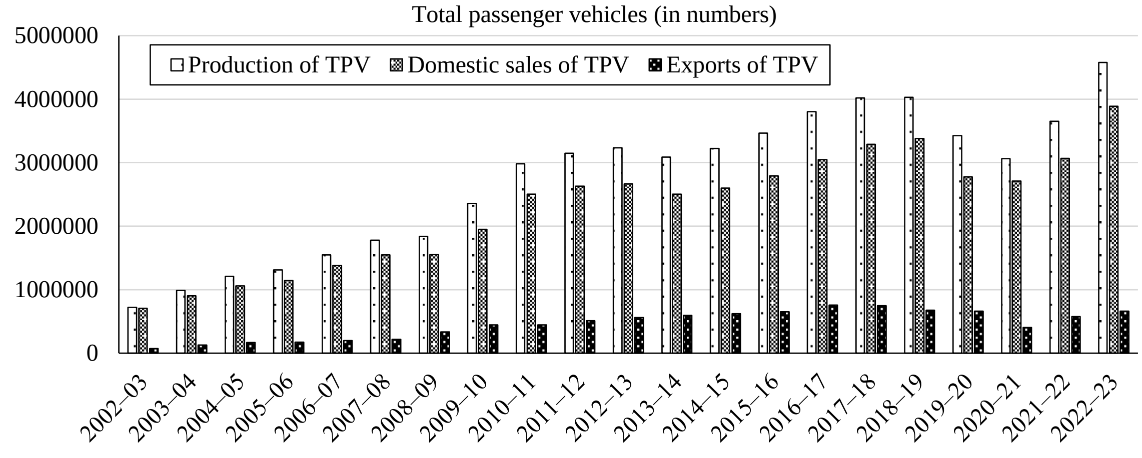

Figure 1.
(Source: Based on Author's own estimates using SIAM data.)

Table 3 and Figure 1, which highlight production, exports, and domestic sales, show the growth trends in the passenger vehicle sector. The analysis shows how much government regulations have affected this industry, as evidenced by the Compound Annual Growth Rates (CAGR) of 8.46% for domestic sales, 9.18% for production, and 11.15% for exports. Over the majority of the time under study, the commercial vehicle market has grown at a strong and promising rate

Total Commercial Vehicle

Commercial vehicle segment also considered an important segment. This sector also showed huge growth after the auto policy was introduced. In FY 2021-22 commercial vehicle segment of India became 7th largest commercial vehicle manufacturer of world. In FY 2022-23 it became 6th largest light commercial vehicle market globally but growth rate of exports was decreased from 92,297 to 78,645.

Table 4. Total commercial vehicle (in numbers).

Year	Production of TCV	Growth %age	Domestic sales of TCV	Growth %age	Exports of TCV	Growth %age
2002–03	203697	_	190682	_	12255	_
2003–04	275040	35.02	260114	36.41	17432	42.24
2004–05	353703	28.60	318430	22.42	29940	71.75
2005–06	391083	10.57	351041	10.24	40600	35.60
2006–07	519982	32.96	467765	33.25	49537	22.01
2007–08	549006	5.58	490494	4.86	58994	19.09
2008–09	416870	-24.07	384194	-21.67	42625	-27.75
2009–10	567556	36.15	532721	38.66	45009	5.59
2010–11	760735	34.04	684905	28.57	74043	64.51
2011–12	929136	22.14	809499	18.19	92258	24.60
2012–13	832649	-10.38	793211	-2.01	80027	-13.26
2013–14	699035	-16.05	632851	-20.22	77050	-3.72
2014–15	698298	-0.11	614948	-2.83	86939	12.83
2015–16	786692	12.66	685704	11.51	103124	18.62
2016–17	810253	2.99	714082	4.14	108271	4.99
2017–18	895448	10.51	856916	20.00	96865	-10.53
2018–19	1112405	24.23	1007319	17.55	99933	3.17
2019–20	756725	-31.97	717593	-28.76	60379	-39.58
2020–21	624939	-17.42	568559	-20.77	50334	-16.64
2021–22	805527	28.90	716566	26.03	92297	83.37
2022–23	1035626	28.57	962468	34.32	78645	-14.79
CAGR	8.05%		8.01%			9.26%

Source: Computed by Annual Report of SIAM

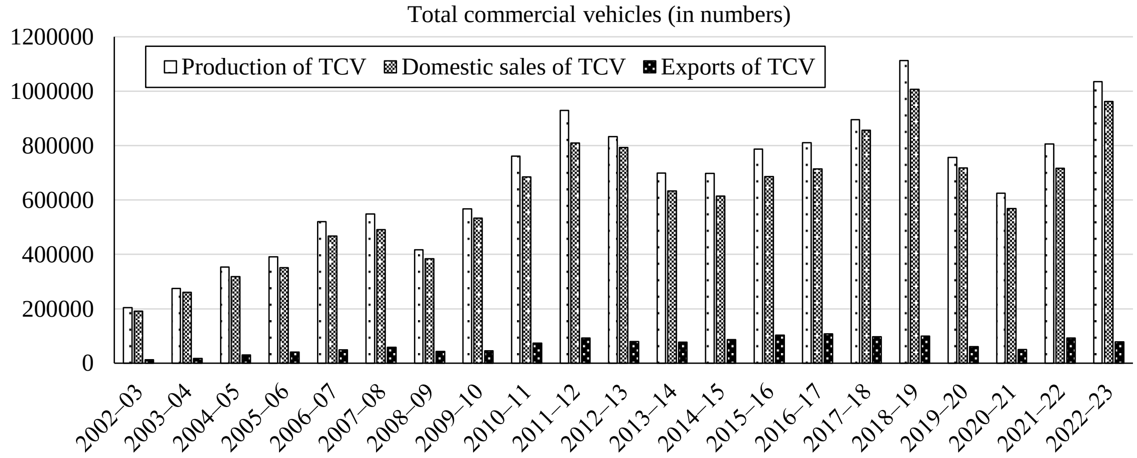

Figure 2.
(Source: Based on Author's own estimates using SIAM data)

Table 4 and Figure 2 show the commercial vehicle industry's growth trends in production, exports, and domestic sales. The analysis shows that government policies have dramatically impacted this industry, as evidenced by the Compound Annual Growth Rates (CAGR) of 9.26% for exports, 8.01% for domestic sales, and 8.05% % for production. The commercial vehicle segment has shown encouraging growth for most of the studied period.

Three-Wheelers

India became largest three-wheeler producer in FY 2022-23. Domestic sales increaed from 261385 to 488768 (In numbers). Further table showed growth rates of three wheelers over the period.

Table 5. Three-wheelers (in numbers).

Year	Production of three wheelers	Growth %age	Domestic sales of three wheelers	Growth %age	Exports of three wheelers	Growth %age
2002–03	276719	_	231529		43366	_
2003–04	356223	28.73	284078	22.70	68144	57.14
2004–05	374445	5.12	307862	8.37	66795	-1.98
2005–06	434423	16.02	359920	16.91	76881	15.10
2006–07	556126	28.01	403910	12.22	143896	87.17
2007–08	500660	-9.97	364781	-9.69	141225	-1.86
2008–09	497020	-0.73	349727	-4.13	145066	2.72
2009–10	619194	24.58	440392	25.92	173214	19.40
2010–11	799553	29.13	526024	19.44	269968	55.86
2011–12	879289	9.97	513281	-2.42	361753	34.00
2012–13	839748	-4.50	538290	4.87	303088	-16.22
2013–14	830108	-1.15	480085	-10.81	353392	16.60
2014–15	949019	14.32	532626	10.94	407600	15.34
2015–16	934104	-1.57	538208	1.05	404441	-0.78
2016–17	783721	-16.10	511879	-4.89	271894	-32.77
2017–18	1022181	30.43	635698	24.19	381002	40.13
2018–19	1268833	24.13	701011	10.27	567683	49.00
2019–20	1132982	-10.71	637065	-9.12	501651	-11.63
2020–21	614613	-45.75	219446	-65.55	393001	-21.66
2021–22	758669	23.44	261385	19.11	499730	27.16
2022–23	855696	12.79	488768	86.99	365549	-26.85
CAGR	5.52%		3.62%			10.68%

Source: Computed by Annual Report of SIAM

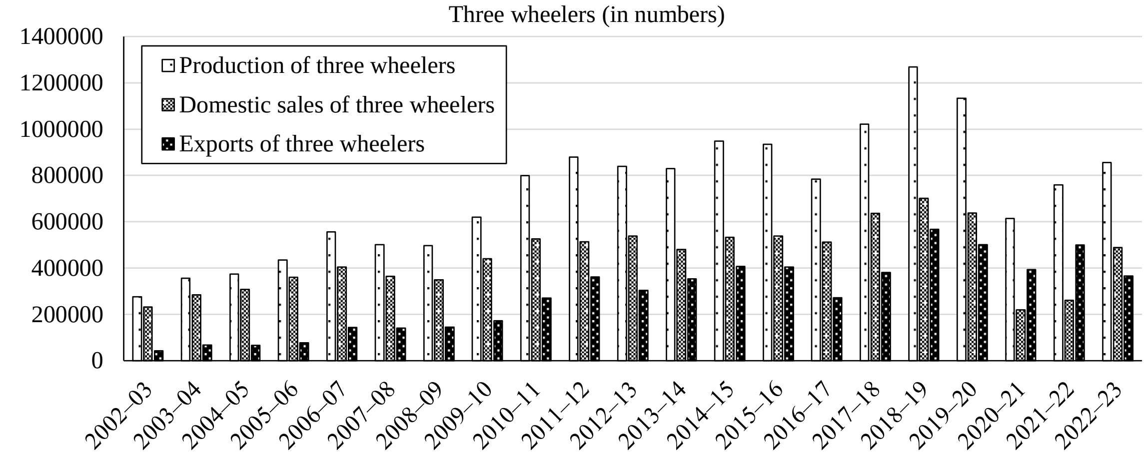

Figure 3.
(Source: Based on Author's own estimates using SIAM data)

The three-wheeler vehicle industry's growth trend for production, domestic sales, and exports is depicted in Table 5 and Figure 3. The analysis showed that government policies had an impact throughout the time, as seen by the 5.52% Compound Annual Growth Rate (CAGR) in production, 3.62% CAGR in domestic sales, and 10.68% CAGR in exports. Over most of the examined period, the three-wheeler segment showed positive development.

Two-Wheelers

India became the largest two-wheeler market in the world in the FY 2022-23. Over time, this segment achieved huge success. Despite testing situations over the years, this sector continues a powerful existence in the market cause of its various range of product contributions. In FY 2022-23, the two-wheeler segment witnessed positive growth in sales; this revealed a powerful recovery as compared to previous years. This growth highlighted the electric two-wheeler section, which was the dominant category that further highlighted the awareness and trust of consumers in the electronic vehicle increased. Growth in electronic cars was more than 150% compared to FY 2021-22. Different environment-friendly initiatives also supported the growth of this segment. Modern technologies and global safety concerns have fueled the growth of this market. Indian two-wheelers now top the global safety and environmental rankings, exceeding safety standards and adhering to the most recent international EU laws; also the best in the world regarding car fuel efficiency, BSIV, and BSVI(Annual Report of Siam; 2021-22,2022-23).

Table 6 and Figure 4 depict the growth path of production, domestic sales, and exports of the two-wheeler automobile industry. The study examined 6.61% of the CAGR (Compound Annual Growth Rate) of production, 5.84% CAGR of domestic sales, and 15.42% CAGR of exports. That showed the significance of Government policies over the entire period. The two-wheeler segment showed positive growth in most of the selected time frame, but in 2019-20, production, domestic sales, and exports decreased because of the COVID-19 pandemic. The economy is still healing from the effects of a pandemic after that Russia-Ukraine war created global tension that affected the exports of India.

Global Success of Indian Automobile Industry

The automobile industry is one of the crucial pillar of world economic growth, providing a extensive supply chain and creating massive employment. Over the period automobile industry accomplished huge success at a global platform despite the many challenges faced like covid 19 pandemic, geo-political trouble due to Russia-Ukraine war. The automobile industry in India is ranked as the fourth vehicle manufacturing hub in the world as per 2021 statistics. Many initiatives were taken over the years that contributed to achieve the growth like raising "Brand India" globally, confirming energy security, constructing sustainable communities, providing continuous skill upgradation, rising consumer awareness etc. Further the table summarized the global achievements of Indian Automobile Industry throughout the past 5 years.

Table 6. Two wheelers (in numbers).

Year	Production of two wheelers	Growth %age	Domestic sales of two wheelers	Growth %age	Exports of two wheelers	Growth %age
2002–03	5076221	_	4812126	_	179682	_
2003–04	5622741	10.77	5364249	11.47	265052	47.51
2004–05	6529829	16.13	6209765	15.76	366407	38.24
2005–06	7608697	16.52	7052391	13.57	513169	40.05
2006–07	8466666	11.28	7872334	11.63	619644	20.75
2007–08	8026681	-5.20	7249278	-7.91	819713	32.29
2008–09	8419792	4.90	7437619	2.60	1004174	22.50
2009–10	10512903	24.86	9370951	25.99	1140058	13.53
2010–11	13349349	26.98	11768910	25.59	1531619	34.35
2011–12	15427532	15.57	13409150	13.94	1975378	28.97
2012–13	15744156	2.05	13797185	2.89	2084000	5.50
2013–14	16883049	7.23	14806778	7.32	2084000	-
2014–15	18489311	9.51	15975561	7.89	2457466	17.92
2015–16	18830227	1.84	16455851	3.01	2482876	1.03
2016–17	19933739	5.86	17589738	6.89	2340277	-5.74
2017–18	24154838	21.18	20200117	14.84	2815033	20.29
2018–19	24499777	1.43	21181390	4.86	3280841	16.55
2019–20	21032927	-14.15	17416432	-17.77	3519405	7.27
2020–21	18349941	-12.76	15120783	-13.18	3282786	-6.72
2021–22	17821111	-2.88	13570008	-10.26	4443131	35.35
2022–23	19459009	9.19	15862087	16.89	3652122	-17.80
CAGR	6.61%		5.84%			15.42%

Source: Computed by Annual Report of SIAM

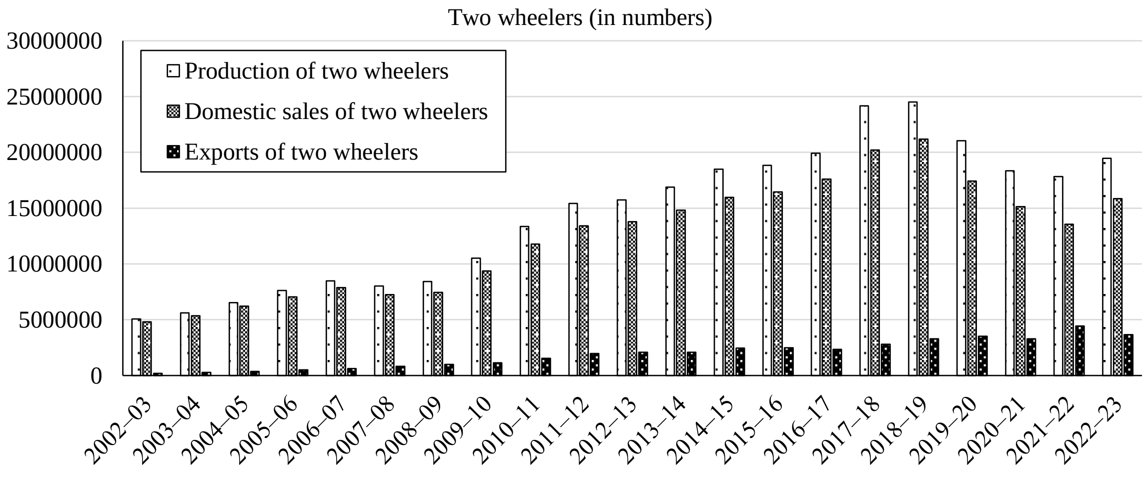

Figure 4.
Source: Based on Author's own estimates using SIAM data

Table 7.

Year	Major achievements
In FY 2022-2023	• India was acknowledged as the largest two-wheelers market in the world. • The world's fourth leading manufacturer of Passenger Vehicle. • Ranked sixth among largest light commercial vehicles. • The world's leading three-wheeler producer.
In FY 2021-2022	• India positioned within the top two for two-wheeler manufacturing. • The fourth leading manufacturer of passenger vehicle worldwide. • The seventh biggest commercial vehicles maker.

Year	Major achievements
In FY 2020-2021	• India was the leading producer of both two-wheelers and three-wheelers. • The second biggest producer of heavy buses. • The fifth top producer of heavy trucks. • The fourth superior car maker. • The ninth foremost producer of light commercial vehicles worldwide.
In FY 2019-2020	• India was the biggest producer of both two-wheelers and three-wheelers. • The second largest manufacturer of heavy buses. • The fourth largest heavy truck producer. • The fourth leading manufacturer of cars. • The seventh leading global producer of light commercial vehicles.
In FY 2018-19	• The leading producer of two-wheelers. • The second largest heavy bus maker. • The third leading manufacturer of heavy trucks. • The fourth largest car producer. • The seventh biggest global manufacturer of commercial vehicles

Source: Annual Reports of SIAM

CONCLUSION AND FUTURE AGENDA

Over the period, the Indian automobile industry achieved huge success and the global status of a manufacturing hub that produced world-class vehicles. The study showed the growth rates and analyzed time series data. More research and development will help this industry to achieving a higher growth path. A further goal of this industry will be to achieve Amrit Kaal's vision of 2047 to make India a self-reliant and developed economy. To include sustainability means achieving success for today's generation without sacrificing the needs of future generations. More research should be conducted on building hybrid and low-emission vehicles for this.

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Review of Sources of Traditional Investment Plans for Women Empowerment in India

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Abstract

The factor of saving and investment is also equally affected on economic Environment of any economy. It is from them that the savings are generated and the financial system of the nation converts the savings into investments and thereby the economy in country gains momentum. Currently women are seen working in many fields along with men in the workforce. A common man tends to save as a provision for the future and strives for it. Women are originally more tending to save than men. The present study examines the traditional ways women in India use to invest and the factors that motivate them. This research has been directed to search why Indian women use traditional ways to invest even when there are many investment options available in modern times. This study found the both uneducated and educated women, working and non-working women are using traditional ways of investment. For this, using the second method of data collection. According to this, women in India are giving the highest priority to buying gold for investment, besides this, it is observed that they are using such sources as bank savings deposit, recurring account, Term deposit account and land purchase. Apart from this, it is noticed that Indian women prefer different types of sources in post office as well. Indian females are seen using these traditional ways while investing based on the principles of safety and liquidity.

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Keywords: Indian women, traditional investment, gold, fixed deposit, saving account, real estate

INTRODUCTION

Currently, in the working population of the modern world, women are working in many fields along with men. The Women’s contribution in the economic development of any country is considered very important. As they are seen working in different sectors, the works of women is also important in the economic component of saving and investment in the country. In a nation like India where the economic and cultural tradition is great, the achievement of women in saving are appreciated and considered as a direction for the growth of India. This is because a cultural cue that men earn money and women should look after of household responsibilities i.e. household expenses is common in Indian tradition. This is where the saving process starts. Basically, saving is a permanent feature found in women because it is easy for women to sort out of the financial burden of the family by being thrifty. Also, in the changing conditions of India, women are seen working in many fields. Women's share in earning is also increasing. Therefore, the role of women in investment is increasing.

The present study examines the sources Indian women rely on for saving and the factors that motivate them to choose such sources. Moreover, efforts are made to review the investment options available to them. Nowadays, modern and convenient ways of saving and investing are considered globally or in India as a whole. Researchers also focus on doing research on similar matters. However, it reviewed how far Indian women are in saving and investing and what traditional ways they follow and how these elements are essential in growth because such factors have been neglected in research. In this sense, the present research is very significant considering the factor of financial inclusion. Many economists seem to criticize traditional savings. According to him, such savings do not come in cash flow. hence, economic progress does not gain momentum. However, when the savings made by women come out in the type of expenditure, then the demand is to be stimulated and the dynamic economy is also encouraged. the fact that such traditional ways of saving also play an crucial role in the economic acievement of the India cannot be neglected in the present study.

OBJECTIVES OF THE RESEARCH

1. To know the sources of traditional investment of Indian women
2. To understand the factors that drives the selection of such sources
3. To explore which of the various sources of investment have more influence
4. To study of different types of sources
5. To assess government policies contribution in the selection of such traditional sources by Indian women

RESEARCH METHODOLOGY

Secondary source of research method is used for the present study. Published and unpublished literature has been considered for this. Apart from this, various types of journals, magazines, government reports and websites have been mainly considered.

Data analysis and Interpretation

Considering the study, after considering the reference literature, various reports, other types of literature, the study topic has been analyzed as follows.

Traditional Sources of Investment of Indian Women

In India, basically, due to the improper of financial reforms, financial institutions was also small, so women in India had to use traditional ways to invest. Epsilon Money surveyed women investors across 37 cities in India. The present survey was to study the level of financial literacy and awareness among women in this regard. The survey revealed that 60 percent of the women surveyed preferred traditional sources for their investments when it came to finding out which one is more convenient and safer between traditional investment methods and modern methods. Therefore, it is clear that Indian women prefer traditional ways of investment. Moreover, the same survey found that 44 percent of women independently take their own decisions regarding their investments. Generally Indian women seem to prefer the following types of investment.

Investment in Gold

In India there is a great tradition of investing in gold since ancient times. A distinct relationship exists between women and buying gold. Women look at buying gold both as a hobby and as an investment. The double advantage of buying gold is that gold jewelery can be worn on the body and also sold to meet one's needs in trouble. According to various studies, 16,000 tons of gold are in Indian households mostly in the form of jewellery. Due to some influential factors like high liquidity and ability to contain inflation, gold is the preferred investment in India. Gold can be invested in many forms like jewellery, coins, bars, gold exchange-traded funds, gold funds, gold bond schemes etc. With so many options for gold investment in modern times, women prefer to buy gold in the traditional way. The following factors are considered responsible for this. The following factors motivates to invest in gold:

1. Can protect against inflationary risks
2. Many options to choose from
3. High liquidity
4. Very easy to purchase and sell in the market
5. A great way for an investment
6. Does not require much maintenance
7. Price stability is an added advantage
8. Can be effortlessly passed down to future generations.
9. Easy to get loan on gold
10. Safer investment compared to other investment types.
11. Remains unchanged over times.

Table 1. Annual demand for gold in India (in metric tonne).

Year	Demand
2010	1001.71
2011	974.02
2012	914.15
2013	958.58
2014	833.45
2015	857.24
2016	666.09
2017	777.22
2018	760.40
2019	690.40
2020	446.40
2021	797.30

Source: Statista

Due to the above reason women priorities to invest in gold in India. Gold is in high demand in India for a variety of reasons like investment, jewelry, wedding, gift. However, if we consider the last ten years, it seems that India's gold is decreasing to some extent. The table below demonstrates that the demand regarding gold in India has decreased in the recent years, particularly because of the increase in the price of gold.

The above table analyzes how the demand for gold in India has changed over the last decade. Fluctuating prices lead to demand fluctuations Demand has declined from 1001.71 MT in 2010 to 797.30 MT in 2021. The demand in India seems to have decreased to some extent as a result of the increase in prices.

Saving Account

India’s Women population is showing its saving streak with the share of women customers in total bank deposits continuing to increase to 20.50 % during the year ended March 2023 (FY23, based on the Reserve Bank of India’s latest report. The overall indivisual deposits, women account for 39% (or Rs. 37 lakh crore), of which senior women citizens (age 60 and above) amounted to Rs. 13.2 lakh crore,that is, 36%of the indivisual women deposits and 7.2% of the overall deposits during the year. State-wise per capita change in women deposits shows that Goa, Karnataka, Haryana, Kerala, Uttarakhand, Gujrat, Himachal Pradesh, Punjab, and Maharashtra have witnessed more than Rs.10000 change in the last five years. Interestingly, the overall deposits of scheduled commercial banks increased by 10.2% driven by incremental annual deposits of Rs. 17.6 Lakh crore. However, the share of individuals in total deposits declined during the year.

Fixed Deposit

Fixed deposits (FDs) in banks are a common choice for conservative investors, including many women. FDs offer a fixed interest rate over a predetermined period, providing a secure investment option. Women earners in India's metros tend to be risk-averse with 51 per cent of their investments parked in (FD) As per survey of Business standard. In 2012, Anush Iyer studied the investment patterns of 225 working women in the city of Bangalore in the state of Karnataka and found that 172 or 76.4 percent of the total respondents chose fixed deposits for investment. The presented research found that women prefer term deposits in banks due to safety and liquidity.

Post Office

P.O. savings schemes like Monthly Income Schemes (MIS), Schemes for elders people (SCSS), and Recurring Deposit (RD) offer secure investment options with fixed returns, making them attractive to Indian women seeking stable income streams. According to a survey conducted by DBS bank India and CRISIL, 51 percent of women prefer fixed deposits in their investments.

Investment in Real Estate

Everyone knows that shelter, clothing, and food are the basic necessities of human life. Nonetheless, while all three of these have importance, for a woman, shelter or a home holds special importance. This is because a home delivers a perception of security that stands out from the security you may get from any other asset. A property, be it a full-fledged house or a plot of land tends to give you emotional along with financial security. Having said this, women typically do not dwell on investment in real estate. It is essential to understand the reasons for this and discover how women can enter the field of real estate investing without any stigma attached. According to a recent ANAROCK-LIC Housing Finance Consumer Sentiment Survey, nearly 57% of women respondents prefer real estate as an investment. Developers are acutely aware of this dynamic and frequently actively target their promotions to women. The government and banking system are also going above and beyond to encourage women to become sole homeowners. In India, for example, stamp duty charges for property registration are reduced in some states if the transaction is completed on behalf of a woman. Women buyers are not required to pay stamp duty in some region in India. Stamp duty exemptions vary by state and range from 1-2%.

Other Choices

Apart from the above different types of investment, Indian women are also observed using such means as Bhisis, women's self-help groups, saving cash at home. Although the precise data is not available on this matter, according to the studies conducted at the local level in many cities of the country, many women are seen investing through this type of medium. So this type is also popular among women across both rural and urban regions of India. Certain studies have discovered that women who are housewives, less educated and have no source of income prefer such investments. Generally, women make such savings from the money given for household expenses.

CONCLUSION AND FINDINGS

Currently, the share of women in the working population is increasing. Therefore, it is revealed that the present day women prefer to invest in the form of recurring deposits and fixed deposits along with the purchase of gold in the savings account in the bank. The trend of owning a house or having a space in one's own name is currently growing among Indian women. Therefore, government policy appears to be partly accountable for the increasing tendency of women to invest in real estate. It appears that women of India are investing in real estate due to some schemes like GST or stamp duty discount if the property is registered under the woman’s name and one percent discount on home loan. This type of investment is getting preference to generate monthly income by renting out such property. It is very essential to implement such schemes all over India for the empowerment of women. Also, many banks need to start different special schemes for women to open savings account in the bank. Many banks have savings accounts in women's names, but several studies have indicated that such accounts are not operational. It is necessary to explain modern ways of saving even for women who with less education and not employable. Women use such means as keeping money at home or participating in self-help groups, some women have come together to implement concepts like recurring deposits. It is very important to explain modern ways of saving to such women.

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Impact of Visual Media Advertising on Consumer Psychology and Behaviour: A Mixed-Method Study on Gender Narratives

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Abstract

We are socialised into traditional gender roles by the cultural narrative surrounding genders. Ads and media that target impressionable audiences with cultural ideas and preconceptions affect how individuals see certain gender stereotypes, which they then unconsciously begin to conform to. Subliminal messaging is a tactic used by brands to appeal to a variety of age and gender demographics in their advertising. This study attempts to explore the impact of gender segmentation in advertisements and its consequences on brand preference by using a set of qualitative and quantitative questions on sixty participants, both males and females, from two age groups, namely 20–25 years of age and 45 years and above. Perceptual mapping and picture profiling are used in the study to better understand this impression by examining brand images and their relationship to gender-based advertising. The stereotyped disparities between how different genders describe and favour different shampoo brands are shown by a qualitative study of the data. The study's consequences are extensive as it sheds light on the implicit elements influencing consumer decisions and shows how firms may maximize their gains by using commercials to cultivate positive and relevant views.

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Keywords: Media, gender disparities, consumer psychology, and advertisements

INTRODUCTION

People are socialised via a variety of sources, including the media, parents, friends, peers, and relatives. Every person who lives in a social environment is subject to particular standards and laws that are based on their age, height, attractiveness, class, religion, and most importantly gender. The term “gender” describes the standards that are imposed by society and culture on what it means to be a man or a woman.

In an effort to appeal to consumers, the abundance of commercials in our media-saturated environment perpetuates gender stereotypes. “A widely held but fixed and oversimplified image or idea of a particular type of person or thing” is the definition of a stereotype. (Oxford, n.d.). Therefore, a picture or notion of a group or individual based on their gender is known as a gender stereotype. Gender stereotyping has been used by advertising agencies as a creative tool to quickly appeal to particular markets (Advertising Standards Authority, n.d.). In addition to perpetuating preconceptions, the propagation of subconscious stereotypes distorts perception. Certain characteristics could give an advertisement a gendered feel.

After examining ad trends, Goffman (1979) wrote a book titled Gender Advertisement, identifying six characteristics that contribute to the creation of gendered advertisements. These elements are dimensions, touch of the feminine, rank functional, the household, the subordination ritualization and authorized withdrawal. Let’s discuss about them in brief.

Dimensions

According to Goffman (1979), a person's relative size in commercials reflects their social standing. Authority, status, position, command, reputation, and other qualities that are valued in all social contexts are referred to as social weight. Here, girth, width, and height are the measures of size. In advertisements, strong men are typically portrayed as larger and taller than women, who are typically shown as being slender and small. Men who are not taller than their female counterparts are typically portrayed in the media as comedic relief characters with less authority and as belonging to a lower social class.

Touch of the Feminine

In most ads, women are shown softly tracing the shape of an object with their hands or fingers—cradling or stroking it instead of clutching or holding it like men do. It is said that this portrayal subtly suggests that women are submissive and can be sexualized. In several ads, women are often shown caressing someone's body or hair to emphasise how delicate and priceless it is.

Rank Functional

When a man and a woman are in a social setting, the guy is always shown as having the executive position, while the woman adopts the character of the follower. The man either gives the lady instructions to complete a task or impresses her with his extraordinary skills. It is implied that women require assistance to complete technical duties. The only other occasion a woman appears in an executive function is when a guy tries to assist her with household duties on a daily basis.

The household

The conventional view is that a nuclear family should consist of a mother, father, son, and daughter. The majority of images and commercials show a strong relationship between000000000000000000 the mother and daughter and a tight relationship between the son and father. Owing to patriarchal conventions, fathers are typically portrayed as being somewhat outside of the physical circle since men are expected to be emotionally well-regulated, normatively built, and incapable of expressing affection or gratitude.

The Subordination Ritualization

Numerous bodily activities show how one component is subservient to another. One of these is putting oneself in a lower physical position than someone nearby. It's regarded a sign of social authority and unashamedness to stand straight; lowering oneself is the exact opposite. The use of floors and beds, which are typically regarded as filthy and unsanitary, by women and children exclusively, rather than men, is another act of subordination. According to Goffman, this is the case since high social and physical locations are frequently connected.

Instead of adopting straight, erect poses for their photos and advertising, women are frequently depicted as bending their knees and canting their bodies. This is because they are physically lowered by each of these methods.

Hand holding and arm locks suggest that the woman needs a man's assistance. While the man's hands are free to carry out any necessary tasks, the woman in an arm lock is dependent on him for support. In terms of handholding, the guy primarily holds his hand up top to indicate his control over the gesture and his freedom to release it at any time.

Authorized Withdrawal

The term "licenced withdrawal" describes the social acceptance of women slipping into denial about their circumstances. Women are frequently portrayed as losing control of themselves as a result of an emotionally taxing circumstance and relying on the kindness of others—primarily men—for assistance. Women are portrayed as mentally.

Women are frequently portrayed as losing control of themselves as a result of an emotionally taxing circumstance and relying on the kindness of others—primarily men—for assistance. Men are depicted as being focused, focused, and alert at all times, while women are shown as psychologically fading away. Additionally, Kotler (2012) mentioned a few social and cultural elements that affect the decisions made by consumers. A person’s habits, customs, and environments are referred to as their culture. Various elements such as socioeconomic class, subcultures, and culture itself can influence consumers and their purchasing decisions. The culture with which one interacts produces the socialization process. Furthermore, families and peer groups are examples of social forces that shape decisions. These are the kinds of groups that can influence a person directly or indirectly. Primary groups are those that have a direct influence on an individual and with whom they interact frequently; secondary groups are those with which an individual interacts less frequently but still has an impact. Aspirational groups, or those that a person aspires to join, and dissociative groups, or those that a person disagrees with, are examples of other types of groups. The degree of conformity and exposure to novel concepts and viewpoints are influenced by reference groups. A person's gender demographic also functions as a point of reference.

Gender-based ads are ubiquitous, according to research. Women are not seen as strong, independent individuals in magazines like Ladies' Home Journal and Essence. Women are only depicted as choosing products based on how they want their houses, kids, or themselves to look.

There are either extremely few or no advertisements related to technology and money (Mastin et al, 2010). Magazines, on the other hand, also support male stereotypes of traditional masculinity. Vokey, Tefft, and Tysiaczny (2013) observed that a content analysis of various publications revealed the presence of a hyper-masculine trait that was primarily geared towards younger, less educated, and less affluent men. The purpose of this study is to comprehend the subtle gender disparities in consumer preferences resulting from gender-specific shampoo brand ads.

METHOD

Participants

There were sixty competitors in all, thirty-one men and twenty-nine women. There were also people in the group of different ages. Thirteen males were 45 years of age or older, while nineteen males were in the 20–25 age range. In addition, 12 women were 45 years of age or older and 17 women were between the ages of 20 and 25.

Sampling Technique

Because the study was seeking volunteers from two distinct genders and particular age groups, the sampling strategy used was purposive.

Actions

A combined questionnaire comprising both quantitative and qualitative responses was used in the study. While some questions asked for a four- or five-point response scale, others asked for subjective responses.

Process

The study's participants were invited to participate. Consent was obtained after they were given a brief explanation of the study and asked if they would like to participate. They received the Google Form over WhatsApp, and the data was examined.

RESULTS

The study's findings are shown in the following tables mentioned below namely Tables 1–3.

DISCUSSION

The goal of the current study was to comprehend the subtle gender disparities in consumer decisions brought about by gender-based shampoo brand ads. Following the assessment of the literature, a mixed questionnaire comprising both quantitative and qualitative questions was created to find out what consumers thought about the shampoo brands they frequently used. The findings showed that participants' perceptions of their shampoos varied according to their preferences, gender, other personality traits, and physical characteristics. Every response is impacted by the way brands are marketed and subsequently viewed by consumers.

Table 1. Lists the quantity and kinds of explanations provided by various genders.

S.N.	Gender	Number of reasons given for the choice of shampoo	Kinds of explanations provided
1.	Male	8	The process of moisturising • Decrease in hair loss • Amount • Velvety feel • calms hair's • Natural structure • Chosen at random It's used by other family members.
2.	Female	14	• Protection of colour • Texture • Moisture • Volume • Lessens frizz • Economical is used by the family • Natural arrangement • Most appropriate • Conditioning • Hair restoration • Leap and Shine • Improved quality of hair Growth • Excellent outcomes suggested • Reduces hair loss

Table 2. Personality traits and gender corresponding to various shampoo brands.

S.N.	Gender of the participant	Brand	Gender allotted to the brand's personality	Characteristics
1.	Male	Dove	Female	Caring, protective, soft, gentle, un-harmful, good smell, delicate, soft, good-looking, committed
		Medikin AD	Female	Good smell committed to a relationship, ambitious, hard-working, caring
		Mama earth	Male	Calm, organized, helpful, easy-going
			Female	Kind, gentle, soft, caring, good smell
		Man Matters	Male	Dependable and suitable
		Park Avenue Beer Shampoo	Male	Refreshing, calm and exciting
		L'Oreal	Male	Reliable, honest, dependable
		Tresemme	Neutral	Supportive
		Head and Shoulder	Neutral	Soft, bouncy, dependable, great
2.	Females	Dove	Female	Mild, delicate, reliable, committed, soft, kind, humble, classy, graceful, stylish
		Sunsilk	Female	Smooth, soft, caring, good smell, sensitive, caring, pleasant
		Salon	Female	Soft, caring
		Tresemme	Female	Helpful, caring
			Neutral	Dependable, dreamy, consistent, reliable, pleasant, strong, beautiful
		L'Oreal	Female	Soothing, subservient, efficient
			Neutral	Smart
		Clinic Plus	Neutral	Elegant, calming

Table 3. Average rating for physical attributes.

S.N.	Attribute	Female participants		Male participants	
	Brand gender	***Female***	***Other genders***	***Female***	***Other Genders***
1.	Scent level	5.53	5.29	5.25	5.08
2.	Foam level	5.67	4.93	5.25	5.13
3.	After use feeling of pleasantness	6.20	6.07	6	5.82
4.	Packaging	5.60	6.07	5.5	5.69
5.	Variety	5.53	5.36	5	5.086
6.	The texture of shampoo (Smoothness)	4.07	3.71	4.125	5
7.	Price Perception	4.67	5.14	4.125	4.82
8.	Perception of vitamin content	4.73	4.86	5.875	5.13
9.	Reputation	5.67	5.93	6.375	5.69

The findings indicate that although there were more male participants than female participants, they provided fewer justifications *(Table 1).* Men tend to give less specific and intimate explanations for their actions. Several of the answers given also address their lack of interest in selecting a brand, using phrases like “randomly selected” or “other family members use it.” This explains why men don't give their shampoo selection much attention or don't want to discuss it. On the other hand, 29 women have provided 25 justifications for why they favour a specific kind of shampoo. Their justifications are more specific, unique, and pertinent to their decision. Several responses explain the process by which they select shampoos for growth, compatibility, better quality, colour protection, hair healing, and other reasons. Whole phrases like “I think it suits my hair type and there I less hair fall from the time I started using this particular shampoo” have also been utilized by females.

The findings suggest that, compared to men, women are more thoughtful and aware of the shampoos they choose. According to a study by Mastin et al. (2010), women are more likely to purchase appearance-based products because that is what they are taught by magazines and other media.

Table 3 displays a portion of the data that was gathered, which was the physical characteristics divided by favoured brands and determined to be either female or of another gender. These characteristics included pricing perception, diversity, smell intensity, foam level, and more. Higher average ratings for aroma intensity, foam level, pleasantness after use, and variety were associated with female-branded products. On the other hand, the average price impression of brands that were either masculine or gender neutral was greater. This is likely because people tend to associate good smells and pleasant feelings with women, while men are typically associated with being more rugged, sweaty, and adventurous.

Table 2 illustrates the most noteworthy gender division that occurred when participants described the personalities of the shampoo brands they preferred. There were separate brands for men, women, and no gender. There were separate brands for men, women, and no gender. There were some shampoos, like Dove, that were mostly associated with women, some that were associated with men, like Beer Shampoo, and some that were neutral, like Head and Shoulders and Clinic Plus. Mama earth, Sun silk, Dove, Medikin AD, and Salon were the brands that were associated with women. In actuality, all of these companies actively promote themselves as a brand intended exclusively for women by exclusively using female celebrities to star in their ads. Brands like Man Matters and Park Avenue Beer Shampoo were identified as exclusively being associated with men. These shampoo ads featured entirely male actors and advertisements, just like the ones for female brands.

CONCLUSION

All around us, advertisements have a significant impact on how people perceive the world. To appeal to distinct client bases, brands present and offer varying images that are segmented based on traditional gender stereotypes. Customers who place aspirational values on the things they purchase are further influenced by these representations while making purchasing decisions. According to the study's findings, consumers identify a brand with various traits and physical qualities, which is strongly influenced by its gender-specific advertising. Moreover, all of the female participants exhibited neutral or feminine dispositions instead of associating their shampoos with a masculine gender.

The other interesting thing that emerged was the characteristics that these gender-specific shampoos gave them. It was believed that shampoos with labels like “kind,” “delicate,” “gentle,” “soft,” “humble,” “caring,” “protective,” “committed,” and “good smell” were connected to women. In society, women are stereotypically associated with these traits. According to Goffman's (1979) theory, the majority of Dove advertisements capitalise on the idea of feminine touch by using soft curves and delicate movements across the product bottle or the subject's body to portray a stereotypically feminine image. Along the same lines, businesses owned by males were defined as “organised,” “dependable,” “appropriate,” “exciting,” “reliable,” and “honest.” These were also traits that were associated mainly with men. However, advertisements that seek to portray an idealised image of their company as being more feminine or masculine both support and uphold these ideals outside of society.

Goffman's (1979) theory of relative size and functional rank explains how businesses like Beer Shampoo and Man Matters use successful men who are tall and powerful to influence their customers. The way these people are portrayed—as tough, beautiful, muscular, and charming—makes them appealing to male consumers and reinforces stereotyped ideas of what it means to be a man.

Kotler (2012) asserts that reference and cultural groups play a significant role in this choice. These factors impact an individual's beliefs, adherence to social norms, and overall lifestyle. The primary, secondary, and aspirational groups socialise the individual into choosing specific brands. Narratives starring male or female performers deliberately advance certain normative ideas in order to gently feed viewers' preconceptions. Consequently, the desire of consumers to feel more feminine or masculine or to align their preferences with their self-concept is often tainted by these gender segregations in advertising. In addition to discussing gender stereotypes' effects on media and advertising, the study looks at how significant they can still be in the twenty-first century.

The results of the study can be used by media corporations to promote gender-neutral advertising campaigns because they are equally effective Additionally, by understanding the implicit influences on their decisions and how to make them, customers may benefit from this study. The fact that the study only considered a product's appearance when evaluating it is one of its weaknesses. Additional goods that are traditionally associated with men can be used in future research to confirm or contradict the results of this study. Therefore, genders other than binary categories can be used to make this inquiry more representative.

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Impact of Resource Conserving Technology on Cropping Pattern in Punjab and Haryana

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Abstract

The cropping pattern of a certain area or region is defined as the percentage of land planted to various crops at a given time. Any particular cropping pattern in a location is the result of many factors influencing the crops; as a result, cropping patterns are subject to change annually due to the variability of these factors. For instance, the monsoon's intensity greatly influences India's cropping patterns. While dry crops that require less water, such as bajra, maize, groundnut, urad, sesame, etc., Soil testing by government of India to farmers free of cost in order to help them out most suitable crop for their land holding. So that they will earn huge margin. This initiative by government of India is helpful to farmers to recognized perfect cropping pattern. It shows positive result and there is also lot of success story of farmers.

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Keywords: HYV High Yielding Variety, RCT Resource Conserving Technology,

INTRODUCTION

The cropping pattern of a certain area or region is defined as the percentage of land planted to various crops at a given time. Any particular cropping pattern in a location is the result of many factors influencing the crops; as a result, cropping patterns are subject to change annually due to the variability of these factors. For instance, the monsoon's intensity greatly influences India's cropping patterns. While dry crops that require less water, such as bajra, maize, groundnut, urad, sesame, etc., are mostly grown during monsoon failure years, rice is commonly planted throughout the nation during excellent monsoon years. Nevertheless, the breakdown of regions due to population growth, market failure,

LITERATURE REVIEW

Singh and Bhalla, (1997). The crop pattern of a given area is affected by the spread of irrigation, which reduces the area used for dry crops, technological advancements in crops, government support and market intervention for some crops but not for others, and—possibly most importantly—changes in the relative prices of various crops.

(Datewala, 1986; Ray, 1983). However, in the Mekong Because they were viewed as non-strategic crops, the area planted to onion, garlic, barley, flax, chickpeas, lentil, fenugreek, and lupine decreased significantly in Egypt. However, there was no change in critical crops like cotton, sugar, rice, wheat, maize, and clover.

(Osama et al. 2017; Boustani & Moahammadi 2010). When talking about the benefits of using other water use levels than the fixed yield technique when water is limited. A water production work for each crop could be included in the multi-crop farm models utilized, giving the option to select different water consumption levels based on water availability.

Kumar and Khepar (1980) observed that crop diversity had an impact on yields across three different crops, with the most pronounced effects of crop rotation noted in maize, where certain treatments resulted in yield increases exceeding 100 percent. Over a span of three years, a significant positive linear correlation was identified between the variety of crop species included in the rotation and the yield of maize.

According to Smith et al. (2008), the agricultural practices in Assam, India, are significantly disrupted annually due to recurrent flooding. Each year, the damage inflicted on crops, livestock, and property compels farmers to modify their cropping strategies.

According to Mandal (2010), the cropping patterns in the state of Manipur showed minimal alteration during the period studied. In contrast, the districts within the Imphal valley underwent considerable transformation due to the adoption of modern technologies, whereas the hilly districts maintained their traditional shifting cultivation practices.

As of Seitinthang, Lh (2013), the agricultural practices in the union territory of Jammu and Kashmir were primarily subsistence-based, yielding little to no surplus. However, with the introduction of the New Agricultural Strategy, there has been a significant increase in the cultivation of high-value crops. This shift has contributed to job creation, poverty reduction, increased income, and enhanced export opportunities.

According to Akhtar (2015), the Bogra region encompasses a total of 177 distinct cropping patterns. The crop diversity index for this area was measured at 0.966, while the average cropping intensity across the region stood at 234%. Among the upzilas, Nandigram reported the highest number of cropping patterns, totaling 36, whereas Dhupchachia recorded the lowest with only six. The cropping intensity within the region varied between 183% and 291%.

The main Objectives 1. To assess the cropping pattern in Punjab and Haryana India. 2. To examine the change in the cropping pattern in a years

RESEARCH METHODOLOGY

Socio Economics Tables and Graphs prepared on the basis of Primary Data Collection in 2022 in Punjab and Haryana States of India. In Resource Conserving Technology zero tillage for wheat crop and Mechanical Rice Transplanter for Rice crop

Limitation of Study

The Present study is limited to Punjab and Haryana and it has no bearing on all India situation

RESULT AND DISCUSSION

Zero Tillage for Wheat crop and Mechanical Rice Trasnplanter for Rice crop is a Resource Conserving Technology. It is explored in Punjab and Haryana state of India.

Two Districts were selected Karnal and Sonipat from Haryana and Two Districts were selected Moga and Ludhiana from Punjab for primary data collection. 65 Adopters farmers from Karnal and Sonipat districts Total 130 adopters farmers of Haryana. 65 Adopters farmers from Moga and Ludhiana districts total 130 Adopters farmers of Punjab. For Non Adopters 202 in Karnal and 200 in Sonipat Districts of Haryana and 200 in Ludhiana and 202 in Moga Districts of Punjab. All Total 804. Farm Household in both districts of 272 in Haryana and 272 in Punjab.

Table 2 In Haryana State 10.56% farmer sowing rice crop in Kharif season and 0.45% farmer sowing other crop in kharif season and 9.55% farmer sowing wheat crop in Rabi season and 0.44% farmer sowing other crop in rabi season In Karnal District 18.03% farmer sowing rice crop in kharif season

Table 1. Sample household size of adopters and non adopters in study area.

States	**Haryana**		**Total**	**Punjab**		**Total**	**All total**
Districts	***Karnal***	***Sonipat***		***Ludhiana***	***Moga***		
Adopters	65	65	130	65	65	130	260
Non adopters	137	135	272	135	137	272	544
Farm house holds	202	200	402	200	202	402	804

Table 2. Cropping pattern and calendar of adopter.

Crop	Haryana	Punjab	Total	Karnal	Ludhiana	Moga	Sonipat
Kharif							
Rice	10.56	27.10	18.80	18.03	35.37	18.71	3.08
Sorghum							
Maize							
Pulses							
Oilseeds							
Other 1	.45	.99	.69	.46	1.22	.74	.43
Rabi							
Wheat	9.55	17.91	13.68	16.01	20.87	14.90	3.08
Pulses							
Oilseeds							
Vegetables	.	15.96	15.96	.	15.96	.	.
Others 2	.44	1.08	.72	.43	1.23	.90	.44
Summer							
Fodder							
Pulses							
Others 3	.	17.64	17.64	.	17.64	.	.

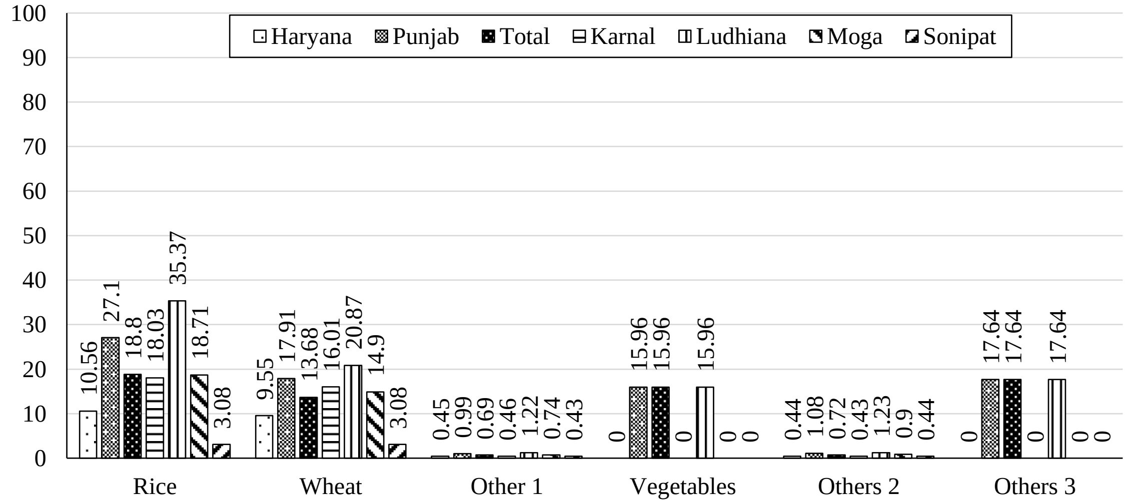

Figure 1. Cropping pattern and calendar of adopter

and 16.01% farmer sowing wheat crop in rabi season and 0.43% farmer sowing other crop in rabi season. In Sonipat District 3.08% farmer sowing rice crop in kharif season and 0.43% farmer sowing other crop in kharif season and 3.08% farmer sowing wheat crop in rabi season and 0.44% farmer sowing other crop in rabi season. In Punjab District 27.01% farmer sowing rice crop in kharif season and 0.99% farmer sowing other crop in kharif season and 17.91% farmer sowing wheat crop in rabi season and 15.96% farmer sowing vegetable crop in rabi season and 1.08% farmer sowing other crop in rabi season and 17.64% farmer sowing other crop in summer season. In Moga District 18.71% farmer sowing rice crop in kharif season and 0.74% farmer sowing other crop in kharif season and 14.90% farmer sowing wheat crop in rabi season and 0.90% farmer sowing other cropin rabi season In Ludhiana District 35.37% farmer sowing rice crop in kharif season and 1.22% farmer sowing other crop in kharif season and 20.87% farmer sowing wheat crop in rabi season and 15.96% farmer sowing vegetable crop in rabi season and 1.23% farmer sowing other crop rabi season and 17.64 % farmer sowing other crop in summer season.

Figure 1 In Overall Total 18.88% farmer sowing rice crop in kharif season and 0.69% farmer sowing other crop in kharif season and 13.68% farmer sowing wheat crop in rabi season and 15.96% farmer sowing vegetable crop rabi season and 0.72% farmer sowing other crop in rabi season and 17.64% farmer sowing other crop summer season.

Table 3. Cropping pattern and calendar of Non adopter

Crop	Haryana	Punjab	Total	Karnal	Ludhiana	Moga	Sonipat
Kharif							
Rice	14.84	4.42	9.66	26.00	3.97	4.87	3.51
Sorghum							
Maize							
Pulses 1							
Oilseeds							
Other 1	.50	.40	.45	.64	.46	.33	.36
Rabi							
Wheat	14.84	4.29	9.61	26.00	3.97	4.62	3.51
Pulses 2							
Oilseeds							
Vegetables	.			.		.	.
Others 2	.40	.40	.40	.39	.46	.33	.42
Summer							
Fodder							
Pulses 3							
Others 3	.			.		.	.

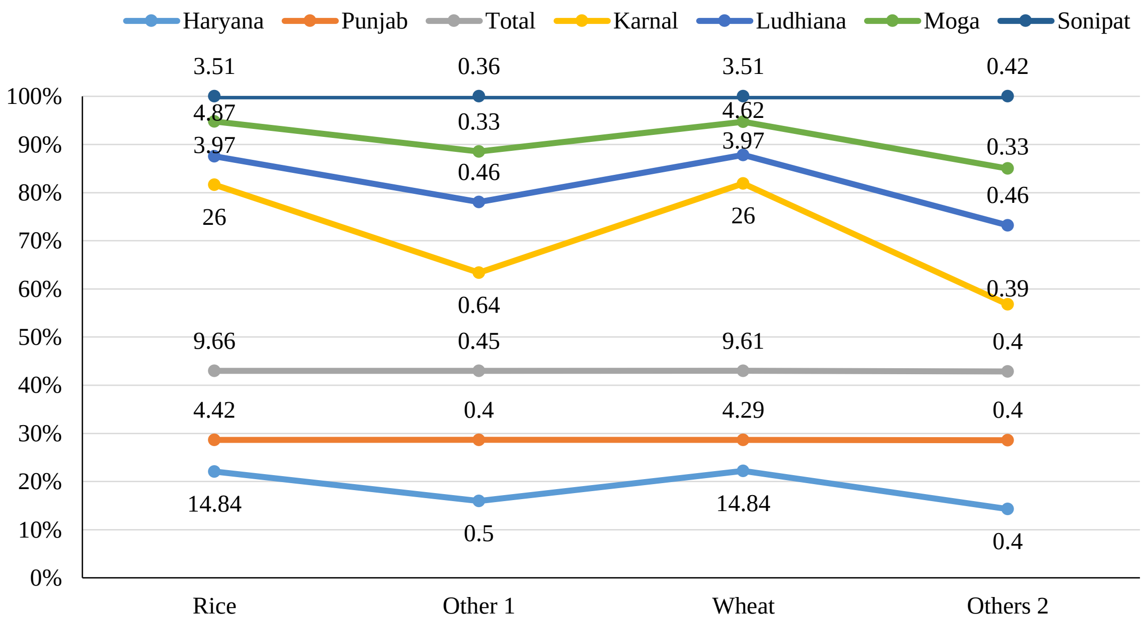

Figure 2. Cropping pattern and calendar of Non adopter

Table 3, In Haryana State 14.38% farmer sowing rice in kharif season and 0.50% farmer sowing other crop in kharif season and 14.34% farmer sowing 14.84% farmer sowing wheat in rabi season and 0.40% farmer sowing other crop in rabi season In Karnal District 26.00% farmer sowing rice in kharif season and 0.64% farmer sowing and 26.00% farmer sowing wheat in rabi season and 0.39% farmer sowing othert crop in rabi season. In Sonipat District 3.51% farmer sowing rice in kharif and 0.36% farmer sowing other crop in rabi season In Punjab State 4.42% farmer sowing rice in kharif season and 0.40% farmer sowing other crop in kharif season and 4.29% farmer sowing wheat in rabi season and 0.40% farmer sowing other crop in rabi season In Moga District 3.51% farmer sowing rice in kharif season and 0.36% farmer sowing other crop and 3.51% farmer sowing wheat crop in rabi season and 0.42% farmer sowing other crop in rabi season In Ludhiana District 3.97% farmer sowing wheat crop in rabi season and 0.46% farmer sowing wheat crop in rabi season and 0.46% farmer sowing other crop in rabi season. In Overall Total 9.66% farmer sowing rice in kharif season 0.45% farmer sowing other crop in kharif season and 9.61% farmer sowing wheat crop in rabi season and 0.40% farmer sowing other crop in rabi season.

Figure 2, In Overall Total 9.66% farmer sowing rice in kharif season 0.45% farmer sowing other crop in kharif season and 9.61% farmer sowing wheat crop in rabi season and 0.40% farmer sowing other crop in rabi season.

CONCLUSION

Rice and Wheat cropping pattern is adopted in Indo-Gangetic plains of India In Haryana and Punjab Farmer adopted same tradition in Kharif and Rabi season In Adopter farmers they had large land holding. So they are mechanized farming system for Rice White farming system they adopted vegetable cultivation as additional measures. In Non Adopter they have small and marginal farmer they are limited to rice and wheat cropping system. They do not used mechanized farming system however they used traditional method for rice and wheat cropping system. These small and marginal farmers are vulnerable risk. So they avoid taking new technology due to various reasons. Resource Conserving Technology is really helpful to farmers to increase their production and reduce their labour cost also their profit increased.

Suggestions and Policy Implications

Soil testing by government of India to farmers free of cost in order to help them out most suitable crop for their land holding. So that they will earn huge margin. This initiative by government of India is helpful to farmers to recognized perfect cropping pattern. It shows positive result and there is also lot of success story of farmers.

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Employee Engagement Strategies and Their Influence on Retention: A Comprehensive Literature Review

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Abstract

Retaining employees is one of the hardest tasks for managers as they are an organization's most significant, valued, and productive asset. To address these kinds of issues, a fully integrated retention policy must be developed, as replacing important personnel comes with a high turnover cost. The aim of this research is to conduct a critical analysis of the existing literature on employee retention, identifying the variables that contribute to employee attrition and the retention strategies that are employed to keep them on board. Since the study is descriptive in nature, several secondary sources are examined in order to combine the disparate pieces of knowledge and provide the literature review in an organised manner. No company wants to lose its brilliant workers because of the rapidly evolving nature of technology, fierce rivalry, and globalisation, which have elevated human resources to a central position in organisational tasks. Both conventional and modern methods of employee retention will be discussed in the literature study. Additionally, there will be a greater focus on elements like supervisors' leadership styles, the capacity to exercise control over decision-making and problem-solving, the desire for skill development and career progression, flexible work schedules, and the growing goal of keeping important personnel on board.

**E-mail:*

Keywords: Employees, Retention, Literature Review, Recent Trends

INTRODUCTION

"Human Capital gravitates towards environments where it is valued and remains where it is treated well. It cannot be coerced; rather, it is drawn by positive factors. Former Citibank Chairman Walter Wriston aptly highlighted this reality. The pivotal role of employees in an organization's sustainability and growth is widely acknowledged. Human resources, being the driving force of competitive advantage, are responsible for fostering innovation. Innovation, in turn, is a key determinant of a company's survival and profitability. When an employee departs, they take with them valuable assets such as knowledge, experience, culture, and the organizational value system. These assets can potentially be used against the organization if not harnessed properly. Moreover, a high attrition rate not only impacts the internal dynamics but also tarnishes the company's image, sending unfavorable signals to both potential employees and customers."

WHAT IS EMPLOYEE RETENTION?

"While the concept of employee retention can be defined in various ways, it essentially encompasses the measures implemented by organizations to motivate their employees to stay with the company for an extended period. The core objective behind employee retention is to safeguard the organization's talented workforce, aiming to prevent their departure (James & Mathew, 2012)."

OBJECTIVES OF THE STUDY

The following goals are intended to be attained by this overview of the literature on employee retention:

1. Examine numerous publications in the area of staff retention critically.

2. Describe the various retention tactics used and the causes that lead to employee departures.
3. Draw attention to current developments in staff retention strategies.”

METHODOLOGY

This research uses a descriptive methodology and mostly uses secondary data. Books, reports, newspaper stories, and papers from various research journals are among the secondary data that were used.”

REASONS FOR EMPLOYEE DEPARTURE

“There are many different elements that might affect an employee's choice to quit an organisation. The desire for further education or a different career, bad relationships with supervisors or employers, relocation for family reasons, termination from the organisation, and the pursuit of better-paying chances elsewhere are some typical reasons for leaving. Basically, there are two kinds of turnover: involuntary turnover, in which the organisation takes the decision to let an employee go, and voluntary turnover, in which the person makes the decision to depart. According to Allen, Bryant, and Vardaman (2010), involuntary turnover usually happens when a firm is reorganising or when an employee's performance is below expectations. Job dissatisfaction, concerns about job security, inadequate compensation, a lack of job autonomy, bad team dynamics, unpleasant working circumstances, and little prospects for professional advancement, to name a few (James & Mathew, 2012).”

CHALLENGES OF EMPLOYEE RETENTION

“The writers of the research (Eldridge & Nisar, 2011; Terera & Ngirande, 2014) address three different issues that businesses face when trying to retain staff. These difficulties include: (1) fierce rivalry between competitors; (2) brain drain, or the exodus of skilled workers from one nation to another that offers greater prospects and compensation; and (3) businesses' inability to predict future staff needs, which makes it more difficult for them to take preventative action. Another research (Scott, McMullen, & Royal, 2012) addresses the talent shortage brought on by the rising demand for qualified workers worldwide from a similar point of view. Furthermore, businesses predict that the proportionate growth in the ageing population will raise demand for skilled workers (Kyndt, Dochy, Michielsen, & Moeyaert, 2009).”

RETENTION STRATEGIES

“Employee turnover poses a significant challenge, prompting substantial efforts towards retention. When an employee departs, they carry with them the organization's culture, values, and skillset, which competitors can exploit—a situation no company desires. The high cost of replacing an employee underscores the importance of retaining existing talent. Moreover, retention is essential for organizational growth and stability. Das (1996) identified six crucial factors for employee retention: Compensation, Learning Opportunities, Benefits and Security, Work Autonomy, Merit Orientation, and Accelerated Vertical Growth. Cloutier, Felusiak, Hill, & Pemberton-Jones (2015) proposed four strategies for employee retention in their studies: (1) good communication; (2) a diverse workforce; (3) employing competent personnel; and (4) carrying out employee training and development programs. Studies show that it is less expensive to keep current staff members than to hire new ones (Sinha & Sinha, 2012). Key factors that affect employee retention include communication, professional development, flexible work schedules, organizational culture, and pay. In their 2012 study, James & Mathew concentrated on retention tactics in the IT industry, such as career planning, flexible work schedules, financial assistance, mentorship programs, training and development opportunities, and reward and recognition. Young professionals (20–25 years old) have a significant attrition rate, according to research by Kumar & Arora (2012). These factors include delayed career progression, strained relationships with coworkers, seniors, and superiors, a work-life imbalance, and seeking higher education. The retention tactics listed below can aid in addressing issues related to staff turnover.”

Employee Voice and Retention

Daniel G., in his study, proposes that organizations providing ample opportunities for employees to voice their dissatisfaction with workplace conditions are more likely to retain them (Spencer, 1986). This suggests that employees feel more inclined to stay with an organization that demonstrates an effective grievance handling system (Spencer, 1986).

Communication and Retention

Efficient communication processes contribute to employee retention in organizations (Cloutier et al., 2015). The authors emphasize that, to maintain a healthy work culture, leadership must adeptly navigate interpersonal, group, organizational, and intercultural communication. Effective communication, as highlighted by Sinha & Sinha (2012), not only enhances the employee's connection with the company's identity but also fosters an environment of openness and trust. James & Mathew (2012) found that effective communication significantly contributes to creating a positive workplace environment. Attridge (2009) discovered that better communication from company executives enhances employee engagement.

Compensation and Retention

Compensation in organizations, typically involving money such as salary, wage, benefits, etc., significantly influences employee retention, as indicated by research. Das (1996) advocates for flexible compensation packages, opposing standardization. He emphasizes that different age groups have distinct preferences, and a one-size-fits-all approach may not cater to everyone's needs. A study by Hong et al. (2012) reveals that companies without compensation planning experience a poor working environment. Kumar & Arora (2012) report that 27 percent of employees cite compensation as the primary reason for leaving a company.

Leadership and Retention

Leadership plays a critical role in employee retention. According to Doh, Stumpf, & Tymon (2011), responsible leadership involves a stakeholder culture prioritizing ethical and social behavior, fair and inclusive HR practices, and full managerial support for employee development. Cloutier et al. (2015) suggest that positive working conditions improve when employees have good relationships with their bosses, and assuming leadership roles strengthens their sense of belonging to the company.

Career Development and Retention

Lack of well-defined career development plans in Indian companies creates a hurdle for loyal employees, diminishing the likelihood of upward mobility (H. Das, 1996). Conversely, Mehta, Kurbetti, & Dhankhar (2014) found that when career opportunities are in place, employees stay longer and tend to be more loyal.

Training, Development, and Retention

Job-related training enhances employees' problem-solving abilities, instilling confidence, motivation, and commitment to their jobs, increasing the likelihood of retention (Hong et al., 2012). Mehta et al. (2014) advocate for retaining well-trained employees rather than incurring the cost of retraining. Cloutier et al. (2015) align with Das (1996) in highlighting training and development as motivational tools for employee retention, elevating employee commitment to the company.

Work/Job Flexibility and Retention

Work flexibility, defined as “the ability of workers to make choices influencing when, where, and how long they engage in work-related tasks” (Jeffrey Hill et al., 2008), positively influences employee retention. Eldridge & Nisar (2011) note that flexible working conditions result in less absenteeism and contribute to employee retention, fostering an environment where employees can enhance their knowledge and bring forth new ideas and innovations (Idris, 2014).

Job Satisfaction and Retention

Job satisfaction emerges as a significant factor impacting employee retention, with 51% of employees preferring it above extrinsic rewards, organizational commitment, and a lack of alternatives (Hausknecht, Rodda, and Howard, 2009). According to B. L. Das and Baruah (2013), work satisfaction occurs when employees' expectations upon joining match reality, while Terera and Ngirande (2014) show a significant link between job satisfaction and employee retention.

Performance Appraisal and Retention

Performance evaluation, which assesses individual performance's total contribution to the firm, serves as a link between management and employees. Hong et al. (2012) show that a successful performance assessment produces satisfied, motivated, and devoted employees. Mehta et al. (2014) underline that a successful performance assessment not only assists firms in tracking their personnel, but also allows people to correct their deficiencies, establishing a stronger employee-supervisor connection and generating a healthy work atmosphere.

EMPLOYEE RETENTION: RECENT TRENDS

Sustainable HRM

In a fiercely competitive environment, companies grapple with a scarcity of skilled employees while simultaneously facing challenges in managing their diverse workforce—ranging from an aging demographic to individuals of varying cultural backgrounds, as well as considerations for both male and female employees, and working couples. Employees, on the other hand, encounter issues like work-life imbalance, escalating stress levels, and performance-related concerns. App, Merk, & Buettgen (2012) propose Sustainable Human Resource Management (HRM) as a strategic approach to gain a competitive edge and establish an appealing employer brand by addressing the aforementioned challenges.

Employee Retention Specialist

Distinguishing between a buyer's and a seller's market is crucial, with the former placing employers in the driver's seat, controlling terms of employment and hiring decisions, while the latter grants workers the advantage of ample job opportunities. Despite this distinction, studies highlight the consistent demand for skilled workers. According to Roger E. Herman, "employee retention is not an HR issue, it is a management issue" (Herman, 2005), underscoring the critical role of an employee retention specialist. This specialist, equipped with education and training, plays a pivotal role in assisting management in enhancing employee performance and reducing turnover costs.

Corporate Social Initiative and Retention

As individuals, employees harbor diverse aspirations from their jobs, with shifting preferences over time. While financial benefits traditionally influenced employee retention, contemporary trends indicate some employees prioritize participating in corporate social initiatives over higher pay (Bode, Singh, & Rogan, 2015). The positive correlation between employee engagement in corporate social initiatives, motivation levels, and their identification with the company emphasizes the role of such initiatives in fostering long-term commitment.

Understanding Generational Preferences

Generations in the workplace, such as the Silent generation, Baby boomers, Generation X, and Generation Y, exhibit distinct preferences and characteristics. Understanding these generational differences is crucial for organizations to formulate effective retention strategies. For instance, Generation X values autonomy and is tech-savvy, while Generation Y emphasizes corporate social responsibility, training, and career development, displaying more individualistic tendencies (Festing & Schäfer, 2014).

Employee as A Customer

Built on the employee equity model (Cardy & Lengnick-Hall, 2011), this approach treats employees as internal customers, aiming to maximize the value of their association with the organization. By investing in relationships, socialization, and employee well-being, organizations strengthen the employees' identification with the company's vision and mission, reducing the likelihood of turnover.

Employee Lifecycle

Similar to the product lifecycle concept in marketing management, employees progress through various career phases, including introduction, growth, maturity, and decline (App et al., 2012). Recognizing the changing needs and expectations of employees at different lifecycle stages is crucial. Organizations must tailor their efforts to understand and meet employee expectations, ensuring a sustained and fruitful association. Additionally, App et al. (2012) introduces the pre and post-employment phases, where post-employment involves employees serving as brand ambassadors for the company.

Gig Economy and Employee Retention

Lloyd Mathias, a business and marketing strategist, discusses a contemporary trend for millennials in the gig economy—a market characterized by short-term contractual or independent freelance work. This transformative trend, driven by digital technology and a focus on results rather than physical presence, requires employees to adapt to working across industries and roles. The gig economy is reshaping the traditional employee-employer relationship and influencing how employees are treated and retained in organizations.

CONCLUSION

The paramount significance of employees as a crucial asset to any organization cannot be overstated. Their substantial contributions significantly impact the company's profitability and overall growth, serving as catalysts for innovation and sustainable development. This study centers around a comprehensive literature review on employee retention. Nevertheless, the extensive array of available materials presents a challenging task in distilling and summarizing the study into a concise format. I have endeavored to address pertinent aspects of employee retention while also giving due attention to emerging trends that are beginning to influence the market.

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Workforce Development (Human Resources)

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Abstract

This paper attempts to analyses to examine the growth and development of workforce in India in terms of human resources factors. The focus is an education and health mainly. The paper also carries and exercises to find out the level of influence of the government expenditure on health. The analysis is supported by estimated regression equations in alternative forms, taking education, health and human development forces. Impact of GDP and GFCF is worded out on such variables. The results support the positive correlation between education and health mutually and contribution of education for health is more propounded then contribution of health to education. Favorable and contrary impacts of GDP and of GFCF are also observed on included social variables.

Keywords: Human development, human capital formation, life expectancy at birth, education index, health index, gross domestic product, gross fixed capital formation (GDY and GFCF respectively).

INTRODUCTION

India has maintained a high growth rate since the economic reforms it implemented in the early 1990s. It has excelled in key sectors such as information technology and medicine and is now considered one of the world's largest industries. Despite these positive developments, India continues to be one of the countries with the lowest human development indicators. Malnutrition, illiteracy, unemployment and poverty are staggering. Income inequality and regional disparities are also a concern. Employment is increasing but the jobs created are of poor quality and inadequate. Despite the expansion of health services such as health, nutrition and education, the quality of services in many remote cities is still poor. Most importantly, the majority of the population is deprived of social assistance. Legislators are therefore faced with a paradox: while some are prosperous and affluent, the majority of the population still faces uncertainty and insecurity. The 11th Five-Year Plan also reflects these concerns and emphasizes the need for balance and "inclusive growth" (World Bank Consultancy Report, 2011).

Economic development of an economy requires not only material resources such as land and buildings but also human capital such as engineers, doctors, teachers and managers. Improvements in people's skills and physical abilities lead to an increase in human capital because they make them more productive.

The first People's Guide in 1990 began with the theme "the real wealth of the country is its people." In the words of Professor Amartya Sen: Human development as a method is related to what I consider to be the central idea of development: to promote the richness of human life rather than the richness of work in which people live, and this is only one of them. In principle, these options may be limited and may change from time to time. People benefit from non-aggregate or immediate effects on income or development: greater access to information, better nutrition and nutritional services, health, greater health, prevention of violence and physical violence, leisure satisfaction, political and economic development, etc. The aim of development is to create an environment in which people can live long, healthy and creative lives. "Human development refers to the development of the abilities and skills of a country's population.

The present study has two dimensions, namely education and health index, to measure the development of people. The literacy index is measured by the adult literacy rate (two-thirds of the weight) and the total number of students in primary, secondary and tertiary education (one-third of the weight) in developed or underdeveloped countries. The health index is measured by other indicators besides life expectancy.

OBJECTIVES OF THE STUDY

The study aims to examine the preliminary impact of India's gross domestic product (GDP) on education, health and the overall human development index (collected by the United Nations Development Programme) of the domestic economy. Similar results were obtained by combining gross fixed capital formation (GFCF) with GDP and using education and health as dependent variables.

The main idea seems to be that education and health are interconnected and affect each other. However, education and health and overall human development seem to depend on the level of GDP and GFCF in economic years. The study used three key health indicators: life expectancy at birth (in years), years of education, and the extent to which government spending affects health. Other key academic indicators were also included in the analysis.

The main objective of this study is to find the contribution of GDP growth and GFCF over the years to the education level, health standards and overall human development of the Indian people. In addition to this, here is an experiment on how education affects health and vice versa.

DATA AND METHODOLOGY

The application is primarily based on the Economic Survey of India and Ministry of Finance, United Nations Development Programme 2011 Report, GDP and Gross Fixed Capital Formation (both in 2005 US dollars) and secondary data like education, health and human development indices. The data is for the entire period of Indian economy from 2000-01 to 2011-2012.

While education, health and human resources are treated as independent variables, gross domestic product (GDP) and gross fixed capital formation (GFCF) in constant US dollars (at 2005 prices) are adjusted according to alternative inflation models as shown below. The statistics in the model include t-value, adjusted R-squared, F-value and Durbin Watson (DW) coefficient.

Model 1: Simple Regression Model

1. It is used to estimate the impact of GDP on Education Index as given below.

   $E = a_1 + a_2\ GDP + e_1$

2. It is used to estimate the impact of GDP on Health Index as given below:

   $H = a_1 + a_2\ GDP + e_1$

3. It is used to estimate the impact of GDP on Human Development Index of India (prepared by UNDP) as given below:

   $HDI = a_1 + a_2\ GDP + e$

Model 2: Multiple Regression Model

It is used to estimate the impact of GDP, GFCF and Health Index simultaneously on Education Index as given below:

$E = a_1 + a_2\ GDP + a_3\ GFCF + a_4\ H + e_1$

Model 3: Multiple Regression Model

It is used to estimate the impact of GDP, GFCF and Education Index simultaneously on Health Index as given below:

$H = a_1 + a_2\ GDP + e_1$

H is the Health Index (both E and H are used as endogenous as well as exogenous variables in alternative regression equations)

- HDI is the Human Development Index for India (Prepared by UNDP)
- GDP is the Gross Domestic Product at constant prices in US $ (2005)
- GFCF is the Gross Fixed Capital Formation at constant prices in US $ (2005)

Data

The application is based on secondary data collected by the Economic Survey, Government of India, Ministry of Finance, United Nations Development Programme Report 2011 and World Development Report 2011. Create a complete work program. The dependent variable is education and health index GDP and the independent variables are GDP (constant 2005 US$) and aggregate capital formation.

Social Overhead Indicators

This study uses health and education as the key indicators of human development in India. Health measures and education measures are used as endogenous variables in the exercise regression. These measures are based on the correlation data given below:

- Table 1 reveals the India's HDI proclivity during 1980-2011, showing improvement of HDI components.
- Table 2 and Figure 1 shows the involvement of each component index India's HDI since 1980.

India's 2011 HDI of 0.547 is below the average of 0.630 for countries in the medium human development group and below the average of 0.548 for countries in South Asia.

Empirical Analysis

Model 1

(i) $E = .306 + .956GDP$
$(27.78) \quad (10.24)^{**}$
adj R^2=.904, F-Value= 105.02 (1,10)**, DW text-0.539
**Figures in afterthought denote values at 95 percent level*
***Figures in parentheses denote d.f.*

Table 1. India's HDI Trends (1980-2011)

Years	Life expectancy at birth	Expected years of schooling	Mean year of schooling	GNI per capita (2005 PPS$)	HDI value
1980	55.3	6.5	1.9	896	0.344
1985	57.0	7.3	2.4	1,043	0.380
1990	58.3	7.7	3.0	1,229	0.410
1995	59.8	8.3	3.3	1,453	0.437
2000	61.6	8.4	3.6	1,747	0.461
2005	63.3	9.9	4.0	2,280	0.504
2010	65.1	10.3	4.4	3,248	0.542
2011	65.4	10.3	4.4	3,468	0.547

Source: UNDP Report 2011

Table 2. India's HDI indicators for 2011 relative to countries and groups

	HDI value	HDI rank	Life expectancy at birth	Expected years of schooling	Mean years of schooling	GNI per capita (PPP US$)
India	0.547	134	65.4	10.3	4.4	3,468
Bangladesh	0.500	146	68.9	8.1	4.8	1,529
Pakistan	0.504	145	65.4	6.9	4.9	2,550
South Asia	0.548	----	65.9	9.8	4.6	3,435
Medium HDI	0.630	----	69.7	11.2	6.3	5,276

Source: UNDP Report 2011

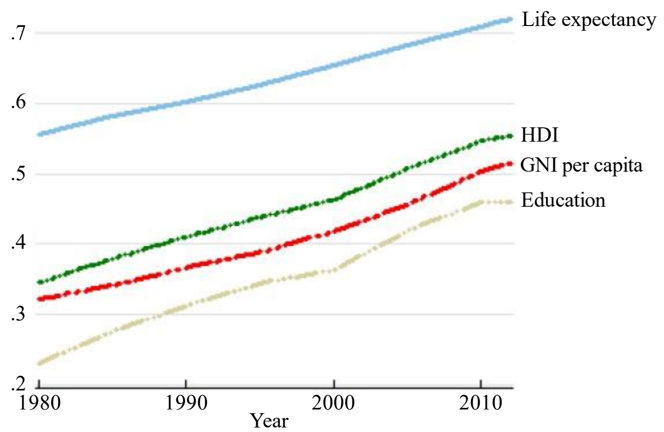

Figure 1. Trends in India's HDI factor indices 1980-2011

These results are satisfactory and indicative of its quality, as proven by the statistical test in the form of modified R[1] (.955) and F value (105.21). The regression coefficient of GDP is estimated to be positive and significant at 95% confidence level for the period from 2000-01 to 2011-12. This shows that GDP growth has helped the government to provide more space for all education standards. However, the DW index is not satisfactory (low)

(ii) *H = .618 + .974GDP*
*(116.74)   (13.63)**
adj R^2 =0.974, F-Value 116.74 (1.10)**, DW test-0.660
**Figure in addition denotes t-values at 95% level.*
***Figures in parentheses denote d.f.*

Considering the good results, these results are satisfactory as proved by the statistical test which is within the modified R2 (.955) and F value (116.74). The estimated regression coefficient of GDP calculated for the period from 2000-01 to 2011-12 is positive and significant at 95% confidence level. This shows that GDP growth helped the government to have more space. Estimated DW index is not satisfactory (rare)”

(iii) Check India's response to HDI (compiled by UNDP) to understand India's performance during the period 2000-01 to 2011-12 using simple horizontal lines. The estimated deterioration equation is as follows:

HDI = .417 + .979 GDP
(2.59)   (15.33)**
adj R^2 = 0.955, F-Value = 235.04 (1,10)**, DW test = 0.667
**Figures in parentheses denotes t-values at 95% level.*
***Figures in parentheses denote d.f.*

These results are satisfactory as evidenced by statistical test including modified R^2 (.955) and F value [235.04] which gives an idea about the quality of fit. It shows that GDP plays a significant role in promoting human development as per Human Development Index. The estimated regression coefficient of GDP calculated for the period 2000-01 to 2011-12 is positive and significant at 95% confidence level. However, the estimated DW parameter is not satisfactory (rare) probably due to autoregressive errors and other errors in the model.

Model 2

The predictable deterioration equation is as follows:

E = -.101 - 1.269 GDP + 1.786 GFCF + 0.46 H
(-703)   (-4.820)   (7.70)   (3.23)
R^2 = 0.98, F-Value 309.8 (2, 10)**, DW Test=2.42
**Figures in digression indicate t-values at 95% level.*
***Figure in parentheses denotes d.f*

These results show a good fit as can be seen from the test results in the form of adjusted R^2 (.970) and F value [118.32]. The regression coefficient of GDP is in the opposite direction (probably due to the economic increase in education since the economic reforms). The regression coefficient of education index of total fixed capital for the period 2000-01-2011 is estimated to be positive and significant at 95% confidence level, indicating that GFCF plays an important role in education development. Also, the health index is estimated to be positive and significant at 95% confidence level for the period from January 2000 to December 2011. This indicates that people are healthy and their education is progressing.

Model 3

The probable corrosion equation is as follows:

$$H = 0.362 + 1.911\ GDP - 2.11\ GFCF + 1.21\ E$$
$$(3.55)^{*} \quad (3.88)^{**} \qquad (2.11)^{*} \qquad (3.2)^{*}$$

Adj R^2 = .958, F-Value = 235.04 (1,10)**, DW test =1.91

**Figures in parentheses denote t-values at 95% level.*

***Figures in parentheses denote d.f.*

These results show satisfactory good fit as can be seen from the test data in the form of adjusted R^2 (.970) and F value [118.32]. The regression coefficient of GDP is positive and significant indicating that it plays a significant role in changing the health index. The regression coefficient of education measure is estimated to be positive and significant at 95% confidence level for the period from 2000-01 to 2011-12. However, the regression coefficient for all fixed variables shows the opposite (this may be because physical health alone is not sufficient to improve all levels of health).

EMERGING ISSUES POLICY IMPLICATIONS

India's 2011 Human Development Index is 0.547, lower than the 0.630 average for middle-class countries and the 0.548 average for South Asian countries. There is always a need to expand health and education more rapidly and more widely.

According to the recommendations of the World Bank (Human Development in India. Emerging Issues and Policy Perspectives), education policy in India should shift its focus from enrollment to school development performance and improve educational outcomes. Specific strategies are needed to improve the impact of the school system on the disadvantaged and marginalized groups in the country. School planning should be strengthened to provide access to this group at the lower and lower levels and thereby remove social barriers to education. A common public space for education should be created so that private and government schools can collaborate in education. There is also a need to make schools a good model and provide important ideas and good teaching.

The gap in investment recommendations should continue. To this end, each state should have well-developed, maintained and quality teachers sent to work planning to ensure standards of teaching and eliminate deficiencies at all levels. The problem of child labour, which affects about 12 million children, needs to be addressed as soon as possible because it is unlikely that children will increase their participation in school unless the problem is addressed. Implementation and monitoring strategies should be in place at the national level, with the government developing additional monitoring models and supporting financial and human resources.

Effective public health policies require the integration of measures from multiple sources. The focus should be on some general aspects of health care, such as food and health security, drinking water, women's knowledge, nutrition, good food and hygiene, and most importantly, community trust in public health. Policies should focus on preventing diseases by providing clean water and sanitation, rather than killing them by using antibiotics. This requires training public health professionals and improving health facilities at all levels.

The focus should be on paying for treatment. The country’s public health spending is only 1% of global GDP. This is expected to rise to 2% in the next five years. There is also a shortage of healthcare personnel. The government can partner with various stakeholders to address these issues.

CONCLUSIONS

The general points that emerge from the analysis of the present problem are as follows:

1. GDP (Gross Domestic Product) supports education and health in India in many ways. Annual increases in GDP generally have a positive impact on education and health.
2. Similar situation is present in India’s HDI (Human Development Index) as we mentioned above. Education and health have a positive and beneficial impact. However, education seems to contribute more to health and health seems to contribute to education but not as much as education contributes to health. This can be said to be the best in the Indian market. This shows that educated people are more interested in health while healthy people are less interested in education.
3. While GDP and GFCF appear positive for health and welfare facilities, the opposite is true for schools and education. This can be considered as alarming and can be attributed to the increasing privatization and commercialization of education in India, especially technical education and higher education, since the beginning of economic reforms in 1991. (Although reading is part of education, it would be inappropriate for the government to emphasize “literacy” over “education”).
4. The GFCF appears to have made a positive and weak contribution to the expansion of educational facilities throughout the economy. The GFCF appears to have had an impact on the health sector as a whole. Similarly, the GFCF may provide better physical treatment and hygiene in the business world, but not all groups of people, both “human” and “physical”, want medical treatment to be available to improve the health of people throughout the economy.

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Cybersecurity and Cybercrime

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Abstract

In our increasingly digital society, cybersecurity is a major worry. The threat landscape has changed as a result of the quick development of technology, growing in complexity and hazard. The numerous cybersecurity risks that people, businesses, and governments must deal with today are thoroughly examined in this study paper. Effective mitigation techniques for protecting data and digital assets are also covered. Cybercrime thus presents a threat to individuals, nations, and institutions worldwide. E-crime affects millions of people globally and is common in many areas of the world. Given the seriousness of electronic crime, its global reach, and its consequences, it is obvious that a thorough understanding is required in order to successfully combat these crimes on a global basis.

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Keywords: Cybersecurity, Cybercrime, Cybercriminals, cyberattacks, Internet, Data

INTRODUCTION

The exchange of statistics and many expert activities, including commerce, purchasing, banking, advertising, services, and so forth, have become commonplace in today's world thanks to cyber civilization. Cybercrime sports have seen an exponential development as a result of the exponential growth in the use of cyberspace. The main cause of this rise is the overuse of internet content in practically every area of study. These internet packages do have design flaws, which cybercriminals take advantage of in order to obtain unauthorized access to networks. As a result, practitioners and researchers are becoming increasingly concerned about cyber defense. The collection of tools, plans, guidelines, safety features, security advice, risk- reduction tactics, maneuvers, instruction, best practices, security assurance, and contemporary technology that can be utilized to protect cyberspace and client property is known as cyber safety. These days, cyber safety—which includes protecting statistics by identifying, stopping, and responding to cyberattacks—has gained attention and significance on a worldwide scale.

The cyberspace protection systems employed by various organizations are insufficient to shield these cyber environments from the continuously expanding threats to their safety. As a result, during the past ten years, scholars and practitioners have been interested in this critical and demanding scientific scenario. Certain research endeavors have been undertaken in unique cyber domains, each possessing distinct characteristics and skills to address a multitude of security breaches.

The digital revolution has come with a double-edged sword: while providing unmatched connection and technological breakthroughs, it has also made people, businesses, and governments more vulnerable to cybersecurity attacks. The very character of these threats has changed over time, growing more hazardous and complicated, making it difficult for cybersecurity professionals to create ever-better mitigation techniques. Since cybersecurity awareness and education are the cornerstones around which a strong cybersecurity posture is constructed, their significance in this dynamic environment cannot be overstated. In order to give a thorough study of the dynamic threat landscape and the mitigation measures required for protecting digital assets and data, this research paper dives deeper into the complex field of cybersecurity.

BACKGROUND STUDY

This section gives some background knowledge about cybercrime and cybersecurity. Cyber-security is defined as a combination of techniques, technologies, and procedures aimed at safeguarding computer systems, networks, and data's availability, privacy, and integrity from cyber-attacks and unauthorized access. Cybersecurity primary goal is to safeguard all institutional assets against both internal and external attacks, including obstacles brought on by natural disasters. Coordination across all of an organization's information systems is necessary for an effective and efficient cyber security consolidation since organizational assets are composed of numerous distinct systems. Risks covered include malware, hacking, data breaches, and denial-of-service attacks, to name a few. These can be executed by governments, gangs, individuals, or hacktivists. The cybersecurity principles—confidentiality, integrity, and adaptability—direct the design and execution of security measures., availability, authenticity, and non-repudiation. Cyber security is a major part of technology, processes and networks, computer systems, various programs and methods designed to protect data from cyber-attacks, all of which are harmful or have unauthorized access. If we talk about computer terms, security includes both cyber security and physical security. Security guidelines that let business learn safe security tactics to limit their data or systems and lower the amount of successful cyberattack. However, network security, data security, communication security, operational security, and application security all depend on cyber security [3].

Cybercrime encompasses a wide range of illicit activities that use the internet's interconnection and vulnerabilities. One well-known kind of cybercrime is hacking, which is defined as breaking into computer systems or networks without permission with the intention of stealing sensitive information, interfering with business operations, or causing harm. Cybercriminals regularly employ highly skilled techniques to circumvent security measures and breach even the most heavily guarded systems. These strategies include, for example, exploiting software weaknesses or social engineering tactics. Identity theft, or using someone else's credit card number, social security number, or other financial information for illegal or unauthorized purposes, is a common cybercrime. Cybercriminals might use this information to carry out a number of crimes, including financial fraud, adding the victim's name to loan applications or credit card applications, or even committing crimes under false pretenses. Certain cybercrimes target both computers by infecting them with viruses that subsequently propagate to more computers and occasionally entire networks. Financial loss is the main effect of cybercrime, which includes a range of profit-driven illegal acts such as ransomware attacks, email assaults, online fraud, identity theft, and attempts to get financial account, credit card, or other payment card information. Cybercriminals may target corporate data and personal information for theft and selling [5, 6].

GROWTH OF CYBERCRIME IN THE LAST FEW DECADES

The 1960s

The first steps into the field of cybercrime were taken in the 1960s. Transistor-based computer systems were introduced during this era; these machines were more compact and less costly compared to their vacuum tube-based predecessors. Computer technology was used more frequently as a result. In its early stages, physical harm to computer systems and data storage was the main objective of cybercrimes. A student disturbance in Canada in 1969 resulted in a fire that damaged computer data at a university. This is an example of an incident of that type. Furthermore, potential criminal abuse of databases and related privacy problems were highlighted during the mid-1960s US discussion on centralizing data-storage power for all government ministries.

The 1970s

Computer systems and computer data utilization increased significantly in the 1970s. By the end of the decade, 100,000 mainframe computers were expected to be in operation in the US. As computer technology became more accessible, both governmental and commercial institutions as well as the common public could use it.. During this time period, new types of cybercrime emerged in contrast to the conventional property offences against computer networks that were common in the 1960s. These new forms include manipulating electronic data and using computer systems illegally. The shift from manual to computer-operated transactions resulted in the rise of computer-related fraud as a major threat. Fraud involving computers resulted in multimillion dollar losses, which prompted law authorities to step up their investigations. In many countries around the world, including the US, talks about legal remedies and changes to combat cybercrime sprang from the difficulties in applying current laws to computer crime cases.

The 1980s

Computer systems became much more common as a result of the 1980s' widespread use of personal computers. The number of people who could become targets for hackers grew as personal computers gained mainstream. During this period, a greater variety of vital infrastructure also became vulnerable to cyberattacks. The increasing interest in software brought about by the widespread usage of computer systems led to the emergence of early cases of software piracy and patent-related crimes. Interconnected computer systems allowed for the creation of new types of crimes by enabling offenders to access a system remotely, even if they weren't present when the crime was committed. Networks made it easier for software to be distributed, which in turn led to the proliferation of malicious software and an increase in computer viruses. As cybercrime evolved, countries began to update and change their legal frameworks and strategies for enforcing the law.

The 1990s

Because of the advent of the World Wide Web (WWW), a graphical user interface, the 1990s saw a substantial shift in the cybercrime environment. Following this breakthrough, the number of Internet users increased quickly, creating new and different issues. Information that was freely available in one nation became available everywhere, even in areas where it was illegal to publish it. The issue of conflicting foreign laws and the jurisdiction of internet information has been brought up by this worldwide accessibility. The astoundingly quick sharing of information was one of the most difficult things about using web services. Because of the ease with which offenders may use digital tools to traverse international borders, this feature made investigating transnational cybercrimes challenging [7]. Furthermore, child pornography was no longer distributed physically through books and tapes but rather online through websites and other Internet services. This change made computer crimes—which were primarily localized— transnational in nature. As such, the international community stepped up its efforts to deal with these issues. A guidebook for the prevention and control of computer-related crimes was published in 1994, and UN General Assembly Resolution 45/121, which was enacted in 1990.

The 20s

Cybercrime and computer crime have continued to follow ever-changing trends in the twenty- first century. A wave of extremely advanced techniques for committing crimes surfaced in the first ten years of this century. Among the most notable were tactics like "phishing" and "botnet attacks." In addition, technology presented new difficulties for law enforcement, like using "voice-over-IP (VoIP) communication." These modifications affected the scope of cybercrimes significantly in addition to their tactics. The quantity of cybercrimes increased dramatically as criminals learned how to automate attacks. Countries, regional organizations, and international entities have prioritized the battle against cybercrime in response to these expanding difficulties. The ever-changing threat landscape has prompted the establishment of initiatives, laws, and cooperative efforts that underscore the necessity of cybersecurity and international cooperation to combat increasingly sophisticated and transnational cybercrimes [8, 9].

EVALUATION

Significant understanding may be obtained from Cyberprooft's Cyber Threat Intelligence (CTI) team's analysis of the nations most at risk in 2021 based on the origins of cyberattacks. According to their results, the top 10 countries responsible for a significant portion of cyberattacks in 2021 were China, the US, Brazil, India, Germany, Vietnam, Thailand, Russia, Indonesia, and the Netherlands. Surprisingly, the top two positions are held by the United States and China, two of the world's most

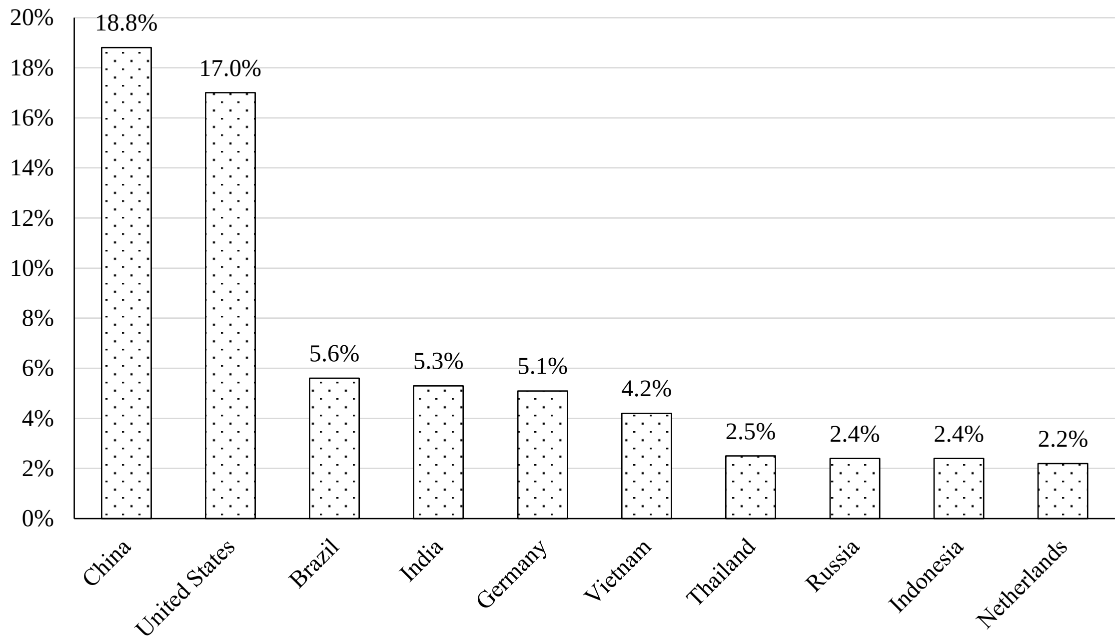

Figure 1. The top 10 nations where cyberattacks originate [1].

powerful technological nations, with 18.83% and 17.05%, respectively [4]. This underscores their significance in the digital realm, where they can be targets or suppliers of cyberattacks. Brazil, India, and Germany are three of the top five nations, demonstrating the wide range of sources of cyberattacks. These nations struggle not only to combat domestic cybercrime but also to maintain their status as technical leaders. Completing the top ten are Vietnam, Thailand, Russia, Indonesia, and the Netherlands, underscoring the worldwide scope of cyber threats. These results highlight the transnational aspect of cyberattacks and highlight the necessity of international collaboration in cybersecurity initiatives [2].

Recognizing that these conclusions are based on geolocated IP addresses and a variety of signs from different attack types is crucial, as it makes them a valuable resource for cybersecurity experts and policymakers. Our research highlights the necessity for an all-encompassing, worldwide approach to cybersecurity because assaults can come from a range of sources and impact nations worldwide.

Precautions to Combat Online Crimes

- Enable pop-up blockers and install and configure firewalls.
- Delete superfluous software on a regular basis.
- To ensure data recovery, keep backups.
- Examine and adjust 2FA security settings.
- Don't use public Wi-Fi; instead, use secure networks.
- Be cautious while opening attachments from emails.
- Make secure and distinctive passwords.
- Don't share too much personal information.
- Keep up with security and privacy issues on the internet.

CONCLUSION

Conclusively, my comprehensive investigation into cybercrime and security underscores the paramount importance of enlightening and educating the populace on the always changing terrain of security risks within the digital domain. People can better safeguard themselves and their digital possessions thanks to this increased awareness. In the connected world of today, it is critical to understand that the digital sphere is large and complex, full of possible threats and weaknesses. The first step to guaranteeing the safe transfer and storage of your important data is realizing its complexity. We acknowledge that staying connected to the internet is necessary for modern living, even though it is true that the only system completely immune to cyber attacks is one that is completely unplugged and powered off. Therefore, exercising caution and making wise decisions are necessary to strike a balance between the ease of technology and personal security. People can greatly improve their capacity to safely traverse the digital environment by remaining aware, adhering to best practices, and using the insights obtained from research on cybercrime and security. They can take advantage of technology's advantages while lowering its risks and difficulties in this way

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Automatic Recommendation of Web Pages for Online Users Using Web Usage Mining Using Artificial Neural Network

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Abstract

Web mining involves a huge variety of applications whose objective is to find and extract concealed information in web user data. It has provided an efficient and prompt mechanism for data access. Web mining helps in extracting beneficial information from user's web access. Earlier Studies on the subject are based on Concurrent Clustering approach. In this approach the clustering of the requests affected the performance results. For this study, we have introduced the Enhanced Multilayer Perceptron (MLP) Algorithm; a special technique of ANN (Artificial Neural Network) to detect patterns of use. In terms of time efficiency for Web log data the Enhanced MLP Technique is better than K-Mean Algorithm. The aim of understanding the Enhanced MLP Technique is to enhance the e-commerce platforms quality, to customize the Websites and improve the Web structure.

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Keywords: Enhanced MLP, FCM, K-Mean, Neural Network, Web usage mining

INTRODUCTION

Today, numbers of web users using internet to perform day to day transactions are increasing. A remarkable number of companies are encroaching towards internet to sell their products and services [1]. The Web mining (usage) applies algorithms to identify patterns of Webpage usage. Web server log data file is used as primary source for web usage mining. With its help, we can obtain four things namely, the user's habits, Site customization data, make a tune-up Server and create business rules. Using it can lead a website/ company to explore new clients and better marketing campaigns. The user's web usage style detection has 3 steps: (i) Pre-processing (ii) pattern discovery, and (iii) Pattern Analysis. It has become trivial for the webmaster to evaluate whether the products and services provided are catering to the need of the customers [2]. One effective solution to handle this issue is to provide personalized recommendation to individual user where he or she shows interested in a product. A Promising solution to overcome this issue is recommendation system. Recommendation System can have two broad classifications: Content-based and Collaborative filtering system [3, 4].

WEB USAGE MINING

Web usage mining aims at discovering a pattern of user's activity, so that it can provide user information in a better way. The ultimate objective of website is to provide the customer with more relevant information. Today's E-Commerce industry faces a cut throat competition for enhancing user experience by providing them with better features and relevant results. Moreover something extra must be available like dynamic content, links etc. for suggesting the user to intrigue him/her. Clustering of the user's log data are one of the main areas of concern for the web community. Log data is stored at 3 locations namely, the server, the user end and the proxy servers. As there are 3 places for data storage, analysis of browsing patterns of users for mining process has become tougher. Results are reliable only if data is available from the entire above said log file. Also log data on the proxy servers provide other useful information. However, it is very difficult to collect information from the client side e.g. Page requests etc. Thus many of the algorithm works depends on server data. Web mining is made up of three major steps [5, 7] as described in Figure 1: (1) Pre processing [6], (2) Pattern discovery, and (3) Pattern analysis.

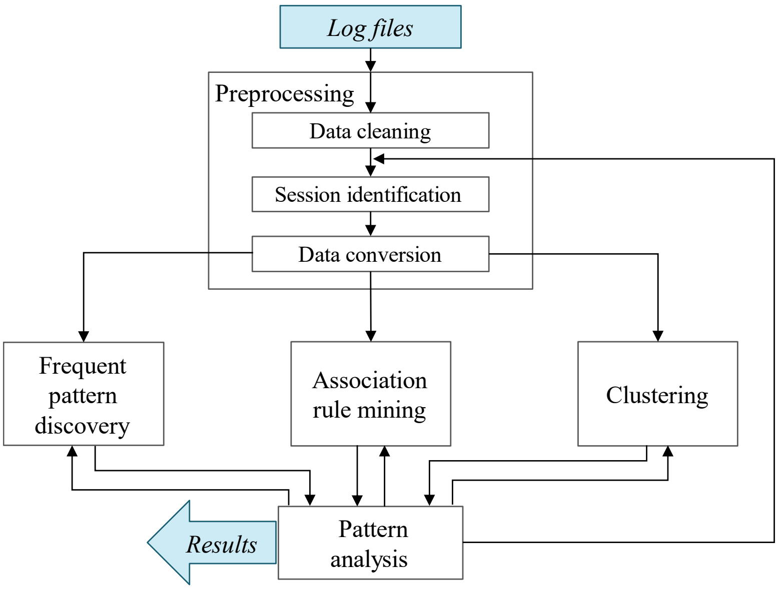

Figure 1. Data Processing step of web usage mining.

During preprocessing, data is collected from the 3 stored locations (i) client side, (ii) server side and (iii) proxy servers. After user identification, User sessions are segregated using click-streams, assuming the session to be 30 min each (approx.). The pattern discovery is also done by either of the three, Clustering, association rule mining or frequent pattern mining. Here we only cluster web access log. Generally in mining of web usage, usage clusters and page clusters are used. Similar browsing pattern users are grouped together into clusters. Clustering of users can be on basis of no. of parameters. On one hand, we can request users to fill a form stating their preferences such as registration on a portal. The user clustering can be obtained based on the forms filled by them. Alternatively, during the customer's navigation, his log data can be collected to create the cluster. Various user information such as user's behavior pattern, his likes/dislikes and his characteristics of the user i.e. their personal information collected using these methods. Clustering web pages helps in creating homogenous groups with content similarity. The last step is the analysis of the pattern found [8].

RELATED WORK ON WEB USAGE MINING

In Data Mining, huge data is analyzed to obtain hidden and unknown outcomes for better and more accurate decisions [9]. Real time recommendation on website is providing to online users irrespective of they been registered or not. Rational recommendation technique is used, it makes use of lexical patterns to generate item recommendation [18].

For consumer products, consensus ranking of products is obtained through rank aggregation, a novel recommendation system [10], here the system returns a ranked list of suitable brands, models available for a particular item as an output. Based on the order of aggregated ranking the products are displayed.The products are then returned in the order of the aggregated ranking. Thisbstudy presents a novel rank aggregation method for aggregation of partial lists [11].

The users are recommended a list of pages based on their web history pattern and al list of unvisited pages [12]. In data mining algorithm Real Life Data is used [13]. increasing volume of data and the variety of their format have led to advance application for data analysis to transform it into relevant information. They study the perception of the specialists who experts that normally work in companies with these applications [14].

Current user's click stream data is used to map his/her behavior, this data is converted to a recommended system resulting in providing useful information to individual without explicitly being asked for it [15].

INTRODUCTION TO ANN

Artificial Neural Network (ANN) is a network which is adapted by the activity of nervous system, quite similar to the brain information processing function. The main characteristic of ANN is the data processing system architecture which consists of many neurons working for solving the particular problem. However, the ANN is also used in pattern recognition or data classification domain by means of learning process. Neural network has a capability to extricate relatable and relevant information from the imprecise or complicated data. This information is further used in extracting the pattern and detecting the trends which were too complex and difficult for the computer or human to detect. Theother advantages of neural network are as follows:

1. A Neural network has capability of adaptive learning which means the ANN's ability to perform task on the basis of data giving for the training purpose.
2. Information received by ANN during learning process help in creating its own organization and representation known as self-organizing map.
3. ANN performs parallel Real Time Operation, using this capability some specific hardware devices can be designed and manufactured.
4. Fault Tolerance via Redundant Information Coding.

WEB USAGE MINING: PROBLEM FACED

1. *Logs processing:* This process cleans Server Log files and user's session data [7].
2. *Log files cleaning:* Non necessary files such as images, Error Logs need to be cleaned before processing data
3. *Users identifications:* User wise data is sorted based on cookies, user's IP address and various other forms.
4. *User session's identification:* Once the user identification is done the data is further divided into sessions, generally by checking the time frame gap between two requests (clicks).
5. *User's habit identification:* It is a dynamic database which keeps updating as per the changing habit/behavior of the user
6. *Pattern discovery:* All users having similar browsing patters are grouped together.
7. *Knowledge post-processing:* The end result of the output can then be used by human/AI interface to create personalized suggestion/response database.

NEURAL NETWORK APPROCH FOR WEB USAGE MINING

Here we shall discuss a feed word neural network. MLP is an extensively used supervised learning algorithm in ANN. It uses error-correction learning rule. Error propagation is calculated using forward pass and a backward pass. (i) Forward pass uses the input vector applied to the nodes of the network and it affects the network layer by layer. In the end, the output is determined by the response. When applying the forward pass, the network synaptic weight is fixed. When applying the back pass synaptic weights are adjusted as per the error-correction rule. The error response is formed by subtracting the observed response from the desired response. This error response is then sent backward i.e. in the opposite synaptic directionconditions. To make the actual and desired output of network similar synaptic weight recalibration is done. The Feed-Forward Neural Network architecture is able to approximate most problems with good accuracy and generalization ability.

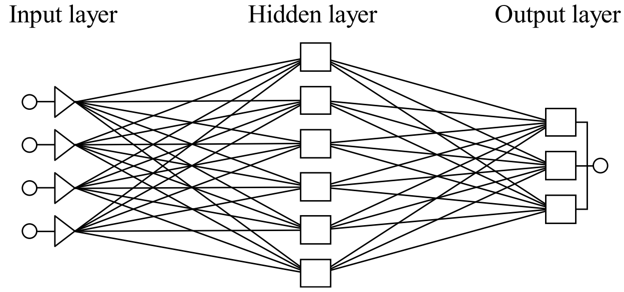

Figure 2. Multilayer-perceptron architecture.

As seen in Figure 2, the input signal is fed to the first layer, the Input Layer. Once the signal is processed via the Hidden Layer the output layer provides the output. The Actual Output is then compared with the Expected Output and error value is calculated for weight adjustment. Then from the output layer again signals are transmitted backward to each unit in the intermediate layer which is connected directly from the output layer , now every unit in the intermediate layer receive only error signal. Based roughly on the relative contribution the unit made to the original output. Layer by layer, this procedure is repeated till the error signals are received by each units describing its relative contribution to the total error.

Multilayer Perceptron Algorithm

Creating codes for various languagescan be done by using the Multilayer Perceptron Algorithm. Here we are assuming the usage of sigmoid function $F_{(net)}$.

Algorithm: [16, 17]

- *Wt. value initiation*
  All wt. shall be set to random.
- *Input feeding and outputs*
  Present input $A_p = a_0, a_1, a_2, ..., a_{x-1}$ and target output $B_p = b_0, b_1, ..., b_{y-1}$ where x and y are the input/output nodes. Now we shall assume w_0 to be -ø, and $a_0 = 1$. The associated patter is represented by A_p and B_p. We shall set $T_p = 0$, the only exception being A_p which is set to 1.
- *Output calculations*
  The following calculations are done for each layer:

  $fT_{pj} = f\,[w_0a_0 + w_1a_1 + ... + w_xa_x]$

  The output T_{pj} is then transferred to the next layer for input. The final output is denoted by o_{pj}.
- *Adjusting the wt.*
  Once the Output is achieved we work back on the wt.

  $w_{ij}(b+1) = w_{ij}(b) + \tilde{n}þ_{pj}o_{pj}$,

  here, ñ = gain term, $þ_{pj}$ = error term p represents the pattern and j = nodes.
  Output

  $þ_{pj} = ko_{pj}(1 - o_{pj})(b - o_{pj})$

  Hidden units are calculated as below

  $þ_{pj} = ko_{pj}(1 - o_{pj})[(þ_{p0}w_{j0} + þ_{p1}w_{j1} + ... + þ_{pk}w_{jk})]$

Enhanced MLP Algorithm

In this section, the enhanced MLP shall be discussed which shall enhance the overall performance. Error adjustment shall lead to better learning. This shall be achieved due to the back transmission of the output signal to the intermediate signal. Alternatively, Output Error can be written as below:

$$\delta_{pk}^{0} = \left(Y_{pk} - O_{pk}\right)$$

Here "p" is the p^{th} training vector, "k" is the k^{th} output unit, Y_{pk} is Output (ideal) and O_{pk} is Output (actual) at the k unit, Feedback δ_{pk} shall update the output signal wt. and the hidden signal weights.

Enhanced MLP Algorithm Which I Used

- Input the Values.
- Add the input Values to the hidden layer.
- Evaluate the Output data from the hidden layer
- Find the errors from the Output and replace updated δ°_{pk} with old δ°_{pk}
- Again calculate the Output and the related error values.
- In parallel the wt. of the Hidden and Output Layer need to be updated for convergence.
- Repeat Steps 1-9 till error achieves an acceptable value.

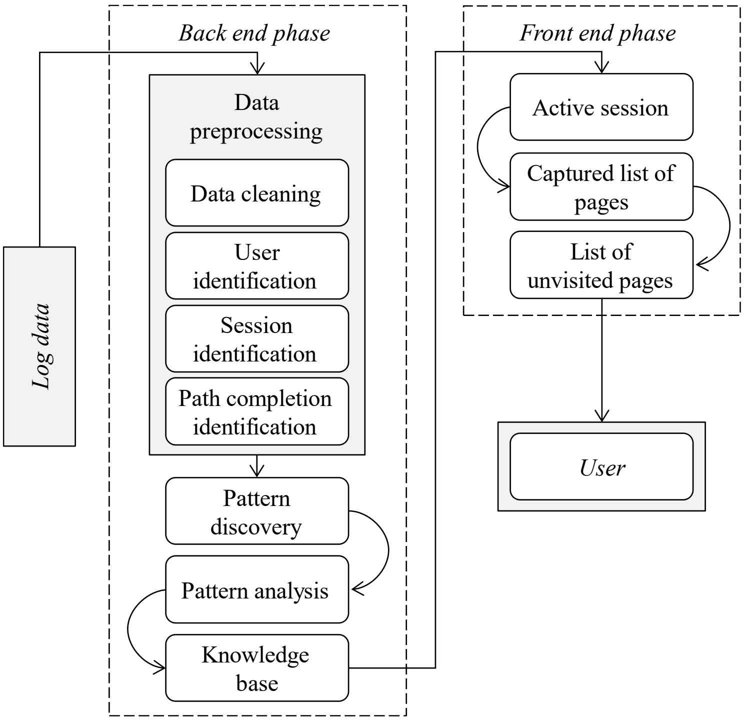

Figure 3. Architecture of the proposed recommender systems.

ARCHITECTURE OF PROPOSED RECOMMENDED SYSTEM

Figure 3 shows the split of architecture in 2 phases (a) Back End phase (b) Front end phase. In the Back End phase the recommender system identifies the users browsing pattern using the 5 steps of Data preprocessing i.e. Identifying User, Cleaning Data, Session identification and Path Completion Identification. Using EMLP the useful data is converted into user browsing pattern. This pattern is then added to the Knowledge Base which provides useful recommendations to the user during his browsing sessions. The front end can be briefly described as following. Active session of user is captured and compared with knowledge base's aggregate usage profile of user. The recommender system compares other user's pattern and search algorithms to searches for unvisited pages. The best possible profile/results are achieved considering maximum similarity. The compared recommendation list with other users is recorded and is updated with the original recommendation list.

- *Step 1: Collection of the data:* In this step we will gather the data not from internet but from the live user's desktop and from various sites which provide data.
- *Step 2: Data analysis i.e. data preprocessing and pattern recognition:* In this phase we clean the data Cluster the user session files having similar navigation patterns.

CONCLUSION

We have studied the possible use of ANN in web traffic data mining classification. The discovery of data patterns allows organizations to create Customer customized advertising for better outcome. We can conclude that; for web usage pattern identification, the enhanced MLP Algorithm is superior to K Means. Enhanced MLP is superior to K Means as it includes an error adjustment algorithm which improves the accuracy by readjustment and multi pass.

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Democratizing Access of Microfinance for Resilience of Social Status of Households (with Special Reference to RoSCA Members)

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Abstract

Rotating Saving and Credit Associations (ROSCA) is a group of individuals who act together for a defined period of time in order to save and borrow funds to fulfill micro level needs. This paper shows the impact over social status of households using RoSCA by having access of finance. 200 members of around 20 RoSCAs are investigated about the change in their ability of saving, asset generation capacity and social cohesion and relation within community.

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Keywords: ROSCA, saving, asset generation and social cohesion and relation.

INTRODUCTION

India is a developing nation which is constantly striving for stable finances. Nation is having huge disparity of income and the foremost reason of disparity is the access of finance. Policy makers are struggling hard to overcome this problem of income disparity. There is a easy financing method for solving this problem, which is collateral free finance by using microfinance i.e. micro loan, micro saving and micro insurance.

Democratizing Access of Finance

Availability of finance to every household is a challenge due to disparity of income in India. People having low disposable income are considered poor in the economy thus having low social status. Such people feel unsecured and they are scared of using formal financing pattern.

Money creates Money is a old and true statement. Households having low social status face difficulty in creating social cohesion in society. Now the aim is to remove this barrier of access of funds if required by any type of household. Informal pattern of financing is also opted by many such household and thus prove to be successful way in increasing the asset generation and social cohesion.

For an economy to function, money and financing must constantly be accessible, and they must be transferred from savers to investors or consumers. There are several methods by which money may go from savers to consumers through financial institutions like banks and financial markets. They have made a significant contribution to this channeling of finances, but people with micro-level needs cannot access these formal funding structures. As a result, “rotating savings and credit associations” (ROSCA), an informal financing arrangement, serve as the primary source of funding for both meeting their basic needs and creating new revenue streams like small businesses or retail establishments using the money raised from informal investments. Microfinance has its roots in a number of programs and trials that tried to give low-income people and communities—especially those in developing nations—access to financial services. Although lending to the impoverished has been practiced informally for generations.

Here are some key milestones in the origin and development of microfinance:

There are several ways in which ROSCAs (Rotating Savings and Credit Associations) can better support asset generation initiatives within the community:

- Financial education and training
- Diversification of investment options
- Partnerships with financial institutions
- Capacity building and skill development
- Community development projects
- Transparent and accountable governance
- Inclusive participation and representation
- Monitoring and evaluation

By implementing these strategies, ROSCAs can better support asset generation initiatives within the community, promote economic empowerment, and contribute to sustainable development outcomes that benefit all members of the community.

LITERATURE REVIEW

Definition of ROSCA in a way that “ROSCA is a rotating credit scheme for pooling money whereby a specific number of people form a group and contribute a specified amount of money weekly, bi weekly, or monthly” (Addo, 2017; Ardener, 1964)

The study was drawn upon the conclusion of different authors stating about “positive impact between the Literacy Level of members who belong to a ROSCA and the growth of women owned Micro Small and Medium Enterprises” (Ruth Chepkemoi Serem & Dr. Ambrose Jagongo 2024)

Microfinance institutions cannot eradicate the problem of poverty thus ROSCAs are likely to improve the participants’ welfare in local communities, each individual well-being may be contingent to their pattern consumption expenditures. (Francois I. Kabuya, 2015)

It is internationally supported and proven by the World Bank 1999 that “the social capital is important to poor households. ROSCA is one of the community support mechanisms in Vietnam helping fragile households cope with certain crises through the network of informal and formal relationships”

People those who feel the credit process is cumbersome, they prefer non banking methods like ROSCA, Its a regulatory, sociocultural and cognitive aspects facilitate low-income, unbanked consumers’ utilization of informal financial services owing to their approachability by, suitability for, and fairness to such consumers. (Sohail Kamran, Outi Uusitalo, 2024)

ROSCA membership increases household asset, consumption, energy efficiency and school expenditure, but only in rural areas (Maitra, Miller, Sedai 2023)

Heterogeneity in the ROSCA group may effect the results of ROSCA. A ROSCA administer has to carefully select the sizes of the Borrower and Saver groups (Krishnan, Mahambare, Sanjoy 2024)

Literature is found on saving pattern of workers. It is found that when the worker is having good social network then on tends to save more using ROSCA. (Riyu & Suzuki 2020)

Inadequate disposable income may create bubble of disparity while choosing member for ROSCA.

Rich households having high disposable income tend to save more informally than using banking facilities as they have great social sanctions.

Varadharajan states an "upward sloping relation between RSCA and Income".

One of the benefits of group lending is that it increases the "effective literacy" of the group. Essentially, it gives a number of less educated individuals the benefits of sharing the educational skill of the few in the group. (Kumar Aniket 2005)

RESEARCH METHODOLOGY

This study examines the effect of participating in ROSCA over social status of households. For conducting this research we surveyed 200 members of around 20 ROSCAs. This research is based on purely primary data, collected using structured questionnaire

The questionnaire is designed in 3 section:

i. *Section 1:* Demographic Information of Respondent
ii. *Section 2:* Asset Generation Ability
iii. *Section 3:* Social Cohesion of ROSCA member

Sample Size and Area

200 ROSCA members of around 20 ROSCAs. The members are not Delhi NCR region.

Objectives of Study

1. If there is any effect of RoSCA's participation on
   i. Asset generation
   ii. Social cohesion
2. Identify the factors that influence the household in asset generation using ROSCA.

DATA ANALYSIS

Ability to Save after Participating in ROSCA

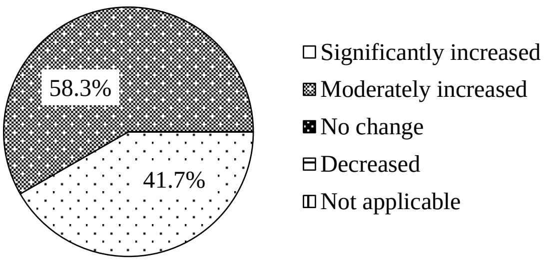

Figure 1.

Assets Generated Using ROSCA

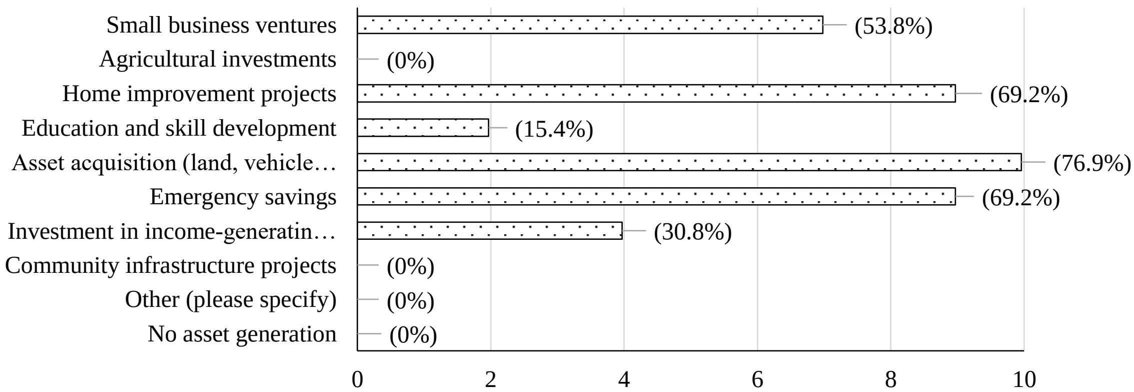

Figure 2.

Interpretation: 69% respondents have spent the ROSCA amount on home improvement project, 76% on asset acquisition, 69% emergency savings. 15% on education and 53% on small business ventures.

Challenges in Generating Assets through ROSCA

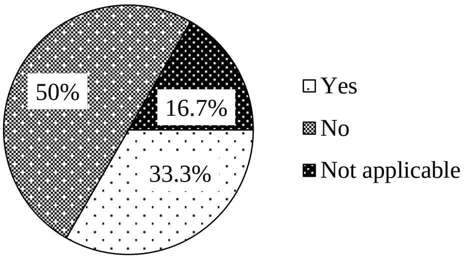

Figure 3.

Interpretation: 30% of the respondents experienced challenges while generating asset and 50% of the respondents didn't faced any challenge.

Prioritizing Asset Generation as a Overall Financial Goal

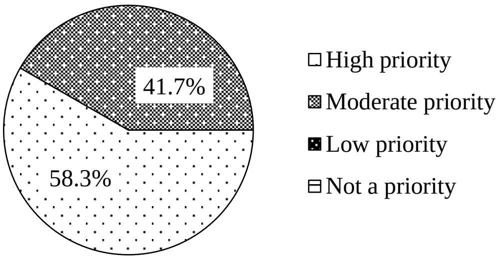

Figure 4.

Interpretation: 58.3% respondents give high priority to asset generation as a overall financial goal.

ROSCA Contribution to Financial Stability

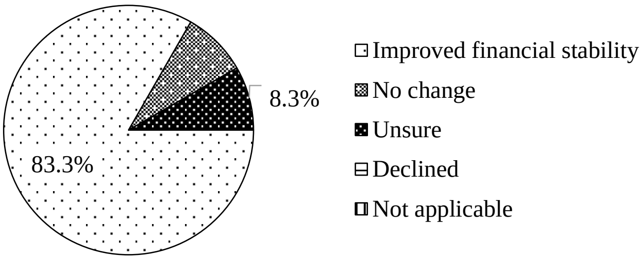

Figure 5.

Interpretation: 83.3% of ROSCA members feel that their financial stability has increased after contributing to ROSCA.

Ways in which ROSCA can Support Asset Generation Initiatives Withing Community

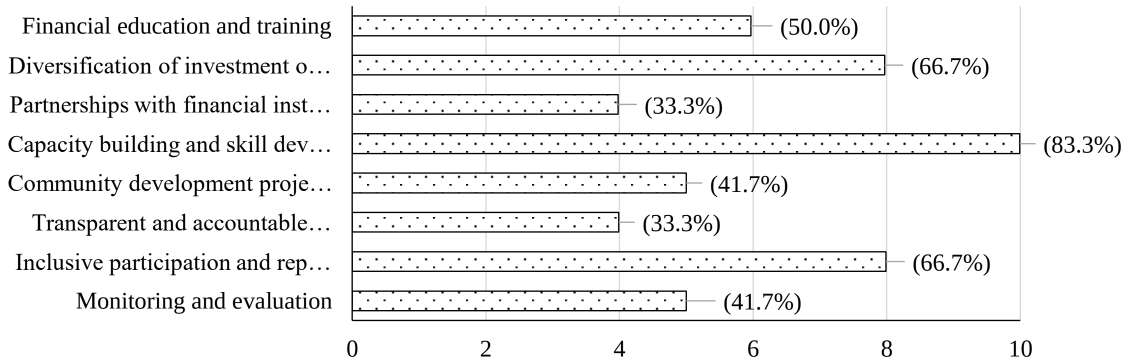

Figure 6.

Interpretation: 83.3% out of total respondents say that capacity building and skill development initiatives can majorly support asset generation within community. 66.7% out of total respondents feel Diversification of Investment option and Inclusive participation and Representation can support asset generation within community.

Contribution to Financial Stability

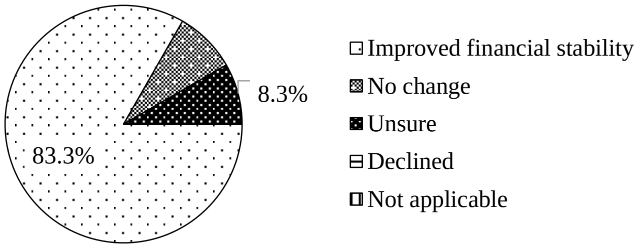

Figure 7.

Interpretation: 83.3% Respondent's financial stability has been improved after contributing to ROSCA.

Access to Credit when Needed

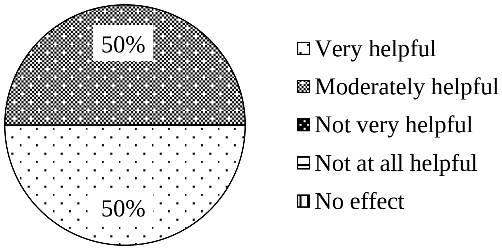

Figure 8.

Interpretation: 50% respondents found ROSCA is very helpful in accessing credit and 50% found it moderately helpful in accessing credit.

Conflicts and Disputes within ROSCA

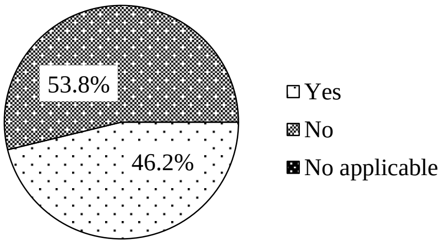

Figure 9.

Interpretation: 53.8% responds that there are no conflicts withing ROSCA. And 46.2% reponds that there are conflicts.

Social Relationship withing Community using ROSCA

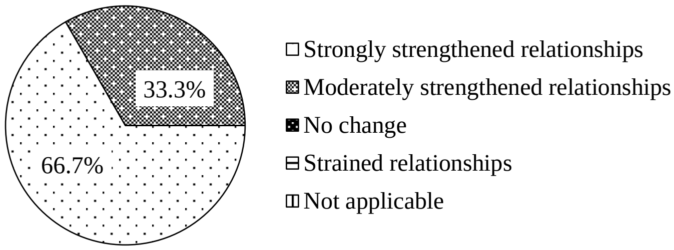

Figure 10.

Interpretation: 66.7% respondents found their relation to be strongly strengthened after participating in ROSCA. 33.3% found a moderate strengthening in their community relations.

Social Cohesion

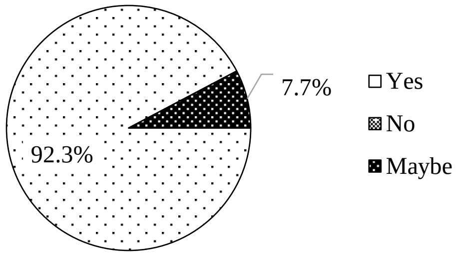

Figure 11.

Interpretation: 92% respondents were found socially cohesive after participating in ROSCA.

FINDINGS AND CONCLUSION

Saving, investing and expenditure pattern of a household determines its social status. ROSCA is found to be a platform where households come together and put their share of fund and one member get the pooled amount at each meeting usually on monthly basis. These members create an informal lending, Self help group and work in cooperative manner creating a harmonious environment.

On the basis of the study which is conducted on 200 ROSCA members it is found that by participating in a ROSCA, the ability of saving and generating assets has been increased significantly. Household spend the pooled amount on home improvement project, asset acquisition like land, vehicle etc and for emergency savings. *Secondly* after research it is found that ROSCA is proved significantly helpful in accessing credit. *Thirdly,* ROSCA research provides a evident result of social interaction by responding over the conflicts and disputes whereas repondents have become sensitive and cohesive towards society as well. Member of ROSCA feels onself a part of community thus creates Human capital along with easy credit access and sense of Solidarity. *Fourthly* determinants like capacity building and skill development and diversification of investment options by ROSCA could better support asset generation initiatives.

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