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Dr. Michael Williams, Editor-in-Chief
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Editorial Note

The global conference on emerging technologies, business, sustainable innovative business practices and social well-being was organized by Confab 360 Degree, Delhi, India on 10th and 11th December'2022. Many universities/ colleges from India and foreign countries have joined Confab 360 Degree as associate partner. The international colleges/universities participated are London Churchill College, United Kingdom; International Training Institute, Papua New Guinea; Wollo University, Ethiopia, and PT. LEO JejaringIlmu- Indonesia.

The Indian colleges/universities participated as associate partner were Shri Jairambhai Patel Institute of Business Management and Computer Applications, Gandhinagar, Gujarat; Guru Nanak Institute of Management, Delhi; Narayana Business School, Ahmedabad, Gujarat; ITM University, Raipur, Chhattisgarh; Mohan Babu University, School of Commerce and Management, Andhra Pradesh; Swami Vivekananda Institute of Science and Technology, Baruipur, Kolkata; Ajeenkya DY Patil School of Engineering, Maharashtra. There were more than 270 papers presented in this conference with a wide coverage of authors from India, Indonesia, USA, UK, Malaysia, Bangladesh, Czech Republic, Vietnam, and other foreign countries. Approximately 700 authors have presented their research papers from various management and engineering domain. Dr. Monika Arora, Professor, Amity University, Gurugram; Dr. Nishu Ayedee, National Forensic Science University, Rohini, Delhi; Dr. Asmat Ara Shaikh, Associate Professor, Lala Lajpat Rai Institute of Management, Mumbai were the conveners of this conference. Prof. Anuj Kumar was the editorial head for this conference. This was the first ever conference which run parallel on ten different locations in online/offline mode.

The theme of the conference was revolving around emerging technologies and sustainable and innovative business practices. It also talks about social well-being. We are living in the dynamic society and in this society, things are changing at rapid pace. The technological advancements are going one after another. Those technological advancements are leading business towards sustainability. The technology adoption in direct or indirect manner will improve the efficiency of business units. The technological innovations are also going on in different phases. Previously, we were seeing technology 2.0 but now the world is seeing technology 4.0 and technology 5.0 and it will go further. In this special issue, a total of sixteen papers published. These papers are matching up with the theme of emerging technologies and sustainable business practices. Most of the papers are talking about application of technologies especially social media and other components of technology 2.0. Few authors are also focusing on big data and artificial intelligence as important components of technology 4.0. Few papers are talking about application of technology in finance domain and others are talking about the same in marketing domain. One paper is discussing about effectiveness of social media influencers and other one is discussing about Fin Tech. All the facets of technology and management have been touched in this special issue.

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Impact of Big Data Analytical Tools on Talent Management in the Service-Based Industry: A Sustainable Move

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[Abstract] Big data analytical tools have been used widely in the service industry. This paper will study the impact of sustainable big data analytics tools in talent management and how these tools are helpful in the day-to-day activities of the talent management function of the organization. How companies retain good talent in the organization is the key to success. It happens with the right mix of many factors, like compensation benefits, bonuses, equal opportunity for growth, and involvement in decision-making, to name a few. Therefore, this study explores and analyzes the available literature on retaining talent in the organization and how big data analytical tools are helpful in this decision-making in the talent management domain. The instrument designed to measure this has 21 items on a 7-point Likert scale. The respondents are HR professionals working in the service-based industry. The responses were collected from 60 HR professionals in Pune city with the help of an online survey instrument (google forms). The study also considers the demographic traits and other BDA tools organizations use to maintain employee data. These BDA tools analyze the current data and can make predictions, which can help in decision-making. These technology and tools fall under the United Nations Sustainable Development Goal Number 9 -- Industry, Innovation and Infrastructure.

[Keywords] big data analytical tools, talent management, HR analytics, HR professionals, service-based industry

[Acknowledgement] This paper has been presented at the Global Conference organized by Confab 360 Degree, the title Global Conference on emerging technologies, business, sustainable, innovative business practices and social well-being held on 10th and 11th December 2022.

Introduction

Big Data refers to the software tools that can quickly analyze enormous volumes of data from various platforms. People-related data is utilized in human resource management to understand better the organization's human capital, workforce capacity, risk, and business performance. Business analytics applies the analytical process used to gather, store, and analyze data. Business analytics (BA) refers to the skills, tools, and methods used for continuous, iterative study and research of areas other than the performance of for-profit businesses to obtain knowledge and direct business strategy. Business success in an organization now heavily depends on the talent and creativity of HR.

The typical human resources and talent management department generate a sizable amount of daily data. Consequently, there is fierce competition among rival companies for HR skills. As a result of the employees' diverse requirements and objectives, HR managers need help to train and motivate them. Because of its clear link with corporate business and strategy, HR data must be big data. Big data for human resources enables more informed HR decision-making by improving corporate situational awareness and ensuring improved recruitment, retention, and training outcomes.

Information about hiring, career advancement, training, individual performance, organizational competency, and more. Data on employee absence.

HR departments are a veritable treasure of "people data" for businesses. In the future, data-driven operations and informed judgements will be the norm for intelligent companies and talent management specialists. Because of the size of big data, it is hard to employ traditional data analysis methods. Instead, data scientists use the right tools to extract valuable insights from the data. The growing emphasis on data-based performance excellence has made data science and data-driven decision-making crucial. Therefore, it is essential that a company deal with its strategic problems and build its customer market strategy on data. Data science approaches may be used to investigate patterns in data to validate suspicions held by the organization and to provide it with new information that could inspire it to respond to chances for competition differently. The stakeholders are then informed of the recent news, and data visualization tools are used to ensure that they know the results' nature and that the proper next steps are laid out. The digital devices that are a part of the Internet of Things - such as mobile phones, desktop and laptop computers, and wearable gadgets - generate, collect, and store a wide variety of data.

Literature Review

Business analytics, according to Wang, Gunasekaran, Ngai & Papadopoulos (2016) is the analysis of the abilities, technologies, applications, and processes used by various businesses to gain a better understanding of the data and statistics related to trade so that the organizations can run their operations accordingly. Using BA will provide HR managers with the ability to predict employee performance based on past data. Additionally, it will make it easier for HR managers to collect, review, evaluate, study, and comprehend data more thoroughly. After all, data is being utilized more to transform decision-making in other functional domains (Malthouse, Haenlein, Skiera, Wege, & Zhang, 2013; Payne & Frow, 2005.

Big data analytics offer a variety of sectors with evidence-based decision support solutions. To extract useful information and knowledge from data generated from a variety of sources to support decision-making; data-based decision-making necessitates the use of the proper principles, processes, and techniques during data collection, analysis, examination, and interpretation (Azhar, 2020; Yin, & Kaynak, 2015). The 5Vs, like volume, velocity, variety, variety, and value serve as a framework for extensive data analysis. Volume infers the quantity of data created from various sources, like digital devices, the internet, social media, mobile phones, etc. Velocity is the rate of real-time data flow and processing. Variety refers to many data sources and forms -- text, images, video, and sounds, including those recorded by wearable technology, all make up the data. Data's veracity is determined by its accuracy and conformance to the facts (Mandinach, 2012). The advantages and satisfaction gained through processing determine the value of data. Big data variability reflects the cyclical peaks connected to extremely erratic data flows (Lakshen, Vraneš, & Janev 2016). To find relationships and patterns in the data, data, visualization tools, like Tableau and Microsoft Power BI, are significantly used (Ishaq Azhar Mohammed, 2020).

To ensure that decisions are informed by information and knowledge, the leadership must foster a data-driven decision-making culture in the organization. The effectiveness of decision-making will depend on the amount and diversity of sources, the transfer, processing, and visualization technologies, the integrity of the data, and the organization's extensive analytical skills. Realizing the promise of big data analytics for decision-making and performance enhancement will require the capacity to build considerable solid data analytics skills (Herschel & Miori, 2017). Big data analytics includes data analysis into three categories: descriptive, predictive, and prescriptive (Bikakis, N., 2018). Summary statistics are used in descriptive analytics to offer information on current performance and how decision-making may be strengthened in

light of learned lessons. By analyzing previous performance to forecast future performance, predictive analytics are used, which use data mining and machine learning to give insights and information about forecasting. To give wisdom and knowledge on the evaluation of possibilities that can occur in the future and describe its course of action will enhance decision-making and performance; it is described as prescriptive analytics, which use simulation models and optimization approaches to increase performance (Chung, Ma, Hansen, & Choi, 2020). Organizations can attain sustained success by using different approaches to business analytics. All this defines the capability of the BDA tools. The link between managerial and technical big data analytic capabilities and operational, financial, and marketing success was explored in research of 209 organization leaders that utilize big data analytics for decision-making in India (Wamba, Gunasekaran, Akter, Ren, Dubey, & Childe, 2017). The study discovered that having access to big data analytics improves organizational effectiveness.

The Rationale of the Study

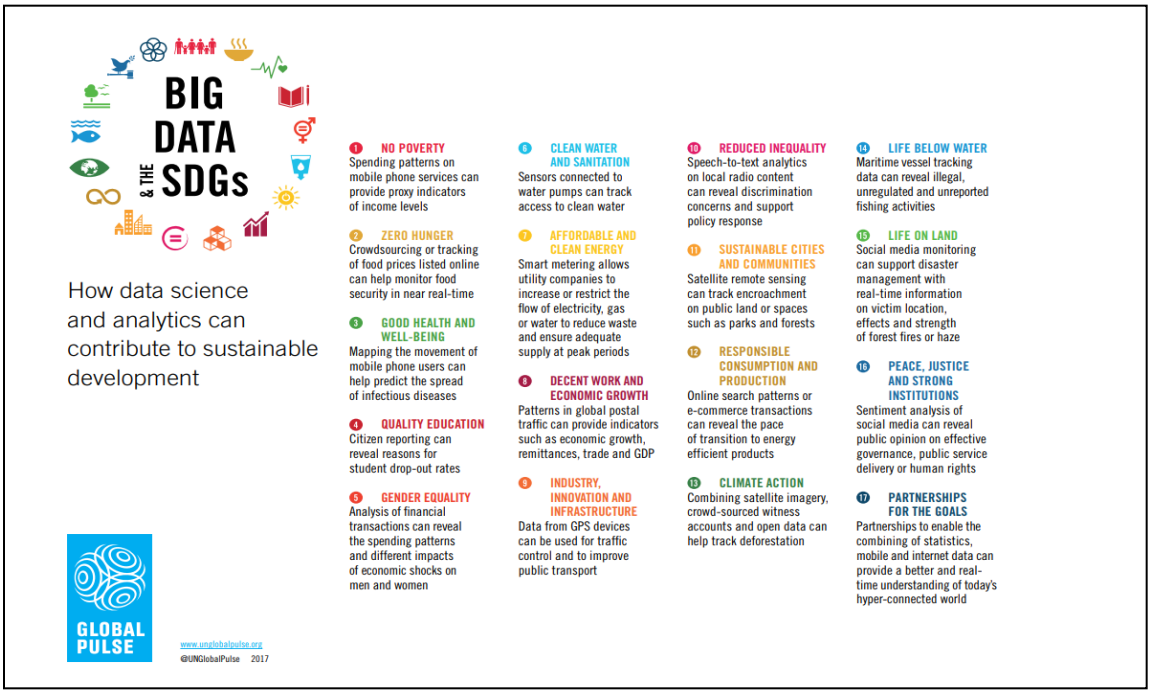
Nearly 70% of respondents to a poll by the International Public Management Association for Human Resources (IPMA-HR) claimed they track HR indicators. However, more than merely collecting all of this data is required; to achieve company objectives: it must be used. Big data analytical tools enable use of employee data in the organization-wide integrated data repository to drive more rigorous decision-making throughout the organization, so the organization can no longer wing it and act on impulse or gut feeling. The following are the main variables used: BDA tools, performance management, talent retention, and decision-making big data has far-reaching effects on a societal, business, and human levels, as claimed by Hacker and Petkova (2017). Big data generally alters how people operate, especially inside an economic institution. Managers of the human resource division may refocus their approach to enhance the working environment for their workers by using big data. The emphasis on big data and people integration shifts attention from operational responsibilities to the organization's more strategic management and its link with big data. Big data applications enable the automation of processes, freeing up the HR department to focus on more strategic responsibilities, like predicting employee attrition and keeping top talent.

$H_0$1: Big Data Analytical Tools do not help to make effective and improved decisions in the Talent Management area of the service-based industry.

$H_1$1: Big Data Analytical Tools helps to make an effective and improved decision in the Talent Management area of the service-based industry.

Figure 1.

Big Data & the SDGs (*Source - UNGlobalPulse)*



Research Methodology

The study conducted is quantitative and explorative. A total of 60 questionnaires were distributed; after scrutiny of missed and incomplete forms, 50 questionnaires were used, an 83 percent response rate. HR Professionals from different IT/ IT enabled service companies from Pune city are being considered for the study to reach the stated objectives. The researcher has used a structured questionnaire which contains 22 questions on a seven-point Likert scale. The preliminary part of the questionnaire measures the demographic characteristics of the HR professionals, such as gender, age, education qualification, work experience, income, firm size, and designation. The second part of the questionnaire measures the extent to which big data analytical tools are used for decision-making about talent management, like Advanced MS-Excel, Oracle HR Analytics, SPSS, Power BI, and Tableau. The last part of the instrument consists of questions to measure the various talent management functions. The scale consists of a 22-item measure of seven dimensions of talent management: recruitment improved training, enhanced employee motivation and engagement, increased retention, forecasting the future (in terms of demand and supply of talent), allocation of the right teams on the suitable projects at the right time, predicting employee performance even before an employee is hired, evaluating layoffs and promotions, minimizing the cost incurred by a bad hire, and helping plan targeted extra benefits to attract and retain talent. The seven-point Likert scale was established to measure talent management parameters. The internal reliability coefficient (Cronbach Alpha) was 0.894 and 0.875 for the "Big Data Analytical Tools" factor and "Talent Management Measures" factor, respectively.

Findings

After assessing the reliability analysis of both factors, descriptive statistics of demographic variables (Table 2) were conducted using the SPSS version 23. Table 3 presents intercorrelation ($r = 0.782$, $\rho = .000$) between the "Big Data Analytical Tools" factor and the "Talent Management Measures" factor. This reveals an important and positive association between big data analytical tools and Talent Management. Hence, our null hypothesis is rejected.

Table 1

Descriptive Statistics for Demographic Variables

Demographic Variables	N	Mean	Median	Mode	Standard Deviation
Gender	50	1.32	1.00	1	.467
Age	50	2.57	3.00	3	1.032
Highest qualifications	50	2.52	3.00	3	1.065
Work experience	50	2.86	3.00	3	1.171
Income	50	3.16	4.00	4	1.136
Type of sector	50	1.70	2.00	1	.731
Firm size	50	2.19	2.00	1	1.291
Designation of the respondent	50	2.24	2.00	2	1.063

Table 2

Model Summary

Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. The error of the Estimate**
1	.985a	.971	.970	.384
a. Predictors: (Constant), Question 9, Question 8, Question 7, Question 4, Question 1, Question 6				

Table 3

ANOVA

ANOVA						
Model		**Sum of Squares**	**Df**	**Mean Square**	**F**	**Sig.**
1	Regression	1177.688	6	196.281	1333.958	.000b
	Residual	35.756	243	.147		
	Total	1213.444	249			
a. Dependent Variable: Question 1						
b. Predictors: (Constant), Question 9, Question 8, Question 7, Question 1, Question 6						

Table 4

Study of Factors

	Mean	SD	Reliability (alpha)	No. of Items	Pearson Correlation
BDA Tools	3.56	0.708	0.894	22	r = .078*
Talent Management Function	3.21	0.824	0.875	21	P value = 0.00

**. Correlation is significant at the 0.01 level (2-tailed).*

Table 2 of the model shows that the R-value of 0.985 is near the range of +1, indicating a positive connection between the factors. In addition, it can be found from Table 1 that the value of R square, 0.971, presents the independent variable explaining the variation in the dependent variable by 97.1%. Further, Table 2 indicates the sig. is 0.00, below the optimum p-value that should be 0.05 (0.05>0.00). In this case, it can be interpreted that the null hypothesis is rejected. Based on the discussion of both tables, it can be stated that Big Data Analytical Tools help to make effective and improved decisions in the Talent Management area.

Conclusion

According to a recent analysis by the World Economic Forum (2012), big data is a new type of economic asset. This viewpoint is crucial because it clarifies the potential for leaders who can figure out how to utilize that resource. As with any managerial tool, our analytical strategy can be used effectively or ineffectively. The key to completing it well is carefully linking the assessment's main objective with the job's requirements. The endeavor will be rapidly thwarted if attention is paid to employee traits that are genuinely unrelated to performance. So, understanding the factors that influence performance honestly and thoroughly is necessary. Decisions concerning talent management are not only tricky but might also be expensive if not handled correctly. When organizations invest in bad hires or harmful programs, the teams developed are bound to fail, and their talent management efforts are gone in vain. Organizational performance also indeed deteriorates under such circumstances. However, leaders may make better personnel management decisions by implementing and utilizing a data-driven talent evaluation system (TAS). Admittedly, data is increasingly being utilized to transform decision-making across the board. From the prospect of using big data for talent management, the most crucial aspect of implementing it is the deliberate linking of the work needs with the assessment's objectives. The impediments to proper talent management could only be identified and addressed with the knowledge that data provided; in each case, this resulted in excellent organizational outcomes (Grissom et al., 2017).

Research Scope and Limitation

Since the scope of the study is limited to the service-based industry, the study's findings apply only to these industries and cannot be generalized to other sectors. It's a descriptive study with a closed-ended questionnaire; hence, the potential to capture unique insight is limited. The research only focused on IT and the IT-enabled service companies, but future research should consider the effectiveness of BDA tools in other industries. The researcher only studied the correlation between the talent management factors and the effectiveness of BDA tools in decision-making and only considered the talent management areas. This research can be further enhanced and should study the impact of BDA tools in the other areas of HR and operations management.

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A Study on Significance of Convenience in Online Grocery Purchases: A Sustainable Approach

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[Abstract] Online grocery shopping is in the country's embryonic stage. The number of clients who are inclined towards web-based shopping for groceries is minuscule in number. Of late, there have been several organizations that have forayed into the online grocery business. Some online grocery companies also needed help to sustain their business. Many of them cleared out from the industry. The reasons were many, from requiring the option to sort out conveyance models to the unendurable expenses related to the interaction. This research paper deals with convenience as a factor and tries to judge its impact on online grocery shopping. Research methodology discusses the methodology adopted for constructing measures and collecting and analyzing the data. The research design used in this study is exploratory. The sampling method used to select the sample is done by convenience sampling. The Chi-Square test has been used for Inferential analysis to conclude.

[Keywords] online grocery shopping, e-grocery, online shopping, convenience, sustainability

Introduction

Online businesses/e-services have impacted us in many ways. Purchasing habits have shifted from retail stores to online purchasing. Lucrative offers and diversified product/segment have influenced purchasing decisions. The upward spiral of the online industry seems prominent, and online grocers have succeeded in leaving a footprint in an upward market. Online grocers have penetrated deep within the online segment and have managed to become a billion-dollar industry in a short span.

The sector has managed to become a must for households. The industry has hugely impacted consumer-intake behavior. The niche being daily consumable-related has helped it grow at multiple phases. The wait time, delivery service, and any bottleneck resulting from operational costs and glitches have influenced consumer behavior for this segment. The sector has few redundancies because of the sudden spike in orders; online grocery companies are looking over all these. Several methods are used to simplify and sort the problems faced by the customers to have smooth transaction/ transparency and recurring transparency business.

Literature Review

According to Gabriela Hanus, 2016**,** the market will see a significant shift in customers' roles in the industry. The fastest-growing and most dynamic type of trade is e-commerce. Consumer behavior refers to the process that comprises the pre-consumption, consumption, and post-consumption stages, as well as contacts with nonprofit organizations and governmental entities. Customers are essential to choosing, acquiring, and utilizing products, services, and experiences. Now, consumers can buy and sell almost everything on the internet. The convenience of buying products online has led to the significantly increasing popularity of online grocery shopping. Along with the advantages of saving time in online grocery shopping, it comes with some risks, like incorrectly evaluating some products because of inadequate representation on the website.

The study of Dr. Amit Kumar Singh and Malswami Sailo, 2013**,** examines the perception and behavior of online customers. It shows how the internet has developed into a global perspective by changing the way of consumer stores. Buying products and services from the internet shop is business-to-customer online shopping. In the 21st century, online shopping is the most accessible and efficient. Since selling online has more subjects than the benefits it currently proposes, companies want to decrease the risks associated with customers. Buyers are at great risk of fraud until the quality of products sold online and service dealings are uniform.

Online commercial dealings between companies and customers for a variety of goods and services have grown. This study focuses on how online grocery shopping is perceived and accepted in Australia. It suggests that potential adopters are more likely to see other people doing online grocery and get a favorable opinion of doing the same. Additionally, it was discovered that OGS's exposure was a significant obstacle to the community's adoption of the system. The Technology Acceptance Model (TAM), used in the study by Sherah Kurnia and Ai-Wen Jenny Chien, 20003, served as the theoretical underpinning for the conclusions drawn from the survey's empirical data collected in Australia.

According to Ellen Van Droogenbroeck and Leo Van Hove's research in 2017, the adoption of online grocery shopping is influenced by population-related factors. The study employs Motivation Adoption Ability (MOA) to examine how sociodemographic factors relate to and are recorded in consumer motivation. The researchers' analysis revealed that because age is connected with young children and the working conditions in the family, age captures a person's capacity to use technology and its usefulness to that person's household.

Kim Ramus and Niels Asger Nielsen's research in 2005 focuses on the variety of attitudes people have toward online grocery shopping. The researchers created the focused group interview guide using the TPB framework. Consumers perceived online grocery shopping as having advantages over traditional supermarket shopping in terms of price and convenience. Some of the drawbacks identified by the study were the potential for obtaining subpar food and the loss of the enjoyable element of grocery shopping.

The paper of Radka Baueroval and Martin Klepek, 2018, explains the technology acceptance and behavior of the consumer concerning online grocery shopping. The research suggested that the marketer should focus primarily on raising awareness about online grocery shopping and improving the service to generate the appropriate value. The study's results can be utilized mainly in service management, marketing communications, and customer relationship management.

Sonal Kureshi and Sujo Thomas's 2019 research ascertains what local grocery store owners think about online grocery retailing. The study discusses the fundamental ideas of the neighborhood merchants who were significant figures in the food retailing industry. It supplied knowledge on local grocery merchants and looked at the variables driving local grocers to adopt online grocery retailing. It guided how to work with and make the neighborhood grocery stores for everyone's gain.

With the potential to expand healthier options through nutrition labelling initiatives, online groceries may be a two-edged sword. Due to factors like customers' fear to buy products online, it also has the potential to increase the number of unhealthy choices. The Stephanie Pitts et al. study 2018 analyzes the present situation of online grocery shopping to identify its benefits and drawbacks. The experts advise more studies to encourage people to switch to online grocery shopping for healthier options.

Moeller et al. (2012**)** discussed the possibilities of a new time-based parcel delivery service in their study article. Convenience is a critical factor in every relationship between a service provider and a client. According to the investigation, a time-based delivery service's perceived attractiveness is positively

correlated with availability to receive deliveries and professional vocation. The study's secondary primary goal was to analyze the income potential of a time-based delivery service as a convenience-improving service. As these locations reflect the various societal living area arrangements, a survey of 315 people was conducted in Germany's rural, suburban, and urban areas. The results show that the two categories, which comprise more than 70% of the primary population segment, may be served by services offered at comparable prices. The customer segment that finds the service unappealing is very tiny, remarkably price sensitive, and would only use the service if it were provided at an extremely cheap cost.

Through their research, Huang and Opewell (2006) discovered how several situational aspects affect customers' propensity to purchase their groceries in-store or online. Grocery shopping is considered to be a very stressful and tedious activity. People prefer to avoid grocery shopping, which is considered a chore. So, it is surprising that people have not lapped up the idea of online grocery shopping, even though it provides many conveniences.

The research, which included four situational criteria (goal of the trip, time available for shopping, delivery fee, and journey time to a physical store), was performed among 152 respondents from southern England. They impact consumer preferences regarding prices, risk, convenience, and enjoyment.

The second factor in ascending order was shopping time. Travel time to a physical store influenced the purchase propensity of the four factors studied. Despite having a high level of internet connection at home (60%) and being familiar with at least some kind of online shopping (63.2%), it was discovered that only a tiny portion of the sample (22.4%) had ever done their food shopping online. The most negligible impact, the Delivery Charge, was nonetheless shown to be considerable.

Objectives

- To determine whether convenience is an essential unique selling proposition for online grocery shopping
- To evaluate whether convenience as a factor influences purchase behavior for online grocery
- To determine whether service plays an essential part in online grocery purchase

Hypothesis

Null Hypothesis ($H1_0$): Convenience is not highly significant in online grocery shopping.

Alternative Hypothesis ($H1_A$): Convenience is highly significant in online grocery shopping.

Convenience – The Only Way Ahead

For an online grocery service, convenience is one of the most critical factors for survival. The business is still in the nascent stage, and most people purchase groceries due to the convenience factor. In metro cities, where several households and married partners work, online grocery delivery provides a big relief from errands to the market and pick up at a grocery. Many companies, like BigBasket.com, grofers.com, JioMart.com, and SuprDaily.com are already thriving in this business.

The expansion in stress related to the balance between work-life activities has changed the bundled products industry. One of the ways of facilitating rushed ways of life-on-the-go products and online shopping for food could answer for the simplicity of focusing on furious ways of life. As a general rule, Twofold pays families to get remarkably less opportunity for a unique collaboration. Individuals who choose not to buy groceries offline would keep away from them happily. Along these lines, buying groceries

online not just saves time that can be enjoyed with families, but also provides for recreational activities as a result of time-saving., In metro cities, wherein the normal travel time to work has expanded due to infrastructural limitations, requesting groceries on the web will, without a doubt, save money and time, along with the stress associated with it.

Delivery

One of the most prominent factors associated with convenience is delivering products on time. This is one of the main reasons for customers opting for groceries through the online mode. The business model for the delivery of groceries varies as per the company. The products are checked for in the warehouse and affiliated stores. Product delivery is given top priority, and the emphasis is to deliver it within the stipulated time.

Due to the high complexity of the process structure and demand and supply bottlenecks, there are disruptions in the process, which lead to delivery issues in a few instances.

One of the significant put-offs for a customer is the non-delivery of items. The undelivered items can be the entire order or some of the things. Due to various complexity and supply chain issues, there are times when products cannot be delivered after an order has been placed. This occurs because of a lack of availability of the product or glitches in the system. During this time, the money is refunded if it is paid online. The funds can also be refunded to the grocery account in the form of credit, and these credits can be used against future orders. However, companies should understand that even if the money is refunded, the customer must go through a repetitive process of ordering once again, which may be very inconvenient and stressful.

Another factor that is one of the big put-offs for the customer is the untimely delivery of products. Due to huge demand and supply and operational look-out, companies tend to have untimely delivery, which seems challenging for most customers. This can be bifurcated into two parts.

Scenario A: Delivery is much sooner than expected. Customers being busy with chores and unaware of the delivery's having arrived is a bottleneck of online grocery. Sudden calls or mail regarding the product being delivered sooner than the stipulated timeline, a few hours before the expected delivery time, is a challenge.

Scenario B: Delivery is later than expected. In this scenario, the customers who are expecting their delivery at a prior time get upset due to non-delivery. The delivery may also occur when the customer is not at his residence. Also, in such cases, if the customer is unable to take the product delivery, additional logistics costs incur for the customers. To avoid such a scenario, companies should always get in touch with the customers before the delivery of products.

Unclear Information

Unclear information on the website ranges from price, delivery slots, modes of payments, cashback, etc. Often, this can also be due to technical glitches. It may also be due to the incorrect information provided by the online retailer, which results in the pricing of products being skewed in many instances. In such cases, companies cancel the order and give coupons or credit to compensate for inaccurate information displayed on the company's website. This credit is available for use against transactions on the website/app of the company.

Research Methodology

To address the many aspects of the investigation, a descriptive cross-sectional research design was used. The study measures customer purchasing patterns for online grocery shopping while accounting for

associated factors and convenience. Using the proper statistical methods, the data gathered from the clients and their reactions were examined.

Convenience Sampling. This technique seeks an information-ready sample of convenient items. The following were used to identify the sampling components or clients:

- First, by using established sources.
- Second, the information would be gathered from the clients based on ease and accessibility. One hundred twenty respondents were taken as an adequate sample size for this study.

Types of Questions. Nominal and ordinal scales can be used when the data is in a category having both dichotomous and multiple questions. Likert rating scales [1-5] have been used to determine the attitude of the respondents on a series of statements indicating their agreement and disagreement in response to the convenience factor of online grocery. The internal consistency of the research variables has been evaluated by Cronbach Alpha (α). Cronbach Alpha (α) is a model of reliability analysis.

Data Analysis & Interpretation

Table 1

Profile of the Respondents

		Frequency	Percent
Valid	Male	54	45.0
	Female	66	55.0
	Total	120	100.0

Table 1 shows the profile of the respondents; 66% of respondents were females and 54% were males

Table 2

Age of the respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<18	1	.8	.8	.8
	18-30	91	75.8	75.8	76.7
	31-45	24	20.0	20.0	96.7
	45-60	4	3.3	3.3	100.0
	Total	120	100.0	100.0	

Table 2 shows the age of the respondents. Around 75% of the respondents fall into the category of 18-30 years, followed by 31-45 years old, which is 20% in the number.

Table 3

Academic Degree

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Up to SSC	6	5.0	5.0	5.0
	Graduate	67	55.8	55.8	60.8
	Post Graduate	34	28.3	28.3	89.2
	Professionals	11	9.2	9.2	98.3
	Others	2	1.7	1.7	100.0
	Total	120	100.0	100.0	

From Table 3, it can be observed that around 85% of the respondents (cumulative) were graduates and post-graduates.

Table 4

Frequency of Purchase

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Once a week	23	19.2	19.2	19.2
	Once a fortnight	16	13.3	13.3	32.5
	Once a month	48	40.0	40.0	72.5
	Quarterly	33	27.5	27.5	100.0
	Total	120	100.0	100.0	

Table 4 shows that 40% of respondents prefer to buy online groceries once a month. This is followed by 27.5% of respondents who purchase grocery through online mode once a quarter.

Table 5

Cronback Alfa Test for the Variables in the Convenience Factor

Convenience	Cronbach's Alpha
Online grocery shopping is convenient	.894
Prompt service with undamaged products plays an important role in online grocery shopping	.887
Delivery employees should be dressed neatly	.901
Home delivery is an important component of online grocery shopping	.874
The client anticipates that products should be delivered on the day they picked	.871
The client anticipates that products should be delivered during the time chosen	.899
Time savings happens in online grocery purchase	.883

Cronbach's Alpha	N of Items
.903	6

Inference: From the above table, it can be inferred that all the variables have the value of Cronbach's Alpha 0.8 and above. It shows that they are highly consistent for the study. The variables in the above table are related to the convenience factor in online grocery purchases, and they are found to be compatible with the study.

Table 6

Chi-Square Analysis for the Significance of Convenience in Online Grocery Shopping

Description	Chi-Square Value	Level of significance
Convenience is an important factor in Online Grocery	80.310	.000
Products delivered should be in an undamaged condition	74.917	.000
Delivery representatives ought to be dressed & groomed perfectly	72.382	.000
Home delivery is a significant part of online grocery shopping	73.583	.000
The client anticipates that products should be delivered on the day they picked	78.083	.000
The client anticipates that products should be delivered during the time chosen	73.917	.000
Time savings happens in online grocery purchase	81.333	.000

{Here df – degrees of freedom and sig – significance level (5%)}

Inference: The significance values of less than 5% for all the variables suggest that convenience is highly significant in online grocery shopping. The significance value of less than 5% reveals that the null hypothesis can be rejected. It can be inferred that convenience is highly significant in online grocery shopping. The highest Chi-Square value has been observed for "Time savings happens in online grocery purchase" at 81.333, followed by "Convenience is an important factor for online grocery" at 80.310.

Conclusion

E-grocery shopping is starting to become one of the massive growing industries in India. The industry, per se, is striving to be successful and reduce customer problems by focusing more on efficiency and customer handling. This paper has strategically analyzed the convenience factor, the unique selling proposition of online grocery business. For any industry to survive, being optimum and robust in operations is the key. Consumers save time and effort, as the products are delivered to their doorsteps, and convenience comes into the picture.

Customers face difficult circumstances, like delays in the scheduled delivery, non-availability of products due to unavoidable conditions, and risk of incorrectly valuing some products. The perishable nature of vegetables, eggs, and meat items adds another layer of uncertainty to handling these products. Despite these restrictions, India's e-grocery market has tons of potential. Further study must be conducted to find the best strategies for encouraging customers to use online grocery shopping for healthier options. While there are many different motivations for placing a digital grocery order, from planning a party to replenishing the pantry, one aspect of the process is constant: purchasing from any platform should be as simple as going to the store. Customers demand detailed filters, intuitive search options, and easy navigation regardless of where they place their orders. Nobody wants to struggle with a confusing user interface.

On Maslow's hierarchy of wants, convenience is the thin, invisible layer immediately above safety. Customers will always prefer convenience if given the option. Convenience had previously been a differentiation. Today, many anticipate it.

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Hey Siri! Examine the Consumer Awareness and Consumer Behavior toward Voice-based Artificial Intelligence

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[Abstract] Technological advancements, the rise in internet and smartphone usage, globalization, and digitalization (Mittal & Manocha, 2022) have encouraged humankind to undergo a rapid paradigm shift leading to altering consumer preferences and the ways consumers interact with brands. Voice assistants have left the server rooms and entered how lives of billions of consumers. Voice assistants, like Amazon's Alexa, Apple's Siri, and Google assistant, are embedded into smartphones, televisions, and cars or built-in as stand-alone speakers. Young consumers are relatively tech-savvy and find it very interesting to interact with new technologies. With a voice as the most comfortable medium for communication, understanding how voice-based artificial intelligence is reshaping consumer behavior is inevitable. The study explores the awareness levels and usage patterns of Indian consumers to understand consumer adoption of voice assistants in a promising economy like India's. Data was collected from 250 respondents from Delhi NCR to examine their awareness level and the key factors influencing the adoption of voice assistants. The data collected was interpreted and analyzed using SPSS software. The study is based on a limited geographical region. Thus, future studies can be carried out in other metropolitan regions or a comparative study between rural and urban areas. Also, longitudinal studies can help understand the change in consumer behavior over a while. The comprehensive and extant literature review underlined the limited presence of studies in this field, especially for Indian consumers. This study would contribute to the previous literature while providing direction for future research in this domain. Also, with voice undoubtedly the future, this study would provide valuable insights for marketers and product developers to cater to the needs of consumers and even earn a competitive advantage.

[Keywords] consumer awareness, consumer behavior, consumer adoption, voice assistants, voice-based artificial intelligence

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Introduction

Rapid technological advancements have transformed the consumption culture across all sectors worldwide. Consumers who want quick resolutions to their conflicts and enriched experiences have become modern and tech-savvy. COVID-19 has also encouraged exposure to new technologies, caused a transition from traditional settings to online settings (Barman, 2022; Shirmila & R, 2022) and made the virtual world quite common worldwide (Kaur & Kumar, 2022). Brands can gain a competitive advantage by providing enriched customer experiences aided by artificial intelligence and adopting modern technologies (Hasan et al., 2021; Jannah et al., 2022). Artificial Intelligence has seen unprecedented growth, with Voice-based Artificial Intelligence (Mittal & Manocha, 2022) stealing the show and rapidly adopted by millions of users worldwide (Guzman, 2019; McLean & Osei-Frimpong, 2019).

Voice assistants are conversational agents built into smartphones or speakers that can understand and interpret human voices, perform the required actions, and even respond via synthesized representatives to the users (Hoy, 2018). Voice-based artificial intelligence helps users to perform their daily chores, like making calls, listening to music, online shopping, setting up reminders, and other personalized tasks, more efficiently and quickly (Hoy, 2018).

As per the latest by Market Research Future, by 2030, the global voice assistant market will grow exponentially to above USD 30 billion (Market Research Future, 2021). Another report by Mobile Marketing Association and digital agency Isobar reported a growth rate of 270% per year in the Indian voice assistant market. This also helps catalyze commerce and purchases (Tewari, 2021).

Consumers rapidly adopt voice assistants and even brands worldwide (McLean & Osei-Frimpong, 2019), giving rise to a new interaction medium powered by voice; however, it is noticed that people use voice assistants primarily for basic tasks, like listening to music, asking questions, weather forecasts, setting timers/alarms, and controlling smart home devices (Ammari et al., 2019). They hesitate when performing transactional activities (Nasirian et al., 2017), like shopping, which involves sharing details regarding bank or other payment avenues.

Despite consumers becoming increasingly accustomed to using voice assistants worldwide (McLean et al., 2021), there is little understanding regarding the awareness and drivers of the adoption of voice assistants in developing nations like India. This study attempts to bridge this population gap by examining the awareness level and usage pattern of voice assistants by Indian consumers.

Literature Review

Artificial intelligence is of immense importance to brands, marketers, consumers, the government, and society at large. The growing interest of academicians and researchers in this field creates the need to study and analyze the existing literature. Also, voice assistants play a pivotal role in the daily lives of consumers trying to perform their daily activities smoothly and effortlessly. With the onset of technology advancements and the growing acceptance of voice assistants around the globe, it is necessary to examine the adoption and usage trends of voice assistants. It is crucial to measure the awareness levels and purpose of using voice assistants along with an understanding of key factors influencing consumers' adoption of these conversational agents. Though voice assistants have gained attention worldwide, it is essential to understand consumer awareness and behavior toward voice assistants in a promising economy like India's. Young generations have adopted an always-online mindset with the onset of smartphones, the internet, and other technological developments (McLean & Osei-Frimpong, 2019; Rauschnabel et al., 2018), leading to broader acceptance of voice assistants in devices like smartphones, smartwatches, smart televisions, cars, smart speakers, laptops/computers, and washing machines, etc.

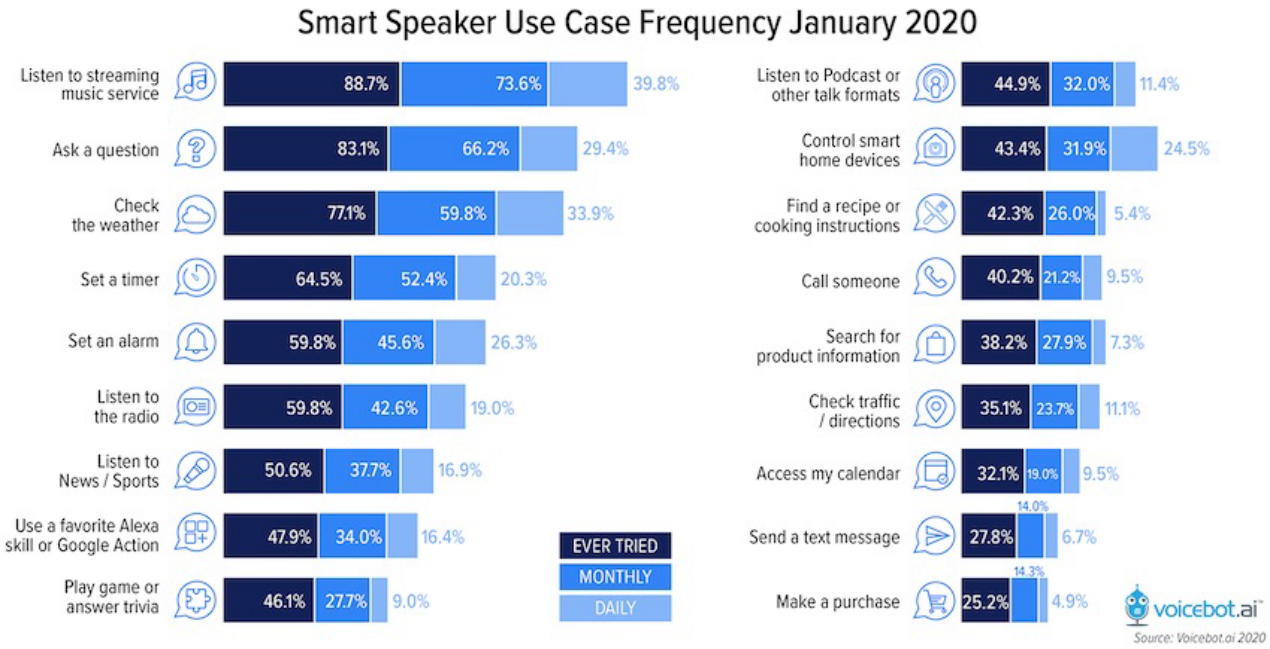
Voice Assistants

Voice assistants are digital conversational agents that use voice recognition and natural language processing to understand human voice to carry out the required tasks and provide a response to the users (Hoy, 2018; Subhash et al., 2020). Voice assistants are usually marketed for their human-like behaviour (McLean & Osei-Frimpong, 2019) and their crucial feature to engage in conversations with humans and provide a touchless hands-free experience to its users (McLean & Osei-Frimpong, 2019; Vassallo et al., 2010). Voice Assistants are integrated into smartphones, computers, laptops, television, high-tech cars, and smart speakers (Hoy, 2018), providing entertainment while allowing users to multi-task simultaneously (Mittal & Manocha, 2022).

Voice-based artificial intelligence is reshaping the consumer's interact with brands, search information, carry out daily tasks, control their smart homes, and make purchases (McLean & Osei-Frimpong, 2019). Some of the popular voice assistants in India are Amazon's Alexa, Apple's Siri, Microsoft's Cortana, and Google's Assistant (Ammari et al., 2019; McLean & Osei-Frimpong, 2019). They are always on-listening mode and react to wake words like "Hey Siri," "Okay Google," and "Alexa" (Hoy, 2018; Tabassum et al., 2019) to perform a variety of functions like making calls, playing music, setting alarms/reminders, and performing transactional activities etc. With advancements in artificial intelligence, speech recognition, and natural language processing, voice assistants can serve numerous functions. Their capabilities can also be enhanced by downloading skills from their applications. Besides voice, these applications provide users with another medium to communicate and carry out various tasks through voice assistants.

Figure 1

Smart Speaker Use Case Frequency (Image Source: Voicebot.ai)



Objectives

The study aims to explore the awareness levels and usage patterns of the Indian consumers to understand consumer adoption of voice assistants. The key objective of this study to examine the awareness of voice assistants like Alexa, Siri, and Google Assistant among the consumers and understand the reasons for consumers minimal use of voice-based artificial intelligence especially for transactional purposes.

1. To measure the awareness and source of awareness of voice assistants by the Indian consumers.
2. To examine the purpose of using voice assistants.
3. To understand the reasons of resistance of using voice assistants.

Research Methodology

This study is cross-sectional and conclusive in nature, and the data was collected using snowball sampling technique from respondents from Delhi NCR. The sample taken for this study is 250 respondents. The

questionnaire was pre-tested and refined as per the expert opinions to ensure validity of the instrument. The questionnaire included questions regarding awareness, source of awareness, purpose of using voice assistants, and even the reasons for resisting voice assistants by the non-users. Further data was analyzed using SPSS software through percentage analysis.

Results and Findings

Data was collected from 250 respondents. The collected data was refined and analyzed using Excel and SPSS software. The study of descriptive analysis of demographic and socio-economic factors of the respondents showed that most of the respondents of this study fall under the category of age group 21-30 years, which comprises of 56.4% of the total respondents. There are 75 respondents from the age group 30-60 years, and a very few respondents belong to the age group "Above 60 years." With the onset of COVID-19, the use of and exposure to new technology systems are very common and necessary to apply the changes in the education industry. Students'attitudes towards information and communication technology (ICT) can affect emotional intelligence concerning their emotional and mental state of effort.

1.	Age-Group	Below 20 years 21-30 years 31-40 years 41-60 years Above 60 years	27 141 40 35 7	10.8 56.4 16 14 2.8
2.	Gender	Male Female	135 115	54 46
3.	Qualifications	Below Senior Secondary Education Higher Secondary Education Under Graduation Post-Graduation Others	12 15 61 145 17	4.8 6 24.4 58 6.8
4.	Family Income	Below 5 Lakh per Annum 5-10 Lakh per Annum 10-15 Lakh per Annum Above 15 Lakh per Annum	34 71 66 79	13.6 28.4 26.4 13.6
5.	Occupation	Student Business Working Professional Home Maker Others	57 46 123 21 3	22.8 18.4 49.2 8.4 1.2

Chart 1

Age Group of the Respondents

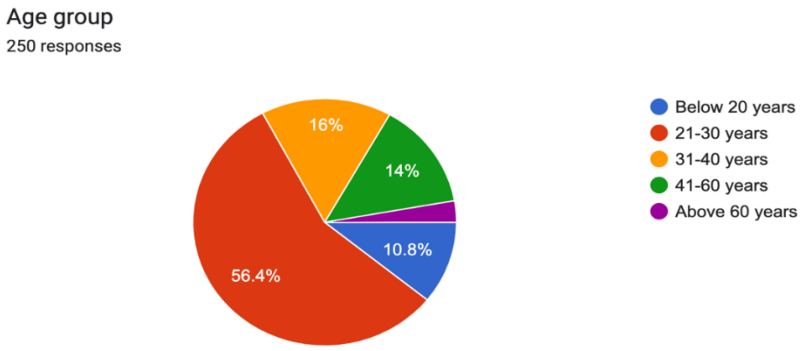
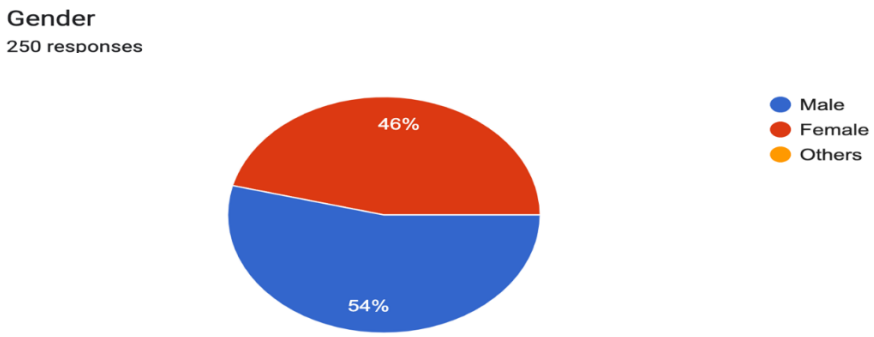


Chart 2

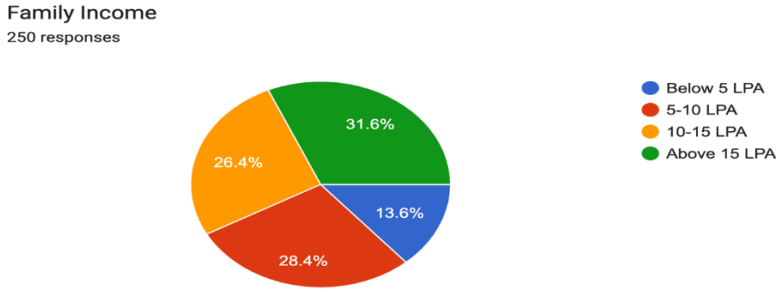
Gender of the Respondents



Further, it was found that it is mostly used by middle and high income groups in relation to people having lower income. This can be due to lower purchasing power to buy smartphones, smart speakers, and internet facilities. Though India is a developing at a high pace, certain segments of the population still lack development at that rate.

Chart 3

Family Annual Income of the Respondents

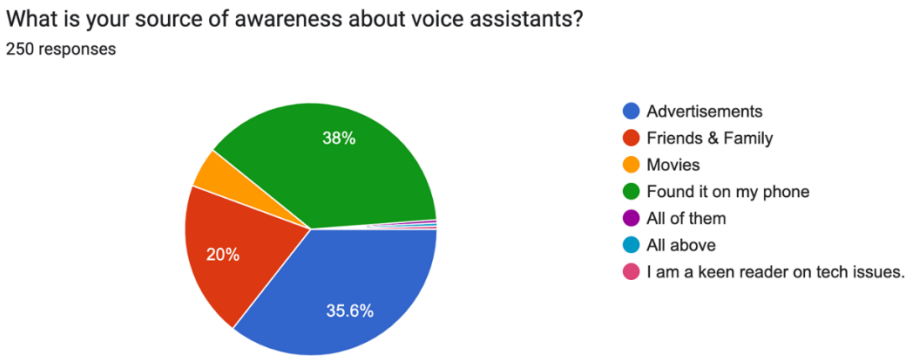


Discussion and Conclusion

An attempt was made to measure the awareness levels and source of awareness for voice-based artificial intelligence of the respondents. It was found that 95.6% respondents were aware of the voice assistants. It can be concluded that the majority of the population are aware of the voice assistants. However, still there is a need for marketers to take measures to raise awareness for actual adoption of voice assistants by the masses.

Chart 4

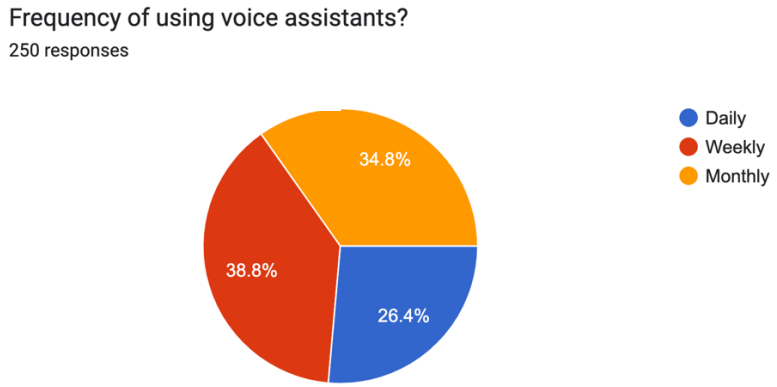
Awareness Level for Voice Assistants



It was found that most people know about voice assistants as a feature on their smartphones. Nowadays, smartphone companies provide built-in voice assistants, like Siri, Alexa, Google Assistant, and Bixby. When consumers purchase and use smartphones, they usually explore the features and get to know about voice functions. Thus, the rise in smartphone adoption will positively influence the adoption of voice assistants. Also, others learned about voice assistants through advertisements and their social circles, like friends and family. Marketers and product developers should adopt comprehensive promotional strategies to let people understand the importance of voice-based artificial intelligence. When consumers understand the benefits of using voice assistants in their daily lives, they can adopt them easily. Marketers should take proper managerial strategies for positioning the use of voice assistants in consumers' minds.

Chart 5

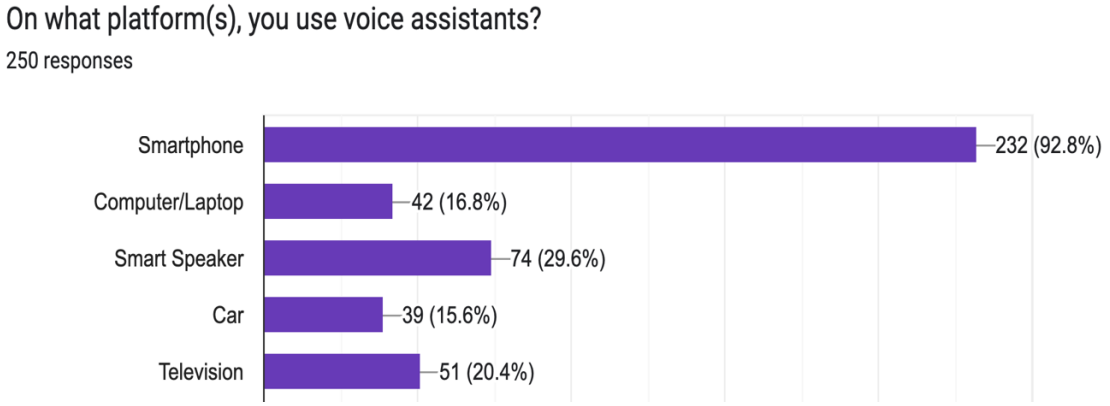
Source of Awareness for Voice Assistants



Also, it was found that approximately 1/4th of the sample uses voice assistants daily. It can be understood that though people use voice assistants, they mostly use voice assistants weekly or monthly. People use voice assistants mostly on their smartphones, which can relate to their awareness source as "Found it on my phone." It was found that 92.8% prefer to use voice assistants on their smartphones, followed by approximately 30% on smart speakers, and 20% on television. Other platforms where voice assistants are used are computers, laptops, and cars. Thus, in addition to the telecommunication industry, voice assistants provide an essential opportunity for innovations and a competitive edge to other sectors like automobiles, education, health, and FMCG.

Chart 6

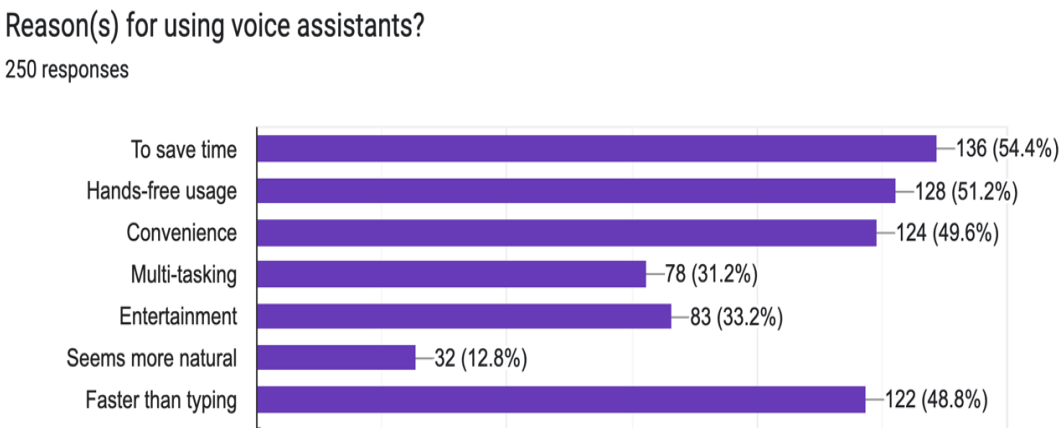
Platforms where Voice Assistant is Used



Researchers also explore the reasons for using and resisting voice assistants among Indian consumers. It was found that most users adopt voice assistants due to their features like convenience and hands-free usage. Voice assistants also help to save time and seem more natural as far as voice is concerned. Humans relate to voice more than typing or any other medium. Voice assistants serve as a source of entertainment and encourage multitasking. In this study, almost half of the respondents use voice assistants, as they help to save time, provide hands-free usage, are faster than typing, and add to the convenience. The study highlighted that only 12.8% of respondents agree that voice assistants seem more natural. Thus, product developers should work on this, and specific innovations to make voice assistants' interactions more human-like can promote the adoption of voice assistants. They can add local slang and more local, regional languages for consumers to relate to this disruptive technology.

Chart 7

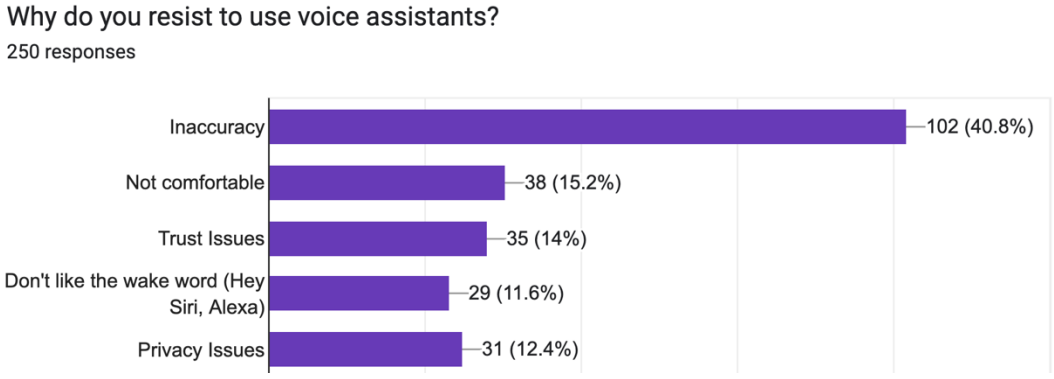
Reasons for Using Voice Assistants



Along with reasons for using voice assistants, respondents were asked about their motivations for resisting using them. It was found that most people resist adopting voice assistants due to inaccuracy. Others think it is uncomfortable and doesn't like the wake word, like Hey Siri and Alexa. Users also have trust and privacy issues.

Chart 8

Reasons to Resist Use of Voice Assistants



This highlights a significant gap in the adoption phase. Users will never perform a transactional activity using any medium if they have trust and privacy issues; this will hinder voice commerce operations. Managerial actions are required to ensure proper security and authentication to create confidence in the consumers' minds and reduce privacy issues. Also, product developers should work on technical algorithms to minimize inaccuracies and ensure smooth, precise interactions.

Limitations and Future Direction

This study provides some interesting and valuable insights into this research field; several limitations can be bridged through further studies. First, the study concludes the analysis of data collected from the

respondents from Delhi NCR. Thus, this study is based on a limited geographical region. Therefore, future studies can be carried out in other metropolitan regions or a comparative study between rural and urban areas. Second, this study discusses the key drivers of consumers' adoption of voice assistants. However, empirical investigation is limited to the awareness level, usage pattern, purpose, and reason(s) for using and resisting voice assistants. It doesn't empirically examine the factors influencing the adoption of voice assistants. Future studies may collect empirical evidence to shed light on this research area. Third, this study considers all voice assistants and doesn't focus on a single brand. Future researchers may investigate consumer perceptions and consumer behavior towards a single brand delivering voice assistants, like Amazon, Google, and Apple. Also, this study is cross-sectional. Longitudinal studies in the future can help to understand the change(s) in consumer behavior over some time.

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Assessing the Impact of Present Internet-based Digital Marketing on Both Consumers and Businesses

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[Abstract] At a time when economic activity is slowing down, COVID-19 has improved e-commerce and accelerated digital transformation. Lockdowns became more common as more businesses and customers "went digital," offering and purchasing more products and services online. So, from 14% in 2019 to over 17% in 2020, e-proportion commerce's share of the world's retail trade expanded. At a press conference to introduce the report, Volkan Bozkir, president of the UN General Assembly, predicted that the trend toward e-commerce would probably persist throughout the COVID-19 recovery. As a result, we must recognize the challenges and assist governments and people as they continue to adopt new modes of operation in the prospects of digital marketing with particular reference to the digital word of mouth (D-WOM) and online advertising.

[Keywords] COVID-19, e-commerce, UNCTAD, digital transformation, digital economy, digital revolution

Introduction

In recent times, there has been a sharp increase in internet users. The majority of people's time these days is spent online. The development of the internet is driven by various causes, including 5G services and technological developments. According to Isabelle Durant, acting secretary-general of UNCTAD, the pandemic-related economic slowdown has been minimized by companies and consumers who were able to "move digital." Hence, she stated that developing nations must be active contributors to the digital economy and consumers, adding that they should do both. They have, however, accelerated a digital revolution that will have long-term consequences for our communities and daily lives, impacts for which not everyone is prepared. An essential part of this ongoing shift is being played by telecom providers like Reliance (R-Jio)**.**

Businesses rely on several digital channels to increase their online presence, including social media, email, and search engine marketing. The estimated $40 billion Indian e-retail sector is expected to grow to $50 billion in 2022 and continue to develop at a 25 - 30% annual rate over the following five years, with a continuous rise in customer base. It covers a range of strategies for reaching consumers online and producing leads and conversions for our business. This is because individuals think it is an easy, practical, and efficient method of learning new material. We can look deeper into things because of a variety of tools and strategies in digital marketing. Businesses can conduct a variety of digital marketing activities through digital marketing platforms. The most popular and up-to-date digital marketing platforms, large and small organizations, use our webpages, blog posts, emails, social networking sites, digital TVs, smartphones and others (Wertime & Fenwick, 2011). According to various authors, there may be many barriers or difficulties in adopting digital marketing or during developing digital marketing strategies. A few authors, including (El-Gohary, Trueman, & Fukukawa, 2009) (Leeflang et al., 2014), (Istvanic, Milic,

& Krpic, 2017), etc., have noted a few difficulties, including management of the received data, government policies, a lack of funding, identification of the appropriate tools and technology, training of personnel, changing customer behavior and attitude, etc. Today's consumers' shopping habits are centred on online and offline retailers for goods and services. COVID-19 now requires business groups to shift their marketing and sales efforts online to maintain a substantial consumer base even after lockdown conditions. This marketing trend is currently the most significant and well-known. As this marketing area becomes increasingly important, it is crucial to understand how it affects businesses and consumer attitudes and opinions. Nowadays, customers make decisions and thoughts on the information they read online. In this case, the changed consumer behavior is called online consumer behavior.

Literature Review

The effects of digital marketing are enormous and vital for commercial enterprises. The current study is focused on the rapidly growing area of research known as digital marketing and its effects on the business world. To complete or reach the study's goals, the following related literature is read from various research papers, books, journals, and articles are studied and analyzed for this objective.

The digital revolution, highlighted by Wind and Mahajan (2002) has fundamentally altered the business landscape by providing customers with benefits like price transparency, ease of use and businesses with cost-effectiveness, simple customization, and broad reach. They described how customers could interact with markets and products differently due to digital technology. Consumers are evolving to become digital consumers. To remain competitive in the market, firms are turning to digital technology as the digital revolution occurs. The primary determinants of brand choice, according to Verma and Munjal (2003), are quality, pricing, availability, packing, and advertising. A customer's female behavioral and cognitive characteristics influence brand loyalty. In rural marketplaces, brand loyalty to products and the impact of mass media have been researched by Ganeshmoorthy, Radhakrishnan, and Bhuneshwari (2003). The study found that the mass media significantly contributed to the sales promotion of a few chosen products. In addition, it has been mentioned that the preference is placed on the product's quality. Marketing benefits on social networks were highlighted by Bolotaeva and Cata (2011).

They have concluded that social networking websites are the finest venues for every person and business to increase the value of their brand. Facebook was specifically mentioned in Brown and Vaughn's 2011 study on using social networking sites in recruiting practices. They talked about how businesses are employing experts using social networking platforms and various stories in the media. The effects of social networking sites on workplace productivity were examined by Awolusi (2012). This study investigates whether social networking sites impact organizational processes, including training, hiring, communicating, and brand management, among others. Based on the findings of this study, social networking sites significantly impact workplace productivity in terms of geographical collaboration, communication, efficient marketing, and promotion of goods and services. According to Constantinides, Lorenzo, and Alarcón-del-Amo (2013) commercial organizations are quite interested in social networking sites since they foster relationships and aid in developing various marketing and promotional techniques. They have concluded that business companies can grow through social networking platforms. Social media's effects on corporate success were investigated by Smits and Mogos (2013). They have concluded that social networking sites have expanded the potential and capacities of commercial businesses.

The impacts on customer purchasing behavior for cosmetic items were examined by Kumar et al. (2014). Additionally, these findings indicate that social variables have an impact on dependence. So, role

models are idealistic organizations that influence young people. Can and Kaya (2016) examined the relationship between addictions to social media sites and attitudes about their advertising. So, the study's findings indicated that social media platforms only have a small influence on the decisions of those completely dependent on or influenced by the advertising on these platforms. The effect of social media on business performance and expansion in India was examined Singh and Sinha (2017). They talked about how social media platforms are simply another kind of communication and engagement, but with a larger scope and coverage of various new ways. A framework for research on the subject of digital marketing was presented by Kannan and Li (2017). They discussed several emerging issues, such as customer, environmental, and organizational concerns. The Indian city of Coimbatore (Ramya & Ali 2016) examined customers' purchasing behaviors in department stores. So, analyzing customer purchasing habits for Amul items is the primary goal of this study. Facebook has the power to either help or hurt social media marketing. As a result, analysts have discussed how Facebook continually rules the market because of its unique innovative features and qualities. The effect of digital marketing on luxury automobile companies for luxury car brands, this study has suggested a marketing estimation method.

The latest research on developing trends in digital marketing comes from various prevailing and predicted trends in digital advertising, including influencer marketing, chatbots, programming commercials, YouTube, and social messaging applications. The majority of rural women consumers are affected by a product's quality. Therefore, FMCG companies must closely stick to quality requirements. The benefits of targeting urban and rural markets for FMCG products. It employs an appropriate marketing approach and cites relevant case studies of businesses that have successfully expanded into rural areas. Therefore, the size of the rural FMCG market has exceeded that of the urban market throughout the years, rising gradually. In their 2011 study, Davison, Maraist and Bing explored the benefits and drawbacks of utilizing social networking sites for HR choices. They stated that the use of the Internet has an impact on several HR procedures. The effectiveness of small business marketing efforts was examined by numerous policymakers, practitioners, business people, academics, and scholars who will find this study beneficial. So, small commercial enterprises are the only subject of this study.

Online marketing will become more participatory and customer-focused by utilizing the newest technologies, as studied (Stone & Woodcock, 2013)**.** They gave examples of how business analytics and market research benefit businesses engaged in interacting or digital marketing. The use of social media as a marketing tool was researched by Rahadi and Abdillah in 2013. They have talked about how social networking and social media platforms, such as Facebook, Twitter, and others, aren't just used as conduits for communication, but also as tools for promoting businesses. Digital marketing was defined from an Indian perspective by Kaushik (2016). In India, he examined the expansion of digital marketing. So, the study concentrates on the measures that need to be considered before implementing e-marketing tactics to achieve better outcomes.

Scope of the Study

The reach of digital marketing is massively increasing because the internet continues to rule the planet. Many people's lifestyles have transformed because they spend most of their time online or using it for business. The present study has broad implications for companies in a variety of industries because it was conducted to determine the various effects of digital marketing on Indian companies and how consumers perceive it. This will assist in resolving various research problems in the future and facilitate decision-making for both commercial organizations and customers. This study will focus on the multiple aspects of

digital marketing that impact businesses favorably or unfavorably so that firms may decide whether to employ digital marketing or not. This study will also show organizations' difficulties in implementing digital marketing strategies. The study's outcomes and conclusions will be useful to companies that are already employing or planning to use digital marketing in the future to understand the function, reach, and effects of this strategy on enterprises.

Research Gap

Research gaps can be categorized as problems, issues, or, we can say, questions that have not yet been answered in previous studies. These are only a few of the research or literary gaps found after a study of the available material. Because of the above factors, a study or research project is required to examine the effects of digital marketing on commercial organizations in the Indian environment. As the influence and domination of the Internet and technology grow over time, it is evident from the literature that marketing theory is being modernized. The government's various programs, such as "Start-up India", "Make in India", "Stand-up India," and "Digital India," have prompted India to adopt them. As a result, people are starting their businesses. Digital marketing can be a beneficial, effective, and beneficial component for expanding their start-up or business. These aspects spark an interest in researching the various effects of digital marketing, the driving forces behind them, and the adoption difficulties so that the business organization can easily develop strategies. One of the crucial stages that may be required to fill in the gaps and efforts made so far in other studies is the current study. An effort is made in this chapter to review prior research and pinpoint any research gaps. This helps people grasp the concept and the purpose of the present research.

Data Analysis and Interpretation

Percentage Analysis

Demographic Variables	Classification	Number of Respondents	Percentage
Gender	Male	130	52
	Female	120	46
	Others	5	2
Age Group	Less than 20	89	36
	20 - 30	105	42
	30 - 40	38	15
	40 - 50	12	5
	Above 50	6	2
Highest Qualification of Respondents	SSLC	30	12
	HSC	30	12
	UG	104	42
	PG	55	22
	Others	31	12

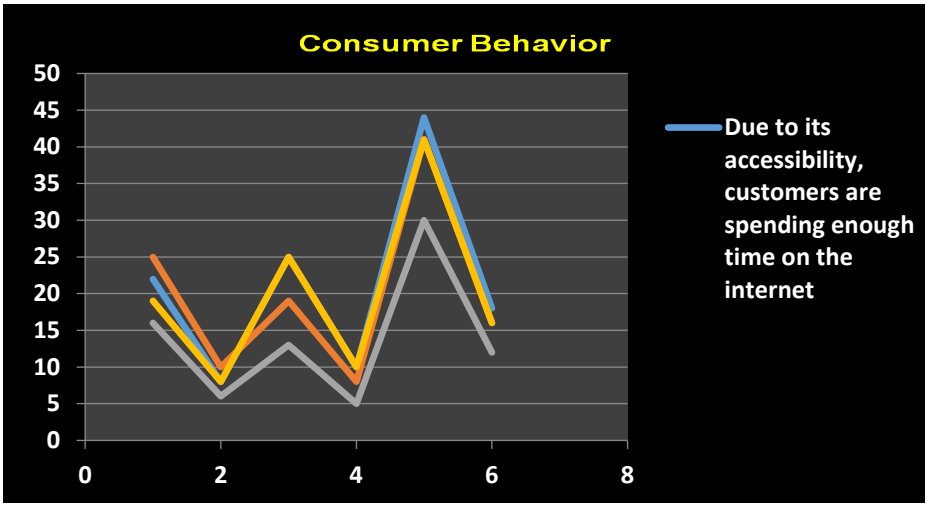
Interpretation

Based on the study's findings, (52%) of respondents were men, (46%) were women, and the remaining (2%) were other respondents. The respondents who fall under the age of 20 is (36%); (42%) are between the ages

of 20 and 30; 15% are between the ages of 30 and 40; 5% are between the ages of 40 and 50; and 2% are over the age of 50. Respondents represent various educational qualifications; SSLC (12%); 12% had an HSC; 42% had an undergraduate degree; 22% had a postgraduate degree; and 12% had other credentials.

Changes in Consumer Behavior

Consumer Behavior	Strongly Disagree	%	Disagree	%	Neutral	%	Agree	%	Strongly Agree	%
Due to its accessibility, customers are spending enough time on the Internet	22	8	25	10	44	18	77	31	82	33
With the use of digital marketing, customers can communicate easily	25	10	19	8	41	16	101	40	64	26
In recent years, consumers' preferences and orientations have shifted from traditional media (such as TV, radio, newspapers, etc.) to digital media (blogs, social media, websites, apps, etc.)	16	6	13	5	30	12	94	38	97	39
Greater individualization of communications is possible via online advertising	19	8	25	10	41	16	95	38	70	28

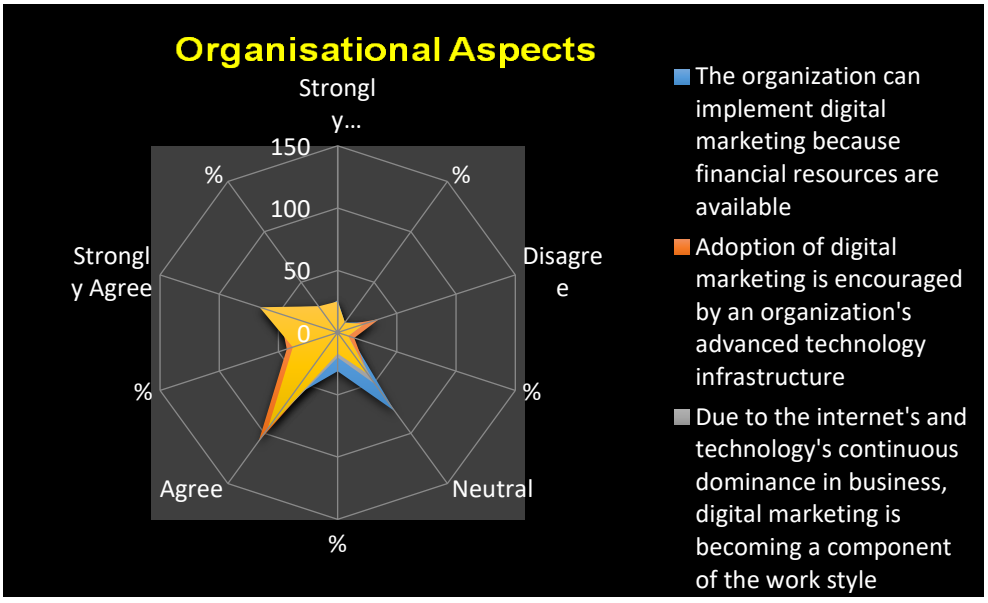


Interpretation

- 33% of customers agreed that they spend enough time online.
- Customers can easily communicate with them because 40% of them use digital marketing.
- 39% of them agreed that consumers' tastes and attitudes had changed recently away from traditional media and more towards digital media.
- 38% of respondents agreed that online advertising enables more individualized communications.

Aspects of Organizational Structure

Organizational Aspects	Strongly Disagree		%	Disagree	%	Neutral	%	Agree	%	Strongly Agree	%
The organization can implement digital marketing because financial resources are available	26		10	27	11	78	31	66	26	53	22
Adoption of digital marketing is encouraged by an organization's advanced technology infrastructure	17		7	35	14	41	16	108	43	49	20
Due to the internet's and technology's continuous dominance in business, digital marketing is becoming a component of the work style	21		8	22	9	51	20	93	37	63	26
The organization's efficiency has grown because of the adoption of digital marketing technologies	25		10	22	9	41	17	96	38	66	26



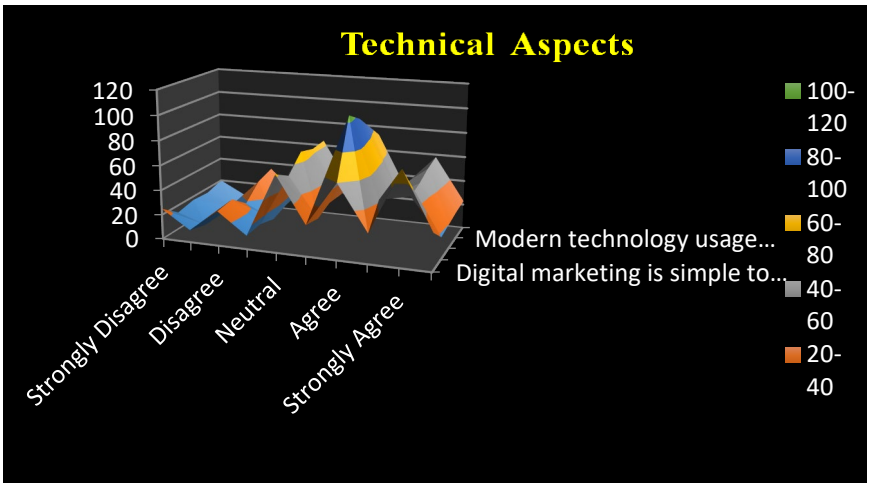
Interpretation:

- 31% of those in the organization agreed to utilize digital marketing because they have financial resources;

- 43% of respondents agreed that an organization's advanced technical infrastructure promotes the adoption of digital marketing;
- 37% of them decided that using digital marketing in the workplace is becoming more common;
- 38% agreed that using digital marketing technologies has increased the organization's efficiency.

Overview of the Technical Aspects

An Overview of the Technical Aspects	Strongly Disagree	%	Disagree	%	Neutral	%	Agree	%	Strongly Agree	%
Digital marketing is simple to use because of technological improvements	25	10	28	11	62	25	60	24	75	30
Use of chatbots and artificial intelligence (AI) campaigns for individualized digital marketing	14	6	30	12	54	22	105	42	47	18
The efficacy of marketing and promotional efforts on digital platforms can be improved with the help of technological advancements in this field	17	6	19	8	67	27	97	39	50	20
Modern technology usage lowers the price of digital platform marketing	16	6	31	12	63	26	85	34	55	22
When using digital marketing, data management is not a problem	20	8	35	14	64	26	73	29	58	23



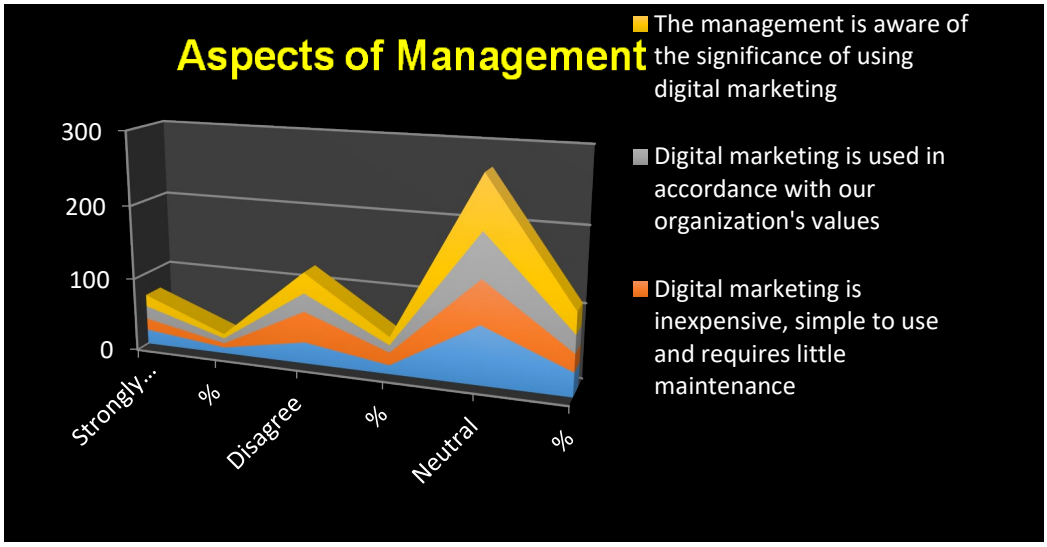
Interpretation

- 30% of them agreed that using digital marketing is easier because of technological advancements;
- 42% of respondents agreed to use chatbots and AI in digital marketing campaigns for targeted audiences;

- 39% of them decided that technological improvements in this field can help to increase the effectiveness of marketing and promotional activities on digital platforms;
- 34% of them agreed that the use of modern technology reduces the cost of digital platform marketing;
- 29% of them agreed that data management is not a problem when using digital marketing.

Aspects of Management

Managerial aspects	Strongly Disagree	%	Disagree	%	Neutral	%	Agree	%	Strongly Agree	%
The management is very supportive of training in digital marketing and its operations	20	8	29	12	79	32	64	26	58	22
Digital marketing is inexpensive, simple to use, and requires little maintenance	16	6	42	17	59	24	95	38	38	15
Digital marketing is used following our organization's values	18	7	25	10	60	24	98	39	49	20
The management is aware of the significance of using digital marketing	16	6	28	11	72	29	85	34	49	20



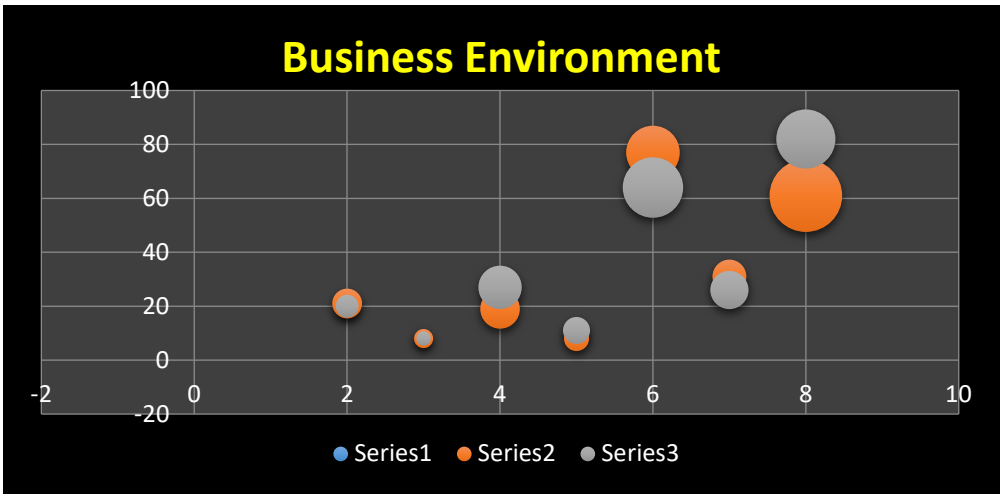
Interpretation

- 32% of them agreed that management is very supportive of training in digital marketing and its operations.
- 38% of them decided that digital marketing is affordable, user-friendly and minimal cost.

- 39% of them agreed that the ideals of our organization are maintained when using digital marketing.
- 34% of them decided that management is aware of the value of implementing digital marketing.

Elements that Affect the Business Environment

Business Environment	Strongly Disagree	%	Disagree	%	Neutral	%	Agree	%	Strongly Agree	%
Digital marketing is essential in today's corporate world	21	8	19	8	77	31	61	24	72	29
One of the reasons to adopt digital marketing is to gain a competitive advantage	17	7	30	12	55	22	101	40	47	19
Adoption of digital marketing within the firm is motivated by social networks and peer pressure	20	8	27	11	64	26	82	33	57	22
Government initiatives, security measures, other statutes, and legislation encourage the use of digital marketing	10	4	36	14	70	28	67	27	67	27

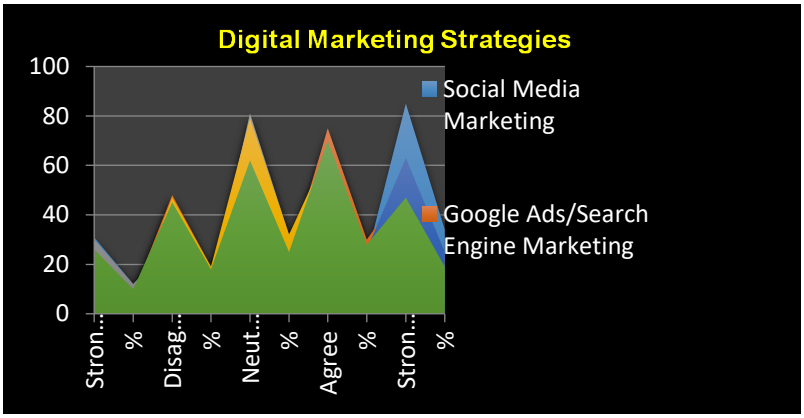


Interpretation

- 31% of them agreed with the idea that digital marketing is essential in today's business environment;
- 40% of them agreed to adopt digital marketing to achieve a competitive advantage;
- 33% of them agreed that peer pressure and social networks play an important role in the company's decision to implement digital marketing;
- 28% of them stated that digital marketing is encouraged by government initiatives, security measures, and other rules and regulations.

Organizations Use Digital Marketing Strategies

Digital Marketing Strategies	Strongly Disagree	%	Disagree	%	Neutral	%	Agree	%	Strongly Agree	%
Social Media Marketing	31	12	27	11	49	20	58	23	85	34
Google Ads/Search Engine Marketing	19	8	48	19	56	22	75	30	52	21
E-mail Marketing	30	12	29	12	81	32	61	24	49	20
Search Engine Optimization (SEO)	16	6	47	19	79	32	66	26	42	17
Content Marketing (through Blogs, Websites)	23	9	40	16	60	24	64	26	63	25
Affiliate Marketing	26	10	45	18	62	25	70	28	47	19



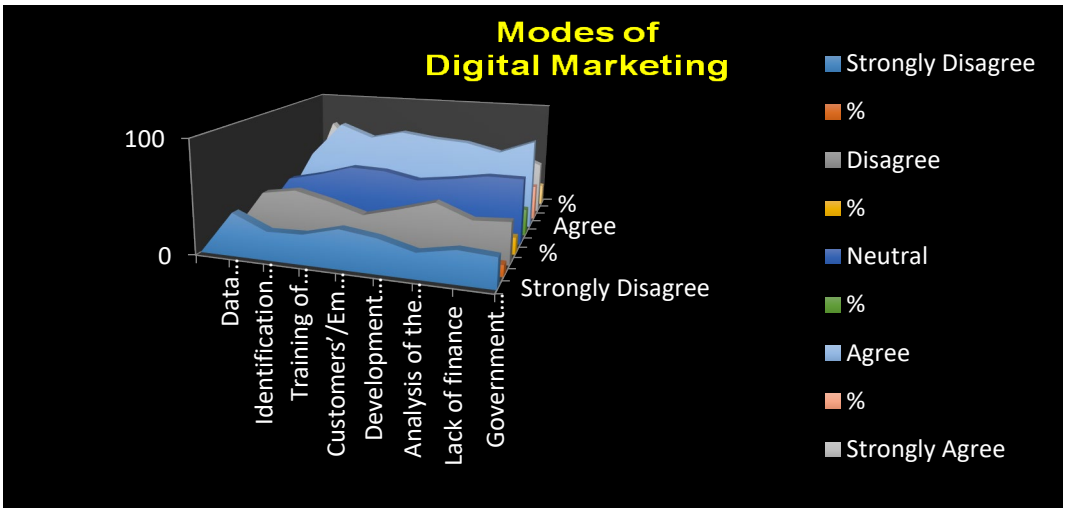
Interpretation

- 34% strongly agreed that they would use Social Media Marketing;
- 30% stated that they would utilize Google Ads/Search Engine Marketing;
- 32% of them said that they used email marketing;
- 32% said they used Search Engine Optimization (SEO);
- 26% of them stated that they would use content marketing using blogs and websites;
- 28% of them agreed to use Affiliate marketing

Utilizing Digital Marketing Channels is Subject to Restrictions

Modes of Digital Marketing	Strongly Disagree	%	Disagree	%	Neutral	%	Agree	%	Strongly Agree	%
Data Management	38	15	41	16	41	16	54	22	76	31
Identification and selection of the right technology	25	10	46	18	48	19	86	35	45	18
Training of team/staff	26	10	39	16	57	23	75	30	53	21
Customers'/employees' changing experience	34	14	30	12	56	22	82	33	48	19
Development of a digital marketing	30	12	38	15	50	20	78	31	54	22

strategy										
Analysis of the competition	22	9	47	19	54	22	76	30	51	20
Lack of finance	28	11	35	14	59	24	69	27	59	24
Government policies	26	10	37	15	59	24	81	32	47	19

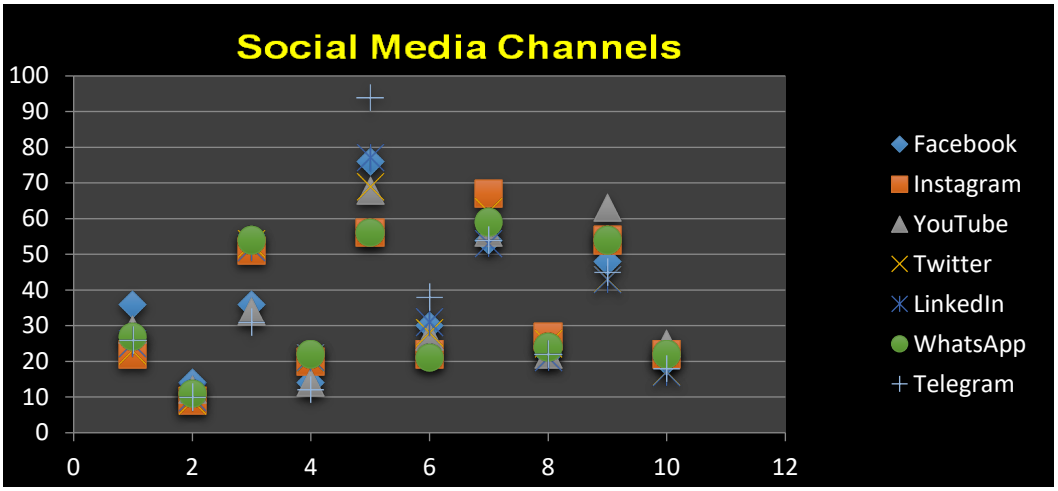


Interpretation

- 31% of them strongly agreed that data management had restricted the use of digital marketing techniques;
- 35% of them decided that using the appropriate technology for digital marketing has been challenging to identify;
- 30% of them agreed that the use of digital marketing methods was limited for team/staff training;
- 33% of them agreed that the changing experiences of customers and employees had limited the use of digital marketing methods;
- 31% of them agreed that the use of specific digital marketing techniques had limited the development of digital marketing strategies;
- 30% of them agreed that the use of digital marketing was limited in the analysis of the competition;
- 27% of them agreed that lack of funding was restricting the usage of digital marketing;
- 32% of them agreed that government policies had placed restrictions on digital marketing methods.

Social Media Platforms are Efficient and Useful for Business

Channels on Social Media	Strongly Disagree	%	Disagree	%	Neutral	%	Agree	%	Strongly Agree	%
Facebook	36	14	36	14	76	30	54	22	48	20
Instagram	22	9	51	20	56	22	67	27	54	22
YouTube	29	12	34	14	68	27	56	22	63	25
Twitter	23	9	53	21	69	28	62	25	43	17
LinkedIn	25	10	52	21	77	31	53	21	43	17
WhatsApp	27	11	54	22	56	21	59	24	54	22
Telegram	26	10	31	12	94	38	54	22	45	18

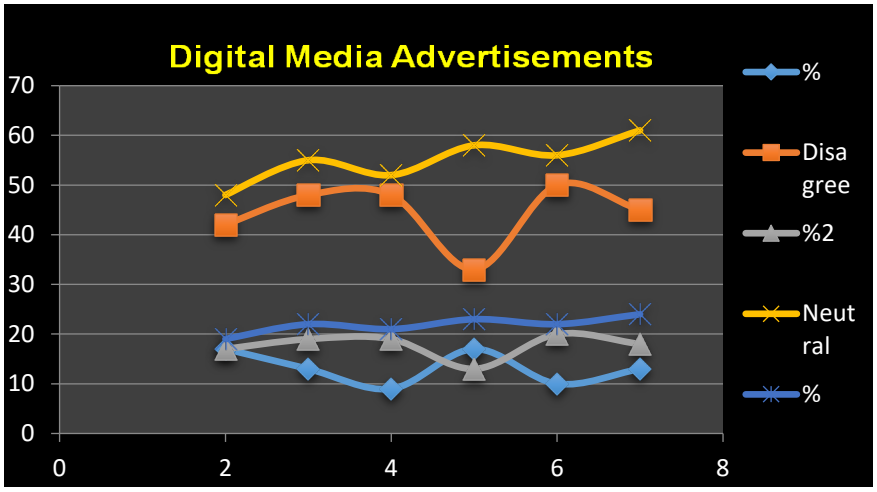


Interpretation

- 30% of them said they would use Facebook;
- It was agreed that 27% of them would use Instagram;
- YouTube was decided upon by 27% of them;
- Twitter was used by 28% of them;
- LinkedIn was agreed upon by 31% of them;
- WhatsApp was agreed upon by 24% of respondents;
- 38% of them agreed to use Telegram.

A Customer's Choice to View Advertisements Via Digital Media

Digital Media Advertisements	Strongly Disagree	%	Disagree	%	Neutral	%	Agree	%	Strongly Agree	%
Price / Discount Offers	43	17	42	17	48	19	42	17	75	30
Design	32	13	48	19	55	22	60	24	55	22
Creativity	23	9	48	19	52	21	70	28	57	23
Attractiveness	42	17	33	13	58	23	62	25	55	22
Content / Message	26	10	50	20	56	22	60	24	58	23
Celebrity Endorsement	32	13	45	18	61	24	65	26	47	19

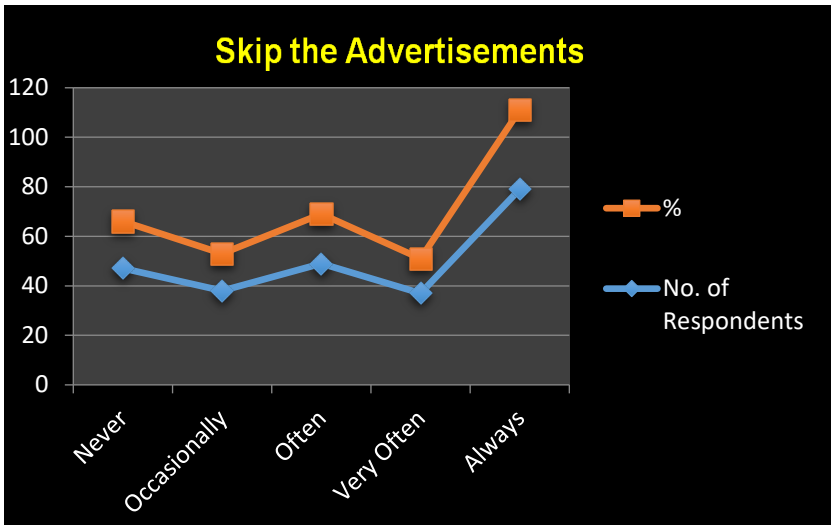


Interpretation

- 30% of them strongly agreed to receive price/discount offers;
- 24% of them agreed with the advertising concept;
- 28% of them agreed with the creativity of the advertisement;
- 25% of them agreed to the attractiveness of the advertising;
- 24% of them agreed to the advertising Message / Content;
- 26% of them agreed to celebrity endorsements in advertisements.

I Typically Skip the Advertisements When Using a Smartphone/Laptop

I ignore the ads.	No. of Respondents	%
Never	47	19
Occasionally	38	15
Often	49	20
Very Often	37	14
Always	79	32

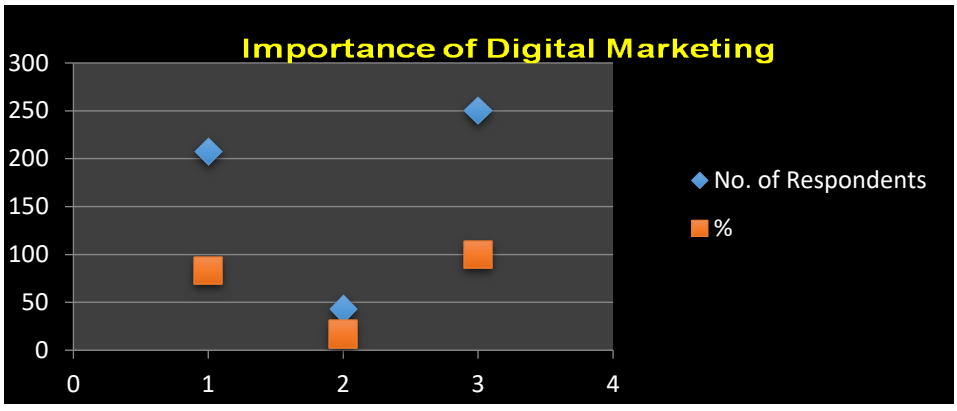


Interpretation

- It is estimated that 19% of them will never skip an advertisement;
- Occasionally, 15% of them will skip the ads;
- 20% of them regularly skip the ads;
- The advertisements are very often skipped by 14% of users;
- 32% of them said they always skip advertisements.

Businesses Must Prioritize Digital Marketing/Advertising

Integrated Marketing/Advertising	No. of Respondents	%
Yes	207	83
No	43	17
Total	**250**	**100**



Interpretation

- 83% of them agreed that digital marketing is essential;
- 17% of them said digital advertising is not significant.

Independent Sample T-Test: Gender of respondents vs. changes in consumer behavior

Null Hypothesis (H0): There is no noticeable difference between the Male and Female respondents concerning their variations in Consumer Behavior.

T-Test

Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
*A change in consumer behavior – Due to its accessibility, customers are spending enough time on the internet	Male	130	3.65	1.408	.123
	Female	115	3.76	1.089	.102
With the use of digital marketing, customers can communicate easily	Male	130	3.68	1.108	.097
	Female	115	3.62	1.348	.126
In recent years, consumers' preferences and orientations have shifted away from traditional media, such as TV, radio, newspapers, etc., towards digital media blogs, social media, websites, apps, etc.	Male	130	4.05	1.102	.097
	Female	115	3.91	1.159	.108
Greater individualization of communications is possible via online advertising	Male	130	3.78	1.156	.101
	Female	115	3.62	1.232	.115

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	*Sig.*	*t*	*df*	*Sig. (2-tailed)*	*Mean Difference*	*Std. Error Difference*	*95% Confidence Interval of the Difference*	
									Lower	Upper
*A change in consumer behavior – Due to its accessibility, customers are spending enough time on the internet	Equal variances assumed	14.720	.000	-.680	243	**.497**	-.110	.162	-.430	.209
	Equal variances not assumed			-.690	238.858	.491	-.110	.160	-.425	.205
With the use of digital marketing, customers can communicate easily	Equal variances assumed	6.795	.010	.379	243	**.705**	.060	.157	-.250	.369
	Equal variances not assumed			.375	221.190	.708	.060	.159	-.254	.373
In recent years, consumers' preferences and orientations have shifted from traditional media (such as TV, radio, newspapers, etc.) to digital media (blogs, social media, websites, apps, etc.)	Equal variances assumed	.546	.461	.974	243	**.331**	.141	.145	-.144	.426
	Equal variances not assumed			.971	235.905	.332	.141	.145	-.145	.426
Greater individualization of communications is possible via online advertising	Equal variances assumed	.334	.564	1.045	243	**.297**	.160	.153	-.141	.460
	Equal variances not assumed			1.041	234.842	.299	.160	.153	-.142	.462

Interpretation

The null hypothesis regarding changes in consumer behavior is accepted at a significant level of 5% because the p-value is greater than 0.05. There is no significant difference between men and women regarding changes in tastes and preferences.

One-Way Anova

Age of respondents vs. Organizational factors

Null Hypothesis (H0): There is no noticeable difference between the various age groups regarding organizational aspects.

Oneway

Descriptives

ORGANISATIONAL ELEMENTS _TOTAL

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Less than 20	89	13.0899	4.33181	.45917	12.1774	14.0024	4.00	20.00
20 30	105	14.5810	3.87988	.37864	13.8301	15.3318	4.00	20.00
30 40	38	14.7368	3.59191	.58269	13.5562	15.9175	4.00	19.00
40 50	12	16.0833	1.50504	.43447	15.1271	17.0396	12.00	18.00
Above 50	6	15.3333	3.01109	1.22927	12.1734	18.4933	12.00	18.00
Total	250	14.1640	3.98303	.25191	13.6679	14.6601	4.00	20.00

ANOVA

ORGANISATIONAL ELEMENTS _TOTAL

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	185.815	4	46.454	3.023	**.018**
Within Groups	3764.461	245	15.365		
Total	3950.276	249			

Post Hoc Tests: Homogeneous Subsets

ORGANISATIONAL ELEMENTS _TOTAL

Duncan[a,b]

Age Group	N	Subset for alpha = 0.05	
		1	2
Less than 20	89	13.0899	
20 - 30	105	14.5810	
30 - 40	38	14.7368	
Above 50	6	15.3333	
40 - 50	12		16.0833
Sig.		.132	.318

Inhomogeneous subsets mean for the groups are shown.

a. Uses Harmonic Mean Sample Size = 16.831.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Interpretation

Ages (40 - 50) have a higher level of awareness. The Post Hoc Test results, shown in the table number, make this clear. The p-value is less than 0.05; hence, the null hypothesis regarding the organizational characteristics of the respondents is rejected at the significant level of 5%.

Conclusion

The present study is summarized in this chapter and concludes with its unique findings, a brief summary and a review of the implications of what was found in the study. This chapter has also covered potential future directions for the research and several recommendations for corporate entities. So, this study is essentially summarized in this chapter in various ways. All types of organizations can benefit from effective digital marketing. For all business sectors nowadays, it falls under modern marketing. In the business's multi-channel marketing approach, digital marketing consistently plays a part. This multichannel medium has enabled cutting-edge models and commercial interactions for the international financial system. Business owners have achieved the biggest deal through digital marketing. These business owners must be highly cautious in selecting the right digital marketing strategy. Organizations use the online platform frequently these days to increase business. This is one of the most cost-effective and practical methods of digital marketing.

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Relationship among Consumer Values, Green Brand Equity and Green Purchase Intention: A Conceptual Framework

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[Abstract] Over the past few decades, green products have been recognized as a critical source for achieving environmental sustainability. Various factors, including attitude, norms, beliefs, values, and motivations, affect the consumers' behavior. However, the literature is scarce on the relationship between values and branding. The present study proposes an integrated conceptual model to better explain green consumer behavior by exploring consumer values (personal and consumption), green brand equity (trust, satisfaction, image, and loyalty) and green purchase intention. The study adds to the knowledge of green consumption and branding.

[Keywords] consumer values, green purchase intention, green brand equity, economic expansion

Introduction

Since the 1960s, the industrial revolution and rapid economic expansion have resulted in massive overconsumption and degradation of natural resources. This has resulted in environmental issues that endanger the planet's sustainability (Ajibade & Boateng, 2021)**.** Climate change (MacMillan, 2020**)** and increased health consciousness (Zhang et al., 2018) have become the driving forces that influence how consumers value products. Growing concern about the environment has pushed companies to adopt "green strategies," propelling environmental issues and sustainability as their forefront agendas (Grant, 2008). In addition to concentrating on making a profit, businesses are actively investigating and developing new approaches, ideas, and plans to position their green brands in the minds of consumers and remain competitive in the marketplace. They are looking into ways they may use to make their products more environmentally friendly to increase brand equity (Mehraj & Qureshi, 2021) and increase the likelihood that customers will purchase.

To understand the consumers' desires, brand managers need to understand the behavioral perspectives (e.g., beliefs and values). Therefore, the best approach for comprehending green marketing involves connecting values with green brands (Ha, 2021). Integrating the behavioral aspects with branding may help understand the role of consumer values and consumers' perception of green brands (Butt et al., 2017). An understanding of values and green brand concepts, including green trust (GT), green satisfaction (GS), green brand image (GBI), and green loyalty (GL), could provide marketing managers with a strategic advantage in today's volatile marketplace. As a result, we need to consider variables like consumer values (CVs), green brand equity (GBE), and green purchase intent (GPI) together.

Literature Review

Consumer Values

Values are now widely acknowledged as the fundamental component of marketing (Tanrikulu, 2021**).** People have values shaped by their upbringing and the experiences they have had throughout their lives. These values affect people's decisions, behavior, and cognitive processes (Kluckhohn, 1951; Rokeach, 1968;

Weber, 2017). It refers to the type of social cognition that helps people adapt to their surroundings (Homer & Kahle, 1988**).** Values held by individuals have a significant impact on the ecologically friendly products that are purchased (Burgess, 1992**).** CVs are of two types, personal values and consumption values. Both the value types are essential to investigate as they may influence the GPI.

Rokeach (1973, p. 5) provides the following definition for the term "values": "an enduring belief that a specific mode of conduct or end-state of existence is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence. A value system is an enduring organization of beliefs concerning preferable modes of conduct or end-states of existence along a continuum of relative importance." According to Schwartz (1992, p. 21), the term "values" refers to a "desirable trans-situational goal varying in importance, which serves as a guiding principle in the life of a person or other social entity." Schwartz's Value Survey (SVS) specified ten core personal values rooted in universal human needs (Schwartz, 1992**).** Based on Schwartz's values, Stern (2000) developed the concepts of unique values in pro-environmental behavior: "altruistic, biospheric, and egoistic." According to the "Value-Belief-Norm theory" (VBN), personal values and beliefs are critical motivators of pro-environmental behavior (Ha, 2021**).** Therefore, if a brand aligns with consumers' values, they may view it as beneficial (Dibley & Baker, 2003**)** and purchase them.

Consumption values are different from personal values. Consumption values refer to "the degree to which the level of consumer need is met by the total evaluation of consumers' net utility or satisfaction related to a product" (Tanrikulu, 2021, p. 2). It explains why people buy a particular product, why they choose a certain brand, and what factors influence their purchasing decisions (Mahmud & Abdul-Talib, 2022). Consumption value is a multidimensional method that analyses value from a behavioural standpoint and presents a typology of perceived value (Tanrikulu, 2021). Consumption values consist of certain values: "Functional, Social, Emotional, Epistemic, and Conditional." The "Theory of Consumption Values" (TCV) recognized the significance of multiple consumption values in consumer choice through these five values. Any or all of the consumption values may have a role in shaping consumers' preferences for particular brands and their purchase intention.

Green Brand Equity

"Brand equity" is the value a company receives from its name and the associations that affect stakeholder behaviour (Weller & Streller, 2019**).** Considering the brand's equity, Chen (2010**)** presented a novel concept called "green brand equity." According to Górska-Warsewicz et al. (2021), GBE is "a set of consumer perceptions and actions related to a brand's environmental problems that improve its usefulness and help it attain greater value." In this view, GBE emphasizes consumers' feelings and attitudes regarding green brands (Li et al., 2019**).** GBE is a relatively new concept in the marketing literature and offers scope for exploring its impact on GPI. Several studies, such as Javed et al. (2020), Kang and Hur (2012), and Lee and Chen (2019), have identified the elements of GBE. The various branding literature is unclear about how managers might use brand equity structures to gauge and enhance the effectiveness of different GBE elements. Indeed, the academic debate is inconclusive about the conceptual foundations of the measures of brand equity; the present article discovered four novel dimensions of GBE, namely GBI, GS, GT, and GL, through the literature review.

Green Purchase Intention

Purchase intention denotes the probability that a consumer will purchase a product or service. It is "the likelihood that an individual will purchase a particular product based on the interaction between customer

needs, attitude and perception towards the product or brand" (Beneke et al., 2016, p.176). In a similar vein, the term GPI represents the likelihood that customers will make a purchase of environmentally friendly products in the near or distant future. A higher intention to purchase equals a higher possibility of the targeted behavior (Ajzen, 1991)**.** GPI is a complicated term influenced by various variables, like "green" customer attributes (Ginsberg & Bloom, 2004) as well as brand-related aspects, such as perceived quality, brand awareness, product features, pricing, eco-labels, and others (Weisstein et al., 2014**).** Understanding green purchase intention is important for green brands as it can help them predict future sales and identify potential areas for growth.

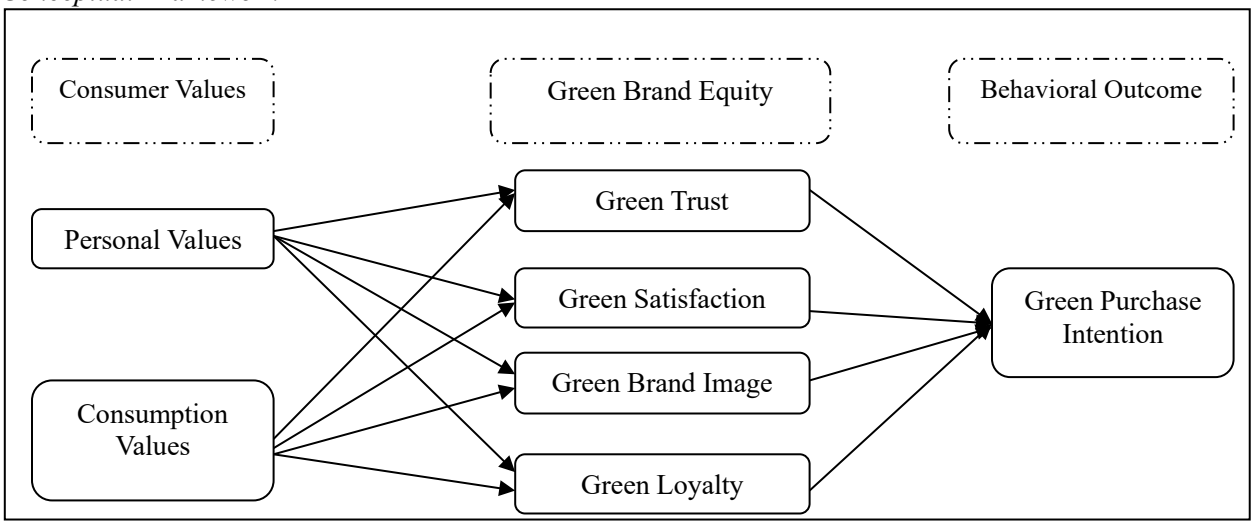
Based on the reviewed literature, the current study provides a conceptual framework that integrates CVs (personal and consumption), GBE (GT, GS, GBI, GL) and GPI. The study seeks to enhance the understanding of green consumer behavior by acknowledging the integrated role of behavioral and branding perspectives.

Conceptual Framework

Through exploratory research, the present study provides a framework for CVs, GBE and GPI. Figure 1 illustrates the conceptual framework.

Figure 1

Conceptual Framework



Discussion

Relationship between Consumer (Personal) Values and Green Brand Equity

Consumers' purchases and consumption of environmentally friendly products are influenced by their values because they believe doing so contributes to the common good (Han, 2015). Consumers will trust environmentally responsible firms if they can meet their values (Butt et al., 2017). Consumers' personal values affect their pro-environmental behavior (Stern, 2000). They have more knowledge and are more conscious of the environmental prevention efforts taken by businesses (Tortosa-Edo et al., 2014**).** Individual characteristics and values shape a person's trust in an organization, which affects their decisions (Chryssochoidis et al., 2009)**.** Prior studies have looked at the faith, but not many have examined how

personal values play a role in building trust (Pirson et al., 2017). As a result, the present article posits that GT mediates the association between personal values and consumers' intentions to make a green purchase.

In order to ensure long-term success, brand owners need to ensure that their brand positioning is relevant and appealing to their target audiences (Dibley & Baker, 2003). When consumers associate a brand with favorable environmental feelings, perceptions, attitudes, and actions, that brand is more likely to remain in their minds (Butt et al., 2017; Chen, 2008). Green brands' eco-friendly features may help customers meet their environmental values (Butt et al., 2017). Environmentally conscious consumers assume that eco-friendly companies with positive images allow them to associate their environmental values (Butt et al., 2017). According to the image congruence theory, the desire for consumers to keep and improve their self-concepts drives their product choices (Grubb & Grathwohl, 1967; Ha, 2021). It will be relevant to propose an association between consumers' values towards purchase intention of the green product mediated by the GBI.

Various scholars elucidated the link between values and satisfaction (Omigie et al., 2020). Consumers feel highly satisfied with a brand if they believe it is fulfilling their personal values. Prior studies have analyzed the impact of one's values on satisfaction in higher education (e.g., Arambewela & Hall, 2011) and luxury hotels (e.g., Cam Le et al., 2021). In services marketing, various scholars have suggested that personal values are essential to satisfaction (Oliver 1996). Based on the prior literature, the present study posits an association between personal values and GS.

Personal values influence and direct consumers' behaviors following the priority that citizens of the society pay to them. Personal values are crucial in explaining consumer behavior (Lages & Fernandes, 2005). As a result, it is a reasonable assumption that one's values might play some role in the explanation of customer loyalty, given that consumer loyalty is associated with behavioral challenges (Jones & Taylor, 2007). Few studies have confirmed a significant relationship between them in banking, airlines, petrol stations, and other services (e.g., Hau & Thuy, 2012; Salciuviene et al., 2009). Even though they appear to be related, very few researchers have examined this connection in green marketing. Therefore, the present study proposes a relationship between personal values and GL.

Relationship between Consumer (Consumption) Values and Green Brand Equity

Consumption values increase confidence in green brands and products (Chen & Chang, 2012; Eid, 2011). GT significantly mediated the effect between consumption values and GPI (Amin & Tarun, 2020; Zaidi et al., 2019). Prior studies show that social value (Khare & Pandey, 2017), emotional value (Karjaluoto et al., 2021; Shuhaiber, 2020), conditional value (Chakraborty et al., 2022), and epistemic value (Jamrozy & Lawonk, 2017) significantly influence trust. Hence, the study proposes a positive influence of consumption values on GT.

Consumption values are a significant predictor of satisfaction in previous research (Carlson et al., 2015; Chen, 2010; Lam et al., 2016). The existing literature on consumption value confirms that it has been widely acknowledged as a reliable predictor of satisfaction (Ryu & Han, 2009). According to Chan et al. (2015), customers who receive more benefits report a higher degree of happiness, which may be equated to the amount of pleasure they experience. Prebensen and Xie (2017) demonstrate that benefits positively impact satisfaction and consumer behavior. Given this, the present study proposes that consumption values influence GS.

According to Hartmann et al. (2005), the most significant effects on green brand positioning result from functional and emotional compensation benefits. The studies that have been done so far have looked

at GBI based on the "Associative Network Memory Theory," which helps explain factors like green brand preference, trust, loyalty, and corporate image (Bashir et al., 2020). To explain green brand loyalty, functional and emotional benefits have been identified as the antecedent of GBI (Lin et al., 2017). Given the prior literature, the present study proposes that consumption values influence the GBI.

Prior studies have demonstrated that consumption values favorably influence customer loyalty (Eid, 2015; Suki, 2016; Wang et al., 2017). These values significantly influence purchase intentions (Brady & Robertson, 1999). Although several studies have been conducted on loyalty, there is a paucity of pertinent research in green marketing that investigates the connection between values and commitment (Ahn & Kwon, 2020). Hence, the present study posits that consumption values significantly influence GL.

P1: CV (Personal and Consumption) influence the GBE dimensions (GT, GS, GBI and GL).

Relationship between Green Brand Equity and Green Purchase Intention

Trust is a belief that one party's actions will satisfy another party's expectations. As a result, building trust is essential to reducing business risk (Anderson & Narus, 1990). GT is necessary for the green brand-consumer relationship because consumers are skeptical of companies' claims of environmental responsibility in the wake of greenwashing (Chen & Chang, 2013). Customers' faith in the green market may suffer if green brands are deceitful about their products, which would be bad for their business (Chen et al., 2014; Ha & Trinh, 2021). Previous studies have shown that GT is a critical component of GBE (Akturan, 2018; Ha, 2020). Furthermore, the intention to buy green products is significantly predicted by GT (Amin & Tarun, 2020; Doszhanov & Ahmad, 2015). The current study suggests a link between GT and GPI in green marketing.

When consumers decide to purchase green products, they have certain expectations regarding the product's characteristics, quality, and other aspects; in other words, they anticipate receiving an eco-friendly product of greater value (Chen & Lee, 2015; Hoyer & MacInnis, 2004). When a brand or product satisfies a consumer's wants and goals, the consumer is more likely to be satisfied, enhancing their delightfulness (Olsen, 2002). A satisfied customer will have a strong and positive association with the brand. As a result, it becomes crucial for brands to meet consumers' expectations of green products or services. Previous literature certifies that GS influences GBE (Chen, 2010; Kang & Hur, 2012) and GPI (Gil & Jacob, 2018; Han & Kim, 2010). It will be pertinent to propose the influence of GS on GPI.

Organizational success in building a "green" brand image depends on the extent to which it can harness customers' positive feelings, emotions, attitudes and behavior about the environment and direct them to the company's products and services (Chen, 2010; Chen & Huang, 2021). Several studies have documented the significance of brand image in establishing brand equity (Aaker, 1991; Keller, 1993; Martenson, 2007). Prior studies demonstrate that brand image positively influences the customer's purchase behavior and intentions (Alia & Deshmukh, 2022). Customers are more likely to buy a company's items if they believe its brand image is better (Tariq et al., 2013). Likewise, GBI influences GPI (Chen et al., 2020). Thus, the present article postulates that GBI influences GPI.

Previous studies have shown that customer loyalty positively correlates with purchase behavior (Huo et al., 2022; Yaseen & Mazahir, 2019). Customers who consistently buy from a company are less likely to be aware of the goods and services offered by rival companies because they recognize the differentiated value of the brand. A company is seen in a more favorable light by loyal consumers than customers who are not loyal or switch companies frequently (Wu et al., 2021). Although there hasn't been much investigation into the relationship as mentioned above in the past, there is a potential to uncover a

connection between the two (Huo et al., 2022). As a result, the study proposes that GL considerably influences GPI.

P2: GBE dimensions (GT, GS, GBI, GL) positively influence the GPI.

Conclusion & Future Research Direction

Due to shifting consumer preferences, several businesses offering products and services are implementing green marketing strategies. These eco-friendly marketing strategies draw in customers who care about the environment and give marketers a sustainable business opportunity. It enables businesses to enter new markets, increasing profits and competitive advantages (Chen, 2010). The present study derives from the CV, GBE, and GPI literature. The study combined existing literature from various domains into a comprehensive framework that aims to represent brand equity in a more realistic, multi-attribute manner. The model proposes that CV (personal and consumption) influences GBE, which further affects the purchase intention for green products. When compared to just one value (either personal values or consumption values), a person's complete "value system" can provide marketers with a more in-depth understanding of the motivations that guide each individual's beliefs, attitudes, and behaviors (Sivapalan et al., 2021). Understanding CVs may help the brands to make a good image, foster trust, and eventually win customer loyalty and increase purchases. By including the relationship of CV in the broader framework of GBE, marketers may create effective green strategies.

Additionally, future studies may be conducted empirically based on the given conceptual framework. Empirical findings may help marketers understand the factors that influence or deter consumers from making green purchases. Marketers may find fresh opportunities to add value and insights about how to tailor their offerings to different consumer segments.

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Nexus between Transport Infrastructure and Sustainable Economic Growth: A perspective of the Northern States of India

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[Abstract] The development of transport infrastructure facilities assists economic growth by improving productivity and creating fair, competitive space. Looking at the national and strategic importance of the transportation network and in pursuance to take forward the existing literature on transport growth, the present study investigates the relationship of transportation infrastructure with sustainable economic development in the nine Northern Indian states. As per the availability, the data has been collected for the period of 17 years ranging from the year 2003-2019. The extensive review testifies to the novelty of the present research work, as previous studies have not analyzed the influence of transport infrastructure networks on the economic growth in the states, namely, Chandigarh, Delhi, Haryana, Himachal Pradesh, Jammu and Kashmir, Punjab, Rajasthan, Uttar Pradesh and Uttarakhand. Here transport infrastructure has been defined as road and railway infrastructure, and gross state domestic product is considered a proxy for growth. Using the GLS panel fixed effect model, the study concludes that the transportation infrastructure significantly and positively impacts the gross state domestic product.

[Keywords] transport infrastructure, road and railway infrastructure, economic growth, panel data analysis, fixed effect model

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Introduction

Transport infrastructure, encompassing roadways, railways, airports and seaports, has a high potential pay-off in economic growth. It is a well-established fact that the availability of adequate infrastructure is vital for the acceleration of the sustainable economic development of a country. It influences the growth of the economy both indirectly and directly (WBR, 1994**;** Bhatta & Drennan, 2003; Lakshmanan, 2007; Condeco-Melhorado et al., 2014; Alvarez-Ayuo et al., 2016; Goldmann & Wessel 2020; Qi et al., 2020). The World Development Report states that adequate and quality infrastructure influence the marginal productivity of capital through – reduced cost of production and structural impacts on demand and supply (Kessides & Ingram, 1995)**.** Potential improvement in transport networks and service lead to a reduction of costs of transport and enhancement of accessibility, which will not only directly lessen the cost of input factors, escalate private financing, vitalize trade, and lead to job creation but also covertly enhances productivity and improves output that ultimately culminates in better overall economic performance (Deng, 2013)**.** Lower cost of production, in turn, impacts the level of work, income and profitability. Infrastructure plays a role in the overall development of a nation, including economic development (Button, 1998)**,** social development (Prud'Homme, 2004), agriculture development, regional development (Ghosh & De, 1998)**,** income distribution (Calderón, & Servén, 2004**)** and poverty reduction (Dercon et al., 2009)**.** Conversely, a lack of infrastructure slows economic development and downgrades the priority of setting up new industries

(World Bank, 1994). Due to its substantial contribution to boosting economic growth, research in this domain holds considerable importance at policymaker and economist desks (Cigu et al., 2019).

In India, the transport infrastructure sector gained tremendous growth in the past few years, and it is undergoing a remarkable resurgence as it is attracting substantial investment. It is expected to grow by 5.9%, becoming the fastest-growing area of India's entire infrastructure sector. The government of India is taking various initiatives, like the Bharatmala project, electrification of railway tracks, introduction of high-speed trains, elevated corridors, focus on reducing carbon emissions, improved land acquisition process, PPP model for investments, attracting private investments, etc. Investments are being lured using various innovative measures, like the hybrid annuity model, toll-operate-transfer model, masala bonds, and infrastructure investment trusts, among other criteria. A well-integrated network creates returns through macroeconomic drivers like the expanse of business activity, competition, innovation, and increase in global mobility, thus enhancing trade, lessening emissions and mortalities as the efficiency of vehicles increases, thus contributing to sustainable economic growth. All these initiatives together focus on introducing intelligent transport infrastructure, which is imperative for spurring sustainable economic growth through the increased contribution of the transport sector to India's GDP. The academic literature has also shown keen interest in exploring the relationship between transport infrastructure development and economic growth, but the observations are mixed. These studies have been conducted in India and abroad. None of the studies has focused on exploring the relationship in Northern India.

The current study endeavors to bridge this research gap by measuring the impact of transport infrastructure development on the growth of the economies of Northern India. The paper is subsequently dissected into five key sections. Section 2 presents a detailed overview of the existing literature in the subject area. Section 3 gives the theoretical framework of data, research methodology and variables used in the research. Section 4 presents the result and discussion of the analysis. Section 5 concludes the empirical results, discusses the research's implications, and highlights the prospects in the respective topic.

Literature Review

This section reviews the extensive literature on transport infrastructure and GDP (economic growth). Many studies, including Apurv & Uzma (2020), Badalyan et al. (2014), Farhadi (2015), Mohmand et al. (2017), Vlahinić et al. (2018), and Wang et al. (2020) have statistically tried to analyze the effect of transportation infrastructure on economic growth. Ke et al. (2020) found a positive impact of transport infrastructure development on the regional growth in the Chinese economy from 2007 to 2015. Assavavipapan & Opasanon (2016) explored the relationship in Thailand by taking the period from 2005 to 2010. The analysis found that one unit rise in the transportation performance index boosts the GDP per capita by 449.420 Thailand Baht. Farhadi (2015) empirically evaluated the impact of transport on the GDP (economic growth) in the group of 18 OECD countries between 1870 and 2009. The result showed a positive influence of change in infrastructure on labor and total factor productivity. Mačiulis et al. (2009) assessed the favorable and unfavorable impact of the transport sector on Lithuanian economy. The study's findings revealed an incremental contribution of the transport sector toward GDP over the years.

Most recently, Apurv & Uzma (2020) investigated the effect of investment in infrastructure development on GDP (economic growth) for BRICS countries for 38 years, i.e. from 1980 the up to 2017. The study concludes a positive association between investment in transport infrastructure and economic growth in Russia and a negative association with the Chinese economy. Some studies have focused on air transport. Balsalobre-Lorente et al. (2021) examined the connection between air transport and economic

growth in Spain during 1970-2015. The empirical evidence exhibits positive and significant implications for economic growth. Goldmann & Wessel (2020) quantified the direct and indirect economic growth effect of the Trans European Transport Network on Eastern European countries. The panel and spatial analyses indicated a higher percentage point of GDP if an area has direct access to the new road. It was concluded that better connectivity between regions enhances regional welfare. Hakim & Merkert (2016) appraised the causal linkages of aviation transport to the economic growth in eight South Asian economies comprising Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka for the period 1973 to 2014. The empirical results show a long-run causal linkage between GDP, air passenger traffic, and freight activity.

Taghvaee et al. (2019) examined the impact of maritime and air transportation in the short and long run on the economy of Iran. The study witnessed a low economic growth elasticity in marine transport relative to air transport. Focusing on roads and railways, Wang et al. (2020) studied the impact on the GDP (economic growth) in 65 Belt and Road Initiative (BRI) countries, considering data for the period 2007 to 2016. The study's findings revealed a significant positive effect at the national level. Vlahinić Lenz et al. (2018) empirically explored the growth effect of transportation infrastructure across 11 Central and Eastern European Member States. Conclusively the research identified a favorable and significant impact of road infrastructure on GDP (economic growth) and found a negative and weak effect of railway infrastructure on (GDP) economic growth. Tripathi & Gautam (2010) used annual data for the period 1970-71 to 2007-08 to measure the impact of road transport on GDP (economic growth).

Road transport was measured using the length of roads, national highways, and state highways. The results stated the long-term relationship between road transport network dynamics externalities and GDP. Ng et al. (2019) analyzed the contribution of the infrastructure of road development to GDP (economic growth). Using fixed effects panel linear regression on data from 60 countries over the period 1980 to 2010, the researcher displays that the growth in road length per thousand population contributed positively to the economic growth. Alawin et al., 2013 identified the relationship between economic growth and income distribution.

Overall, it can be concluded that the majority of the analysis done so far found a positive association between transport infrastructure and GDP (economic growth) in countries, including Russia, Spain, Central and Eastern European countries, Iran, Thailand, and 18 OECD countries. A negative association was identified between the Chinese economy and East Asia and Central Asia. However, one study found a positive relationship in China, as well. Further, the casual linkages were established between aviation transport and economic growth in eight South Asian economies comprising Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka. Further, sufficient shreds of evidence are not found in the Indian economy, particularly in the Northern states of India. Therefore, the current study aims to fill the gap by examining the association between transportation infrastructure and GDP (economic growth) in northern states.

Based on the literature review, the following hypotheses are formulated:

H1 Road infrastructure development has a significant relationship with the GSDP (gross state domestic product) of the Northern states of India

H2 Railway Infrastructure development has a substantial relationship with GSDP (gross state domestic product) in the Northern states of India

Methodology

Data and Variable

The present study focuses on nine Northern Indian states: Chandigarh, Delhi, Haryana, Himachal Pradesh, Jammu and Kashmir, Punjab, Rajasthan, Uttar Pradesh, and Uttarakhand. Rail and road transport has been used as a proxy for transport infrastructure. These variables are widely accepted indicators of transportation infrastructure (Badalyan et al., 2014; Vlahinić Lenz et al., 2018; Goldmann & Wessel, 2020; Wang et al., 2020). There are other metrics to measure the transportation infrastructure, such as airport infrastructure; however, these metrics are not available at the state level. Thus, it has been excluded from the study. Gross state domestic product (GSDP) has been used as a proxy for sustainable economic development. The panel data has been collected for a duration of 17 years ranging from 2003 to 2019, from the latest available *Handbook of Statistics on Indian States* published by the Reserve Bank of IndiaThe variables are divided into three categories: experimental variable that includes gross state domestic product (GSDP) measured at constant 2011-2012 (Badalyan et al. (2014)**;** Saidi & Hammami (2017); Saidi et al. (2018); Gherghina et al. (2018); Taghvaee et al., 2019); Control variable that includes total population (TPOP), Population Urban (POPURBAN), Gross Fixed Capital Formation (GFCF) measured in thousands, in thousand and lakhs, respectively (Saidi & Hammami (2017); Balsalobre-Lorente et al. (2021); Badalyan et al. (2014); Vlahinić Lenz et al. (2018); Apurv & Uzma (2020) and Explanatory Variable include Rail and Road measured in length in Km Badalyan et al. (2014); Vlahinić Lenz et al. (2018); Goldmann & Wessel (2020); Wang et al. (2020).

Model Specifications

To spot the relationship of transportation infrastructure with economic growth (GDP), the following model is proposed:

$$lngsdp_{it} = \beta_0 + \beta_1 lnrail_{it} + \beta_2 lnroad_{it} + \beta_3 gfcf_{it} + \beta_4 tpop_{it} + \beta_5 popurban_{it} + \lambda_t + a_i + u_{it}$$

Where $lngsdp_{it}$ is the logarithmic value of GSDP (gross state domestic product) for the states *i* the cross-sectional unit and time duration *t*,

$lnrail_{it}$ is the logarithmic value of rail length for the states i and time duration t,

$lnroad_{it}$ $rail_{it}$ Is the logarithmic value of road length for the states i and time duration t,

$gfcf_{it}$ is the value of gross fixed capital formation for the states i and time duration t,

$tpop_{it}$is the total population for the states i and time duration t, $popurban_{it}$ is the urban population for the states i and time duration t.

λ_t represents the unobservable time effect a_i Signify unobservable time-invariant individual effect, u_{it} is the stochastic error term (Vlahinic Lenz et al., 2018) and $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ are the coefficients.

The panel data controls the unobservable heterogeneity and offers consistent coefficient estimates. According to Baltagi (2005), if these limitations are not handled, it might lead to spurious results. Therefore, to remove the endogeneity, the panel regression methodology has been used to inspect the impact of transportation infrastructure on the GDP (sustainable economic growth). The hypothesis parameter is estimated using generalized least square- fixed effect and random effect methods. The fixed effect method is prioritized over OLS as it controls the variable omitted biasness and endogeneity (Roodman, 2009**).** The OLS estimation of panel data does not include the regional and unobserved time effect. This makes the estimations biased and inconsistent, as a positive relationship exists between the lagged variable and the

error term (Ding et al., 2008). Further, the Hausman Test was applied to test the appropriateness of the fixed or random effect method. The accuracy of findings relies upon the underlying assumptions of the model. Further, autocorrelation and heteroskedasticity were tested to validate the hypotheses of multicollinearity.

Result and Discussion

Descriptive Statistics and Correlation Matrix

Table 1 presents the descriptive statistics of the experimental, explanatory, and control variables under study. Road infrastructure (LnRoad) has a mean value of 10.705, with a minimum value of 7.40 and a maximum value of 12.98. The average rail transport (LnRAIL) is 6.405, the total weight is 9.12, and the minimum value is 2.07. Gross state domestic product (LnGSDP) has an average value of 16.49 with a maximum and minimum value of 18.39 and 13.76, respectively.

Table 1

Descriptive Statistics

	Minimum	Maximum	Mean	Std. Deviation
LnGSDP	13.7632	18.3945	16.496633	1.1328428
LnRoad	7.4006	12.9853	10.705661	1.3653997
LnRAIL	2.0794	9.1234	6.405102	1.9074836
GFCF	3070	2521418	486309.70	525909.237
TPOP	901	199812	38147.72	55242.421
POPURBAN	596	44495	10439.62	11828.435

To confirm the likelihood of the presence of multi-collinearity, Pearson's correlation and VIF test are employed. Correlation coefficients are used to measure the strength and direction of the linear relationship between the variables. As evident from Table 2, the dependent variable is positively correlated to the independent variables. It means that the coefficients of the total population and population urban and transport infrastructure have a solid linear positive relationship.

Table 2

Correlation Matrix

	LnGSDP	LnRAIL	LnRoad	GFCF	TPOP	POPURBAN
LnGSDP	1	.840**	.844**	.661**	.649**	.766**
LnRAIL	.840**	1	.929**	.675**	.695**	.673**
LnRoad	.844**	.929**	1	.630**	.696**	.680**
GFCF	.661**	.675**	.630**	1	.628**	.597**
TPOP	.649**	.695**	.696**	.628**	1	.955**
POPURBAN	.766**	.673**	.680**	.597**	.955**	1

*** Correlation is significant at the 0.01 level (2-tailed).*

Table 3 shows the results of variance inflation factors (VIF). All variables, including experimental and explanatory variables, are within range of 10, thus confirming the average level of collinearity (Chu, 2012). Though high VIF was observed for control variables TPOP (12.20704) and POPURBAN (11.31526), since these are not collinear with the variable of interest, there is no problem (Allison, 2012).

Table 3

Variance Inflation Factors

	Coefficient	Uncentered	Centred
Variable	**Variance**	**VIF**	**VIF**
C	0.087047	203.0663	NA
LNROAD	0.001776	482.4305	7.665533
LNRAIL	0.000944	97.76799	8.024782
GFCF	3.23E-15	3.674736	1.989205
TPOP	1.78E-12	18.01277	12.20704
POPURBAN	3.60E-11	20.16647	11.31526

Model Testing

Regression Analysis: Generalized least square method (fixed effect). Table 4 shows the generalized least square (fixed effects) model results. T- statistics probability value of road and rail transport infrastructure is significant at a 95% level of confidence. The positive value of the coefficient signifies a significant positive impact of rail infrastructure and road infrastructure on the gross state domestic product of the nine states. A P-value of *t*- statistics in the case of TPOP is 0, which is significant at a 95% significance level. The TPOP coefficient is negative, implying that it has a negative relationship with the gross state domestic product. In the case of POPURBAN, the *t*- statistics probability value is 0, which is significant at a 95% significance level. GFCF's *t*- statistics p-value is 0.0001, which is substantial at a 95% confidence level. The adjusted R-squared value is 0.984889, indicating the model's desirability. In the table, the overall F- statistics is 0, which is significant at a 95% significance level.

Table 4

Fixed Effect Model -Relationship with GSDP

Dependent Variable: LNGSDP				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	9.913701	0.507242	19.54433	0.0000
LNRAIL	0.211567	0.063278	3.343455	0.0011
LNROAD	0.474184	0.060463	7.842562	0.0000
GFCF	2.13E-07	5.10E-08	4.172264	0.0001
TPOP	-4.67E-05	1.06E-05	-4.392202	0.0000
POPURBAN	0.000172	3.64E-05	4.724355	0.0000
Weighted Statistics				
Root MSE	0.174873	R-squared		0.986355
Mean dependent var	21.01681	Adjusted R-squared		0.984889
S.D. dependent var	8.540006	S.E. of regression		0.184713
Sum squared resid	4.128366	F-statistic		672.8069
Durbin-Watson stat	0.589443	Prob(F-statistic)		0.000000
Unweighted Statistics				
R-squared	0.972534	Mean dependent var		16.46307
Sum squared resid	4.589093	Durbin-Watson stat		0.389448

Generalized Least Square Method (Random Effect): Table 5 shows the results of the random effect model. The road infrastructure significantly and positively impacts the GSDP of the nine states. The coefficient value is positive, signifying a significant impact on the gross state domestic product of the nine states. The value of the coefficient is negative, implying a negative relationship with gross state domestic product. T- Statistics probability value of LNROAD (the indicator of road infrastructure) is 0 which is

significant at 95% level of significance and the value of coefficient is positive. The t- statistics probability value of rail infrastructure is 0.0001 which is less than 5% and thus significant at 95 % level of significance. P-value of t- statistics of TPOP is 0, compelling at a 95% significance level. The t-statistics probability value of POPURBAN is 0, essential at a 95% significance level. The t-statistics p-value of GFCF is 0, which is significant at a 95% significance level. The adjusted R-squared value is 0.8235, which shows the model's desirability. The overall *F*- statistics are important at a 95% confidence level, thus testifying to the overall significance of the model.

Table 5

Random Effect- EGLS-Relationship with dependent variable GSDP

Dependent Variable: LNGSDP				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	10.51263	0.470198	22.35789	0.0000
LNRAIL	0.205245	0.049153	4.175669	0.0001
LNROAD	0.389582	0.063265	6.157984	0.0000
GFCF	2.52E-07	5.70E-08	4.423708	0.0000
TPOP	-2.95E-05	2.84E-06	-10.36454	0.0000
POPURBAN	0.000141	1.24E-05	11.43021	0.0000
Weighted Statistics				
Root MSE	0.201234	R-squared		0.830139
Mean dependent var	5.513415	Adjusted R-squared		0.823555
S.D. dependent var	0.490082	S.E. of regression		0.205861
Sum squared resid	5.466839	F-statistic		126.0886
Durbin-Watson stat	0.356211	Prob(F-statistic)		0.000000

Finally, the Hausman test is conducted to choose the best model based on the result of the panel least square method fixed effect and panel least square random effect models. The Chi-square p-value is 0.0001, which is significant at a 95% significance level. Therefore, the result of the fixed effect model is preferred over the random effect model. Table 6 presents the development of the Hausman test.

Table 6

Hausman Test

Correlated Random Effects - Hausman Test			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	25.633621	5	0.0001

Thus, hypotheses H_1 and H_2, i.e., the road Infrastructure has a significant relationship with the gross state domestic product of the Northern states of India, and the railway infrastructure has a considerable connection with the gross state domestic product of the Northern states of India, respectively, are accepted. The final model that can be framed from the results is as follows:

$$lngsdp_{it} = 9.9137 + 0.2116lnrail_{it} + 0.4742lnroad_{it} + 2.13E-07gfcf_{it} - 4.67E-05tpop_{it} + 0.0002popurban_{it} + \lambda_t + a_i + u_{it}$$

Conclusion

This paper empirically appraises the association of transport infrastructure and sustainable economic growth in nine northern states of India, including Chandigarh, Delhi, Haryana, Himachal Pradesh, Jammu and Kashmir, Punjab, Rajasthan, Uttar Pradesh, and Uttarakhand. From the analysis mentioned above, transport infrastructure development has significantly and positively impacted the economic growth of the

northern states. According to the regression analysis of the panel data using the fixed and random effect models, the impact is validated. Thus, the study supports the findings of Balsalobre-Lorente et al. (2021), Goldmann & Wessel (2020), Vlahinić Lenz et al. (2018), and Farhadi (2015). Gherghina et al. (2018) found a favourable relationship between transport infrastructure and sustainable economic growth.

Similarly, the study concludes a significant positive impact of road infrastructure on the GDP (economic growth) of the nine north Indian states. It supports the finding of Wang et al. (2020**).** In addition, the railway infrastructure has also favorably impacted the GDP (economic growth). The present study's results contradict Vlahinić Lenz et al. (2018**).** The gross fixed capital formation and urban population also have a significant favourable impact on the GSDP. The study supports the finding of Vlahinić Lenz et al. (2018). The total population significantly negatively impacts the state's economic growth. Overall, it is concluded that there is a positive relationship between road and railway infrastructure development and sustainable growth of state GDP. Thus, it is recommended that more investment be made in developing transport infrastructure to ensure sustainable growth of the state as a well-organized and developed network enhances the quality of life of people.

The Academic and Practical Contribution of the Study

This work's findings should be expected to advance to develop a more theoretical and practical description of the relationship between the two constructs. Therefore, this study significantly adds to the existing literature in creating a compelling ground to understand the sector's importance and how it can contribute substantially towards sustainable growth. Further, it highlights the potential that the transport sector holds in oiling the wheels of the economy, as the two are significantly and positively regressed in the model studied in this research.

Limitations of the Study

The research study also bears some limitations. First, the scope limitation is in the regional context, as the findings are limited to the Northern Indian States. Moreover, the timespan was from 2003-2019, per the data availability. So, limited data is also a constraint. Second. transport infrastructure encompassed roadways and railways only as per the availability of data for airport infrastructure at the state level. In the future, the researchers can expand the sample to include more states. The size of the sample, when increased, might improve the quality and robustness of the results. Third, region-wise analysis can be done within India to test the effect of transport infrastructure on the growth of regional economies.

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Information Needs and Dissemination Among Farmers: A Step Towards Sustainability

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[Abstract] The study identified the information needs and sources used by the farmers of Malwa region of Punjab and analyzed how those sources are used based on the size of their landholdings. The study also identified the challenges encountered when trying to get the necessary information. By adopting a multistage stratified disproportionate sampling technique and a standardized questionnaire, data was collected from 607 farmers. Various statistical techniques utilized were Descriptive statistics, One-way Annova and Factor analysis (EFA). Information on pesticide application and market and price were the main information required by the farmers and farmers mostly rely on other farmers, input dealers as well as mass media sources like television and radio to obtain information. Additionally, the study discovered a significant difference between the utilization of various information sources on the basis of land size. Four factors were identified using factor analysis and categorized as Source, Individual, Information Provider related, and Other Challenges, and no statistically significant difference was found between these difficulties and the farmers land size.

[Keywords] information sources/channels, challenges in accessing information, information dissemination, developing countries, information needs/requirements, landholding size-based source usage

Introduction

To meet their need for food, humans have invented and used the skill of agriculture. Due to the dependence of most rural residents on agriculture, every developing nation views it as an entire sector. By subtracting the number of urban residents from the overall population, the rural population – those people who reside in rural areas—can be determined. According to a set of development indicators compiled by the World Bank, India's rural population made up 65.53% of the country's total population in 2019, and 70% of rural households depend on agriculture for a living. Regarding worldwide output, India is the leading manufacturer of cashews, cotton, wheat, fruits, vegetables, rice, sugarcane, and oilseeds. It ranks second in producing milk, jute, cashews, tea, and spices. It also ranks first in the export of mangoes, bananas, and grapes. The top agricultural exports in value are rice, marine products, and spices. Other important exports include sugar, cotton, buffalo meat, and oil. Additionally, it can be seen from various data provided by CSO and NSSO that farmers' incomes are lower than those of people employed in non-agricultural sectors.

Farmers and non-agricultural workers now earn significantly different amounts of money. This income inequality is a serious policy matter that has to be addressed. This is the leading cause of the dramatic rise in farmer suicides that the nation saw between 1995 and 2004; after considering these issues, Prime Minister Sh. Narendra Modi set the objective of doubling farmers' income by 2022–2023 to improve farmer welfare, lessen agrarian stress, and eliminate the income gap between farmers and those employed in non–agricultural sectors. Other problems that Indian farmers face include a lack of adequate water supplies, a lack of use of modern farming equipment, an excessive reliance on traditional crops like wheat and rice, a lack of reliable marketing infrastructure, inadequate storage and transportation options, high-interest rates that burden farmers with debt, the failure of government programs to reach small farmers, etc. Thus, it

becomes necessary to give farmers helpful information based on their needs to help them increase agricultural output.

The information sought must be pertinent to farmers and valuable to them, and it must also be presented in a style that is most appealing to farmers (Diekmann et al., 2009). The most excellent and current agricultural practices, as well as modern tools and equipment, must be promptly made accessible to farmers to achieve sustainability in agriculture (Naveed and Anwar, 2013; 2015). Farmers must have the best knowledge available to them to practice sustainable agriculture for reducing poverty, developing rural areas and ensuring food security (Mchombu, 2001; Naveed & Anwar, 2013, 2014, 2015). Low yield per acre compared to the farmers' potential could result if they are not given the necessary information. When revamping current information infrastructure or creating any new information delivery system, it is essential to identify information demands and farmers' information-seeking behaviors as this will increase their satisfaction because they will be able to obtain appropriate information according to their needs in the given context. (Zaverdinos-Kockott, 2004; Mahindarathne and Min, 2018; Banmeke & Olowu, 2005).

Farmers' access to information has historically been a top priority for agricultural extensionists and rural advisory service providers in an effort to improve their socioeconomic status. They have therefore offered a variety of sources via which they can offer their services to farmers in order to address the knowledge vacuum, and these days they are more interested in experimenting with e-extension initiatives. Information providers can provide interventions that specifically target farmers with specific information needs by conducting an assessment of their information needs. As it can be observed that the possession and usage of mobile phones, as well as computers, has become a basic necessity in present-day society, and people use them regularly irrespective of age, income, place of residence, profession etc., Therefore, it is necessary to investigate how farmers are currently using these sources for getting information related to agriculture activities, which could aid information providers in boosting ICT-based information delivery depending on how farmers are presently using ICT-based sources. To raise farmers' knowledge, it is necessary to demonstrate the advantages of using ICT-based sources. For example, Jabir (2011) noted that compared to ICT non-users, information delivery based on ICT has helped various livestock producers in the Indian state of Uttar Pradesh to make considerably better-quality decisions on a number of livestock operations. ICTs provide chances to reach more people by making information and knowledge accessible locally or globally. The new developing paradigm of agricultural growth is thus posing a challenge to traditional ways of providing essential services to citizens. Around the world, traditional civilizations are also evolving into knowledge societies, which alters how villagers perceive and behave. (Meera et al., 2004).

Statement of the Problem

The researcher has made an effort to investigate the type of information needed for supporting agricultural activities, utilization of various information sources, the impact of land size on utilization of information sources, as well as the difficulties farmers encounter while trying to get information on agriculture, given that agriculture and rural development play a significant role in every developing economy. Understanding how much farmers use various sources, including the media, people they know, ICT, and other sources, will support the expansion of an effective information distribution system and provide improved extension services for improving the socioeconomic standing of rural communities and farmers. In light of this, the following goals for the study were created:

1. To study the agricultural information needs of the farmers.
2. To assess the farmer's use of different information sources.

3. To compare the utilization of information sources based on Land Size.
4. To identify the challenges faced by the farmers in accessing the required information

Review of Literature

A literature review is a thorough summary of earlier studies on a subject. Academic journals, books, and other resources relevant to a particular field of study are examined in the literature review. This earlier work needs to be cited, summarized, appraised critically, and explained in the review. It must give the investigation a theoretical foundation and help the researcher specify the study's boundaries. A literature review provides a detailed account of earlier findings. Table 1 in the current study offers a thorough synthesis of prior research on farmers' information/knowledge requirements in various countries. Additionally, it reviewed the results of earlier research on the resources utilized by farmers worldwide and the challenges that farmers confront while accessing information.

Information Needs/Requirements of the Farmers

Table 1

Summary of Literature Related to Information Needs/Requirements

S.No	Author Name	Year	Country	Sample	Information needs
1.	Naveed & Hassan	2020	Pakistan	Citrus Farmers	Information on how to prepare the site, then on how to manage and conserve soil fertility, on better citrus varieties, on protecting citrus trees, when and how to harvest, etc.
2.	Benard, Dulle & Hieromin (2018)	2018	Tanzania	Fish Farmers	Activities for fish processing and preservation, water management, and spawning
3.	Nkebukwa	2018	Tanzania	540 respondents	Market segmentation, manure use, and soil preservation
4.	Mohanaku mara et al.,	2017	India	Farmers	Information on fodder production
5.	Ayiah	2017	Nigeria and Ghana	Farmers	Information on the availability of fertilizers and varieties of seeds/plants was followed by information on pest control, subsidy availability, plant disease and control, credit facilities and weed control (with the same weightage), a mechanized system of farming, storage facilities, market opportunities, weather and government policies.
6.	Daramola, Adebo, & Adebo	2016	Nigeria	Vegetable farmers	Financial information is presented first, followed by market knowledge, building organizations for better bargaining, and care in managing produce.
7.	Sánchez-Soto	2016	Mexico	Farmers who are self-employed and those who lease their farms	Information on disease and pest control, fertilizer use and application for independent farmers, new agave production methods, agrochemical use and application, government funding, and agricultural credit for the farmers who rent out their land.

Table 1

Summary of Literature Related to Information Needs/Requirements (continued…)

S.No.	Author Name	Year	Country	Sample	Information needs
8.	Mahapatra	2016	India	Farmers	Information on irrigation followed by information on the current agricultural system, disease and insect management, crop storage, manure management, government programs, seeds and planting supplies, soil and water conservation, market information, and post-harvest practices.
9.	Adejo, Okwu & Saliu	2016	Nigeria	189 Maize Farmers	Post-Harvest Information needs: Storage of Maize
10.	Singh, Malhotra & Singh	2016	India	Dairy Farmers	Information about government incentives and subsidies to maintain dairy farming and aspects of cattle health.
11.	Omoregbee and Banmeke	2014	Nigeria	Cassava Farmers	Information on applying fertilizer followed by information on insecticides and herbicides.
12.	Elly & Silayo	2013	Tanzania	Rural Farmers	information on financing choices, agricultural and livestock care, marketing, and value addition
13.	Menong, Mabe & Oladele	2013	South Africa	Commercial Farmers	Information on disease management followed by details on supply companies, product demand, accessible agricultural markets, agricultural equipment, seed, fertilizer, and pesticide producers, as well as on grading.
14.	Naveed and Anwar	2013	Pakistan	Farmers	Information on soil preparation, how to take good care of crops, animal husbandry and harvesting activities
15.	Churi et al.	2012	Tanzania	Farmers	Climate information
16.	Adebayo and Oyetoro	2011	Nigeria	110 small-scale maize farmers	The planting time and agronomic procedures for growing maize followed by details on preventing pests and diseases, processing, storing, and selling maize.
17.	Oladeji et al.	2011	Nigeria	Root and tuber-crop grower	Details on marketing practices, soil management approaches, enhanced planting methods, and processing
18.	Samarakoon and Shamil	2010	Sri Lanka	Vegetable farmers	Price information is followed by details on fertilizer and pesticide use, farming methods, and how to lessen animal and plant hazards. information about vegetable seeds, market demand and supply statistics, and sales-related data.
19.	Okwu and Umoru	2009	Nigeria	Women farmers	Information on how to apply pesticides and fertilizer, as well as information on new and better farm tools and types of equipment
20.	Elizabeth	2008	Nigeria	Women farmers	Weather-related information, credit availability, soil management, knowledge of higher-quality seedlings, farm management, fertilizer and pesticides, future market pricing, animal health, land tenure, animal vaccination, and child vaccinations.
21.	Rezvanfar, Moradrezhai and Vahedi	2007	Iran	125 Dairy farm women	Information on the treatment of animals, controlling external parasites, controlling internal parasites, animal breeding

Information Sources Utilized by the Farmers

Table 2

Overview of Literature Related to Information Sources Utilized by the Farmers

S.No.	Author Name	Year	Country	Sample	Sources Used
1	Ndimbwa, Mwantimwa & Ndumbaro	2021	Tanzania	341 smallholder farmers	Fellow Farmers followed by mobile phones and demonstration plots
2	Durgun, Gunden and Unal	2020	Turkey	Fishers	Other farmers followed by Fishery cooperatives, Own experience, Television and Radio.
3	Jalali et al.	2020	Iran	300 dairy farmers	agricultural conferences and seminars, as well as those in universities and technical and vocational training facilities
4	Sharma Pandit et al.	2020	Nepal	Farmers	Notice board service Traders Other farmers
5	Isaya, Agunga and Sanga	2018	Tanzania	Women farmers	Radio, Extension agents, television, local government representatives, and suppliers of agricultural inputs.
6	Msoffe and Ngulube	2017	Tanzania	Farmers	Extension officers, which family, friends and neighbors followed.
7	Ijatuyi	2016	Nigeria	Fish farmers	Mobile phones, radio and professional colleagues and radio.
8	Msoffe and Ngulube	2016	Tanzania	Farmers	Friends, neighbors, extension officers, researchers and radio.
9	Consolata, Msuya, & Matovelo	2016	Tanzania	livestock farmers	Veterinary shops and extension officers
10	Rimi, Akpoko & Abdullahi	2015	Nigeria	cowpea farmers	Fellow friends who were followed by Radio, Extension agent's advice, Attendance at the on-farm demonstration, Community leaders, Attendance at extension training/meetings, Attendance at field days and contact with agrochemicals sales agents
11	Kabir et al.	2014	Bangladesh	Farmers	Pesticide dealer, seed dealer, and mass media
12	Ajani and Agwu	2012	Nigeria	108 small farmers	Radio, mobile phones, video and television
13	Fawole and Olajide	2012	Nigeria	192 Farmers	Radio and television
14	Nyamba and Mlozi	2012	Tanzania	Rural farmers	Mobile phone
15	Verma et al.	2012	India	Livestock farmers	Localite sources- neighbours followed by progressive farmers. Cosmopolitan sources-veterinary officers followed by the private veterinary service provider, Bhartiya Agro Industries Foundation and *Para veterinary* workers. Mass media sources-radio, followed by mobile phones and newspapers.
16	Kameswari, Kishore & Gupta	2011	India	Farmers	Middlemen, Government agencies, and friends/relatives.
17	Opara	2008	Nigeria	1386 farmers	Extension agent
18	Tologhonse, Mesini and Tsado	2006	Nigeria	500 Rice farmers	Extension agents, demonstration, SPAT, neighbor friends, radio, field day and parents
19	Musib	1989	West Bengal	258 rural farmers	Personal experience followed by friends and relatives, market/shopkeeper and fellow professional

Farmers' Difficulties/Challenges in Acquiring Information

Table 3

Overview of Literature Related to Challenges Faced

S.No.	Author Name	Year	Country	Sample	Challenges
1.	Satapathy and Mishra	2020	India		Poor communications infrastructure, insufficient information infrastructure, Illiteracy, linguistic obstacles, attitudes and behaviors that are gender-specific, the distance from the information center household duties, societal restrictions on women, Farmer communities' lack of agricultural libraries, and inadequate financial means.
2.	Folitse et al	2018	Ghana	150	Lack of expertise in accessing information, Inadequate poultry information resources, insufficient veterinary officers, Less information centers, and improper timing of programs on radio stations on agriculture.
3.	Kavi et al.,	2018	Ghana		Inability to utilize the information, ignorance of the sources, and distance between the origins of the data. Information is broadcasted on the radio and television at the wrong time.
4.	Misaki et al.,	2018	Africa	11 studies	Less participation in the early phase of the invention, High servicing cost, Low education and training, less trust and transparency, Inadequate infrastructure, Poor commitment from the government to implement proper policies, Low awareness, Theft of mobile phones and bureaucracy and misuse of a foreign language (English) in an environment where it is inappropriate
5.	Mbagwu, Benson, & Onuoha	2017			Insufficient ICT infrastructure, rural farmers have little interest in utilizing information connected to agriculture, Lack of knowledge among farmers in rural areas, Lack of ICT literacy, and inadequate understanding of rural farmers' information demands. In remote places, no agency provides information.
6.	Singh & Varma	2017	India		Inability to access formal channels of information Insufficient market information, Low level of income Lack of ability to access formal channels of communication, Poor transport facility, and broadcast agricultural information on television and radio at an unconventional hour.
7.	Radad, Behzadi & Zadehrahim	2017			Professionals lack consideration for farmers' needs, have Poor technological expertise, and have poor training/promotional sessions.
8.	Osei et al.,	2016	Ghana		Subpar public relations with Agriculture extension agents, A lack of local language television broadcasts of agricultural information, illiteracy in reading and writing (illiteracy), lack the funds to acquire DIY guides, lack of farmer forums, and Lack of workshops, seminars, and training programs.
9.	Nzonzo & Mogambi	2016	Kenya	362	Lack of education, ICT expertise, inability to use ICTs, ICTS and financial cost.
10.	Syiem & Raj	2015	India	120	A lack of faith in using ICTs, inconsistent electricity supply, a poor network connection Less knowledge of ICTs' advantages.
11.	Odini	2014	Kenya		Illiteracy, Poverty, Ignorance of information sources, language barrier, Time to find the information, Inadequate information, Information is unavailable and difficult to get, Negative attitude, Cultural belief, non-availability and

					affordability, no sufficient information, concealing of information by the people Outdated information, Distance to information sources, Shy to access information, Not attending meetings.
12	Mwalukasa	2013	Tanzania		Obsolete information, long access times, high access costs, insufficient power, language barrier, and poor infrastructure for information services.
13	Siyao	2012	Tanzania		Unsatisfactory infrastructure, the awful transmission of power and housing, inadequate knowledge about information access, filthy transportation system, a high level of illiteracy, language difficulties, and not having enough financial resources.
14	Mokotjo and Kalusopa	2010	Lesotho		Lack of visits by AIS staff, Lack of feedback, Less promotion, Lack of training to the farmers, Broadcasting of the same information again and again, Inappropriate broadcasting time, non-availability of appropriate channels, Late announcement
15.	Ghafoor, Muhammad, and Chaudhary	2008	Pakistan		Less emphasis on spreading information about citrus in radio and TV programs, less availability of printed materials, Lack of cooperation, unable to find extended field staff, Illiteracy, lack of growers' interest, no access to electronic media, Extension field employees have less technical expertise.

Methodology

The Malwa region was chosen for this study because it accounts for up to 60 and 70 percent of Punjab, where the study was done. Farmers from the Malwa region were included in the study, and those farmers were further divided according to the size of their farms. Eleven districts make up the Malwa area, including Firozpur, Faridkot, Fazilka, Shrimuktsar Sahib, Bathinda, Moga, Barnala, Ludhiana, Mansa, Patiala and Sangrur. Districts like Fatehgarh Sahib, Rupnagar, and Ajitgarh (Mohali) are included in the Poadh region (Ropar). Poadh is one of Punjab's most significant regions, yet it is included in Malwa and not given its own status.

Additionally, five categories are used to group the farmers' operating landholdings, i.e., marginal, small, semi-medium, medium, and large farmers. Small and marginal farmers have many identical concerns and demands. Hence, they were categorized as small farmers.

Description of the Study Area

One of India's well-known rural states in the north is Punjab. It has made Indian food independent and tremendously contributed to Indian agriculture and the economy. Punjab produces over 17% of India's total wheat production, ranking second among the states after Uttar Pradesh, as well as about 12% of the nation's total rice production and about 5% of its total milk production, according to Agriculture data at a glance for 2018. Because of this, it is referred to as "India's breadbasket" or the "granary of India." The State of Punjab has set the bar for agricultural development and paved the path for India's Green Revolution. The majority of the nation's needs for rice and wheat are met by the State, while small and marginal farmers who are deeply indebted find farming to be a non-profitable endeavor. Several unanticipated complicated issues have arisen due to overexploitation of the land and significant dependence on the rice-wheat agriculture cycle. The high incidence of cancer and organ failures is a result of many health difficulties caused by the rapidly declining water table and high toxicity of the soil from excessive fertilizer and pesticide use.

Agriculture still accounts for the vast majority of jobs in the state despite a fall in its overall contribution of gross state product (GSVA). For the state's maximum population, agriculture continues to be their primary means of subsistence. To achieve sustainability in Punjab's agriculture, researchers and the government must prioritize the problems and demands of those farmers. This would allow them to receive appropriate and timely remedies.

Data Collection and Data Analysis

The sample size was determined by utilizing Godden. B. formula (2004), and the investigation utilized a multistage stratified disproportionate sampling technique. The study applied the Godden, B. (2004) formula to the total number of small landholdings, semi-medium landholdings, medium landholdings, and large landholdings. In the case of small, semi-medium, and medium-sized landholdings, the Godden. B. formula of the infinite population was used, whereas in the case of large-size landholdings, the Godden. B. formula of the finite population was used. The formula estimates a sample size of 600 for each situation. A suggested sample is used to equalize each calculated instance by 1/4th to make the sample representative and enable easy comparison, i.e., 150 in each category. So, 600 respondents were considered to represent the overall population. The study utilized the pre-structured questionnaire to gather the data. It was distributed among 700 farmers, and 650 questionnaires were filled with a response rate of 92.8%, among which 43 questionnaires were found useless. So, the responses of the final 607 respondents were made part of the study. Microsoft Excel and the Statistical Package for Social Sciences (SPSS) were used to analyze the data. Several analysis procedures were utilized, such as mean, standard deviation, One-Way Anova test, and Exploratory Factor Analysis.

Results and Discussion

Socio-Economic Characteristics of the Respondents

Results indicate that 56.5% of respondents were between the age group of 31 and 40, 168 respondents had completed a secondary education, 148 respondents had met only a primary education, 120 graduates, and 46 postgraduate respondents. This indicates that 79.4% of respondents had completed a good level of education. This study shows that Punjab's agriculture is still primarily controlled by men (with a 99 percent male response rate) and very few women working in the field (with a 1 percent female response rate). Therefore, the government should take several actions to encourage women to work in agriculture. The findings also indicated that most farmers (n=252) earned yearly incomes of 50001–10000, which is relatively little to support a livelihood. As a result, the government should make every effort to be in the farmers' best interests.

Information Needs of the Farmers

Findings in Table 4 indicated that for Punjab farmers, highly needed information was information on Pesticide application, Market and price, Fertilizer application, Pest and disease management followed by Weeding, Weather related information, Amount of water to be given to plants, Availability of credit (Sources), Training on techniques of farming, use of agriculture machinery, training on agriculture machinery, Government policies and subsidies, Availability of agricultural machinery, Price of agricultural machinery, Time and frequency of irrigation, Proper time and method of Harvesting, the Best time to sow the seeds, Planting methods, Information on Price and quantity of seeds needed per acre, Information on the location of distribution offices of sources, Information on Suitability to area and climate, Information for Crop selection and Soil testing/Preparation and the least needed information were information on

Poultry, Sericulture, Horticulture, Fisheries, and Organic farming. The moderately required information was Information related to mobile applications/portals, Storage of agricultural produce, Distribution of agrarian produce, Business and Trade, Transportation, Crop diversification, Crop Insurance, Socioeconomic Characteristics of Consumers, Expectations/Perceptions of Consumers, Contract farming, Grading, Management of natural resources and diary.

Table 4

Information Needed by the Farmers

Information Type	N	Mean	S.D.
Pesticide application	607	5.68	1.471
Market and price information	607	5.62	1.145
Fertilizer application	607	5.55	1.407
Pest and disease management	607	5.23	1.421
Weeding	607	4.98	1.601
Weather-related information	607	4.76	1.523
Amount of water to be given to plants	607	4.61	1.434
Availability of credit (sources)	607	4.61	1.499
Training on the techniques of farming	607	4.59	1.572
Uses of agricultural machinery	607	4.58	1.610
Training on agricultural machinery	607	4.58	1.601
Government policies and subsidies	607	4.57	1.476
Availability of agricultural machinery	607	4.53	1.508
Price of agricultural machinery	607	4.50	1.552
Time and frequency of irrigation	607	4.49	1.465
Proper time and method of Harvesting	607	4.45	1.450
Best time to sow the seeds	607	4.44	1.568
Planting methods	607	4.44	1.629
Information on Price and quantity of seeds needed per acre	607	4.35	1.128
Information on the location of distribution offices of seeds	607	4.22	1.228
Information on Suitability to area and climate	607	4.18	1.285
Information for Crop selection	607	4.11	1.752
Soil testing/preparation	607	3.75	1.593
Information related to mobile applications/portals	607	3.23	1.290
Storage of agricultural produce	607	3.14	1.403
Distribution of agricultural produce	607	3.09	1.435
Business and trade	607	3.08	1.295
Transportation of agricultural produce(cost)	607	3.07	1.404
Crop diversification	607	2.80	1.154
Crop Insurance	607	2.70	1.312
Socioeconomic Characteristics of Consumers	607	2.69	1.309
Expectations/Perceptions of Consumers	607	2.68	1.275
Contract farming	607	2.67	1.265
Grading of agriculture produce	607	2.66	1.191
Management of natural resources	607	2.60	1.255
Dairy	607	2.37	.862
Organic farming	607	1.98	.954
Forestry	607	1.97	.866
Fisheries	607	1.96	.993
Horticulture	607	1.95	.808
Sericulture (silk farming)	607	1.71	.875
Poultry	607	1.52	.698

Utilization of Information Sources by the Farmers

The second objective was assessing the agricultural information sources and channels rural farmers frequently use and access. Using a seven-point Likert scale and the data collected, descriptive analysis was applied to rate the utilization of the information sources. The findings in Table 5 show that, to a large extent, Punjab farmers utilize interpersonal communication sources/channels such as other farmers and Input dealers/shops/private companies, followed by traditional mass media sources such as television, radio, newspapers/magazines. Among internet sources, farmers utilize more of the internet on mobile phones and mostly use social media applications like YouTube, Facebook, Instagram and Twitter. It can be observed from the findings that the most minor utilized sources are landline phones, NGOs, Internet on mobile-agriculture websites, Internet on computer-agriculture websites, social media sites like YouTube, Facebook, Instagram, Twitter, WhatsApp, and cooperatives accessed via the internet on computers and laptops.

Table 5

Farmer's utilization of Information Sources

Sources of Information	*n*	Mean	S.D.	Rank
Other farmers	607	4.65	1.556	1
Input dealers/shops/private companies	607	4.62	1.639	2
Television	607	4.38	1.653	3
Radio	607	4.28	1.948	4
Newspaper/Magazines	607	3.45	2.106	5
Internet on mobile- social media applications like YouTube, Facebook, Instagram and Twitter	607	3.37	1.825	6
Krishi Mela	607	3.05	1.792	7
Call and SMS services of mobile phones	607	2.82	1.365	8
Internet on mobile phones-Agriculture applications	607	2.80	1.667	9
KVKs/Research Stations	607	2.68	1.667	10
State department of agriculture	607	2.61	1.696	11
State agricultural universities	607	2.61	1.635	12
Cooperatives	607	2.04	.849	13
Internet on Computer/Laptops-Social media applications like Facebook, Instagram, YouTube, WhatsApp and Twitter	607	2.02	.736	14
Internet on Computer/Laptops-Agriculture websites	607	1.87	.640	15
Internet on mobile- Agriculture websites	607	1.84	1.096	16
NGO	607	1.78	.673	17
Landline phones	607	1.24	.544	18

Therefore, it can be seen that the use of online resources is still lacking. Farmers need to be aware of the advantages of using online resources, such as agriculture websites on computers and mobile devices, as they can gain the most by using these websites to obtain information about agriculture. Farmers have remained reliant on informal and traditional techniques for gathering information. To inform most farmers, agencies producing information and knowledge must determine the best channels. There is a further need to determine why most contemporary communication channels, such as ICT sources, are still not viewed as significant agricultural information providers. Traditional sources of information offer information of general interest since they have to meet the demands of farmers at large. Still, ICT sources offer context-specific information, which is required to increase work efficiency and improve productivity. Suppose the information producers—such as universities, research institutions, governments, and others – decide to provide the farmers with context-specific information. In that case, television programs, local radio,

newsletters and leaflets could likely be sources of information. Farmers must be taught how to use ICT sources to survive in this cutthroat environment. Additionally, knowledge of ICT sources must be raised because they will soon occupy the top spot in every company category.

Comparison of Information Sources Concerning Land Size

One-way ANOVA was conducted to check whether any differences existed in the farmers' use of information sources based on the size of their farms. The findings of Levene's test for homogeneity of variance and the robust tests of equality of means are provided in Tables 6 and 7 (Pallant, 2010). The factors, including television, landlines, internet on computers and laptops, websites related to agriculture, and social media applications such as Facebook, YouTube, Twitter, Instagram, and WhatsApp, online agricultural applications, online agricultural websites, mobile phone calls and SMS services, NGO, and cooperatives all adhere to the homogeneity of variance assumptions. ($p > 0.05$) (Table 6).

Table 6

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Television	.164	3	603	**.920**
Radio	19.808	3	603	.000
Newspaper/Magazines	10.688	3	603	.000
Landline phones	.895	3	603	**.443**
Internet on Computer/Laptops-Agriculture websites	.417	3	603	**.741**
Internet on Computer/Laptops-Social media applications like Instagram and Twitter, Facebook, WhatsApp, YouTube	.507	3	603	**.677**
Internet on mobile phones-Agriculture applications	.647	3	603	**.585**
Internet on mobile- social media applications like YouTube, Facebook, Instagram and Twitter	6.814	3	603	.000
Internet on mobile- Agriculture websites	.091	3	603	**.965**
Call and SMS services of mobile phones	.687	3	603	**.560**
KVKs/Research Stations	12.757	3	603	.000
Krishi Mela	18.343	3	603	.000
Input dealers/shops/private companies	5.448	3	603	.001
Other farmers	3.582	3	603	.014
State agricultural universities	11.328	3	603	.000
State department of agriculture	7.373	3	603	.000
NGO	.412	3	603	**.744**
Cooperatives	.183	3	603	**.908**

Input dealers/shops/private companies, radio, newspapers/magazines, the Internet on mobile devices, social media platforms like Facebook, Instagram, and Twitter, Krishi Mela, other farmers, state agricultural universities, and the state department of agriculture are examples of variables that defied the equality of means test ($p < 0.05$) but failed the homogeneity of variance assumption. (Table 7).

Table 7

Robust Tests of Equality of Means

		Statistic[a]	df1	df2	Sig.
Television	Welch	15.032	3	334.594	**.000**
Radio	Welch	52.284	3	333.196	**.000**
Newspaper/Magazines	Welch	47.550	3	331.754	**.000**
Landline phones	Welch	.291	3	334.855	.832
Internet on Computer/Laptops-Agriculture websites	Welch	.862	3	334.245	.461
Internet on Computer/Laptops-Social media applications such as Facebook, YouTube, WhatsApp, Instagram and Twitter	Welch	.434	3	334.419	.729
Internet on mobile phones-Agriculture applications	Welch	.884	3	334.476	.450
Internet on mobile- social media applications like YouTube, Facebook, Instagram and Twitter	Welch	141.692	3	332.220	**.000**
Internet on mobile- Agriculture websites	Welch	.695	3	334.987	.556
Call and SMS services of mobile phones	Welch	1.155	3	333.748	.327
KVKs/Research Stations	Welch	52.737	3	330.139	**.000**
Krishi Mela	Welch	68.126	3	330.977	**.000**
Input dealers/shops/private companies	Welch	69.511	3	333.067	**.000**
Other farmers	Welch	47.627	3	333.771	**.000**
State agricultural universities	Welch	55.742	3	330.379	**.000**
State department of agriculture	Welch	45.017	3	331.775	**.000**
NGO	Welch	.349	3	334.785	.790
Cooperatives	Welch	.264	3	334.490	.851

Asymptotically F distributed
Source: SPSS (2022)

Results (Table 8) demonstrate that the use of information sources like Television, Radio, Newspaper/Magazines, Internet on mobile- social media applications like YouTube, Facebook, Instagram and Twitter, KVKs/Research Stations, Krishi Mela, State department of agriculture, other farmers, Input dealers/shops/private companies, and State agriculture universities differ significantly with different farm sizes. Due to farmers' varying farm sizes, which affect how they use sources, a variation has been documented.

Table 8

ANOVA Results for Information Source Utilization with Respect to Top Farm Sizes of the Farmers

		Sum of Squares	df	Mean Square	F	Sig.
Television	Between Groups	113.490	3	37.830	14.793	**.000**
	Within Groups	1542.072	603	2.557		
	Total	1655.562	606			
Radio	Between Groups	441.502	3	147.167	47.751	**.000**
	Within Groups	1858.445	603	3.082		
	Total	2299.947	606			
Newspaper/Magazines	Between Groups	523.415	3	174.472	48.594	**.000**
	Within Groups	2164.997	603	3.590		
	Total	2688.412	606			
Landline phones	Between Groups	.262	3	.087	.293	.830
	Within Groups	179.139	603	.297		
	Total	179.400	606			
Internet on Computer/Laptops-Agriculture websites	Between Groups	1.155	3	.385	.940	.421
	Within Groups	247.036	603	.410		

	Total	248.191	606			
Internet on Computer/Laptops-Social media applications like YouTube, Facebook, Instagram, Twitter, WhatsApp	Between Groups	.735	3	.245	.451	.717
	Within Groups	327.894	603	.544		
	Total	328.629	606			
Internet on mobile phones-Agriculture applications	Between Groups	7.387	3	2.462	.886	.448
	Within Groups	1676.092	603	2.780		
	Total	1683.479	606			
Internet on mobile- social media applications like YouTube, Facebook, Instagram and Twitter	Between Groups	890.560	3	296.853	158.656	**.000**
	Within Groups	1128.247	603	1.871		
	Total	2018.807	606			
Internet on mobile- Agriculture websites	Between Groups	2.628	3	.876	.728	.535
	Within Groups	725.503	603	1.203		
	Total	728.132	606			
Call and SMS services of mobile phones	Between Groups	6.221	3	2.074	1.114	.343
	Within Groups	1122.563	603	1.862		
	Total	1128.784	606			
KVKs/Research Stations	Between Groups	272.819	3	90.940	38.884	**.000**
	Within Groups	1410.245	603	2.339		
	Total	1683.064	606			
Krishi Mela	Between Groups	399.215	3	133.072	51.896	**.000**
	Within Groups	1546.202	603	2.564		
	Total	1945.417	606			
Input dealers/shops/private companies	Between Groups	375.434	3	125.145	60.279	**.000**
	Within Groups	1251.893	603	2.076		
	Total	1627.328	606			
Other farmers	Between Groups	253.650	3	84.550	42.007	**.000**
	Within Groups	1213.697	603	2.013		
	Total	1467.348	606			
State agricultural universities	Between Groups	278.757	3	92.919	41.767	**.000**
	Within Groups	1341.487	603	2.225		
	Total	1620.244	606			
State department of agriculture	Between Groups	264.933	3	88.311	36.046	**.000**
	Within Groups	1477.311	603	2.450		
	Total	1742.244	606			
NGO	Between Groups	.479	3	.160	.351	.789
	Within Groups	274.250	603	.455		
	Total	274.728	606			
Cooperatives	Between Groups	.577	3	.192	.266	.850
	Within Groups	436.474	603	.724		
	Total	437.051	606			

A pairwise comparison of the mean using Tukey HSD revealed that in the utilization of Television, Krishi mela and the State department of agriculture, all groups were statistically different from each other except the 4 to 10-hectare and ten and above 10-hectare group. Further, in the case of radio and internet on mobile phones-social media applications, all groups were significantly different from each other. Whereas in sources like newspapers/magazines, input dealers and other farmers, below 2 and 2-4-hectare groups were not statistically significantly different from each other. For the sources like KVK research stations and state agricultural universities, two groups were not found to be significant additional such as 2-4 hectares and 4-10 hectares.

Challenges Faced in Accessing Information

Factor analysis was conducted to identify and categorize farmers' difficulties accessing information. Is Bartlett's test of sphericity used to check the factorability of the data? The Kaiser-Meyer-Olkin (KMO) value was utilized to confirm the sampling adequacy of the data. KMO was determined to have a value of 0.876, which is higher than the suggested cut-off point of 0.6, as indicated in Table 9, and Bartlett's test of sphericity is significant ($p< 0.05$) (Pallant, 2010). For factor extraction, Principal component analysis was utilized. Communalities were checked as they are the deciding factor in including or excluding a variable in the factor analysis. Cut off the value of Communality should be 0.5. According to Hair et al. (2006), the average factor loading of all the factors' items should be greater than 0.5. Based on the findings, values of commonalities and factor loading of 3 statements were found to be less than the cut-off values and were removed. Those three statements were: non-availability of information in local/simple language, Poor public relations with extension officers and Lack of professional attention to the needs of the farmers. The remaining 21 statements were categorized into four factors. The four factors' eigenvalues are more significant than the suggested value of 1. About 69.7% of the variance is explained by these factors collectively.

The following categories and labels apply to the factors. All variables categorized as "Source related challenges" are included in the first factor. Out of the 69.7% of the explained variance, this group accounts for a reasonably large fraction (23.6%). Thus, it suggests that the majority of farmers believe they encounter source-related difficulties while trying to get the necessary information, i.e. Online platforms only offer partial information; information sources are not easily accessible; information is broadcast on television or radio at odd hours; mobile applications do not function properly in terms of offering immediate solutions to problems; information sources are expensive to acquire; there are high fees associated with using the internet and phones to obtain information; and there is poor network connectivity. The second variable consists of all the variables that fall under the category of "Individual related problems." It explained an 18.536% variance in the total variance. Under this category, challenges faced by the farmers are Insufficient technical knowledge, Inability to read and write (Illiteracy), Unawareness of sources of information, Insufficient funds to get information, less time for searching for information and Less interest in the report. The third factor comprises six statements explaining 15.561 % of the total variance. This factor is about the "Information provider related challenge." It includes words like Lack of technical guidance by the authority concerned, Lack of training programs/workshops on the use of the Internet, sources for accessing agriculture information, Lack of follow-up activity, Lack of visit by agricultural extension officers and Inadequate knowledge and preparation by extension officers. The next factor extracted included three statements which were related to each other. This factor explained 11.982 % of the total variance. Based on the statement's meaning and nature, this factor is named 'Other Challenges.' It includes information like the Slow rate of private investment in the agriculture sector of Punjab, the Digital divide and the Lack of regular power supply.

Table 9

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.876
Bartlett's Test of Sphericity	Approx. Chi-Square	8893.325
	Df	276
	Sig.	.000

Table 10

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.592	31.391	31.391	6.592	31.391	31.391	4.968	23.656	23.656
2	3.579	17.042	48.433	3.579	17.042	48.433	3.893	18.536	42.193
3	2.770	13.192	61.625	2.770	13.192	61.625	3.268	15.561	57.753
4	1.703	8.110	69.735	1.703	8.110	69.735	2.516	11.982	69.735
5	.948	4.516	74.251						
6	.574	2.735	76.986						
7	.550	2.621	79.607						
8	.522	2.487	82.094						
9	.485	2.309	84.403						
10	.456	2.169	86.572						
11	.375	1.788	88.360						
12	.369	1.758	90.118						
13	.354	1.687	91.805						
14	.306	1.456	93.262						
15	.279	1.327	94.589						
16	.254	1.211	95.800						
17	.237	1.129	96.929						
18	.201	.959	97.889						
19	.184	.874	98.763						
20	.141	.671	99.434						
21	.119	.566	100.000						

Note: Method of extraction: a principal component analysis.

Table 11

Rotated Component Matrix

	Component			
	1	2	3	4
Online platforms provide incomplete information	.876			
Lack of accessibility to information sources	.874			
Information broadcasting at odd hours on television/radio	.873			
Mobile applications do not work properly in terms of providing immediate solutions to the problems	.824			
High cost of acquiring Information sources	.820			
High tariffs for using the internet and phones to get information	.809			
Poor network connectivity	.695			
Insufficient technical knowledge		.822		

Inability to read and write (Illiteracy)		.813		
Unawareness of information sources		.804		
Deficiency of funds to obtain information		.756		
Lack of time to search for information		.750		
Lack of interest in the information		.743		
Lack of technical guidance by the authority concerned			.861	
Lack of training programmes/workshops on the use of Internet sources for accessing agriculture information			.804	
Lack of follow-up activity			.754	
Lack of visits by agricultural extension officers			.730	
Inadequate knowledge and preparation by extension officers			.720	
The slow rate of private investment in the agriculture sector of Punjab				.843
Digital divide				.838
Lack of regular power supply				.837

Notes: Method of extraction: principal component analysis;
Method of rotation: varimax with Kaiser normalization; a process converged in five iterations

A Comparison of the Challenges Faced Concerning Farm Size

One-way ANOVA was used to determine if there were differences in terms of challenges faced by the farmers concerning their farm sizes. Tables IV provides Levene's test for homogeneity of variance. The independent variables, namely Source related challenges, Individual related challenges, Information provider-related challenges, and other challenges, conform to the assumptions of homogeneity of variance ($p > 0.05$) (Table 12).

Table 12

Testing of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Source Related Challenge	.145	3	603	**.933**
Individual Related Challenge	.146	3	603	**.932**
Information Providers Related Challenge	.936	3	603	**.423**
Other Challenges	.024	3	603	**.995**

Table 13

ANOVA Results of Comparison of Challenges Concerning Farm Size

		Sum of Squares	df	Mean Square	F	Sig.
Source Related Challenge	Between Groups	7.109	3	2.370	1.899	.128
	Within Groups	752.307	603	1.248		
	Total	759.417	606			
Individual Related Challenge	Between Groups	2.827	3	.942	1.164	.323
	Within Groups	488.040	603	.809		
	Total	490.867	606			
Information Providers Related Challenge	Between Groups	1.813	3	.604	1.021	.383
	Within Groups	356.863	603	.592		
	Total	358.675	606			
Other Challenges	Between Groups	2.073	3	.691	.412	.745
	Within Groups	1012.303	603	1.679		
	Total	1014.376	606			

Findings (Table 13) demonstrate that the difficulties farmers with various farm sizes encounter in gaining access to information are similar. So, farm size has no impact on the challenges faced by the farmers of the Malwa region of Punjab.

Conclusions, Implications and Recommendations

According to the results, most farmers prefer to learn more about crop farming, and the results showed that information connected to allied activities is the least necessary information. The study's implications are as follows: suppose the situation persists as it does now and shortly. If modern means of communication, such as Information and communication technologies, had contained locally relevant, context-specific information for farmers, they might have been more accessible and appropriate sources. In that case, traditional and interpersonal forms of communication will continue to be of the utmost importance and widespread sources of information amongst the farmers.

1. To develop appropriate policies for information generation for farmers, policy-making bodies must take context-specific information into account.
2. When creating efficient extension and dissemination initiatives, it is essential to consider the preferences and demands of a particular group of farmers.
3. Farming communities vary widely regarding their traits and information demands; therefore, intervention programs must pay careful attention to these differences.
4. The following recommendations are given in light of these findings:

The information providers need to decide on the best channels for reaching farmers with the information that they need. If the situation doesn't change, traditional and interpersonal methods work better in rural areas. An open line of contact among the suppliers of information and the information sources is necessary for this to occur. Agricultural programs broadcasted on television and radio need to be encouraged and established first. Then, local periodicals relevant to the area should be supported, motivated, and published locally. The local community where programs are implemented must be a focus of information distribution in the agenda of the government and development partners. Farmers' information demands are dynamic, so there is a requirement to identify those information needs constantly. In light of this, it is advised that future studies should consider various agroecological zones while also taking local development into account.

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Exploring the Influence of Sustainable Tourism on the Growth of the Handicraft Sector: A Socio-Demographic Study of Rajasthan

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[Abstract] Rajasthan is one of India's most well-liked travel locations because of its magnificent forts, palaces, artwork, traditions, and cultural history. Many foreigners visit Rajasthan while visiting India due to its famous art, culture, and craftsmanship. Handicrafts are valuable souvenirs that form a vital part of the tourism experience; they symbolize local traditions and communities. Many countries benefit from the handicrafts business, providing the local population with earnings and employment prospects. Tourists from all over the world admire Rajasthan's handicrafts because of their simplicity and elegance. These handicraft items generated foreign revenue and earned the state and country a wide acclamation. This paper aims to assess the relationship between the socio-demographic characteristics of local handicraft workers and their perception of sustainable tourism and the role of government. An exploratory study was conducted across the four districts of Rajasthan - Jaipur, Jodhpur, Jaisalmer, and Udaipur to gain insight into the handicraft business through surveys with individuals involved in it. For this study, a structured questionnaire has been used, which consists of statements related to the role of tourism and government.

[Keywords] handicraft tourism, tourism, sustainable tourism, Rajasthan tourism, local community development

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Introduction

The tourism industry has been growing expeditiously and contributing considerably to nations' GDPs. This rapid development comes with the problems of the asymmetrical distribution of benefits. The motto of the sustainability of tourism is to minimize the damaging impacts of mass tourism on the environment, economy, society, and culture and to create sustainable living for host communities. For the justifiable growth of tourism, appropriate consideration is necessary for the factors like local economic growth, host community development, and environmental protection.

With the growth of tourism, new forms of tourism, like sustainable tourism, responsible tourism, ecotourism, etc., evolved, giving more importance to the environment and well-being of the host community (Pataskar, 2005). As per UNDESA, tourism is one of the businesses with the fastest growth rates worldwide. It provides significant employment and foreign exchange and profoundly influences the economy and ecology of host destinations. Developing economies receive more significant influence of tourism on their economy, community, culture, and ecology; therefore, the sustainability of tourism is imperative to support tourism expansion in the upcoming year. The essential components of sustainable tourism development are the environment, economic, and socio-cultural factors. One of the SDG Agenda for Sustainable Development targets is to create more jobs in the tourism industry and bring local culture and products on a broad platform. Local population support is crucial for the sustainable growth and development of the tourism industry (Ryan, Zhang, & Zeng, 2011).

Literature Review

The tourism industry has become more significant to communities worldwide, so sustainably promoting tourism is a top priority. Local communities are a significant source upon which tourism depends, and their presence in a certain location at a specific period can be used to validate the industry's growth (Richards & Hall, 2002). Tourism is very important for developing nations like India, as it provides employment and contributes so much to the economy in different forms. It provides various entrepreneurial and service opportunities to host communities (Gombu, 2021). The government's role in fostering and advancing the handicraft industry is crucial, and the government should create and implement policies for the economic benefit of vulnerable people (Abisuga-Oyekunle & Fillis, 2016). There exists a positive relationship between sustainable development and tourism industry growth. The effort towards maintaining more benefits for the local population over costs contributes to both sustainable tourism and tourism industry growth (Creaco & Querini, 2003). Tourism improves the standard of living of the local population by providing employment. It also supports and promotes local dances, events, festivals, folk traditions, and fine arts and provides a market for local handicrafts and manufacturing (Kumawat & Kumar, 2021). Handicrafts are the most significant part of the tangible cultural heritage of the state. They are one of the major factors that attract tourists, and a relationship exists between tourism and handicrafts. The expansion of the tourism industry shows a significant growth in the production and sale of handicrafts. They contribute considerably to the culture and tourist experience of tourist destinations and significantly to the state's economy by employing crafters and artisans who, while preserving cultural heritage, generate income through the informal sector (Baskaran, 2021). Tourism is of great economic and social significance to the host destination. It provides income and employment opportunities. The tourism sector consists of numerous businesses offering tourists various goods and services, with handicrafts ranking as one of the most well-known attractions that capture Rajasthan's rich cultural past. These crafters and artisans work in different environments. Some work in more formal creative industries, while others work in travel, leisure, and event services.

Tourism provides a huge export opportunity for many handicrafts. For instance, hotels, restaurants, and tour organizers require varied handicrafts to decorate and furnish their premises. Rajasthan is home to a wide range of ethnic communities and crafters. Most of them still maintain their cultural tradition in the form of handicrafts, including jewelry, beadwork, woodwork, wooden furniture, paintings, blue pottery, marble work, terracotta work, embroidery, puppet shows, carpets and rugs, leather goods, etc. (Saxena & Gupta, 2020). These crafters and artisans face major obstacles and challenges in their development and struggle hard to survive. As with the advent of industrialization, some handicrafts gradually lost their relevance, and the industry is currently stigmatized with inferiority and backwardness. To solve this problem, the collective efforts of government and stakeholders are a must. (Dash, 2015).

Methodology

The representative sample of participants for the current study was chosen based on the following factors. Respondents must belong to an ethnic minority community residing in Rajasthan; respondents must have handicrafts as their source of income; the sample size should be between 100 and 120. The study was conducted in the four districts of Rajasthan: Udaipur, Jodhpur, Jaipur, and Jaisalmer. Thirty handicraft workers were selected from each district, thus, making the total sample size 120. The information for this study was gathered from primary data. To collect data, a structured questionnaire comprising statements related to the role of sustainable tourism in the growth of the handicrafts sector and the role of government

in the sustainable development of the handicraft sector and tourism industry with dichotomous rating scales was used. The raw data collected was carefully checked, verified, and properly organized. After coding, data entry was carefully done, and statistical tools like SPSS (version 26.0) and MS Excel were then used to analyze the data. Data analysis techniques, such as descriptive and inferential statistics, were used further. To study the distribution of perception of local residents involved in the handicraft industry across socio-demographic factors, a non-parametric test was used—the Mann-Whitney U test for gender and the Kruskal-Wallis test for education and age.

Table 1

Descriptive Statistics of Demographic Variables

Demographic Variables		Count	Percent
Gender	Male	86	71.7%
	Female	34	28.3%
Age group	Up to 30 years	37	30.8%
	31-40 years	49	40.8%
	41-50 years	23	19.2%
	Over 50 years	11	9.2%
Highest level of Education	Up to matric	43	35.8%
	Up to higher secondary	56	46.7%
	Over higher secondary	21	17.5%

The details about the demographic profile show that 71.7% were male respondents who participated in the study; in contrast, 28.3% were female respondents. Thus, the gender ratio of the respondents in this study is 2.5:1, indicating a domination of the male perspective in research findings. The majority (40.8%) of participants surveyed were 31-40 years, followed by 30.8% aged up to 30 years, 19.2% between the ages of 41 and 50, and 9.2% beyond 50. The mean age of respondents was 36.4 years, with an SD of 5.74. As per the respondents' education profiles, 46.7% had a higher secondary education, followed by 35.8% with a secondary education or less, and 17.5% with a higher secondary education.

Table 2

Descriptive Statistics of Perception of Locals Involved in the Handicraft Industry Regarding the Influence of Sustainable Tourism on the Growth of the Handicraft Business

Influence of Tourism	N	Mean	Std. Deviation
Increase in Demand	120	1.05	.219
Employment generation	120	1.24	.430
Growth of small-scale businesses	120	1.44	.499
Growth of Supporting industries	120	1.33	.473
Commercialization of customs & traditions	120	1.22	.414
Increased benefits to locals	120	1.09	.290
Improved standard of living	120	1.31	.464
Valid N (listwise)	120		

Table 3

Descriptive Statistics of Perception of Locals Involved in the Handicraft Industry Regarding the Role of Government in the Growth of the Handicraft Sector and Tourism Industry

Role of Government	N	Mean	Std. Deviation
Subsidies to crafters	120	1.54	.500
Development of Hotels & Resorts	120	1.23	.425
Development of Heritage Sites	120	1.33	.470
Training and support to crafters	120	1.42	.496
Organized various exhibitions	120	1.36	.482
Valid N (listwise)	120		

Hypothesis Testing

H1: The perception of handicraft industry workers regarding the influence of sustainable tourism on the growth of the handicraft business is the same across gender, age group, and the highest level of education.

H2: The perception of handicraft industry workers regarding the role of government in the growth of the handicraft sector and tourism industry is the same across gender, age group, and the highest level of education.

Analyses of Hypotheses

Null Hypothesis H1a: The perceptions of men and women regarding the influence of sustainable tourism on the growth of the handicraft business are not significantly different.

A non-parametric Mann-Whitney test was used to investigate the null hypothesis, which states that perceptions of the influence of sustainable tourism on the growth of the handicraft business did not vary by gender. The null hypothesis is maintained after a U test, demonstrating that gender has no bearing on how craftspeople perceive sustainable tourism's influence.

Hypothesis Test Results

Null Hypothesis	Test	Sig.	Result
Across all gender categories, the division of the influence of sustainable tourism is the same.	Independent-Samples Mann-Whitney U Test	.634	Maintain the null hypothesis.

The significance level is .050

Null Hypothesis H1b: The perceptions of the various age groups about sustainable tourism's influence on the handicraft business's growth are not significantly different.

The Kruskal-Wallis Test is used to test the null hypothesis, which states that perceptions of the influence of sustainable tourism on the growth of the handicraft business are consistent across age groups. The null hypothesis is dismissed, demonstrating that age difference impacts the perception of craftspeople.

Hypothesis Test Results

Null Hypothesis	Test	Sig.	Result
Across all categories of Age Groups, the division of the role of tourism is the same.	Independent-Samples Kruskal-Wallis Test	.001	Dismiss the null hypothesis.

The significance level is .050

Null Hypothesis 1c: The perceptions of the categories of respondents having different education levels regarding the influence of sustainable tourism on the growth of the handicraft business are not significantly different.

The Kruskal-Wallis Test is used to test the null hypothesis, which states that perceptions of the influence of sustainable tourism on the growth of the handicraft business are consistent across people of different educational levels. The null hypothesis is rejected, demonstrating that difference in education level impacts the perception of craftspeople.

Hypothesis Test Results

Null Hypothesis	Test	Sig.	Result
In all categories at the highest level of education, the role of tourism is divided uniformly.	Independent-Samples Kruskal-Wallis Test	.000	Dismiss the null hypothesis.

The significance level is .050.

Null Hypotheses 2a: Male and female perspectives on the role of government in the growth of the handicraft sector and tourism industry do not differ much.

To test the null hypothesis of the perception of the role of government in the growth of the handicraft sector and tourism industry is the same across gender, the Mann-Whitney U Test is conducted, and the null hypothesis is dismissed, which shows gender influences the perception of artisans.

Hypothesis Test Results

Null Hypothesis	Test	Sig.	Result
Across all gender categories, the division of the role of government is the same.	Independent-Samples Mann-Whitney U Test	.004	Dismiss the null hypothesis.

The significance level is .050

Null Hypotheses 2b: The perceptions of different age groups about the role of the government in the growth of the handicraft sector and tourism industry are not significantly different.

The Kruskal-Wallis Test is used to test the null hypothesis that perceptions of the craftspeople regarding the role of government in the growth of the handicraft sector and tourism industry are consistent across age

groups. The null hypothesis is rejected, demonstrating that age differences have an impact on the perceptions of artisans.

Hypothesis Test Summary

Null Hypothesis	Test	Sig.	Result
Across different Age Groups, the division of the role of government is the same.	Independent-Samples Kruskal-Wallis Test	.037	Dismiss the null hypothesis.

The significance level is .050

Null Hypotheses 2c: The perceptions of the categories of respondents having different education levels regarding the role of government in the growth of the handicraft sector and tourism industry are not significantly different.

The Kruskal-Wallis Test is used to test the null hypothesis that perceptions of the role of government in the growth of the handicraft sector and tourism industry are equal across different categories of education level. The null hypothesis is rejected, demonstrating that differences in education level impact the perceptions of craftspeople.

Hypothesis Test Summary

Null Hypothesis	Test	Sig.	Result
Across all categories of different levels of education, the division of the role of government is the same.	Independent-Samples Kruskal-Wallis Test	.001	Dismiss the null hypothesis.

The significance level is .050

Conclusion

For the sustainable development of host communities, the growth of the handicraft sector is a win-win situation, as it provides a boost to the local economy and attracts tourists worldwide. To make the handicraft industry economically viable, tourism and the government play big parts. This research highlights the importance of sustainable tourism and government policies in developing the handicraft industry. This study sought to determine how local handicraft industry workers' perceptions of the roles of sustainable tourism and the government in the growth of the handicraft sector were influenced by socio-demographic factors. The findings of this study reflect that both age group and education level have influenced the perceptions of the influence of sustainable tourism in the growth of the handicraft sector. The influence of government in the growth of tourism and the handicraft sector is perceived variably by all socio-demographic factors selected for the study. The results of perception of the influence of sustainable tourism in the growth of the handicraft sector across males and females show no variance that is there is no significant difference in their opinion regarding it.

Today, sustainable and economic development in any sector is impossible unless it generates employment and revenue along with skill enhancement in its human resources (Hosseinnia & Shoja, 2017).

The research results indicate a significant role of tourism in generating demand for handicraft products, creating employment, and economic benefits for locals through sustainable tourism development. This implies that tourism development can have sustainable financial implications for the handicrafts sector due to preserving and transmitting local ethnic culture (Saad, 2020). Additionally, the government's contribution to developing the handicraft sector is essential for the long-term growth of both tourism and handicraft businesses. The involvement of the state government and local authorities is vital in initiating, implementing, promoting, monitoring, and sustaining tourism programs and developing the handicraft industry. As such, the programs must satisfy the expectations of ethnic communities by involving local people and institutions.

Tourism in Rajasthan contributes significantly to the state's GDP and provides economic benefits, such as regional development, infrastructure development, employment, foreign exchange earnings, and promoting local handicrafts. Handicrafts symbolize local traditions and the local communities. However, the industry is currently stigmatized with inferiority and backwardness, and the locals face various challenges. Undoubtedly, the promotion of sustainable tourism will give a boost to the handicraft industry (Dash, 2015).

Future Scope

This study was conducted in four districts of Rajasthan, and three factors of socio-demographic variables were considered. Future researchers are urged to perform thorough research from the standpoint of workers in the handicraft business, which covers a wide geographical area and includes additional socio-demographic factors.

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A Revisit on Training and Development Practices in Public Sector Undertakings for Employee Sustenance

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[Abstract] In India, the concepts of training and development have a significant weight in the country's organizations' public and commercial sectors. It is essential for both the growth and development of the organization, which helps to prevent managerial obsolescence, as well as the development of its employees (which helps improve knowledge, skills, and performance). These training and development policies assist management with assessing employees' work performance and making choices on the welfare of individual employees about promotion, awards, compensations, and other welfare facilities, among other things. It also helps managers in areas such as inspiring colleagues, keeping workers, planning, organizing, and supervising the implementation and executing of plans. This article is a review study that looks at the practices used for training and development in the public sector in India. The study went through the many phases, techniques, and advantages of training, including those for individuals, organizations, and society. It also developed a model for improving the effectiveness of employee training. In preparation for the presentation of this research work, we combed through a total of 68 research articles. These articles covered training and development practices, design and implementation, evaluation, and transfer of training, all of which are intended to maximize the advantages of training and development.

[Keywords] training & development, employees' performance, sustainable training design, training implementation

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Introduction

According to McKinsey (2006), a skilled workforce with enhanced capacity, skills, and knowledge has become a considerable advantage globally. Organizations need workers with the required knowledge, skills, and talents to ensure that the correct individual is assigned to the proper position. Additionally, organizations need effective training programs that boost "employee motivation" and "organizational commitment" (Meyer & Allen, 1991). It is essential for organizations to maximize the potential of their workers in line with the job criteria. To accomplish this aim, organizations engage in long-term planning to build new skills in their employees to prepare them for times of change. Improvements made by top management personnel to workers exhibited their dedication to the organization. They stimulated them, resulting in high productivity levels for the employees working for that organization.

Training and development are essential to the upkeep of an organization's most important assets, the employees. This is because employees are the most precious assets an organization has. The development of a business is directly correlated to the success of its employees, and employee performance may be improved via training. The following formula should be used to determine the need for training and development management:

$$T\&D = SP - AP$$

Whereas:-

T&D: Training and Development

SP: Standard Performance

AP: Actual Performance

There are some areas that come under employee development, and they are listed as follows: "Technological advancement," "personality development," "interpersonal relationships," "problem-solving techniques," and so on. "Quality improvement programs," "time management skills," "employee efficiency development programs," "violence prevention programs," "workplace safety," "communication," and so on. In this research paper, we discuss the impact of training and development on employee performance and shed some light on the training literature. We also present a suggestive model for maximizing the benefits of training and its implementation. This paper also discusses the advantages of training and development for individuals, teams, organizations, and societies.

Research Problem and Research Objectives

Training is a procedure intended to develop an individual's abilities, knowledge, and strength to do an effective job that contributes to an organization's growth, capital, and productivity. In this research study, our primary emphasis is on the performance of workers who have undergone training to increase their skills. However, a significant number of businesses, both public and private, need to place more emphasis on educating their workers to boost staff productivity. This has a detrimental effect on the expansion of these businesses. When the economy is in a downturn, many companies cut their expenditures for employee training. This either results in more employee turnover or higher recruiting expenses, leading to financial losses for the companies.

A significant number of scholars have established and proved a connection between training and the success of organizations. Training helps individuals increase their knowledge and abilities, enhancing their performance, improving the business's performance as a whole, and ultimately resulting in a profit. Companies solely focused on customer relations and customer satisfaction have recognized the importance of employee development and have been working to improve it with the assistance of various training tools to lower the costs associated with employee recruitment and retention (Evans & Lindsay, 1999). This research seeks to find answers to the following questions:

- What are the meaning, methods, and importance of training?
- What benefits of training and development for individuals, organizations, and society?
- What is the relationship between training and employee performance?
- What is a suggestive model for enhancing the benefits of employee training?

To find the answers to these questions, we reviewed research papers that impact training and lead to the growth of employees' careers/organizations.

Research Objectives

To create guidelines for evaluating employee performance utilizing a variety of studies, research papers, periodicals, reports, books, and materials that have been published and unpublished, we conducted a subject review and determined the following objectives:

- To research the significance, meaning, and various training approaches.
- To determine the positive effects training and development have on individuals, organizations, and society.
- To consider the connection between training and the workforce's overall performance.
- To develop a strategy for increasing the positive effects of staff training programs.

Review of Literature

The business world faces uncertainties and new challenges in rapidly changing technology (Tai, 2006). Organizations now invest in training programs to prepare their employees for protection. We describe training and development in the figure below.

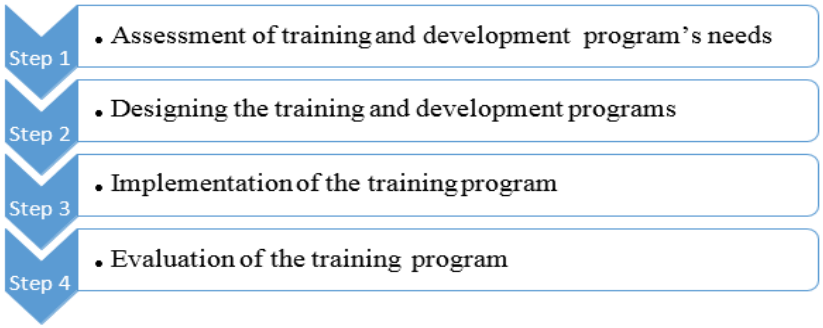
S. No	Author	Year	Findings
		Training	
1.	Rowden	2002	It has been postulated that training is a useful instrument for enhancing work satisfaction. This is because improved performance results in praise from higher management, making employees feel more at ease with their job.
2.	Hollenbeck, Derue & Guzzo	2004	Training employees not only helps them expand their talents, but also helps them improve their thinking capacity and inventiveness, which enables them to make better judgements on time and in a more productive way.
3.	Chiaburu, D. S., & Tekleab, A. G.	2005	Training programs help people enhance their skills, but they also aid companies in getting the most out of their human resources and gaining a competitive edge. Consequently, the company has to prepare a training program for its workers to help them develop the skills and capabilities necessary in the workplace.
4.	Farooq, M., & Khan, M. A.	2011	They argued that ineffective work-related practices have a negative influence on work, while effective work-related practices have a positive impact on work. If this is not the case, workers who stay in any organization produce difficulties that directly impact productivity.
5.	Tai, W. T.	2006	Greater levels of job satisfaction, as well as superior performance, are found in employees enjoying the training programs. In return, the trained workers are better at serving customers.
		Importance of Training	
1.	Bartel, A.P.	1994	"Training is required not only to boost production, but also to excite and inspire employees by teaching them of the significance of their professions and giving them with all the essential knowledge to accomplish those duties."
2.	Frayne & Geringer	2000	Participants in the training program reported increased levels of both self-efficacy and resulted in anticipation after completing the program.
3.	Goldstein Ford	2002	Learning and development is a systematic approach that strives to increase the performance of individuals, teams, and organizations.
		Employee Performance	
1.	Leonard-Barton	1992	An organization that places a high value on knowledge as a means of obtaining a competitive advantage over rivals should build a system that assures continual learning, and training is one of the most effective ways to accomplish this goal.

2.	Pfeffer	1994	It has been established that a workforce that has received adequate training is in a better position to achieve the set performance objectives and to achieve a competitive edge in the market.
3.	Delaney Huselid	1996	Training is the process of helping workers to do tasks more effectively, and, as such, it is considered to be an essential component of strategically managing the performance of human resources.
4.	Kinicki Kreitner	2007	When workers are content with their jobs and working conditions, their productivity increases, and managers have an easier time motivating high performers to help the company achieve its objectives.
The Relationship between Training and Employee's Performance			
1.	Harrison	2000	Learning via training affects the performance of an organization by improving the performance of its employees. This kind of learning is seen as an essential component in accomplishing business objectives.
2.	Swart et al.	2005	They are improving employee performance via effective training programs as a solution to performance challenges.
3.	Cheramie et al.	2007	Many different factors contribute to management's overall reluctance to invest in the company's human resources. Some workers, although participating in training programs that are efficient and timely are meant to cash it in for their market worth and job chance, or they are willing to cash it in.
4.	Sultana. A, et. al.	2012	Found that training programs are responsible for 50.1% of the variance in employee performance and that training is an excellent forecaster of employee success.
Studies on Innovative Training and Development			
1.	Nhat Tanpham, Tan vo-thanh Muhammad Muhammad Usman	2020	Training programs focused on the environment may assist individuals in lowering their carbon footprints and contributing significantly to the resolution of environmental problems.
2.	Ingeborg Kroese	2022	A model of education that is attentive to issues of sexuality and gender is presented in the review as a way to direct future research and practices. Gender-neutral training does not accurately represent the myriad ways men and women vary.
3.	Ashfaq Ahmad Kabir maitama kura palwasha bibi	2019	Identified the influence factors such as salary, management support, the degree of employee dedication, and coworkers' engagement in service.
4.	Shweta Maheshwari Veena Vohra	2018	Training and development are best practices for efficiently implementing change; with the assistance of these best practices, we determine how workers may operate most efficiently.
5.	Ravenda khresna brahmana Ritzky karina Brahmana	2018	The moderating effect of corporate governance on the relationship between company success and training and development The effectiveness of the company is improved by the training and development policies, the corporate governance program, and the training program.
6.	Riccardo Sartori Arianna Costantino Andrea Ceschi Francesco Tommasi	2018	The performance of employees may be enhanced via training, development, and innovation.
7.	Eliane Lourenco Goulart Alex Quadros		In cooperative organizations, this research aims to evaluate the link between training effectiveness and self-efficacy as a means of achieving the study's stated aim.
8.	Alba Manresa Andrea baklava Alexandra Simon	2019	The primary motto of this research is the investigation of four different training approaches and how implementing such practices might affect a company's innovative capacity and financial performance.
9.	Sanjay Kumar Singh	2019	According to the findings of this research, environmental ethics affect

	jin Chen Manlio del giudece Abdul Nasser El-Kassar		environmental training, and ecological, ethical practices must be proactive to increase environmental performance inside an organization.
10	Harshit Topno	2012	Evaluation of training and development is an essential component of any organization, since it creates a systematic approach to enhancing employee performance, job responsibilities, and the likelihood of retaining existing staff members. It is a significant investment that will ultimately contribute to the organization's development.
11	Khawaja jehanzeb Dr. Nadeem Ahmed Bashir	2013	In this study, the sound effects for organizations as well as their workers are discussed. Employees benefit from a training and development program that enhances knowledge and abilities related to specific tasks. This helps increase employee retention rates.
12	Chris Segrin Michelle Givertz	2003	The SST model is a multi-model training program that offers a variety of instructional approaches for developing skills. It makes people's situations better and assists them in dealing with the difficulties of life.
13	Danish Ahamed Siddiqui Noor Sahar	2019	The purpose of this research was to investigate the extent to which workers receive training and development and how effectively they communicate and work together. The research outcomes suggest that each employee's level of involvement may be increased via communication and that each employee's needs should be met in the current employment environment.
14	Ali Junaid khanFarrukh BashirIsmet NasimRashid Ahamad	2021	The fundamental objective of this research is to learn about nurses' perspectives on training and development and the advantages associated with receiving such training and growth. Patients get treatment of the most excellent quality, thanks in part to the efforts of the facility's nursing staff.
15.	Bee-Lan Lok Ming-yu cheng Chee-keong choong	2021	Studied the stimulus that training and development of soft skills have on organizations' performance and HRM outcomes.
Studies on Innovative Training and Development (continued…)			
16	Agnes Slavic Nemanja Berber	2019	Although they are fundamental HR operations, training and development are very important to the success of any organization. Training and development may improve employees' knowledge and abilities, which helps organizations get closer to achieving their objectives. It also helps to enhance the performance of both employees and the organization.
17	Adnan M. Rawashdeh Saleh Abdalhameed Tamimi	2020	Intentions about employee turnover and organizational commitment are investigated in this research.
18	Jessica E. Federman	2019	This research explores the many sorts of interruptions that learners experience and the influence these disruptions have on online training.
19	Annie C. Jeffries Samuele M. Marcora Aaron J. Coutts Lee Wallace Alan McCall	2022	The creation, execution, and monitoring of projects are all helped by better understanding of higher-order constructs and conceptual frameworks.

Figure 1

Stages of Training and Development Program



$$"ED = EE + ES + TE + EQWL"$$

Whereas:

"ED: Employee Development"

"EE: Employee Education"

"ES: Employee Skill"

"TE: Training Effectiveness"

"EQWL: Employee Quality of work life"

For achieving the goals of the organization, the given contribution of employees is known as the employee's performance (Frayne & Geringer, 2000).

Methods of Training and Development Program

There are numerous training methods, but the following are some of the most valuable and well-known:

1. "On the Job Training Methods" 2. "Off the Job Training Methods"

Figure 2

ON the Job Training Methods

"On the Job Training Methods"				
Job Rotation: Employees are rotated through various jobs, where they learn about different departments' jobs.	**Job Coaching:** xperienced employee can provide a verbal presentation to explain the intricacies of the job.	**Job Instruction:** An instruction or directions to perform a specific task or function in the form of orders or steps to complete a task	**Apprenticeships:** Fresh graduates are assigned to experienced employees to learn job functions.	**Internships and Assistantships:** During their education, an intern or an assistant is hired to perform specific time-bound tasks.

Figure 3

OFF the Job Training Methods

"Off the Job Training Methods"			
Classroom Lectures: An instructor delivers a verbal lecture to a large audience.	**Audio-Visual:** It is possible to do so using films, televisions, video, and presentations.	**Simulation:** This type of training method creates real-life situations to facilitate decision-making. Further, the actual job conditions understanding is also given. a.Case Study b. Role Playing	**Sensitivity Training:** This is more from the standpoint of behavioral assessment, determining how an individual will behave himself and towards others under various circumstances. There is no predetermined agenda, and everything happens in real time.

Guidelines for Employee Specialized Evaluation & Development

Table 1
Employee Specialized Evaluation & Development

Employee Specialized Evaluation & Development		
S.NO	**Categories/ Authors/year**	**Explanation**
1.	Ability Diversity Inc. 2011	Assess the employee's physical capabilities and any preexisting medical issues to determine the degree to which they can carry out the duties of their position. You should also consider the employee's psychological background when determining whether or not the employee has the mental ability to start the activities or finish them.
2.	Standards Halliburton	Examine how the workers feel about their jobs in terms of whether or not they are aware of deadlines, whether or not they understand their obligations and tasks, and whether or not they can collaborate well with their bosses. Investigate the availability and clearance of procedures and objectives and how this information is conveyed to staff members.
3.	Knowledge and Skills Training Industry, 2012	Verify that the workers' experience and skill set are commensurate with the duties that are currently being handled. Check whether there is any training available to help bridge the knowledge and skill gaps. Consider if the employee must carry out the obligations if training is not offered.
4.	Measurement ABET	Determine if your employee evaluation is centered on gauging the employee's performance in task performance or whether it is geared toward the person being evaluated.
Employee Specialized Evaluation & Development (continued…)		
5.	Feedback ET, and "Sengupta, 2012"	Analyze whether the employee is provided with frequent feedback on their performance and document your findings. In addition, if feedback is provided, it is essential to establish whether or not it is connected to the employee's salary and whether or not the employee has a vote in who reviews them.
6.	Environment McDonald's	Ensure that the worker is surrounded by the tools necessary to do the job, sufficient time is supplied, and the working environment is favorable to the activity being completed.
7.	Motivation JFC staffing company	Verify that there is some reward or incentive for excellent performance and some penalty for poor performance. In addition, when it comes to productive workers, check to see whether there is any safeguard in place to protect such workers from being given more work just because of their successful performance.

Model for Maximizing the Benefits of Training and Development

In the following paragraphs, we will provide a model that may be used to maximize the positive effects of training and development. The ideas addressed and summarized in relation to maximizing the study are the source of inspiration for our suggested model (Aguinis, H., & Kraiger, K., 2009).

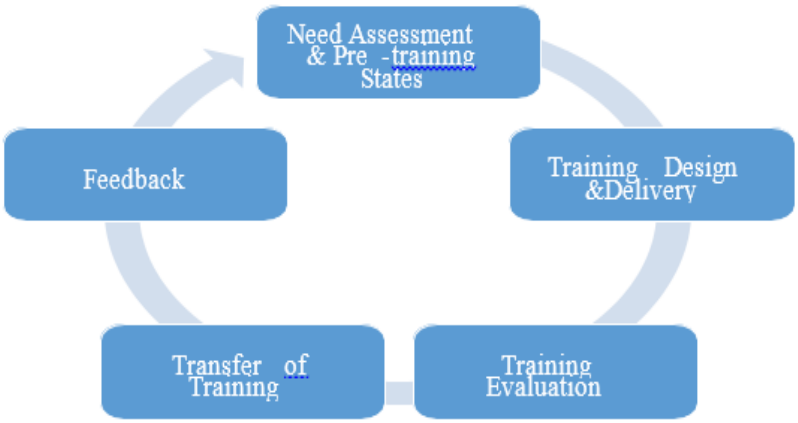


Figure 3: Suggestive Model for Maximizing the Benefits of Training and Development

Implementation of Suggestive Model for Maximizing the Benefits of Training and Development

Needs Assessment and Pre-training States

There are two ways a company may improve the advantages of training: the first approach is to do a needs assessment making use of experienced SMEs, and the second is to make sure that learners feel passionate about training. In addition, it is possible to say that certain things can increase the readiness of the trainees. Further, the anxiety of the trainees about training can be lowered by showing them in advance how fruitful the exercise is to them and by ensuring that workers are highly active in their jobs.

Training Design and Delivery

The benefits of training may be increased to their full potential by making optimal use of the methods available for training design and delivery. Several recent studies have suggested that "theory-based learning principles", like motivating learners to arrange the training matter, making sure that learners make an effort to absorb new skills, and allowing learners to learn by making mistakes and learning while making mistakes, should be utilized in the design of training programs. Additionally, how the training delivery system may be improved is via the use of technology.

Training Evaluation

In addition to getting the most out of the benefits of training, proper documentation of the training and its advantages must be carried out. When assessing training, it is essential to consider several factors, including the evaluation goal, the audience's requirements and level of expertise, and the variables about the different utility responses (i.e., affective versus utility).

Transfer of Training

`Numerous studies have focused on the best approaches to ensure that the modifications made during training are successfully implemented in real-world settings. These findings, when taken together, emphasize how important it is to consider interpersonal factors, such as support from peers and supervisors,

as mediators of the link between training and its subsequent transfer. It has yet to be universally agreed upon that factor at a more removed organizational level, such as transfer climate, have a substantial moderating role.

Feedback

The idea that the growth stage after training accurately reflects teaching efficiency has been debunked by a large number of researchers. The management is aware of this training feedback system's positive and negative aspects.

Conclusion and Future Scope of Study

Every organization engages in these activities to foster advancement, since they are crucial to individual and organizational development. These training sessions value the individual's career and performance, increasing the organization's production. Effective training and development organizations conduct these activities regularly. Still, first, they must complete a need assessment. Once they have determined the need for training, they must make a proper plan and adhere to it sincerely so that the outcome of the training activities is beneficial to an individual or an organization. This research analyzes the impact of training and development on employee performance and illuminates the training literature. This research examined how training and development benefit people, teams, companies, and society. In addition, we present a methodology for maximizing the benefits of exercise and explain how to implement it.

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Role of Artificial Intelligence (AI) in Sustainable Education of Higher Education Institutions in Guwahati City: Teacher's Perception

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[Abstract] Human resource management is a very imperative feature in the education practice. Human resources in an educational institution submit to every individual or group functioning in that institute, counting educators, learners, administrators, and all supplementary members of the workforce running in that institute. Online teaching and learning came into the style. Artificial intelligence (AI) is altering every market sector, and the education sector is no exception. AI has been converted into a fundamental component of educational institutions and has a force on teachers and students. The educational sector has embraced the recent techniques of training and learning. Hence, artificial intelligence (AI) gives opportunities for education to turn effortlessly accessible both inside and outside the classroom. In the demand of the present times, AI has a vast potential in the education sector in the market and is a progressive change. This paper attempts to get an insight on the role of AI in sustainable instruction of higher education institutions from the teacher's perception.

[Keywords] artificial intelligence, higher education institution, human resource management, sustainability

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Introduction

Technology has altered the main sectors across the globe. Technology plays a crucial part in society and is the fastest emergent essential today. Artificial intelligence (AI) is at hand in our lives, and in modern times, it is progressing with competence. AI gives a fair chance to enterprises to analyze their operational activities in detail and pave the way for a better future. Thus, using AI in active chores helps organizations attain quality and saves time. Artificial intelligence is the replication of individual aptitude procedures by machinery, particularly computer systems. AI, which stands for artificial intelligence, refers to techniques that take off human intellect to execute everyday jobs and can progress themselves based on the information they collect. The position of AI has caused a marvelous escalation in the education sector. Numerous diverse habits are being used to assist students in being taught with the increase of artificial intelligence in education. The inclusion of AI has become the need of the hour for organizations.

Earlier higher educational institutions were characterized by where teachers and students interacted in the classroom, and most of the job was done by hand in higher education institutions. In traditional learning, the teacher delivers knowledge to the students in the school. However, online teaching came into fashion during the Covid-19 pandemic, when all the countries were affected globally, especially the education sector. The Covid-19 global pandemic has dramatically impacted education, leading to the shift from the traditional classroom to an online setting. Varied modes of teaching can be used, such as one-on-one video calls, group video calls, and webinars at several apps, such as Zoom, Google meets, and so on. Online learning facilitates

teaching from any location (our comfort zone, i.e., our home) and enrolls students from various geographical areas. The internet has altered the citizen's vision of education.

AI's newest technology innovation can be used to find sustainable answers. AI would be able to cooperate in higher education institutions alongside a sustainable approach. The United Nations declared in its 2015 report, Transforming Our World: The 2030 Agenda for Sustainable Development: Getting a decent education is vital for boosting the lives of the commoner and encouraging sustainable development. The Sustainable Development Goals 2015 ensures comprehensive and fair education and stimulate enduring learning prospects for all. Target 1: "By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and Goal 4 effective learning outcomes" shows the commitment to nondiscriminatory education outcomes.

A Role for Artificial Intelligence in Sustainable Education

Planned in sequence. Students benefit from AI's applicability in education. Teachers may need to be conscious of limitations in their teaching and study resources that can create confusion in the students' minds about certain concepts. Artificial intelligence makes a mode to resolve that dilemma. Students can locate the answers or information on Wikipedia or Google Scholar.

Uncomplicated grading software. Teachers can grade the students' written papers through machines, as AI is much faster and more accurate. Teachers can now use various software applications to rate the answers and essays written by students. Teachers can reorganize their workloads according to their priorities rather than sacrificing time to evaluate answer scripts.

AI provides valuable feedback to teachers and students. AI comments on both teachers and students about the accomplishment of the lessons. Some higher education institutions are using AI systems to keep an eye on learners' improvements and to prepare the teachers if there is any matter with student presentation. Various AI systems permit learners to obtain the guidance they require.

Virtual Reality Learning. Students feel more associated with their education familiarity. AI in tutoring has been tremendously rising by presenting virtual reality lessons. Users of AI have contact to submit to universities across the globe from any part of the city.

Transform the position of educators. In the education sector, teachers are accountable for eternity. Therefore, AI is modifying the position of the educator to be that of a facilitator. As mentioned above, AI can capture odd jobs like grading, help students progress learning in a different manner, and serve as a place for students to find information. In some way or another, technology is already motivating changes in higher educational institutions' classrooms.

Undoubtedly Artificial Intelligence Is Now an Enormous Instrument in Teaching-Learning Environment, But AI Still Has A Few Disadvantages:

Diminishing human interaction. Students lose the capacity to become skilled at societal skills, as they do not interrelate with the entire group for the course instance, thereby creating a communication gap between teachers and students.

Financial Problem. AI machines, such as face detection or language processing tools adopted by higher educational institutes, are much more expensive. Putting these technologies into operation in higher educational institutions takes more work.

Addicted to AI. As students get more interested in AI devices, students could lose interest in learning. Artificial intelligence can become addictive.

Maintenance issue. A specialist should be present in higher educational institutions to serve

everything AI does.

The approach of idleness. With the increased usage of AI, students nowadays wish to avoid placing an attempt into their studies, as AI has made things much more suitable. Therefore, this technology has persuaded idleness in the student body.

Literature Review

Chaudhary (2017) confirms that artificial intelligence is mutually advantageous for learners and educators. The applicability of artificial intelligence and recently upgraded software have assisted learners and educators to achieve more didactic knowledge (Ocaña-Fernández, Valenzuela-Fernández, & Garro-Aburto, 2019). The consequence of these advanced systems of AI does not discontinue at this position. It improves tutoring for all diverse groups, thereby civilizing the quality of tutoring by allowing feedback to students on their knowledge acquired.

Chaudhary (2017) confirms that using new technologies can help both educators and learners gain added educational familiarity. Though artificial intelligence (AI) is an element of computer science, intelligent systems bestow identical uniqueness originating in individual performance (Aldosari, 2020). Researchers believe that the effects of the supremacy of artificial intelligence contribute to momentum and precision (Ma, & Keng, 2018). Therefore, AI is a chief force on the curriculum of higher education institutions. AI is altering how educators instruct and how students acquire knowledge, and it is now promoting tailored teaching and learning (Dishon, 2017). AI evaluates students' performance based on gigantic information and instrument knowledge by curbing learners' erudition instantly.

AI's reducing the burden on teachers is another advantage. In most higher education institutes, the teachers devote most of their time to checking homework and assessment documents, which absorb teachers' training and research time. Therefore, intelligent systems (Holstein, McLaren, & Aleven, 2017), didactic robots (Chevalier, Riedo, & Mondada, 2016) and other AIs can lend a hand to the teachers in solving these continual tasks mechanically.

Methodology

The study is descriptive, and the data used are primary and secondary data. The study was conducted among the teachers of various higher education institutions in Guwahati, Assam. The data was collected by circulating a questionnaire among the teachers of different higher education institutions in the city. The total sample size of the study is 105. The study was conducted in the period of September-October 2022. The analysis has been done with the help of SPSS ver.20 using Chi-Square testing. Apart from this, secondary data has been compiled through journals, annual reports, and articles linked to the topic of the present study. In this study, the researcher has adopted Judgmental Sampling Technique in selecting the sample unit.

The objective of the research is to analyze the function of artificial intelligence (AI) in the sustainable education of higher education institutions (HEI), with particular reference to the city of Guwahati from the teacher's perception.

Data Analysis

Null Hypothesis:

H1: There is no association between the quality of teaching and gender in using AI.

H2: There is no association between proper time management and gender in using AI.

H3: There is no association between the level of learning and gender in using AI.

H4: There is no association between the level of communication with students and the use of AI.

Table 1

Summary of Hypothesis

Sl No.	Hypothesis	P-Value	Result
1	H1	.02	Rejected
2	H2	.01	Rejected
3	H3	.03	Rejected
4	H4	.04	Rejected

Interpretation

From the above analysis, it can be interpreted that the p-value of H1 is .02, i.e., it is < 0.05, which is of significance rank. Since an acceptable quality of teaching is one of the foremost essentials of higher education institutions, as a result of the use of AI, the quality of teaching plus its sustainability has been increased. So, the null hypothesis is cast off, and the substitute hypothesis is established; hence, an association linking the quality of education plus gender in using AI is present.

While AI is the most powerful technology, it saves a lot of time for the teachers and the students, and using AI by gender leads to proper time management in the training process. The p-value of H2 is .01, i.e. it is < 0.05, which is of significance rank. So, the null hypothesis is discarded, and the substitute hypothesis is acknowledged; hence, a relationship between proper time management plus gender in using AI is present.

The p-value of H3 is .03i.e it is < 0.05, which is of significance rank. So, the null hypothesis is cast off, and the alternate hypothesis is accepted; hence, there is an alliance involving the level of learning and gender in using AI. Male students, as well as female students, can learn their answers from internet sources. Consequently, using AI has also enhanced their intensity of learning.

The p-value of H4 is .04, i.e., it is < 0.05, which is of significance rank. Throughout the use of AI, a communication gap has evolved between educators and learners in the classroom. Both male students and female students have become tech addicts. So, the null hypothesis is discarded, and the alternative hypothesis is established; hence, the relationship involving the level of communication with the students, along with the use of AI, is at hand.

Results and Discussions

It has been found that most teachers have been working in different colleges in the city for an extended period, more than five years. The teachers in higher education institutions have been using AI, such as interactive boards and laptops, which significantly influences their teaching style, such as proper time management and quicker teaching. Due to the availability of AI and the internet, students can now learn quickly. However, for every advantage, there is a disadvantage. It has been found that AI has created a communication gap between teachers and students, thereby making the students tech addicts, too. To minimize the communication gap, teachers may persuade the students to share their experiences in the classroom. This can be prepared using effortless assignment tasks or by encouraging extra-curricular activities, like sports, cultural events, etc. Teachers may discuss digital balance with the students and guide them to tackle the pitfalls of technology obsession.

Conclusion

Artificial intelligence and its practice in our normal life seem to grow daily. In education, AI started making its mark by acting as a support to maintain the teaching and learning process. It has enhanced teachers' teaching quality and students' learning methods. Applications of current technological advancements in artificial intelligence hold considerable promise for making education sustainable for India and the rest of the globe. In its 2015 report, Transforming Our World: The 2030 Agenda for Sustainable Development, the UN affirmed the following: A high-quality education is obligatory to advance people's lives as well as advance sustainable development. AI in education is here to stay and will only carry on progressing and cause a revolutionary alteration in the higher education institutions.

Future Research

Even though the technology is available in most schools, colleges, and universities, all the educators and learners are not occupied in this arrangement. Most older teachers lack knowledge of how to use their laptops or mobile devices' internet capabilities. Furthermore, some rural places lack internet access, while some less developed communities lack access to electricity and other modern conveniences. It can be accomplished that the location of AI has caused a spectacular acceleration in the education region and its sustainability. However, augmentation of infrastructure for artificial intelligence is eventually compulsory to judge this manner of learning as absolutely rewarding.

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Social Sustainability of Tea Industries: Measuring Through Subjective Happiness of Tea Garden Workers of Dibrugarh District, Assam

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[Abstract] The present study investigated the subjective happiness of tea garden workers of Dibrugarh district, Assam, concerning gender (male and female) and income group (middle and lower-income groups). The sample comprised 100 (50 male, 50 female) tea garden workers aged 21 to 60 years. A survey research design was implemented in this study, while the purposive sampling technique was used for selecting participants. A socio-demographic sheet and subjective happiness scale was used to collect data. Mean, standard deviation, percentage (%), and t-test were computed for statistical analysis of the responses. The findings reveal that the subjective happiness of male and female tea garden workers is significantly different at the 0.01 level. Male workers perceive more pleasure than their female counterparts; further, it was found that lower- and middle-income group workers perceive an equal level of satisfaction in their lives; no significant difference was found between them.

[Keywords] gender, middle-income group, subjective happiness, social sustainability, tea garden workers

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Introduction

Sustainability and sustainable development are essential in making industry or business more profitable in other fields. Although some people use the words "sustainability and sustainable development" interchangeably, they both talk about the possible danger of excessive consumption of natural resources without refilling them. However, there are some subtle differences between the two: sustainability focuses more on present status, while sustainable development focuses more on future outcomes.

Moreover, the term sustainable is broad, as it includes both environmental and social and economic sustainability, which are called three pillars of sustainability (Kaur & Kumar, 2022). These are also represented as a planet, people, and profit. That means an industry can be sustainable only when it saves its natural resources, has a healthy workforce, and remains financially stronger by generating long-term revenue. Sustainable means something that is to be sustained continually to a certain level. In 1987, the United Nations Brundtland Commission (United Nations, 2022) defined sustainability as "meeting the needs of the present without compromising the ability of future generations to meet their own needs."

On the other hand, sustainable development describes the processes to be sustained continually by achieving some goals called sustainable development goals, such as improving long-term economic

conditions and the quality of life of future generations without compromising their ability to meet their goals and needs.

In 2015, United Nations General Assembly (UNGA) (United Nations, 2015) interlinked goals to bring peace and prosperity among the people on this planet at present and in the future. These goals are called Sustainable Development Goals (SDGs) or Global Goals. These goals are mainly "No poverty, zero hunger, good health and well-being, good health and well-being, quality education, gender equality, clean water and sanitation, affordable and clean energy, decent work and economic growth, industry, innovation and infrastructure, reduced inequalities, sustainable cities and communities, responsible consumption and production, Climate Action, Life Below Water, life on land, Peace, Justice, and Strong Institutions, Partnerships for the Goals." (UNDP, 2022). Most of these goals are expected to be achieved by 2030. Therefore, organizations, especially industries, can become sustainable if they try to complete most of the above SDGs.

We have already found that an organization cannot be sustained without the well-being of its employees because they are an integral part of an organization. Therefore, in this present study, the researcher attempted to focus on "good health and well-being of workers of tea industries," which is one of the 17 SDGs and one of the pillars of sustainability, i.e., social sustainability.

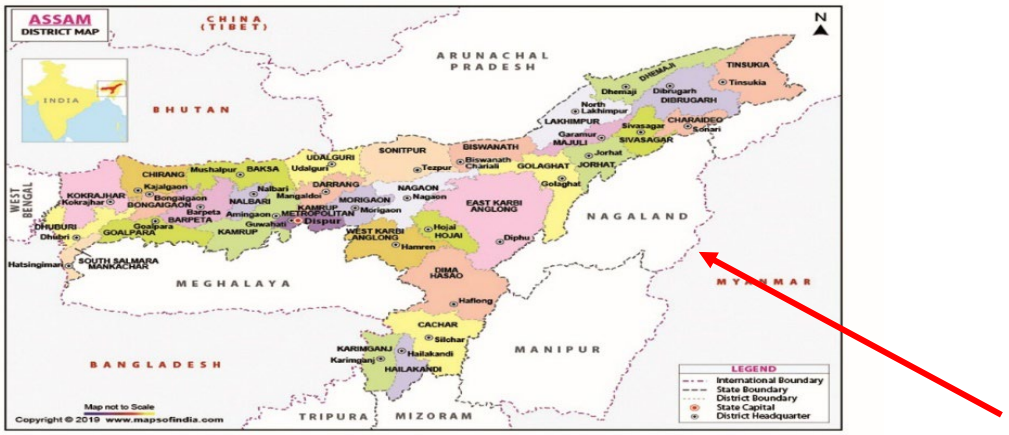
Tea Industries of Assam and its Workers

Assam is the largest state in Northeast India, covering 78,438 sq. km. Assam is bordered by seven sister states, namely Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Tripura and West Bengal and two other countries, Bangladesh and Bhutan (which is shown clearly in Figure 1 below). Assam is well known for "Assam Tea" all over the globe. Indeed, its contribution to the tea industry has enabled India to dominate the global market.

The tea industry is one of the significant foreign exchange-earning industries in India. India's dominance in this global tea market involves the hard work of tea laborers. Tea laborers are descendants of people who migrated and were brought by the British during the 1860s-1890s from different parts of the country, namely from states like Andhra Pradesh, Chattishgarh, West Bengal, Odisha, and Jharkhand.

Figure 1

Map of Assam



(Red mark indicates the Dibrugarh district, the place of data collection in the present study)
Source: Mozumdar, T.H. (2020). http://hdl.handle.net/10603/310204)

Those tea garden workers belong to a diverse multi-ethnic group of different religions, languages, castes, and cultures. Despite this diversity, they are collectively referred to as the "Tea Tribe" community

in Assam and are estimated to constitute about 20% of Assam's total population. During the period of colonial rule by the British, the tea garden laborers were called "Coolies," but now this term is considered disrespectful by the Tea Tribe community. During the colonial period, tea garden workers faced inhumane treatment such as flogging, physical abuse, imprisonment, etc., and the Chief Commissioner of Assam during that period commented, "they were deprived of all their freedom, and their derogatory conditions and atrocities remind one of the slaves running in Africa and the global slave trade."

Today, not only Government has implemented many plans, policies, and programs , namely the Plantations Labor Act (PLA, 1951), Mahila Samakhy (1989), District Primary Education Program (1994), Mid-day Meal Scheme (1995), Sarba Siksha Abhijan (2000), National Program for the education of Girls at Elementary level (2003-04) and Mezenga Female Labor Welfare Training Centre situated at Mezenga in Upper Assam (Bosumatari & Goyari, 2013) but also different trade unions, such as Assam Chah Mazdoor Sangha, Assam Sangrami Chah Shramik Sangha, Assam Tea Labor Union, Namoni Assam Cha Mazdoor Sangha, Cachar Chah Sramik Union, etc., are working together to improve the conditions of the lives of tea garden workers. However, still, their situation has not improved much. Their poor lifestyle, low education rate, poverty, male workers' addiction to country beer, population growth, and inadequate health facilities make them a socially and economically backward group of society today.

As tea workers are an integral part of the tea industry, taking care of their physical and mental health is essential. However, we are often concerned only about physical health by ignoring mental health (Sowers et al., 2009). Studies show that psychological and physical health are closely intertwined (Sowers et al. 2009; Ohrnberger et al. 2017). According to WHO (2001), "Mental health is characterized by subjective well-being or happiness, perceived self-efficacy autonomy, competence, intergenerational dependence, and self-actualization of one's intellectual and emotional potential, among others." According to the famous Hawthorne study, if an organization's employees are happy, they become more productive at work (Wright & Cropanzano, 2007), have better social relationships, live longer and healthier lives, and ultimately increase organizational productivity (Diener & Tay, 2012 as cited in Diener, E.).

Subjective Happiness

The scientific term for happiness is "subjective well-being" (Allen, 2020). Over the past thirty years, the field of psychology has become more interested in studying positive experiences, events, and states of human life like happiness, joy, gratitude, resilience, love, etc.

Happiness is something subjective, an internal feeling which is from inside. Happiness is emotional because different people perceive happiness differently. People with everything in life may feel empty inside; they perceive themselves as unhappy beings, while Buddhist monks with no materialistic and luxurious life may experience themselves as contented, happy, and peaceful.

According to Sonja Lyumbomirsky (2007), "Happiness is the experience of joy, contentment and well-being and combination of these three factors lead to the sense that one's life is good and meaningful." Genes determine fifty percent of an individual's happiness. In contrast, forty percent of happiness is set by one's conscious choice, and the rest ten percent of happiness is related to the person's life situation, like socioeconomic status, quality of social relationships and relationships with a romantic partner, educational level, work environment, etc. Therefore, we can also say that being happy is mostly a choice (Lyumbomirsky, 2007), mainly depending on the individuals themselves. They can follow some strategies to increase their level of happiness. According to Martin Seligman, "Happiness is made up of positive

emotion, engagement and meaning" (Wikipedia, 2022). The concept of happiness and well-being can be understood clearly by the models below:

Diener's Tripartite Model

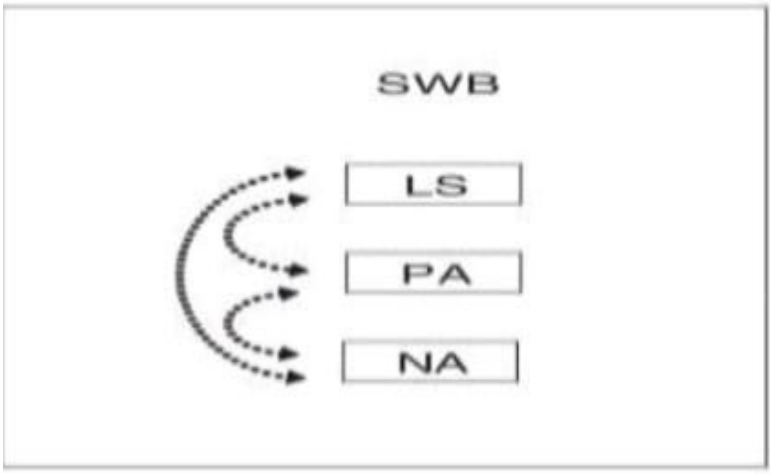
Edward Francis Diener developed a Subjective Well-being Model in 1984. This model is called the "Tripartite Model of Subjective Wellbeing." According to this Tripartite Model, subjective well-being is determined by the following three components:

i. Cognitive evaluations of life satisfaction: One's life satisfaction is judged based on the balance between positive and negative emotions.
ii. Frequent positive affect (pleasant, happy feelings)
iii. Infrequent negative affect (feeling of distress, pain)

These three components are shown clearly in the diagram below, where LS indicates Life Satisfaction, and PA and NA mean Positive Affect and Negative Affect, respectively.

Figure 2

Diener's Tripartite Model of Subjective Wellbeing



Source: Busseri & Sadava, 2011, p. 292 as cited in Moore, C. (2019). Subjective Well-being in Positive Psychology. https://positivepsychology.com/subjective-well-being/

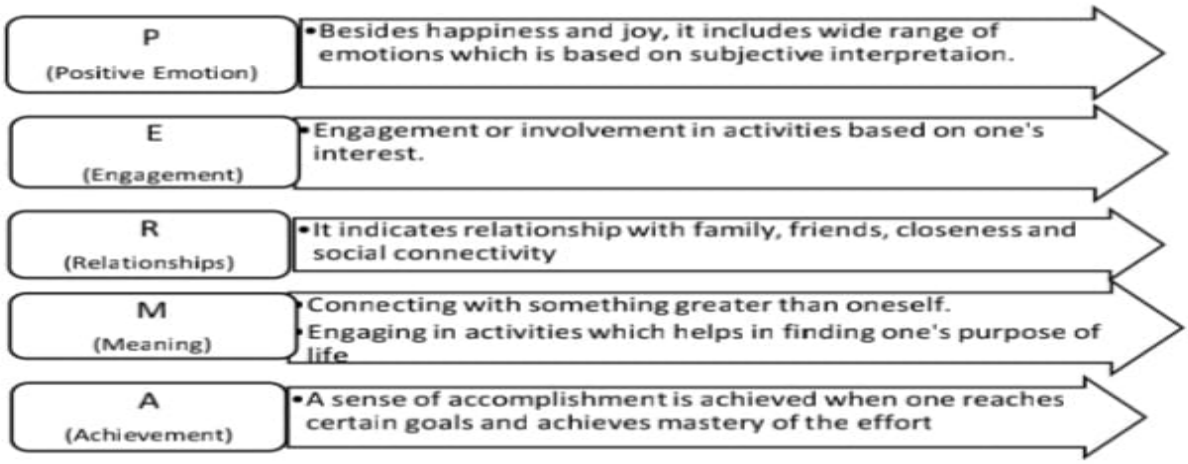
Although the components mentioned above are distinct, all of them are interconnected with each other. A person evaluates his life satisfaction based on his experience of positive and negative emotions. It means frequent Positive Affect and infrequent Negative Affect determine an individual's Life Satisfaction.

Seligman's PERMA Wellbeing Model

Martin Seligman is one of the pioneers of Positive Psychology. His extensive research on happiness led to developing the "PERMA Wellbeing Model" tool in 2011 for measuring satisfaction. This model identifies five elements which determine happiness or well-being; these are mentioned below:

Figure 3

Seligman's PERMA Wellbeing Model



It is imperative to be happy and satisfied in life. Happiness always leads to better and satisfying social relationships, better health and self-control, increased pro-social behavior, increased creative and divergent thinking, increased ability to persist in non-enjoyable tasks, being a multi-tasker, methodical and sincere worker and, also, increased longevity (Boniwell, 2008).

Review of Literature

Studies on Happiness

Lakshmanasamy (2021) studied the influence of socioeconomic status and demographic factors on the subjective well-being of Indian people. Data from twenty-four years (1990-2014) was collected from the World Values Survey of India and interpreted using the chi-square test. It has been found that there are significant differences in the subjective well-being of Indian people concerning their socioeconomic status and different demographic factors, such as education, income, religion, age, marital status, and health. Further, subjective well-being between male and female participants is found to be equal; there is no statistically significant difference between them. The happiness, life satisfaction and financial satisfaction determined subjective well-being here.

Maseide (2021**)** studied whether income is related to happiness in different age groups. In this study, samples were taken from three age groups as follows: the young group (18-30 years of age), the middle age group (31-64 years), and the older age group (65 and more). European social survey data was used in this study, and the Generalized Ordered Logit Model was used for data analysis and interpretation. Findings show that income and happiness positively and significantly correlate in all three age groups. It indicates that the more the income rises, the more significant the satisfaction will be.

Zaremohzzabieh et.al. (2019) explored different factors responsible for happiness among youth (n=400) residing in the urban areas of Malaysia. Data were analyzed with the help of a structural equation model. Results indicate that social and family environment and educational level play an essential role in the case of happiness among youth. On the contrary, a negative correlation was found between economic opportunities and satisfaction among youths.

Yue et al. (2017) investigated the influence of gender on happiness and depression among Chinese students. The study was conducted on 5648 students within the age range of 17 to 29 years. The result revealed that females are happier than males. Surprisingly, the depression level was also higher in females than males. Results also show that extroverted women experience more happiness; on the other hand, women with neuroticism experience more depression.

Dutta & Blangayil (2016) conducted a study to assess the relationship between subjective happiness and student life satisfaction. It also examined the effect of gender on subjective happiness and life satisfaction. The sample consisted of 60 students, and data was collected by administering Sonja Lyubomirsky's Subjective Happiness scale (1997) and Life Diener's Satisfaction scale (1984). This study revealed that life satisfaction and subjective happiness are significantly correlated among students. It was also found that personal happiness and life satisfaction were higher among males than females.

Demir (2010) investigated the influence of close relationships on happiness in emerging adults (18–25 years). There were two groups of adults, i.e., one group having romantic partners (n=152) and another group without romantic partners (n=152). Findings indicate that a close relationship with the mother and best friend plays a more significant role in the happiness of adults without a romantic partner. On the other hand, in the case of adults with romantic partners, three factors are associated with their joy, namely (i) relationship quality between mother and child, (ii) quality relationship with a romantic partner, and (iii) conflict with a romantic partner.

Studies on Tea Garden Workers

Roy (2021) conducted analytical research to assess the problems of tea garden workers' children studying in secondary education. The study was conducted on secondary-level students of tea garden workers in Dibrugarh and Biswanath districts, Assam. A descriptive survey method was used for data collection. Data were collected by administering a Problem Questionnaire, an Interview schedule and an Attitude Scale. Findings revealed that girl students do not continue studying because of the lack of basic facilities in schools. It shows that 53.33% of students cannot continue their studies due to financial constraints, and 14.67% are due to a lack of parental support. It also found that the Tea Tribe community has a negative attitude toward girls' education; therefore, early marriage practices are most common in this community. The study also revealed that the consumption of alcohol is most common among tea garden workers, hampering the sound home environment. Most of the tea garden worker's family income and resources are very low.

Thadathil (2021) conducted a study to assess substance abuse among tea workers in East Nepal. The study was carried out in rural areas of Nepal. The sample comprised 152 tea garden workers (18-70 years); the males were 54, and the females were 98. Data was collected through the interview method. The result shows that 43.42% of workers regularly drink alcohol, whereas 28.95% are not alcoholic, and no response was obtained from the rest, 27.63% of participants. A history of substance abuse was reported by 68.42% of workers, while 28.95% had no such history.

Sarkar et al. (2016) conducted a case study among tea plantation laborers residing in Sub-Himalayan, West Bengal. They found that female laborers confront issues, such as inadequate health facilities, lack of

pure drinking water, marriage at a tender age, maternal mortality, child labor, alcoholism, lower literacy rate, etc. Women are also deprived of their rights.

Bosumatari & Goyari (2013) examined the educational qualification of female laborers in the Udalguri district, Assam. Participants of this study comprised 120 female workers. The interview method was used, and data were analyzed through a chi-square test. Findings revealed that the female workers' educational status is much lower than the male workers. This study also indicates that the possible reason for this poor academic level among female laborers is a parental negative attitude toward education of daughters, marriage at tender age, and lack of proper school infrastructure.

After reviewing the previous studies of tea garden workers, it has been found that no research was conducted on mental health-related issues, especially on the subjective happiness of tea garden workers in Assam, to the best of researchers' knowledge. Therefore, looking into the scarcity of research in these areas and also to fulfil this gap, the present study was planned to conduct on "Subjective Happiness among male and female tea garden workers of Dibrugarh district, Assam."

The Rationale of the Study

The tea industry is one of the most important foreign exchange earnings and profitable industries, contributing significantly to the country's economy. Workers are part and parcel of the tea industry; without their well-being, the progress of the tea industry is impossible. However, despite their devotion and hard work behind the revenue generation of the tea industries, they are still deprived and unaware of their rights and privileges, mainly because of their lower literacy rate. Although the government has developed many plans and programs, their livelihood and living conditions are still poor, and they have not been improved much yet.

Happiness of the workers of tea garden is utmost important, as research studies have shown that happier people tend to be healthier, more social, have more longevity and self-control, increase pro-social behavior, increase creative and divergent thinking, increase the ability to persist in non-enjoyable tasks, being a multi-tasker, methodical, sincere and productive at their workplace (Boniwell, 2008). Therefore, looking at the importance of tea industries in our country, we should take care of the tea workers' physical and mental health. However, very little research has been conducted on this area of mental health, especially on the subjective happiness of tea workers of Assam. Thereby, looking into the lack of research in this area, especially in Assam, the present study was undertaken on the topic "Subjective Happiness among male and female tea garden workers of Dibrugarh district, Assam."

Objective

To compare the subjective happiness of male and female tea garden workers from lower-income and middle-income groups.

Hypotheses

H_O1: There is no significant difference regarding the subjective happiness of male and female tea garden workers.

H_O2: There is no significant difference in the case of subjective happiness of tea garden workers belonging to lower-income and middle-income groups.

Methodology

A survey research design was implemented in this present research. The sample comprised 100 (50 male and 50 female) Tea Garden workers within the age range of 21 to 60 years, which was selected through purposive sampling. The samples were taken from the Durgapur and Borboruah Tea Estate of Dibrugarh district, Assam. The Dibrugarh district was chosen for data collection, as it is one of Assam's highest tea-producing districts (Roy, 2011).

Inclusion Criteria

- All married participants.
- Presently working in the tea garden.
- Residents of Dibrugarh district.
- Age should be within the range of 21 to 60 years.
- Male and female participants were only included.
- Participants who belong to lower- and middle-income groups.

Exclusion Criteria

- Widow and divorcee.
- Those who did not give voluntary consent for participation.
- Physically and mentally unwell individual.

Variables

Independent variable:

i) Gender (male and female)

ii) Income groups (Lower- and middle-income groups)

Dependent variable: i) Subjective Happiness

Measures

The following measures were used for the collection of data:

1) Socio-demographic sheet: A socio-demographic sheet was developed by the researchers, which was constructed in the Assamese language. It contains socio-demographic information and information related to relationships with family, spouse, and friends.
2) Subjective Happiness Scale (SHS): Lyubomirsky and Lepper developed this Subjective Happiness Scale (SHS) in 1999. In this scale, Cronbach's alpha was found to be within the ranges from 0.85 to 0.95, indicating good internal consistency reliability. The test-retest reliability score was found within the range from 0.55 to 0.90 (M = 0.72), and in the case of convergent validity, the correlation was found within the range from 0.52 to 0.72 (M = 0.62). This scale consists of four items measuring the individual's subjective happiness. This scale uses a seven-point Likert Scale, where respondents have to rate themselves from 1 (not a very happy person) to 7 (delighted person). Here, in two items, respondents are asked about how happy they are by using absolute ratings and ratings by comparing themselves with peers. The rest two things, three and four, assess the extent to which an individual is very happy or very unhappy, respectively. The scoring procedure of the SHS is straightforward, where all the values of the first three items are scored as marked by the participants, but item 4 is scored reversely (i.e., seven is scored as 1, 6 as 2, 5 as 3, 3 as 5, 2 as 6 and 1 as 7).

After that, the scores of all four items are summed and then have to compute mean to get the final score. The higher scores indicate greater happiness (Lyubomirsky, 1999).

Before the administration of the Subjective Happiness Scale, it was translated from the original English version to the Assamese language, as it is the native language of the participants of this present research. After that, the Assamese translation was re-examined by experts in the psychology field. To ascertain the face validity of the questionnaire, it was translated back from Assamese to English again by two other experts. It was found to be valid, and no discrepancy was found between the original and back-translated versions of English. After that, the translated Subjective Happiness Scale was used in the current study.

Statistics

Data were analyzed by calculating mean, standard deviation, percentage (%), Chi-square and test.

Procedure

First, rapport was built with the participants, and consent for participation in the present research was taken from each of them. They were given assurance of maintaining confidentiality, and it was explained that their identity would not be disclosed; instead, they would be identified by assigning numbers to each person. Hence, they were requested to give honest responses. The researcher went door to door to collect data and used face to face interview method in this present study, as most of the respondents were illiterate and had low education levels. After completing the interview, the respondents were provided some refreshments as a token of thanks by the researcher for their cooperation. After data collection, the responses in the socio-demographic sheet were scrutinized. It found that all the participants belonged to the Hindu religion, and no participants were from the higher income group. Instead, they belonged to the lower- and middle-income groups. These two income groups were taken as the independent variable of the present study. Then the responses to the Subjective Happiness Scale were scored, calculated, and analyzed.

Result and Discussion

Statistical Analysis of Responses to Socio-demographic Sheet

Under this section, the socio-demographic information was analyzed through the application of frequency, percentage and Chi-square test, and these are presented in the tables below.

Table 1 shows frequency (f) and percentage (%) of responses of tea garden workers in terms Socio-demographic variables.

Table 1

Distribution of Responses of Tea Garden Workers Concerning Socio-demographic Variables

Socio-demographic Variables		f	%	
Age Range	20-30	49	49	
	30-40	23	23	
	40-50	17	17	
	50-60	11	11	
	Total	100	100	
		f	**%**	
Religion	Hindu	100	100	
	Islam	0	0	
	Christian	0	0	
	Others	0	0	
		f	**%**	
Caste	OBC	100	100	
	SC	0	0	
	ST	0	0	
	Others	0	0	
		f	**%**	
Family Types	Joint	23	23	
	Nuclear	77	77	
	Total	100	100	
		f	**%**	
Income Groups	Lower	16	16	
	Middle	84	84	
	Higher	0	0	
	Total	100	100	
		Gender	**f**	**%**
Level of Education	High School	Male	11	22
		Female	2	4
	Middle School	Male	19	38
		Female	5	10
	Primary School	Male	9	18
		Female	2	4
	Illiterate	Male	11	22
		Female	41	82
	Total		100	100

Table 1 shows that the majority, 49% of workers in this present study, lie within the age range of 20 to 30 years, followed by 23% (30-40 years), 17% (40-50 years) and 11% (50-60 years) respectively.

Table 1 shows clearly that all the participants belong to the Hindu religion and Other Backward Castes (OBC). It can be seen in Table 1 that the majority, 77% of workers, were from the nuclear family type, and only 23% were from the joint family. It has been found that more significant percentages (84%) of workers belong to a middle-income group, and the rest, 16%, belong to a lower-income group. But no workers were from the higher income group.

In the educational qualification of male tea garden workers, it can be seen in Table 1 that greater numbers of male workers, i.e., 38% have academic qualifications up to middle school, followed by 22% have an educational level up to high school, and 18% have up to primary level, respectively. The rest, 22% of male workers, were found to be illiterate. On the other hand, it has been found that a greater percentage

of female workers, i.e., 82%, are illiterate, followed by 10% who have an educational level up to middle school level, 4% have education upto high school level, and the rest 4% have upto primary level, respectively.

Table 2

Distribution of Responses to the Statement Related to Spouse, Family and Friends by Gender

Statement	Gender	Positive Response		Negative Response		Total		Chi-square value	df	Critical Value	Level of Significance
		f	%	f	%	f	%				
"Having good relation with spouse."	Male	40	80	10	20	50	50	31.41	1	6.635	The significant level is at 0.01
	Female	12	24	38	76	50	50				
	Total	52	52	48	28	100	100				
"Going out with the family"	Male	40	80	10	20	50	50	0.174	1	3.841	Non-significant
	Female	39	78	11	22	50	50				
	Total	79	79	21	21	100	100				
"Interaction with friends"	Male	44	88	6	12	50	50	23.25	1	6.635	Significant level is at 0.01
	Female	21	42	29	58	50	50				
	Total	65	65	35	35	100	100				
"Going out with the friends"	Male	42	84	8	16	50	50	31.818	1	6.635	Significant level is at 0.01
	Female	14	28	36	72	50	50				
	Total	56	56	44	44	100	100				

From Table 2, it can be seen in the case of the statement "*Having good relation with spouse*" that the majority, 76% of female workers, felt that they do not have a good relationship with their husbands. In contrast, 80% of male workers perceived that they have a good relationship with their spouses. The Chi-square value, i.e. 31.41, is significant at 0.01 level, indicating that male and female workers significantly differ in their relationship with their spouse.

In the case of the statement "*Going out with the family*," it can be noted in Table 2 that the majority of male (80%) and female (78%) workers most often go out with their families. The Chi-square value, i.e., 0.174, is also not significant. It points out that male and female workers are significantly different regarding their responses to the statement "going out with the family."

Concerning the statement "*Interaction with friends*" (in Table 2), a large number of female workers (58%) responded that neither they have any friends, nor do they have interactions with any friends. On the other hand, a more significant percentage of male workers, i.e., 88%, responded that they do interact with their friends most often. The Chi-square value, i.e., 23.25, is found to be significant at 0.01 level (shown in Table 2), indicating that the difference between the responses of male and female workers regarding the statement "interaction with friends" is significant.

Regarding the statement "*Going out with friends*" in Table 2, the majority, 84% of male workers, said they most often go out with their friends. Only 28% of female participants responded positively to this statement. The Chi-square value, i.e., 31.818 in Table 2 is found to be significant at the 0.01 level, pointing out that male and female workers are significantly different regarding their responses to the statement "Going out with friends."

Statistical Analysis of Responses to Subjective Happiness

In this section, the responses of male and female tea garden workers who belong to lower- and middle-income groups regarding subjective happiness are analyzed through descriptive statistics, such as mean, standard deviation, and t-test.

Table 3

Mean, SD and t-test of Subjective Happiness among Male and Female Workers

Gender	Mean	SD	t -value	df	Critical Value	Level of Significance
Male	6.09	0.39	3.707	39	2.707	Significant at 0.01 Level
Female	5.75	0.18				

In Table 3, the mean scores of male (6.09) and female (5.75) workers show that males perceive more happiness than female workers. The t value, i.e., 3.707, indicates that the mean difference between male and female workers regarding their subjective happiness is significant at 0.01 level, as shown in Figure 4 below. It means Hypothesis 1, stating "There is no significant difference regarding Subjective Happiness of male and female tea garden workers," is rejected in this present study.

Figure 4

Graphical Representation of Subjective Happiness Among Male and Female Workers

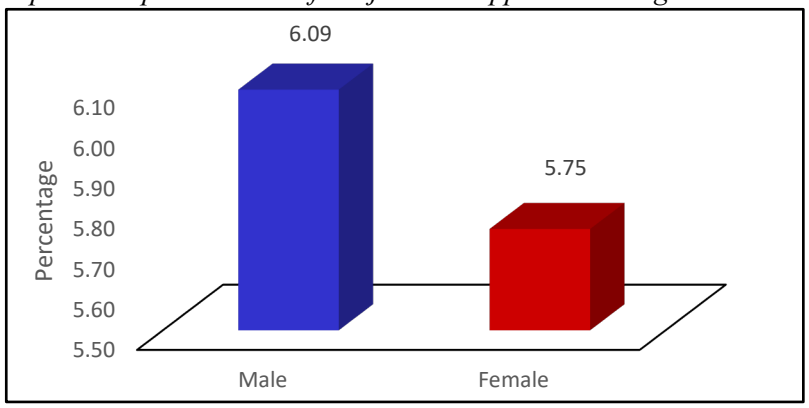


Table 4

Mean, SD and t-test of Subjective Happiness among Workers Belonging to Different Income Groups

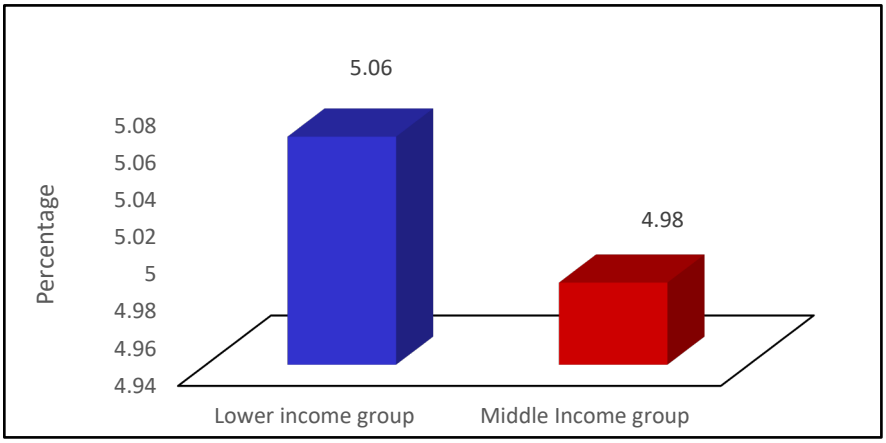
Income Group	Mean	SD	t -value	df	Critical Value	Level of Significance
Lower income group	5.062	1.3	1.451	23	2.80734	Non-significant
Middle-Income group	4.984	1.6				

In Table 4, although the mean difference was found between the lower-income group (5.062) and middle-income group (4.98) in their subjective happiness, the calculated t value, i.e. 1.451, was not significant. It indicates that lower-income and middle-income group workers perceive an equal level of happiness; there is no difference between them. Therefore, Hypothesis 2, stating, "There is no significant

difference in the case of subjective happiness of tea garden workers belonging to lower-income and middle-income groups," is accepted in this current study.

Figure 5

Graphical Representation of Subjective Happiness Among Workers Belonging to Different Income Groups



The discussion has been provided below based on the hypotheses: **H_O1: There is no significant difference regarding the Subjective Happiness of male and female tea garden workers.** Table 3 shows that the mean scores regarding subjective happiness of male and female tea garden workers are significantly different, indicating that males perceived more satisfaction than female tea garden workers in this study. The present finding may be due to the overburdening of female workers, as they must manage their workplace and home, namely looking after their children, husband, and other family responsibilities, like cooking, carrying firewood from garden to home, etc.

The tea tribe is a patriarchal community; females are also expected to be submissive. That is why they silently carry all the burdens without any arguments. They have to work in the garden and at home, even during their pregnancy and the post-natal period, which affects their physical and mental health. Because of this, they do not get time for recreational activities (Saha et al., 2019**)** and cannot go outside to spend time with their friends. They don't have time to take care of themselves; therefore, female workers usually suffer more from psychological stress (Saha et al., 2019). Table 2 also shows that the majority, 58% of females, responded that neither do they have any friends, nor do they interact with their friends.

On the other hand, a more significant percentage of male workers, i.e., 88%, responded that they do interact with their friends most often, and this difference between male and female workers is found to be significant at the 0.01 level. In Table 2, it can be observed that the majority, 76% of female workers, felt that they did not have a good relationship with their husbands. In contrast, 80% of male workers perceived that they have a good relationship with their spouse, and the difference is significant at the 0.01 level. Thereby, lack of connectivity with friends and close relationships with a spouse might be the possible reason for the unhappiness of most female tea garden workers in this current study. Our happiness is also measured by our relationship with friends, romantic partners, and social connectivity (Lyumbomirsky, 2007; Seligman, 2011).

Education is the key to happiness (Nayak & Rroy, 2022). Early marriage and low literacy rates (Bosumatari & Goyari, 2013; Deb Nath & Nath, 2014) among female workers might also be the reason for

greater unhappiness in this study. Table 1 also shows that the majority, 82% of females, are illiterate, whereas only 22% of males are illiterate. Because of this lower literacy rate, female workers are unaware of their rights and privileges (Banagiri et al., 2022). They constantly become victims of domestic violence, which many female workers expressed to the researchers during the informal interview session. One of them said, "My husband always beat me after consumption of country beer which is called "haria" (locally prepared alcohol), and he just grabbed all my income, whatever I earn; he never tries to understand my problems and also never support." This fact is also supported by previous studies that there is a high intake of alcohol and tobacco among male tea garden workers (Sahoo et al., 2011; Roy, 2021; Sahu & Bhuyan, 2022).

H_O2: There is no significant difference in the case of subjective happiness of tea garden workers belonging to lower-income and middle-income groups. A fascinating result has been found in Table 4 above, which shows that there is no significant difference between tea garden workers belonging to lower- and middle-income groups in their subjective happiness. It indicates that both the lower- and middle-income groups perceive equal happiness levels. Here, in this study also it can be seen that although the lower income group workers face harsher life situations in comparison to middle income group workers, such as financial crises, poor living conditions, poor health, etc., but they perceive an equal level of happiness as the middle-income group workers, which is a positive indication about lower income group that they might have found the meaning and purpose of their life, and in spite of the external situation, they experience contented, happy, and peaceful life. These findings prove Sonja Lyumbomirsky's (2007) view that happiness is primarily an individual choice, no matter how adverse the situation is. According to Lyumbomirsky, 40% of our happiness is determined by our selection.

Conclusion

It can be concluded that male tea garden workers in the Dibrugarh district feel greater happiness than female workers. It has been observed that a lower literacy rate, poor relationships with spouses, domestic violence, male workers' excessive alcohol consumption, and lower social connectivity might be the possible reason for the lower level of happiness among female tea garden workers in the Dibrugarh district.

Another more interesting finding is that both lower- and middle-income group workers feel a similar level of happiness. This indicates that happiness is not determined by external situations. like financial crises, wealth, etc. These findings strongly support Sonja Lumbomirsky's dictum, "Happiness is mostly a matter of individual choice."

The present research findings can be considered guidelines for government, policy makers, researchers, counsellors, and NGOs. Based on these current findings, they will be able to gain more insight into tea industry workers, and, consequently, they can formulate and implement various plans and policies to improve the mental health conditions of tea plantation workers. Government and various non-governmental organizations can come forward to organize different training programs among tea garden workers, especially female workers, regarding learning different strategies to increase happiness in one's life.

Future Research

The tea plantation workers can consider these present results as an assessment of their level of happiness, and, accordingly, they can take preventive measures to boost their happiness level. These current findings would also help the government realize the importance of the appointment of male and female counsellors, as well as career counsellors, in every tea garden's hospital and school who can provide career counselling,

family counselling, and couple counselling to students, teachers, and parents. The present study's findings also have opened many unexplored avenues for future research.

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Effectiveness of Social Media Influencers in Brand Purchase Intention

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[Abstract] In an age where the internet is ubiquitous through platforms like Twitter and blogs, "social media influencers" have become a potent new type of third-party ad agency, swaying consumers' opinions and decisions to buy a product or service. The concept of a "social media influencer" was first explored in the realm of advertising, specifically to generate excitement about products in markets that target a young audience and increase their social media footprint. Instead of advertising to a broad audience, influencer marketing concentrates on persuading influential people to spread a brand's message to the desired demographic. Advertisers employ influencers as a means of spreading their messages to consumers. The literature review formed the basis for the conclusion that businesses are moving away from using famous people to promote their products in favor of bloggers and Instagram stars. The efficiency of using social media influencers in brand purchase intention is not well-researched in the Indian context; a latent gap exists to be explored. Influencers are a recent development in the field of social media. Even though western countries have set precedence on different aspects of social media influencers, such as measuring the effectiveness of SMIs on other platforms or celebrity vs. influencer endorsements in advertising and how SMIs are the new celebrity endorsers both from the theoretical and empirical orientations. Moreover, the proposed conceptual paper towards setting a research proposition on using SMI for brand promotion in the Indian context is broken down into two objectives; first , to examine the relationship between consumers' utilitarian personalities about their attitudes towards SMIs and, second , to study the role of social media influencers in building consumer attitudes towards brand purchases.

[Keywords] social media influencers, brand purchase intention, bloggers, utilitarian, instafamous

Introduction

The media and advertising landscape are both ever-evolving entities. Tracy (2008) predicted the impact of Web 2.0 on advertising popularly using the title "New social Web 2.0." The number of people using social networks and social media has increased by more than 100% in the last five years. The boom of digitalization is constantly growing with time. The average time spent per day consuming digital media increased from 5 hours and 37 minutes to 6 hours and 45 minutes from 2012 to 2018. The focus of influencer marketing is on the use of influential people to spread a brand's message to a specific audience. Instead of marketing your product or service directly to many potential customers, you pay influencers to get the word out for you. Influencers are a recent development in social media, so there is a need to research the respective topic. Social media influencers have emerged as potential endorsers in recent times with theirs. Their ability to generate hashtags is effective and more efficient than other marketing tactics (such as celebrity endorsement). Celebrity endorsement was the original form of influencer marketing. Still, in the digital era, social media bolsters the rise of social media influencers with a niche audience that can often offer more value to brands. Inviting social media influencers like bloggers with tens of thousands of followers on their social media channels as their brand's ambassadors is a central tenet of influencer marketing agencies. Successful businesses expand their online visibility by forming partnerships with social media giants like Facebook, Instagram, Twitter, and YouTube. They effectively employ social media influencers to disseminate information about their products and the latest deals to their online followers.

Social media influencers (SMI) are becoming a "crucial marketing strategy" for Indian brands. Even though the West has established a precedent for SMIs, Indian businesses are only now beginning to explore this digital goldmine. According to a recent survey, Instagram was the most popular platform for social media influencers in 2018–2019. Facebook, Twitter, LinkedIn, WhatsApp, YouTube, Quora, TikTok, Blogging, and Snapchat follow this. In addition, more than 500 brand guardians were polled for the study, including top ad agencies and startups, as well as creatives like blogs, YouTube channels, Tweet influencers, and Instagram influencers. More than half of those surveyed identified "better reach and engagement" as the primary benefit of investing in influencer marketing. As of 2018, most businesses allocated between 5% and 7% of their marketing budgets to online influencers. The percentage of companies that intend to increase their spending on social media influencer marketing rose to 73% in 2019, up from 60% the year before. As a result, we can observe that brands love social media influencers because they can create trends and encourage their followers to buy the products they promote.

This research further seeks to understand the notion of social media influencers by measuring the effectiveness of SMI for brand promotion in the Indian context, using various variables, such as consumers' utilitarian personality, attitudes towards the brand, and SMI's credibility. Based on these parameters, we will be evaluating the impact of social media influencers on promoting different brands and examining the relationship between consumers' utilitarian personalities with regards to their attitudes toward SMIs.

Objectives of the Study

1. To examine the relationship between consumers' utilitarian personality (source characteristics) concerning their attitudes toward SMIs.
2. To study the role of social media influencers in building consumers' attitudes toward brand purchase.

Literature Review

Concept of Social Media Influencers

Millions of people follow influencers on social media sites like Instagram and YouTube because of the content they produce and curate about a specific topic (Chapple & Cownie 2017); Mediakix 2017). A school of thought sees social media influencers (SMIs) as nothing more than competitors who might even be hostile to a brand or organization (Gorry & Westbrook, 2009). Still, others see the value in forming partnerships with SMIs to increase brand awareness and sales. There is a growing body of scholarly work exploring the value of influencer marketing and the processes at play in the influence of influencers on consumers' reactions to brands. Evidence from studies conducted by Lee and Watkins (2016), for instance, indicates that vloggers have a significant impact on viewers' intent to purchase the (luxury) brands that are featured in those videos.

Influencers are the glue that holds a brand together with its target audience. According to Freberg (2010**)**, the success of social media influencers is vitally essential to brands; therefore, technology has been developed to identify and track influencers' relevance to a brand or organization. This technology tracks the number of hits on a blog, times a blog is shared, likes and comments, and followers. These points are pivotal aspects of a social media influencer's success (Freberg, 2010). According to Ledbetter (2017), "When one person tries to persuade another to do something, it sets off a chain reaction that can alter the nature of their relationship." Buyer (2016) addressed that the success of the influencer marketing phenomenon can be attributed to the fact that influencers enjoy a great deal of social clout and credibility

due to their openness and honesty with consumers (Ledbetter, 2017). Compared to traditional marketing, which primarily aims at reaching a large number of people, influencers can instead reach specific subsets of the population that would otherwise be unreachable (Ledbetter, 2017).

Enablers of Social Media Influencers

According to their participation in the platform's informational production and consumption, social media users occupy various roles within each platform (Shoo; Muntinga et al., 2011; Austin et al., 2012; Li, 2016; Ge & Gretzel, 2018).

The vast majority of social media users can be categorized into two broad groups: those who actively participate in the platform and those who don't participate, who are considered passive users. When it comes to social media, "active users are the creators, critics, collectors, and joiners," as opposed to "passive users," who merely observe the action from within the platform (Li, 2016). Moreno et al. (2015) highlight that one subset of social media users is referred to as "influencers," and they are identified as "opinion leaders who can use their digital platforms to diffuse information and actually impact the attitudes and actions of their viewers." Social media influencers aren't just people who amass many followers on Instagram because they're famous or because they can post a picture of their abs after drinking a nuclear-powered protein shake and get 10,000 likes; instead, they're people who have an impact on their audience.

Current Literature on Social Media Influencers (SMIs)

According to Hayes and Carr (2015), Johnson and Kaye (2015); Djafarova and Rushworth (2017); Ge and Gretzel (2018) address the first area of study looks at how social media influencers (SMIs) interact with their followers and other members of the social media community, often comparing the information shared by SMIs on social media to that which is disseminated through more traditional means of communication.

The second field of research examines how social media influencers (SMIs) and organizations interact, emphasizing the latter's management of its relationships with SMIs (Jin & Liu, 2010); Pang et al., 2016; Ong & Ito, 2019).

The third area of study that has emerged in the last few years is SMIs' unique personalities. To comprehensively describe the prominent personality characteristics of SMIs, (Freberg et al., 2011**)** used a California Q-sort method. Other studies have also looked into how social media influencers (SMIs) use self-branding and "micro-celebrity" to get ahead (Wiedmann et al., 2010; Khamis et al., 2017). Even after the expanding body of literature on SMIs, management researchers have paid scant attention to the question of how these influential people can be recognized and evaluated. Quite often, the number of a person's posts, followers, pageviews, or connections is a surrogate for their actual impact in a given field (Himelboim et al., 2014; Agostino & Arnaboldi, 2017; Djafarova & Rushworth, 2017).

Different Factors, which have been Grouped Below, Contribute to the Impact of Social Media Influencers

Influence of Source Characteristics Includes:

Product Knowledge. Knowledge, as defined by Turban et al. (2001), comprises "facts that have been arranged and analyzed to provide comprehension, experience, further learning, and competence as applied to a specific business situation or method. While product knowledge, according to Lin and Lin (2007), is "consumers' attitudes and impressions of a product, including their own previous experiences with the product. Similarly, Putri's (2009) research found that consumer product knowledge substantially impacts

purchase decisions.

Sense of Style and Admiration. According to Haidt and Seder (2019), as an emotion, admiration for one's sense of style is often thought of as being uniquely human. Theoretically, admiration as a social emotion is tied to how followers view and interact with those they look up to (Smith, 2000) and, in a broader context, how it promotes collaborative education amongst teams (Fessler & Haley, 2003).

SMIs Credibility. Expertise is a crucial component of credibility because it establishes the speaker's or writer's authority. Expertise refers to the degree to which a speaker is familiar with or qualified to discuss a particular subject (Hovlnad, Janis, & Kelley, 1953). It has been argued by O'reilly et al. (2016) that the expert knowledge of the source is the first thing to be established when evaluating the credibility and that if this expertise is discovered to be absent, the investigation of the source's credibility will be abandoned.

Trustworthiness. To be credible, others must believe that what you say and do are reliable, and to be trustworthy, others must believe that you are reliable (Admin,2014). Hovland et al. (1953) state, "if you believe the source has good reasons for telling the truth, you can have more faith in what they say." Copeland et al. (2011) say that a source is considered trustworthy if seen as truthful and credible. This means that users are more inclined to build trust and listen to this source than a source that is not seen as reliable.

Attractiveness. Various facets of attractiveness have been addressed as a character trait of SMI brand building, as seen in the literature review. In their article "The Attractiveness of the Source and Its Influence on Persuasiveness," Nune et al. (2018) talk about the importance of the source's attractiveness to the persuasiveness of a message. It appears that content-generating bloggers have more sway than their non-producing counterparts.

Similarity. According to Poyry et al. (2019) consumers are more likely to connect with SMIs who share their interests and values than social media celebrities who don't feel relatable. Schouten et al.(2020**)** also reach the same conclusion, saying that individuals are prepared to relate better to influencers than celebs because of the greater realism with which they can draw comparisons.

Proposed Conceptual Framework

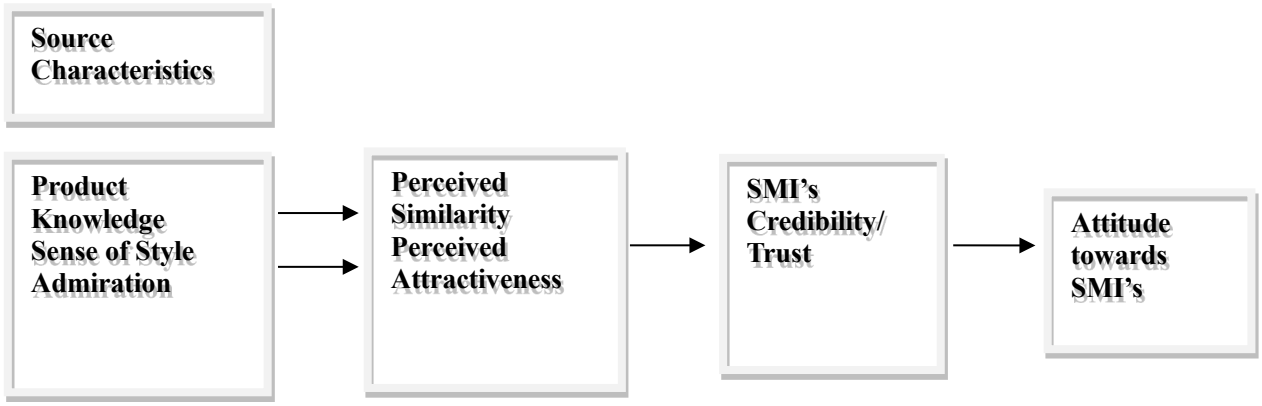
Consumers' Personality Traits (Source Characteristics) Perceptions and Attitudes Toward Social Media Influencers

To better understand how to match consumers' utilitarian personalities (product knowledge, admiration, and sense of style) with various SMIs and their attributes, we have adapted Model-1 from the source mentioned earlier (i.e., similarity or attractiveness). SMIs' credibility for that product and, ultimately, their attitudes will be affected because it will serve as the basis for consumers to use their practical personalities (CUP) to determine which SMI characteristics are most important.

Source: Silvera, D. H., & Austad, B. (2004). Factors predicting the effectiveness of celebrity endorsement advertisements. European Journal of Marketing.

Figure 1

Proposed Conceptual Framework

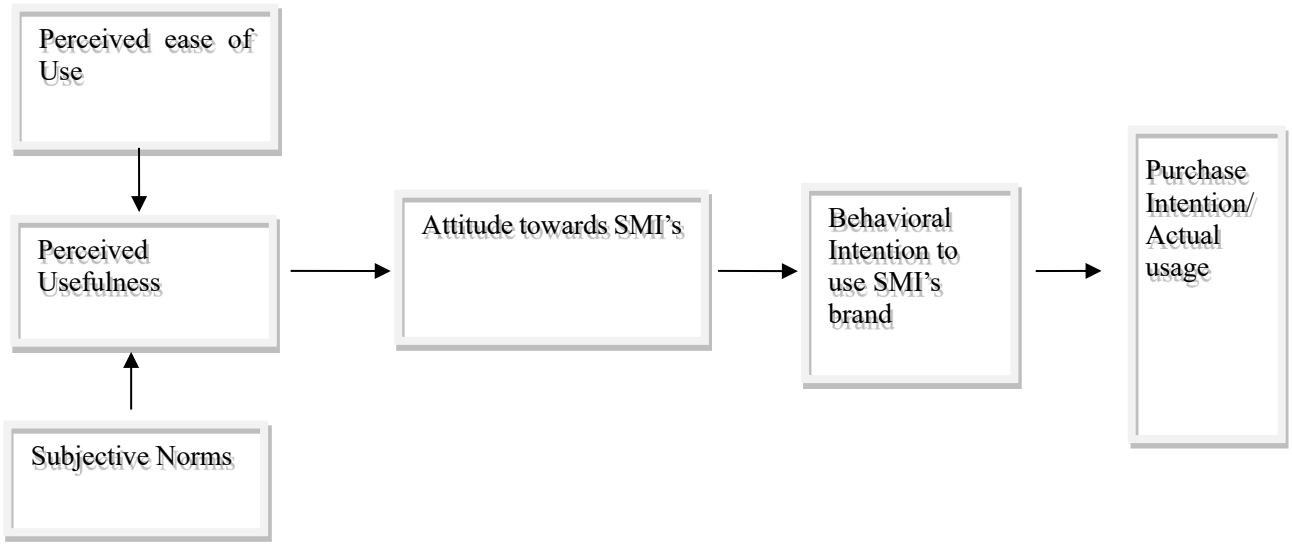


Role of SMI in Building Consumer's Attitude Towards the Brand Purchase

Incorporating the Technology Acceptance Model (TAM), we have developed Model 2 to illustrate how various factors influence consumers' openness to and enjoyment of SMIs when making purchases or engaging in other brand uses. Since the TAM is a widely used model, it is deployed to the study's context by adding the following variables: subjective norm (SN), behavioral intention (BI), attitude toward using (ATT), social media influencers, and consumers' purchase intention or actual brand usage to perceived usefulness (PU) and perceived ease of use (PEU).

Figure 2

Role of SMI in Building Consumer's Attitude Towards the Brand Purchase

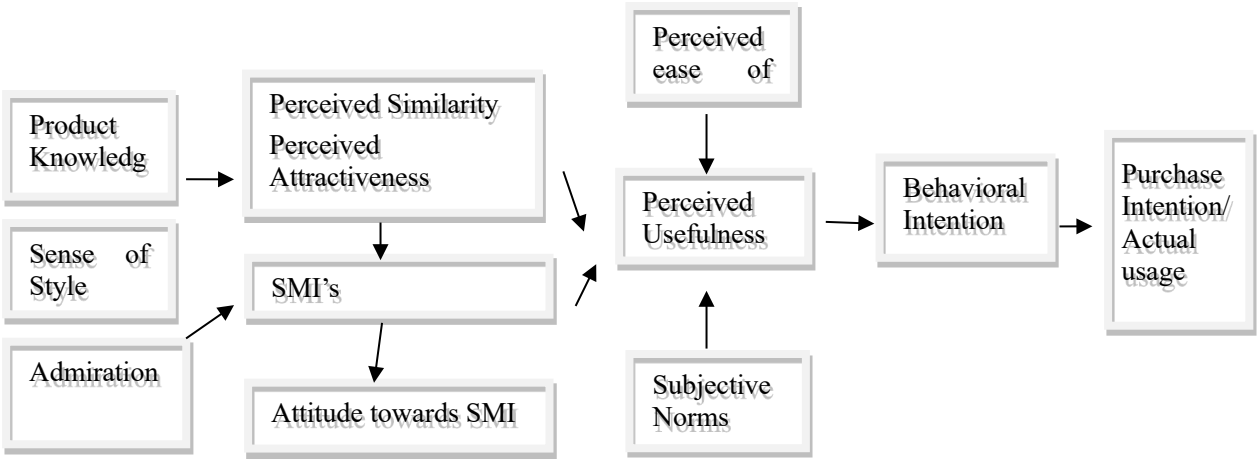


Integrated Conceptual Model

We have created an integrated theoretical model from the two models above. This conceptual framework model includes items that are pertinent to prior studies.

Figure 3

Integrated Conceptual Model



Hypotheses

Davis's (1986) "Technology Acceptance Model" (TAM) is a popular framework for understanding how people will react to new technologies. Perceived Usefulness (PU) and Perceived Ease of Use (PEU) are the two significant factors that make up the Technology Acceptance Model (TAM) and determine whether a person will adopt a new piece of technology (Davis, 1986; Liu et al., 2010). Using PEOU and PU as independent variables and the system under study as the dependent variable, Davis (1989) performed several tests to verify TAM. Liu et al. (2010) say that TAM can only provide an overarching picture of an individual's attitude toward new technologies. This study employs the TAM approach, used in various settings by previous researchers, to demonstrate how different variables affect consumers' perceptions of and engagement with a product or brand.

The above models led to the formation of following hypothesis: Hypothesis 4.1- There is a significant influence of (source characteristics) product knowledge, sense of style and admiration concerning consumer's attitudes towards social media influencers (SMI). Hypothesis 4.2- There is a significant influence on consumers' attitudes toward purchase intention/actual usage.

Perceived Usefulness (PU)

According to Sun et al. (2009), a person's level of PU is defined as "the degree to which that individual anticipates that the use of a specific system will improve his or her performance at work." As a result, it is linked to the idea that people's productivity increases when they use technology (Liu et al., 2010). To facilitate this research, PU has established the following relationships with social media influencers: It indicates how well a social media user thinks social media will help them achieves the goal of using social media as part of the creative process (Rauniar et al., 2014). Therefore, it is presumed that PU considers SMIs when deciding whether to make a purchase based on a recommendation made by a social media influencer. In light of this, the hypothesis is stated as follows:

H4.2.1- Perceived Usefulness has a significant influence on Attitude toward SMIs.

Perceived Ease of Use (PEU)

Numerous studies show that people are more likely to adopt new technologies when they perceive that using them will not strain their already busy schedules (Davis,1986; Liu et al., 2010). As stated by Sun et al. (2009), a user's perception of the effortlessness of a system is known as the "perceived ease of use"

(PEU). Like PU's impact on PEU, PEU can significantly impact perceived usefulness. This leads to the hypothesis mentioned below.

H4.2.2 There is a significant influence of Perceived Ease of Use (PEOU) on Perceived Usefulness (PU).

Subjective Norm (SN) The term "social norm" (SN) refers to "a person's view that the majority of people important to him believe he should or should not perform the behavior in question," as stated by Fishbein and Ajzen (1975). According to Venkatesh and Davis (2000), the reason someone acts in a way that is out of character is because of SN, which eventually results from social influence and peer pressure. Multiple studies have shown that SN is a precursor to behavior intention (BI) (Venkatesh & Davis, 2000; Ramayah et al., 2009). This leads to the hypothesis mentioned below.

H4.2.3 There is a significant influence of Subjective Norm on Perceived Usefulness (PU).

Behavior Intention (BI) Foreseeing future actions and motivations is a typical application of the theory of reasoned action. Behavior intention (BI) is the central tenet of the theory developed by Fishbein and Ajzen (1975). The TRA defines behavior intention (BI) as "the moves an individual takes before engaging in an atypical behavior." As a result, BI affects behavior, provided the individual believes there is a connection between the outcome and the chosen actions (Lie et al., 2005). This leads to the hypothesis mentioned below.

H4.2.4 There is a significant influence of behavioral intention to use SMIs brand on purchase intention/actual usage.

Attitude Toward using the SMIs Brand

Fishbein & Ajzen (1975) highlighted that the prior studies had assumed that ATT has some effect on behavior intention (BI). To put it another way, the variable ATT is influenced in some way by each factor above, including PEU, PU, BI, and SN; behavior is not ATT. This leads to the hypothesis mentioned below.

H4.2.5 There is a significant influence of attitude toward SMIs on behavioral intention to use SMI brands.

Research Methodology

An extensive survey of literature was used to design the study's constructs, with the resulting categories being the idea of social media influencers and the indicators of social media influencers. The independent, interdependent variables, product knowledge, sense of style and admiration, SMI credibility, trustworthiness, attractiveness, and similarity, were unearthed while searching the body of knowledge for the influence of source characteristics.

The Technology Acceptance Model was the integrative model towards assessing the purchase intention and the actual usage of the consumers using the findings of the preceding model 1, i.e. consumers' personality traits (source characteristics), perceptions (Model 1), and mindset towards social media influencers (Model 2), which forms the basis of continuance for the TAM for the integrative model as a proposed model for the study. The proposed two sets of hypotheses will serve as a foundation for comprehending the concept, and the results will contribute to existing knowledge about the function of social media influencers.

Expected Contribution of the Study

From the above paper, we can conclude that the cost of communication or promotion through SMIs is much less, with a high return on investment (ROI) for the companies if we see it from an economic point of view.

Second , for researchers, our paper will add or create a new body of knowledge that will help them do their research or can be the basis of further research work. Third, social media influencers will aid in attempting to convince and encourage consumers to purchase eco or habitat-friendly products in a country like India, where there is a growing awareness of environmental issues. The results of our research will also help marketing experts develop and implement effective influencer marketing techniques.

Discussion and Conclusion

Social media influencers are a recent development in social media, which is quickly becoming a critical marketing tool for businesses worldwide. The start-ups seem too keen on employing the strategy considering the limitations of funds they have to face and the low cost associated with SMI. Further, traditional celebrity endorsers are also losing their charm, owing to the excessive use and high cost associated with them. In this scenario, brand promotion and brand purchase through SMIs also seem viable options for big businesses. However, this requires concrete evidence on whether SMIs are equally, if not more, effective than celebrity endorsers. The study not only proposes to answer this question, the relationship between consumers' utilitarian personality (source characteristics) with regard to their attitudes toward SMIs, but also seeks to explain the idea of social media influencers in building consumer's attitudes toward brand purchases.

In addition, marketing firms' use of SMIs is still in its early stages in the Indian context. Still, it is forecasted to develop much faster due to the meteoric rise in social media use. Despite this, research on SMI's effectiveness in India is scarce as compared to western countries, which have set precedence on this topic

Research and Contextual Implications for Managers

The findings of this study will aid marketing professionals in developing and implementing effective influencer marketing strategies. First, according to this study, we are matching the source characteristics of the consumers with SMI's qualities of credibility, expertise, and trustworthiness; it was SMI's content concerning consumers' personalities that drove consumer traffic and triggered their attitude towards SMIs. These results are helpful for merchants and promoters, since they shed light on which aspects of SMIs are most important to highlight and exploit. The number of SMI's followers isn't necessarily indicative of their marketing potential; instead, brands (retailers or marketers) should prioritize how well their target audience's values and interests align with those of the SMI. Thus, the notoriety of SMIs does not necessarily imply that they can impact the product selections of targeted customers. Therefore, brands should, instead, evaluate the content of SMIs in light of how they stack up against consumers' personalities in terms of how attractive (or visually appealing), expert (or experienced, or qualified), and informative they appear to be.

Second, we found that the opinions of social media influencers can affect consumers' perceptions and, ultimately, their decisions to buy a particular brand. Companies (or retailers or marketers) can form partnerships with various SMIs for influencer marketing, with the goals varying from raising awareness of a corporate campaign or event online to promoting a newly released product through influencer advertising. Ultimately, consumers' desire to be like SMIs drove them to try one of the products, brands, or services featured on or recommended by these influencers.

To counteract this, businesses employing social media influencers must ensure that the SMIs they select for influencer marketing have the taste, new fad opinions, and sense of fashion, as well as the

likeability and knowledge of products and the latest trend, the more likely they are to spark their intended audience and trigger the consumer's desire to look or be more like people.

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Public Sector Banks' Role in Promoting Financial Inclusion: An Empirical Analysis of the Perspective of Financial Inclusion Schemes' Beneficiaries

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[Abstract] All countries require a robust and effective financial system to achieve sustainable development. Finance is considered the most fundamental aspect of the growth and advancement of any economy. Moreover, financial inclusion promotes inclusive and equitable growth because it attempts to give every household in the nation easy access to necessary financial services like deposit, credit and insurance facilities at a reasonable cost. Our government has always been proactive; hence, after understanding the significance of financial inclusion, the regulatory bodies have taken numerous landmark initiatives for decades. However, despite the efforts, the results were not overwhelming. So, in continuation of the initiatives taken from 2014 onwards, a diverse range of financial inclusion schemes have been launched, which offered saving bank account facilities, social security schemes, credit facilities etc., after which exponential growth had been witnessed.

As the public sector banks are the key intermediary in achieving financial inclusion, the current study closely analyzes the perspective of beneficiaries of financial inclusion schemes on their role in its promotion. The study also determines the factors that lead to its successful implementation. Data was gathered using a structured questionnaire built on a 5-point Likert scale model, and with a sample size of 400 respondents, judgement sampling was used as the sampling method. Among statistical tools, mean and multiple regression had been applied, and it has been concluded that the public sector banks have successfully implemented the financial inclusion schemes.

[Keywords] financial inclusion, inclusive growth, public sector banks, government of India and RBI

Introduction

With the aid of financial institutions, financial inclusion is a relatively new idea that contributes to the country's sustainable development by making financial services accessible to the underserved population. All members of the economy must regularly use formal financial institutions and services to be considered financially included. These groups comprise representatives from the public, business, and nonprofit organizations. Offering banking and financial services to every member of society without prejudice is known as financial inclusion. It aims to involve everyone in the community by providing them easy access to essential financial services, regardless of their income or savings. Financial inclusion's primary objective is to provide impartial, dependable financial aid to those living in economically disadvantaged areas. It aims to offer financial solutions devoid of any indications of inequity. It is also dedicated to transparency while providing financial support without any additional fees or unexpected charges (Phogat, 2019).

Literature Review

In India, inclusive growth was viewed as the primary strategy for achieving economic development in the Eleventh Five Year Plan (2007–12). It was discovered that inclusive growth could be achieved by adequately distributing all resources from top to bottom (Gomathy, 2015).

As a robust financial system is a prerequisite for economic growth, sustainable development and progress of any economy, both the Indian government and the Reserve Bank of India (RBI) have been taking many initiatives for decades and nationalization of banks was the first step towards financial inclusion followed by the establishment of regional rural banks that were established to cater to the need as well as to provide rural parts of the country with banking and financial services (Aggarwal, 2014).

Both demand-side, as well as supply-side factors affect financial inclusion. Even though several steps have been taken to improve the supply-side factors, these measures will only work with adequate demand for financial inclusion (Kumar & Mishra, 2015). Some of the demand-side factors influencing financial inclusion include accessibility, culture, income, literacy, lack of awareness, insufficient documentation, high transaction costs, and behavioral aspects of the rural population (Ghatak, 2013; Siddiqui, 2018). However, after consideration of both side factors, many collaborative initiatives by the government of India (GoI) and the Reserve Bank of India (RBI) have been taken, which include priority sector lending, the introduction of the Lead Bank Scheme, issuance of the General Credit Card (GCC) and the Kisan Credit Card (KCC), the use of the services of business facilitators and business correspondents, the establishment of ATMs, the introduction of online banking, mobile banking, direct benefit transfers, opening more branches in the rural areas, and opening bank accounts accepting the Aadhar card as a legal document (Uma & Rupa, 2013; Rajasekaran, 2018).

Recently, as a part of the financial inclusion initiative, our government has launched various financial schemes, such as Pradhan Mantri Jan Dhan Yojana, Pradhan Mantri Jeevan Jyoti Bima Yojana, Pradhan Mantri Suraksha Bima Yojana, Atal Pension Yojana, etc. (Sachdeva et al., 2018). With the introduction of these schemes, growth in the level of financial inclusion has been exponential, but, still, a lot needs to be done. Moreover, technology can also be used in developing innovative products, suitable service models, structured expansion, appropriate regulatory norms, etc., which shall be instrumental in achieving financial inclusion goals (Garg & Agarwal, 2014).

Objectives of the Study

- To analyze the perspective of beneficiaries of financial inclusion schemes on the role played by public sector banks in promoting financial inclusion.
- To ascertain the factors that lead to public sector banks' successful implementation of financial inclusion schemes.

Research Methodology

The present study is empirical, examines the perspective of those who have benefited from financial inclusion schemes on the role played by public sector banks in promoting financial inclusion (FI) and, also, ascertains the factors that lead to the successful implementation of financial inclusion schemes by the public sector banks (PSBs). Four hundred beneficiaries were surveyed through a structured questionnaire with a 5-point Likert Scale Model. Judgement sampling was adopted as the sampling method. Statistical tools, like mean and multiple regression, were applied, and data was collected anonymously at the beneficiaries' request.

Data Analysis and Interpretation

The general profile of the respondents has been represented in Table 1. using percentage analysis. In table 1, it is observable that out of a total of 400 respondents in the survey, 70.25% are males and 29.75% are females. Also, 35.50% of the respondents are in the age group of above 25 years and up to 40 years, 44.75% of the respondents are in the age group of above 40 years and up to 55 years and 19.75% of the respondents are above 55 years. Moreover, 24.75% of the respondents are availing only one FI scheme, 40.50% of the respondents are availing two FI schemes, 28.50% of the respondents are availing, three FI schemes and 6.25% of the respondents are availing, more than three FI schemes introduced by the government.

Table 1

*The Demographic Factor of The Respondents**

Factors	**No. of respondents (No.)**	**Percentage (%)**
Gender		
Male	281	70.25
Female	119	29.75
Total	400	100
Age		
25-40 Yrs	142	35.50
40-55 Yrs	179	44.75
Above 55 Yrs	79	19.75
Total	400	100
Beneficiaries' enrolment in the number of FI Schemes		
1	99	24.75
2	162	40.50
3	114	28.50
More than 3	25	6.25
Total	400	100

Table 2

*Perspective of Beneficiaries of Financial Inclusion Schemes on the Role Played byPpublic Sector Banks (PSBs) in Promoting Financial Inclusion (FI)**

S. No.	**Factors that lead to the successful implementation of FI schemes by the PSBs**	**Mean score**
1.	PSBs are serving the unbanked population and financing unorganized businesses	3.73
2.	PSBs are promoting inclusive growth and ensuring trust in the FI schemes	4.29
3.	PSBs have been an indispensable link between the government and the underprivileged	3.87
4.	PSBs are providing adequate services considering the demand side factors	3.63
5.	PSBs are offering a diverse range of financial services as per the needs of the weaker segment	4.02
6.	PSBs are opening branches and ATMs even in the remote areas	3.71
7.	PSBs are easing the documentation requirements for opening bank accounts and for obtaining credit facilities	4.34
8.	PSBs are initiating awareness campaigns for FI schemes through a variety of platforms	4.51
9.	PSBs are engaging business correspondents who are providing adequate banking services	4.13
10.	PSBs are urging individuals to use organized channels to access financial products and schemes	3.58

Table 2 illustrates the perspective of beneficiaries of FI schemes on the role played by public sector banks in promoting FI. It is analyzed that PSBs are initiating awareness campaigns for FI schemes through various platforms with a mean score of 4.51, followed by PSBs easing the documentation requirements for opening bank accounts and obtaining credit facilities with a mean score of 4.34. PSBs are promoting inclusive growth and ensuring trust in the FI schemes with a mean score of 4.29, and PSBs are engaging business correspondents who are providing adequate banking services, with a mean score of 4.13. According to the beneficiaries of FI schemes, PSBs offer a diverse range of financial assistance per the needs of the weaker segment, with a mean score of 4.02. PSBs have been a vital link between the government and the underprivileged with a mean score of 3.87. PSBs are serving the unbanked population and financing unorganized businesses with a mean score of 3.73, closely followed by PSBs opening branches and ATMs even in remote areas with a mean score of 3.71. PSBs provide adequate services considering the demand side factors, with a mean score of 3.63. PSBs are urging individuals to use organized channels to access financial products and schemes, with a mean score of 3.58.

Tables 3 to 5 discuss the Impact of factors on the role played by Public Sector Banks (PSBs) in promoting financial inclusion (FI) & Multiple Linear Regression has been applied.

Table 3

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	176.626	10	17.663	22.137	.000[b]
	Residual	310.374	389	.798		
	Total	487	399			

The ANOVA Table reveals that the regression model is significant and independent variables impact the dependent variable significantly.

Table 4

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	2.445	.297		8.243	.000
PSBs are serving the unbanked population and financing unorganized businesses	.032	.042	.036	.760	.448
PSBs are promoting inclusive growth and ensuring trust in the FI schemes	.312	.060	.281	5.179	.000
PSBs have been an indispensable link between the government and the underprivileged	.159	.039	.192	4.134	.000
PSBs are providing adequate services considering the demand side factors	.130	.045	.149	2.872	.004
PSBs are offering a diverse range of financial services as per the needs of the weaker segment	.163	.047	-.170	-3.485	.001
PSBs are opening branches and ATMs even in the remote areas	.217	.055	.206	3.954	.000
PSBs are easing the documentation requirements for opening bank accounts and for obtaining credit facilities	.554	.055	-.507	-10.119	.000
PSBs are initiating awareness campaigns for FI schemes through a variety of platforms	.007	.054	.007	.132	.895
PSBs are engaging business correspondents who are providing adequate banking services	-.033	.048	-.030	-.698	.486
PSBs are urging individuals to use organized channels to access financial products and schemes	.220	.044	.221	5.015	.000

Dependent Variable: Successful implementation of FI schemes by the PSBs

Table 5 illustrates the impact created by the independent variables on the dependent variable. The results showed that all the statements, except PSBs, are serving the unbanked population and financing unorganized businesses, PSBs are initiating awareness campaigns for FI schemes through a variety of platforms, and PSBs are engaging business correspondents who are providing adequate banking services that have a significant impact on successful implementation of FI schemes by the PSBs.

Table 5

Model Summary

Model	R	R Square	Adjusted R Square	Std. The error in the Estimate
1	.814[a]	.780	.704	.89324

Predictors: (Constant)*

Table 5 depicts the model summary. The value of Adjusted R Square is .704, which shows that the independent variable explains 70.4% of the variance in the dependent variable.

Findings and Conclusion

India is a developing nation where most people live below the poverty line. Poverty can be reduced when financial services are available and accessible to the weaker section at an affordable cost. Financial inclusion is inferred to be the optimum solution to cater to this problem. One of the significant steps the regulatory bodies took that resulted in establishing public sector banks was the nationalization of 14 critical private banks in 1969 and six other private banks in 1980. Since then, public sector banks have been a vital link between the government and the underprivileged and have been excluded from implementing financial inclusion schemes. Though there has been substantial growth in financial inclusion and in consideration of the country's vast population, more concentrated and collaborative efforts of the government of India, RBI, and public sector banks are required with customized solutions. The study concludes that there has been successful implementation of financial inclusion schemes by the public sector banks.

Contribution

The present study highlights the perception of beneficiaries of financial inclusion schemes on the role played by public sector banks in promoting financial inclusion. Perception is not formed instantly, but, rather, it is a long-term phenomenon; hence, in the research study, it is the result of the ongoing efforts made by the public sector banks over the years. The result elaborates on the factors that have not only had a long-term impact on the beneficiaries' minds but have also increased their level of satisfaction. Furthermore, because the beneficiaries represent the demand side, the study will help financial institutions and policymakers identify the areas where additional work must be done individually and in collaboration.

Future Research

The study's focus has been limited to the perception of beneficiaries of financial inclusion schemes on the role played by public sector banks in promoting financial inclusion. Still, as the topic is extensive and dynamic, there is plenty of room for future research. The future scope of the study includes the opinion of people with field experience, such as bank employees, business correspondents (BCs), etc. As the country is quite diverse with different issues in other regions, future research comparisons can be drawn between the perception of beneficiaries residing in different regions, states, and nations so that area or region-specific solutions could be provided. Moreover, future research could be conducted to study the strategies adopted by other developing and developed countries, and a suitable action plan could be implemented with a global partnership model.

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Achieving Sustainable Development through Financial Literacy of College Students: RBI initiatives

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[Abstract] Financial literacy (FL) has long been seen as one of the foundations of sustainable growth. Out of the 17 SDGs, SDG 1, SDG 8, and SDG 9 can be achieved by promoting financial literacy (FL). Further, sustainable development can be linked with savings, investments, and financial inclusion. This highlighted the need for financial literacy (FL). Moreover, earlier studies revealed the significance of the young generation's involvement in achieving the SDGs for any country. Therefore, adequate financial literacy (FL) of college students can help create an equitable and sustainable future for the young generation and the entire world. This paper attempts to investigate the financial literacy (FL) level of college students and the role and reach of RBI (as a regulatory body) in promoting financial literacy (FL). The study has been made using primary data collected from 400 college students across different colleges in Assam.

[Keywords] sustainable development, financial inclusion, financial literacy (FL), college students, target group

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Introduction

Financial literacy (FL) has long been seen as one of the foundations of sustainable growth. (Margvelashvili & Kostava, 2020). Out of the 17 SDGs, SDG 1, "No poverty," SDG 8, "Decent work and economic growth," SDG 9, "Industry innovation and infrastructure," are highly related to finance. An individual who masters the skills of finance-related matters can favorably contribute to economic development. It is evident from earlier studies that economic development is significant in achieving the SDGs for any country across the globe. Economic growth can be achieved with the help of financial inclusion (Bhatty et al., 2022). Previous studies revealed the importance of financial literacy (FL) on financial inclusion. (Hasan & Hoque, 2021). Moreover, the easy accessibility of information through mobile phones and other digital modes has motivated most younger generations to start investing from an early age. Among the younger generations, college students are more prominent and active. Hence, the study tried to investigate college students' financial literacy (FL) level.

College students are often in a unique position regarding sustainable development and financial literacy as they establish independence and learn to manage their finances for the first time. Investment from the younger generation will help the country grow with more savings and investment for economic development (Kohli & Devi, 2022). Further, considering the importance of savings and investment, most people try to invest but face various issues such as misselling , financial fraud, etc. As per reports (Business Standard, 2022) economic, in the last three years, 42% of Indians have become the victim of financial fraud. Moreover, the misselling of financial products is another concern. Reports state that most mis-selling occurs because the customers are unaware and often depend on the recommendations of the agents. Further, descriptions of IRDAI state that 47,503 missellings took place in the financial year 2017-18; this has been

reduced to 35,178 in 2019-20, primarily due to increased customer awareness. All these issues have made the issue of financial literacy a must for every individual. The RBI, realizing the importance of the same, took different initiatives to promote financial literacy among the country's people. The RBI has developed other programs and schemes on financial literacy meant for various target groups. College students are one of them, and the present study evolves around the target group, i.e., the college students and the role of RBI in promoting financial literacy. The study will help to understand whether the programs of RBI have reached Assam's college students and their success. To study the financial literacy level of the sample students, their knowledge about savings, investment, insurance, taxes, and grievance redressal mechanisms, etc., have been observed.

The Objective of the Study

1. To study the financial literacy level of the college students in the study area.
2. To compare the financial literacy level of college students with different demographic variables.
3. To explore the role of the Reserve Bank of India (RBI) in promoting financial literacy among the respondents.

Research Hypothesis

H1o: There is no difference between the financial literacy scores of the students at rural area colleges and students of urban area colleges.

H2o: There is no significant association between the financial literacy scores of the college students of the commerce stream and other streams.

H3o: The financial literacy scores of male students and female students are similar.

H4o: There is no significant association between attending financial literacy programs and the financial literacy level of the students.

Review of Literature

Agarwalla et al. (2013) found the need for adequate financial literacy in responsible economic behavior. Bhargava (2016) revealed that financial literacy not only helps the economy but also helps in initiating entrepreneurship among the people. Kumar and Anees (2013) revealed financial literacy to be much more relevant to financial well-being and economic growth. Baluja (2016) demonstrated women's financial literacy and its impact on self-reliance and economic growth. Shetty and Thomas (2019) revealed financial literacy as a prominent contribution to the development of the economy. Sravanthi (2017) studied the initiatives undertaken by different regulatory bodies and highlighted the role of different regulatory bodies in financial literacy. Lusardi et al. (2014) and Eniola and Entebang (2016) revealed the significance of promoting financial literacy in sustainable development.

Significance of the Study

Young college students are often exposed to income or revenue after graduation. This can be established, as most college graduates start earning either by job engagement or entrepreneurial activities. Also, informed decisions regarding financial management from an early age will help individuals for a better and sustainable future. Moreover, a lack of financial literacy at the college level makes an individual dependent on the voices of the agents and other people, which sometimes leads to financial distress. Studies revealed

that individuals' trust in investments decreases when they become victims of misselling. Hence, the FL level among college students is forward-looking adequate FL from the college level will ensure that the students can effectively manage money the moment they start earning. This will help them start investing from an early age, contributing to the nation's economic development. The financial literacy of college students is considered, as most will be entering the workforce soon and need to make financial decisions. The study highlighted the students who are less taken into account but are the future of the country's economic growth. Again, imparting financial education to girls while they are in college will help them take up entrepreneurial activities, thus helping them reach the SDGs. Further, the study will help the policymakers analyze and identify whether RBIs initiatives have reached college students.

The Methodology Adopted for the Study

The study mainly used primary data. First, all the colleges were divided into two strata based on location: rural and urban. Further, the colleges were classified into two substrata, i.e., commerce and non-commerce (arts and science), based on the stream of education to compare with the location and streamwise student's financial literacy level. The study employed a random sampling technique while selecting the colleges, and snowball sampling was used to collect the data from 400 college students across different colleges of Assam. The data have been collected from 7 districts of Assam, and in each district, four colleges have been selected, two from the rural area and two from the urban area. The sample size has been determined based on Cochran's formula at a 95% confidence level, which stands at 384, as the population size was 92090. Hence, 400 students have been selected, as it fulfills the minimum sample size requirement. The analysis is made using SPSS 25.0 (Genuine Version) as the data are not found to be normally distributed. Hence Kolmogorov-Smirnov Z test statistics, Cramer's V test statistics, and the chi-square test have been used to interpret the findings and address the hypotheses set. Further, a reliability test was done using Cronbach alpha and found to be reliable as it is .835. See table 1 below.

Table 1

Reliability Statistics

Cronbach's Alpha	N of Items
.835	28

Analysis and Discussions

Status of Financial Literacy in the Study Area

To access the FL level of the college students, the study was carried out with 28 questions based on savings and borrowings, insurance, investment, taxes, and a grievance redressal mechanism. The questions were framed based on OECD guidelines and day-to-day personal finance requirements. The questions were asked mainly on some select issues of basic financial knowledge. Based on the responses, the following findings have been forwarded. For each correct response, 1 point is allotted; otherwise, 0. (OECD guidelines).

Table 2

Financial Literacy Level of the College Students

Descriptive Statistics					
	N	***Minimum***	***Maximum***	***Mean***	***Std. Deviation***
Financial Literacy Score	400	.00	22.00	11.7250	4.09956

Observations: Table 2 reveals the maximum score obtained by the respondents remained at 22 out of 28 marks allotted to 28 questions, while the minimum score was 0, indicating financial illiteracy among the students of the study area. Moreover, the mean score remained at 11.725, which was less than 50% of the total marks (28). This also indicated that the average FL of the students was found to be in the lower side. Table 3 provides the category-wise financial literacy level of the students.

Table 3

FL Level of the College Students

Financial Literacy Level	Frequency	Percent
Financial illiteracy	2	.5
Low Financial Literacy	59	14.8
Moderate Financial Literacy	236	59.0
High Financial Literacy	101	25.3
Very High Financial Literacy	2	.5
Total	400	100.0

Observation: The scores of the students were classified into four categories. Students who scored 0-6 are classified as financially illiterate. Students who scored 7 out of 28 were considered to have a low level of financial literacy. Students scoring between 8-14 were considered moderately financially literate, while those who scored between 15-21 had high financial literacy, and those scoring more than 22 were regarded as highly economically literate. Table 3 reveals that 59% of the students are moderately financially literate, 25.3% are highly economically literate, and only 0.5% are very highly financially literate.

Table 4

Location-wise Financial Literacy of the Students

			Financial Literacy Level					Total
			Very Low FL	*Low FL*	*Moderate FL*	*High FL*	*Very High FL*	
Location of the College	Rural	Count	1	43	110	46	0	200
		% within the Location of the College	0.5%	21.5%	55.0%	23.0%	0%	100.0 %
	Urban	Count	1	18	124	55	2	200
		% within the Location of the College	0.5%	9.0%	62.0%	27.5%	1.0%	100.0 %
		Total	2	59	236	101	2	400

Table 4a. *Test Statistics*

		Financial Literacy Scores
Most Extreme Differences	Absolute	.155
	Positive	.155
	Negative	-.020
Kolmogorov-Smirnov Z		1.550
Asymp. Sig. (2-tailed)		.016
a. Grouping Variable: Location of the College		
Source: Computed primary data using SPSS 25.0		

Observation: Table 4 reveals the location-wise literacy scores of the college students. It found that 21.5% of college students from rural areas and have low financial literacy, against only 9% of the students from urban areas. At the same time, 27% of highly economically literate students are from the college in urban areas, as against 23% of students from rural area colleges. However, the cross-tabulation displays a clear picture; yet, to make a conclusion and address the hypothesis (H1), a two-sample K-S test is used. The value of the two sample K-S test is 1.550, corresponding p-value of 0.16. The p-value was <0.05, rejecting the null hypothesis, and the study found that the FL levels of students in rural and urban areas are different.

Table 5

Streamwise Financial Literacy of the Students

		Financial Literacy Level					Total
		Very Low FL	Low FL	Moderate FL	High FL	Very High FL	
Stream of Education	Arts	2	18	64	16	0	100
	Science	0	16	63	21	0	100
	Commerce	0	23	106	69	2	200
Total		2	59	236	101	2	400

Table 5a.

Test Statistics

		Value	Approximate Significance
Nominal by Nominal	Phi	.266	.000
	Cramer's V	.188	.000

Source: Compiled from primary data using SPSS 25.0

Observations: Table 5 reveals the stream-wise FL level of the students, and it is found that the FL level of the students from the arts and science stream is comparatively lower than those from the commerce stream. The combined percentage of high financial literacy among arts and science students stands at 18.5% against 34.5% of commerce students. Test statistics were found to be significant, as the p-value <0.05. Rejecting the null hypothesis, we can conclude that there was a substantial difference between the stream of education and the financial literacy level of the students.

Table 6

Gender-wise FL of the Students

		Financial Literacy Level					Total
		Very Low FL	Low FL	Moderate FL	High FL	Very High FL	
Gender	Male	0	4	153	78	2	237
	Female	2	55	83	23	0	163
Total		2	59	236	101	2	400

Table 6a

Test Statistics

		FL Scores
Most Extreme Differences	Absolute	.635
	Positive	.000
	Negative	-.635
Kolmogorov-Smirnov Z		6.236
Asymp. Sig. (2-tailed)		.000
a. Grouping Variable: Gender		

Source: Compiled from primary data using SPSS 25.0

Observations: Table 6 reveals the gender-wise scores of the college students. It is found that 33.74% of female college students have low financial literacy against only 1.69% of male college students. In comparison, 32.91% of highly financially literate students are male, as against 14.11% of female students. The value of the two sample K-S test is -.635 with its corresponding p-value as 0.00 (Table: 6a). As the p-value is less than 0.05, we can conclude that the financial literacy levels of the male and female students differ.

Table 7

Attended any Financial Awareness Program

Variables	Frequency	Percent
Yes	49	12.2
No	351	87.8
Total	400	100.0

Table 7a

Attended any Financial Awareness Program

Variables		FL Level recorded					Total
		Very Low FL	Low FL	Moderate FL	High FL	Very High FL	
Attended any financial awareness programme	Yes	0	13	6	30	2	49
	No	2	46	206	95	0	351
Total		2	59	236	101	2	400

Table 7b

Chi-Square Test Statistics

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	9.600[a]	4	.048

Source: Compiled from primary data using SPSS 25.0

Observation: Table 7 reveals the number of students who agreed to attend any financial literacy program. The table shows that only 12.2% of the students participated in the financial literacy program. The result highlighted significant results, indicating that various financial literacy initiatives of different agencies are yet to reach the students of the study area. Again, the result obtained from the analysis raised questions on the practical implementation and reach of the financial literacy programmes. To address the hypothesis (H4), chi-square statistics have been used to comment on the significant association (p-value <0.05, Table 7b) between the FL level of the students and the attendance of financial literacy programs .

Role of RBI in Promoting Financial Literacy in India

RBI, being the apex bank, has been promoting financial literacy among various target groups, including college students. The study revealed that college students' financial literacy is at a lower level. Hence, the segment deals with multiple initiatives undertaken by RBI. This segment will also help to investigate the role played and the reach of the programs , especially in the study area.

Initiatives are Taken by the Reserve Bank of India

Project Financial Literacy

In its first plan to promote financial literacy, the RBI took the initiative under the scheme "Project Financial Literacy" in 2007. The project's primary goal was to disseminate knowledge on general banking ideas to various groups, including students, women, senior citizens and low-earning individuals from rural and urban areas. Further, intending to impart financial information to children, the RBI launched various informative economic study materials in the form of the comic to make the children learn the complex concepts of banking, insurance, and other finance-related information with fun. The RBI also took the initiative and conducted various essay competitions on financial literacy and gave an RBI young scholar award to generate and promote financial literacy among the students.

National Strategy for Financial Education (NSFE)

NSFE is a nationwide coordinated approach consisting of an adapted framework introduced by RBI in 2013. NSFE focuses on developing expertise, knowledge, attitudes, and habits required for appropriate money management and financial well-being.

National Centre for Financial Education (NCFE)

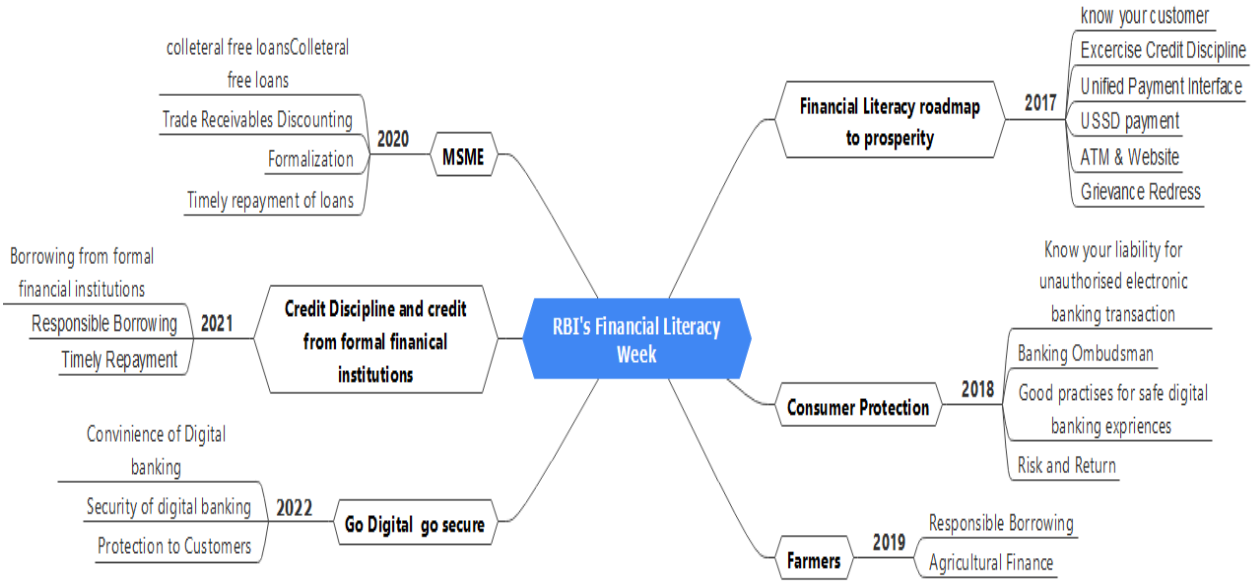
The NCFE was set up with the primary goal of providing basic financial education and creating appropriate material to increase financial literacy among individuals. The NCFE promotes financial education through programs like "MSSP" ("for schools"), "Financial Education Training Program" (FETP) "for school teachers," "Financial Education Program for Adults" (FEPA), and "Financial Awareness and Consumer Training" (FACT) for the "undergraduate and postgraduate students."

Financial Literacy Week

Another practical approach of the RBI in promoting financial literacy among the population is the celebration of FLW. It is an initiative by RBI to deliver awareness on critical topics. The RBI celebrates a week-long focused campaign targeting people with significant financial issues. The RBI started observing FL week from the year 2017. A detailed butterfly figure (Fig. 1) shows the year-wise FL weeks with different themes and the contents covered.

Figure 1

Present Status of Financial Literacy Programs Undertaken



The segment below deals with the status of the financial literacy programs undertaken by RBI under the NCFE for 2021-2022 throughout India, including the union territories. The data have been derived from the annual report of NCFE.

Table 8

State-wise Number of FLCs under NCFE (2021-2022) (Source: Annual Report, NCFE)

Name of the states/ Union territories	Number of FLCs	Percentage
Uttar Pradesh	**1228**	**23.98**
Odisha	**450**	**8.79**
Jammu & Kashmir	**419**	**8.18**
Uttrakhand	348	6.79
Haryana	339	6.62
Bihar	324	6.33
Maharashtra	249	4.86
Gujrat	243	4.74
Madhya Pradesh	233	4.55
Jharkhand	224	4.37
Tamil Nadu	183	3.57
Rajasthan	162	3.16
Andhra Pradesh	108	2.11
Himachal Pradesh	107	2.09
Assam	**94**	**1.84**
West Bengal	89	1.74
Karnataka	64	1.25
Delhi	44	0.86
Punjab	43	0.84
Chattishgarh	36	0.7
Kerela	26	0.51
Nagaland	22	0.43
Puducherry	19	0.37
Telengana	16	0.31
Tripura	10	0.2
Manipur	9	0.18
Arunachal Pradesh	6	0.12
Meghalaya	6	0.12
Sikkim	6	0.12
Chandigarh	5	0.1
Mizoram	5	0.1
Goa	3	0.06
Ladakh	2	0.04
Total	5122	100

Observations: Table 8 reveals that NCFE organized 5122 FLC during 2021-2022. Uttar Pradesh tops the list with 23.98 % of the comprehensive programs , followed by Odisha (8.79%) and Jammu and Kashmir. (8.18%). A minimum gap of 15.19% between the programs organized in Uttar Pradesh and subsequent states can be observed. Further, it can be observed that in most of the states and union territories, the number of programs organized is deficient, and the issues need to be addressed. The least number of programs was organized in Ladakh, with only two digits of programs in 2021-2022. The data indicated that financial literacy awareness is yet to reach most people, even in 2022. Also, a strong need for policy implementation is required so that more FLCs are organized uniformly in all parts of the country. Considering the northeastern states, we can see that the number is much less compared to other parts of the country. Out of 8 states, Assam tops the list with only 94 FLCs organized, followed by 22 FLCs in Nagaland, 10 FLCs in Tripura, and the other NE states stand at below ten programs within the period, indicating great negligence in conducting the programs.

Table 9

Target Groups Reached under Different Programs

Name of program	Target groups	Number	Percentage
Financial Education Programme for Adults (FEPA)	Anganwadi Worker	215	4.20
	Asha Workers	39	0.76
	Employees of any organization	166	3.24
	Farmers	1299	25.36
	MGNEREGA Beneficiaries	132	2.58
	Migrant Labour	221	4.31
	Skill Development Trainees	326	6.36
	Retired Personnel	33	0.64
	Rural Folks	560	10.93
	Self Help Groups	639	12.48
	Women Groups/Household people	935	18.25
Financial Awareness and Consumer Training (FACT)	**College Students**	**303**	**5.92**
Money Smart School Program (MSSP)	School Students	69	1.35
Financial Education Training Program (FETP)	School Teachers	185	3.61
Total		5122	100

Source: Annual Report, NCFE 2021-2022

Observations: An attempt has been made to highlight the importance of FL for college students. Table 8 highlights that even after having specific programs viz. Financial Awareness and Consumer Training (FACT) mainly for the college students, the program is yet to achieve its objectives. Table 9 reveals that out of the targeted beneficiaries, college students formed only 5.92% of the total beneficiaries, and only 303 programs were conducted all over India.

Table 10

Awareness Level of the Students on Some Select FL Programs

FL Program	Aware	Not Aware
RBI Financial Education Initiative	121 (30.25%)	279 (69.75%)
Financial Literacy Week	163 (40.75%)	237 (59.25%)
SEBI Investors Education programme	134 (33.5%)	266 (66.5%)
National Centre for financial education	162 (40.5%)	238 (59.5%)
Financial Awareness and Consumer Training (FACT)* For College students	110 (27.5%)	290 (72.5%)

Observation: An attempt has been made to study the awareness level of some select financial literacy programs conducted under the aegis of RBI and other agencies. The study observed a shallow level of awareness among the students of the different programs. Although the RBI and foreign agencies claim to have conducted programs aggressively, most standard programs are unknown to the students. Table 10 reveals that the awareness level of the students is less than 50% for the select most common financial literacy programs organized by different agencies under the aegis of RBI. Moreover, significant findings were revealed as the awareness level on Financial Awareness and Consumer Training (FACT), designed especially for college students, is very low and stands at only 27.5%. This indicates that the RBI has failed to reach the college students in the study area.

Major Findings

Some of the significant findings have been highlighted under this segment.

1. A shallow level of financial literacy was observed among the college students in the study area. The average score was only 11.72 out of 28, which is less than 50%. Further, the majority of the students (59%) are found to be moderately financially literate (Tables 1 & 2).
2. Students from urban colleges were more literate than students from rural colleges. (Table 3). The Kolmogorov-Smirnov Z statistic was found to be significant with a p-value <0.05. (table 3a)
3. The study revealed a significant difference between the students' stream of education and financial literacy level. College students from the commerce stream were found to be more financially literate than those from the arts and science stream. The test statistic was found to be significant with a p-value < 0.05.
4. An investigation into the gender-wise financial literacy level of the students was done and found that the males are more financially literate than the females across a different stream of education. The test statistics also support the findings with a p-value <0.05.
5. Another significant finding from the study was that those students who attended financial literacy or awareness programs were more literate than those who had not participated in any financial literacy or awareness programs.

6. The study also revealed that financial literacy or awareness programmes play a vital role in increasing the financial literacy level of students. Yet, the role of RBI and the affiliating agencies must perform their best.
7. A study on the role of RBI revealed timely initiatives undertaken by the apex bank, but the enterprises are yet to work in tandem. A deficient number of financial literacy programs have been conducted over the year, considering the geographical reach of the country.
8. Moreover, the study also highlights that college students are yet to get the attention, yet as only 303 (5.92%) of the total program have been conducted over the year all over the country with 34.3 million students [Annual Status of Higher Education (ASHE), (Deloitte 2021)].
9. The awareness level of ongoing financial literacy/awareness programmes was shallow among the study area students. This indicated that although the RBI has taken initiatives, the programs are yet to reach the study area.

Suggestions

India still does not provide appropriate financial education. Earlier studies support that the level of financial literacy, particularly in underprivileged areas, is intolerably low. Based on the findings, it can be suggested that the RBI needs to work more rigorously in promoting and increasing the students' financial literacy. The objectives of RBI financial literacy programs can be reached with improved outreach and broad exposure of the programs. While the study pointed out some serious issues in delivery mechanisms as most programs are yet to get the target groups. The RBI and the affiliating agencies must develop integrated guidelines and strategies with extensive research and continuously monitor the implementation of the programs and the success of the programs .

The RBI should monitor the different programs for their successful implementation on a timely basis. Another important suggestion is that although the number of literacy programs has been observed, the efficacy needs to be addressed. The RBI and the affiliating agencies need to assess the target groups post the literacy programs to make the financial literacy programs more fruitful.

Conclusion

Financial literacy and sustainable development are two essential concepts that are closely related. Adequate financial literacy helps create a better and sustainable future for all by making responsible financial decisions that help balance economic growth. College students are the most vital group in economic development, as they are considered the nation's future. In this regard, academic learning and college habits play a significant role. The learnings at the college level will reflect on future decisions. Out of all, the financial decision is prime. Thus, proper financial literacy from an early age will help the students make financial decisions beneficial to them. Also, the risk of financial failure and debt trap becomes low with timely financial literacy. All these have raised the issue and made the researcher investigate the ground reality and determine the students' financial literacy level.

Moreover, as few financial literacy programs have been organized in the state of the study area; hence, the study investigated the effectiveness of and reach, which, however, was found to be negligible. The study's findings paved the way for the RBI and the affiliating agencies to look into the issue deeply and frame policies on the successful implementation of the programs and the way to measure the effectiveness of the different programs continuously. This will not only help the students to learn from a young age how to control their finance and make effective financial decisions shortly.

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Evolution of Fintech Ensuring Sustainability in Financial Markets: A Bibliometric Analysis

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[Abstract] Financial technology, or Fintech, combines two major fields: finance and information technology. In today's era of automation, the financial markets and supply of financial services are significantly impacted by a mix of innovative business models, technology applications, and innovative products and services. The benefits of technology in the financial sector include increased operational effectiveness, cost reduction, disruption of the established industry structures, blurring of industry borders, facilitation of strategic disintermediation, creation of new entry points for entrepreneurship, and democratization of access to financial services. The paper provides a bibliometric review of FinTech in financial markets based on the 901 publications retrieved from the Scopus database between 1980 to 2022 (September). Initially, a wide range of keywords was used to search within "TITLE-ABS-KEY" with the help of Boolean operators in two parts: (1) financial technology and (2) financial markets, which resulted in 1,738 documents. Limiting the search to English as a language, journal as a source type, and article as a document type, documents were reduced to 901. The importance of technology in financial markets, especially the banking industry, is further illustrated through various tools, like Biblioshiny for graphs and tables, Microsoft Excel for frequency analysis, and the VOS viewer for data and network visualization. The empirical research of the study is divided into two parts: performance analysis and science mapping by using common bibliometric indicators like authorship, active institutions, citation analysis, geographic distribution, keywords analysis, co-citation analysis, bibliographic coupling, thematic analysis, and cluster analysis. The study will add to the existing literature by presenting a bird's eye survey on the evolution of FinTech in financial markets, the challenges faced by its stakeholders and how they have been overcome. The findings suggest that COVID-19 had played an essential role in facilitating the adoption of technology in the financial sector, ensuring the sustainability of all financial transactions even when everyone preferred to be behind closed doors.

[Keywords] bibliometric analysis, science mapping, performance analysis, financial markets, banking industry

[JEL Classifications] D53, G21 "This paper has been presented at the Global Conference organized by Confab 360 Degree on title Global Conference on emerging technologies, business, sustainable, innovative business practices and social well-being held on 10th and 11th December 2022."

Introduction

Fintech is a multidisciplinary term that combines two well-developed disciplines, i.e., financial technology and financial markets. Payment gateways, digital wallets, mobile banking, online trading platforms, peer-to-peer lending, automated trading platforms, asset management, reg tech, insurtech, blockchain, the online stock market (Preda, 2006) and other products emerged as a result of the unintentional growth of information technology and its involvement in financial markets. All these products of fintech are well

accepted because of their advantages of quick processes, cost efficiency, elimination of physical movement, and related hassles (Lee & Shin, 2018).

The importance of fintech was further realized with the sudden breakdown of COVID-19, where the focus was to maintain regular functioning without coming into direct contact with human beings. In other words, fintech has played an essential role in ensuring the sustainable functioning of financial transactions during COVID-19 with the help of mobile applications and websites catering to all the needs of the individual; you name it, and you get it with the use of technology. For basic needs, we have an electronic interface. For food, we have Swiggy and Zomato; for making payments, we have e-wallets and internet banking; for pharmacy needs, we have MedLife and 1mg; for basic groceries, we have Grofers; and many more. This list doesn't end here; even doctors diagnosed their patients online via video calls, and the government initiated the Aarogya Setu app to keep records of COVID vaccinations. North et al. (n.d.) conducted a study examining mobile applications' effects on the healthcare sector. They highlighted the security risk associated with patient data. They concluded that Diasend is developing the safest healthcare app for patients without worrying about their data privacy. Obeidat et al. (2020) discussed the development and outspread of mobile banking, highlighting the paradigm shift from first-generation mobile telephony (analogue cellular phones) to fourth generation (wireless communications networks).

The emergence of the concept of fintech can be traced back to the 1980s, but the rate of acceptance has increased over time. Initially, people were skeptical about e-financial services because of cyber fraud and security issues, which experts have well addressed with sound-protected cyber walls to offer a smooth platform to their stakeholders. Covid-19 has also paced the transitional shift from traditional bank visits to online portals to ensure smooth and sustainable financial transactions. No player in the financial sector can undermine the importance of technology or part ways with it; instead, all are coming up with start-ups to revolutionize the way the financial sector operates in search of enhanced customer satisfaction, a more profitable business model, and innovative services, such as the concept of virtual property initiated by Kotak and the advent of robo-advising as opposed to traditional human advisors who got swayed by their emotions (Belanche et al., 2019; Rico Pérez et al., n.d.). Each player had to adopt innovative strategies incorporating information technology into their daily routine tasks to survive; otherwise, they would be kicked out of the market very soon. Obeidat et al. (2015) investigated business intelligence technology and how it converts enormous amounts of varied data gathered from malicious sources into helpful information, enabling more effective and efficient production. To transform financial services, the industry had to undergo various disruptions and innovations (Gomber et al., 2018).

Berger (2003) examined the introduction of financial technology in the banking sector and suggested that due to technological advancement, it became easy to consolidate the performance and functioning of all major players of the segment along with quality improvement and a large basket of new services offered, like internet banking, online transfer, online loan intimations and investments, etc. Buchak et al. (2018) posited that due to an increase in fintech lenders, the role of shadow banks in the mortgage industry doubled from 2007 to 2015. Further, this growth is not solely due to technological advancement but is equally supported by a loose regulatory framework for online lenders and shadow banks compared to traditional banks. Stakeholders initially supported fintech products due to their cost efficiency, but this has now shifted to convenience in dealings even with the same or marginally higher cost. Thako (2020) has done a review paper to summarize the connection between fintech and banking. Due to changes in the basic functioning of the financial sector, financial regulations need to be revamped to offer regulatory frameworks for monitoring online transactions, which were not required earlier. The global financial crisis also paved the

way for more stringent financial regulations (Arner et al., 2017) (Neu et al., 2006). Further, other authors have also studied the impact of fintech and regtech on financial regulations and the performance of the banking industry and other financial markets (Anagnostopoulos, 2018).

With the introduction of the internet in the 1980s, its impact on financial markets, the increasing role of artificial intelligence in financial services, and the increased demand for more financial regulations, this study is a need of the hour to map the evolution of fintech and highlight the emerging themes to help future researchers interested in fintech get a quick view on quantitative parameters. Thus, the present study intends to conduct a quantitative or bibliometric analysis of studies published in the Scopus database between 1980 and 2022. In light of the backdrop mentioned above, the remaining paper has been segregated into six Sections; Section II lists the objectives. The research methodology is expounded in Section III. Empirical analysis has been produced in Section IV, followed by a conclusion in Section V. Finally, limitations and scope for further research have been mentioned in Section VI and Section VII, respectively.

Objectives of the Study

The overall objective of the study is to conduct a bibliometric analysis to understand the evolution of financial technology in financial markets; specific objectives are as follows:

1. To identify leading nations publishing on fintech
2. To ascertain pioneer journals in the field of fintech
3. To recognize the most influential authors publishing in the domain of fintech
4. To find out the most cited articles or persuasive research papers on fintech
5. To discover the volume of publications on fintech every year; and
6. To detect keywords widely associated with fintech.

Research Methodology

In the initial literature review stage, it was observed that much research has already been done on the concept of "financial technology" and "financial markets" working together. Bibliometric analyses have also been done in the past on the related aspects of fintech, but to the best of the author's knowledge, few similar studies exist (Bhatt et al., 2022). Further, addressing the gaps with its extensive dataset, this study aims to conduct a bibliometric analysis by following a "Triple A Framework," i.e., "acquire, assemble, and analyze" all the data available in the concerned subject field.

Database

This study analyzes the bibliographic information of 901 documents from the Scopus database published between 1980 and 2022 (September). From the pool of available databases, Scopus is considered one of the largest and most widely used. Studies published in Scopus offer a sufficient sample size for generalizing the results. With the use of Boolean operators, a variety of keywords were initially employed (see Table 1) to search within "TITLE-ABS-KEY" in two parts: (1) financial technology and (2) financial markets, which produced 1,738 documents (Goyal & Kumar, 2021; Krishen et al., 2021). The number of papers decreased to 901 when the search was restricted to English, journals, and article types.

Table 1

Search Terms used for Obtaining Dataset

Search String	Search Terms
1. Financial Technology	FinTech OR fin-Tech OR "Financial Technology*."
AND	
2. Financial Markets	"Financial Market*" OR "Capital Market" OR "Money Market" OR "Stock Market" OR "Stock exchange" OR Bank* OR "Banking Industry" OR "Banking sector"

Research Design

Bibliometric analysis is one of the common quantitative techniques used to gauge the recent trend in publications based on the bibliographic information of the literature. It is widely used to get a "bird's eye view" opinion on any field. This paper has attempted to perform a bibliometric analysis on the "Evolution of Fintech" from 1980 through September 2022 on the studies available on the Scopus database entailing performance analysis, scientific analysis, and cluster analysis. More popularly, bibliometric analysis has been divided into analysis and science mapping (Donthu et al., 2021; Noyons et al., 1999). Analyzing the various research constituents (like countries, journals, authors, organizations, etc.) based on their number of citations and several publications helps analyze their performance in quantitative terms. In contrast, science mapping helps analyze the associations between the constituents using various analyses such as co-citation analysis, bibliographic coupling, co-occurrence analysis, etc.

Research Tools

Empirical analysis has been done with the help of the Biblioshiny package of R studio and Vos viewer software (version 1.6.16), two of the most widely used software packages, to gauge the basic trend using information available for the number of documents, number of citations, h index, and g index (Aria & Cuccurullo, 2017; Jan van Eck & Waltman, 2020).

Empirical Analysis

Empirical analysis has been conducted in three parts: (i) Descriptive Analysis, (ii) Performance Analysis and (iii) Science Mapping

Descriptive Analysis

Descriptive analysis entails descriptive statistic summary and annual scientific publications in the research area:

Descriptive Statistic Summary. A brief list of results for the bibliometric analysis conducted on a dataset of 901 studies published in the Scopus database between the period 1980 to 2022 is presented in Table 2.

Table 2

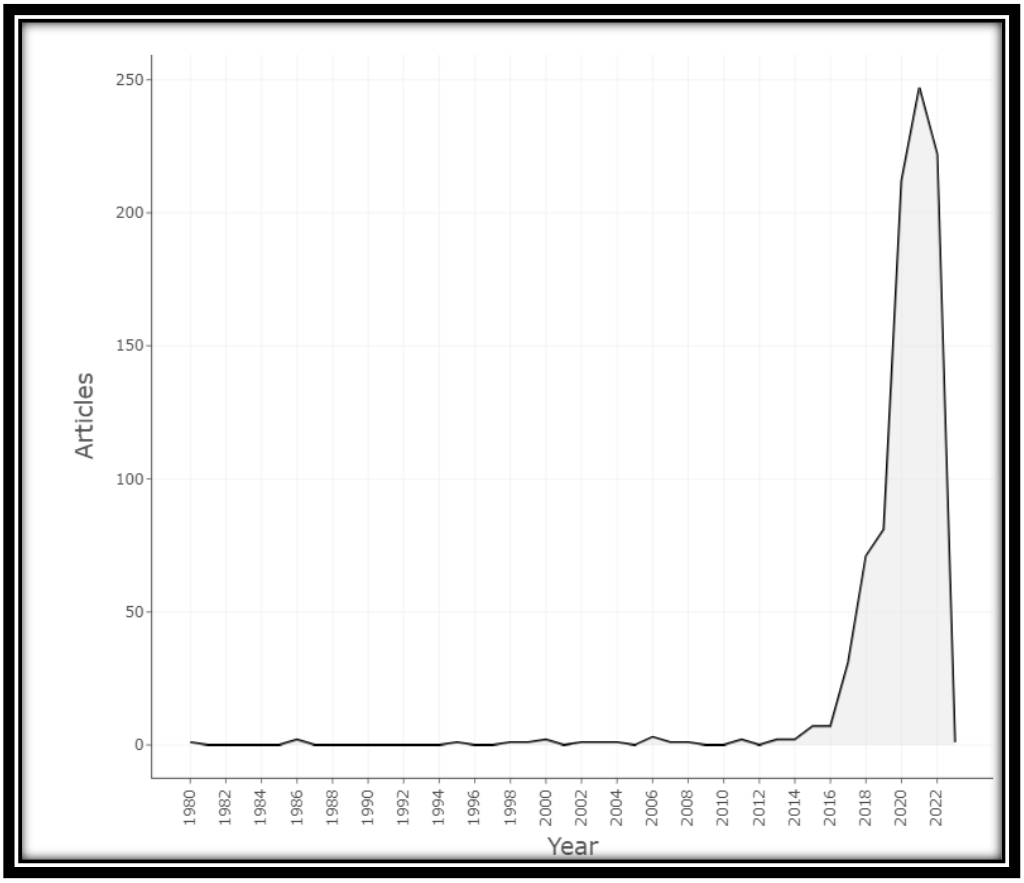
Descriptive Statistic Summary

Description	Results
Main Information About the Data	
Timespan	1980:2022
Sources (Journals, Books, etc.)	496
Documents	901
Document Average Age	2.07
Average citations per doc	9.738
References	43406
Document Contents	
Keywords Plus (ID)	1719
Author's Keywords (DE)	2450
Authors	
Authors	2143
Authors of single-authored docs	193
Authors Collaboration	
Single-authored docs	212
Co-Authors per Doc	2.67
International co-authorships %	22.91

Looking carefully, Table 2 shows that 901 papers are distributed across 496 different sources with an average citation per document of 9.738. This is a good measure of impact; the higher the intermediate authority, the better. A total of 2143 authors have used 2450 different keywords to analyze the concept from different angles, which shows the attractiveness of FinTech as a research field. In contrast, there are only 193 authors with single-authored documents.

Annual Publication Analysis. Figure 1 shows the number of studies published from 1980 to 2022. The number of publications has increased significantly from 2017 to 2022, with the maximum number of documents published in 2021, the year following the COVID-19 pandemic.

Figure 1
Annual Publication Analysis



Results show that from 1980-2015, the number of publications per year ranged between 1 and 7 documents, which shifted to 31 papers in 2017, followed by further increases to 71, 81, 212, 247, and 222 articles in subsequent years, respectively. The initial increase to 10 documents from 7 documents was in 2015, a year after the Modi government came into power. A drastic increase in 2020 can be attributed to COVID-19 and its role in digitalization.

Performance Analysis

This section analyzes the importance and output of various research constituents, such as journals, authors, countries, and articles to analyze their performance in FinTech.

Most Productive and Influential Countries

Productivity can be measured by the size of the circle and influenced by the number of connecting nodes or links and their strength. Figure 2 presents the results for the most productive and influential countries. It shows that studies in the dataset are diversified globally among 126 countries, out of which 39 meet the threshold of the minimum number of documents for Country 5 and the minimum number of citations for Country 50.

Figure 1

Most productive and Influential Countries

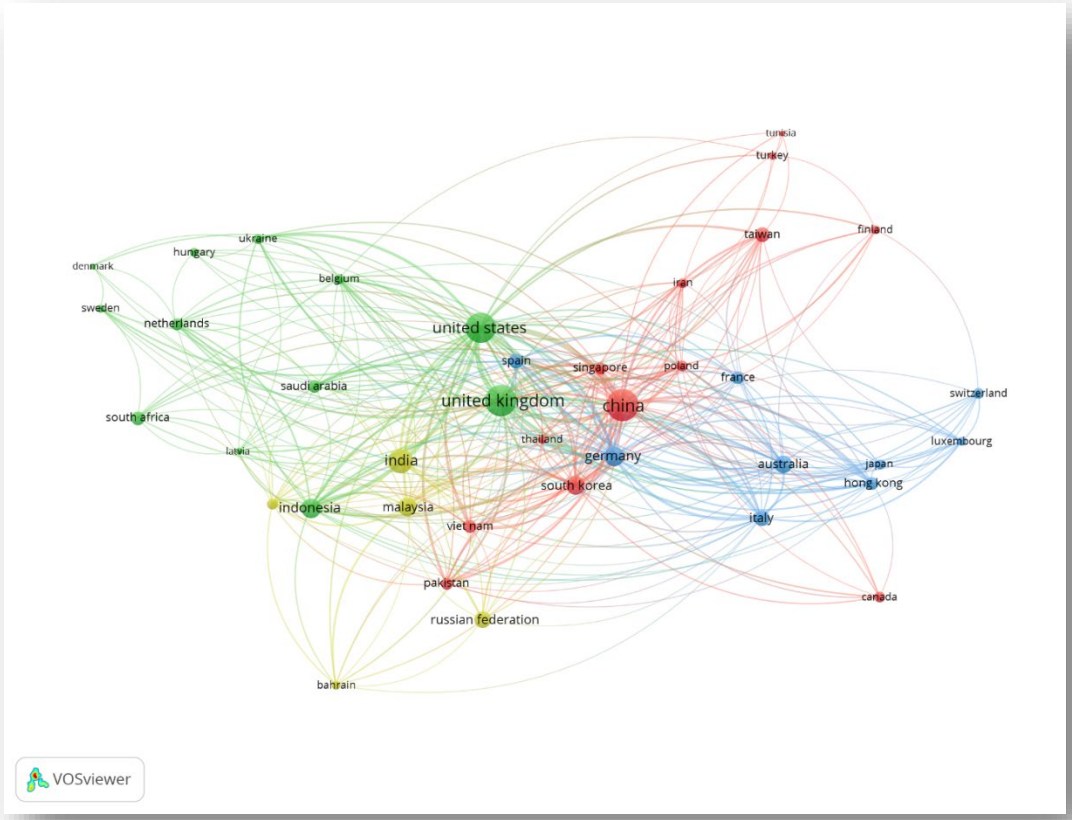


Figure 2 highlights three countries, namely the United States, the United Kingdom, and China, which have quite similar visual presentation and dominate the other counterparts. To get a more detailed view, Table 3 presents the top 10 countries based on number of publications on the left side, the number of citations in the middle, and the total link strength at the right side of the table.

Table 3.

Most Productive and Influential Countries (TD: Total Documents; TC: Total Citations; TLS: Total Link Strength)

Rank	Country	TD	TC	TLS	Rank	Country	TD	TC	TLS	Rank	Country	TD	TC	TLS
1	China	122	1369	222	1	United States	108	2003	266	1	United States	108	2003	266
2	United Kingdom	111	1530	214	2	United Kingdom	111	1530	214	2	China	122	1369	222
3	United States	108	2003	266	3	China	122	1369	222	3	United Kingdom	111	1530	214
4	India	67	414	57	4	Germany	45	1099	177	4	Germany	45	1099	177
5	Indonesia	46	140	93	5	South Korea	42	747	100	5	South Korea	42	747	100
6	Germany	45	1099	177	6	Australia	36	568	78	6	Indonesia	46	140	93
7	South Korea	42	747	100	7	Hong Kong	20	444	54	7	Spain	25	361	82
8	Malaysia	41	213	81	8	India	67	414	57	8	Malaysia	41	213	81
9	Australia	36	568	78	9	Singapore	16	410	74	9	Australia	36	568	78
10	Russian Federation	34	101	19	10	Spain	25	361	82	10	Italy	29	156	78

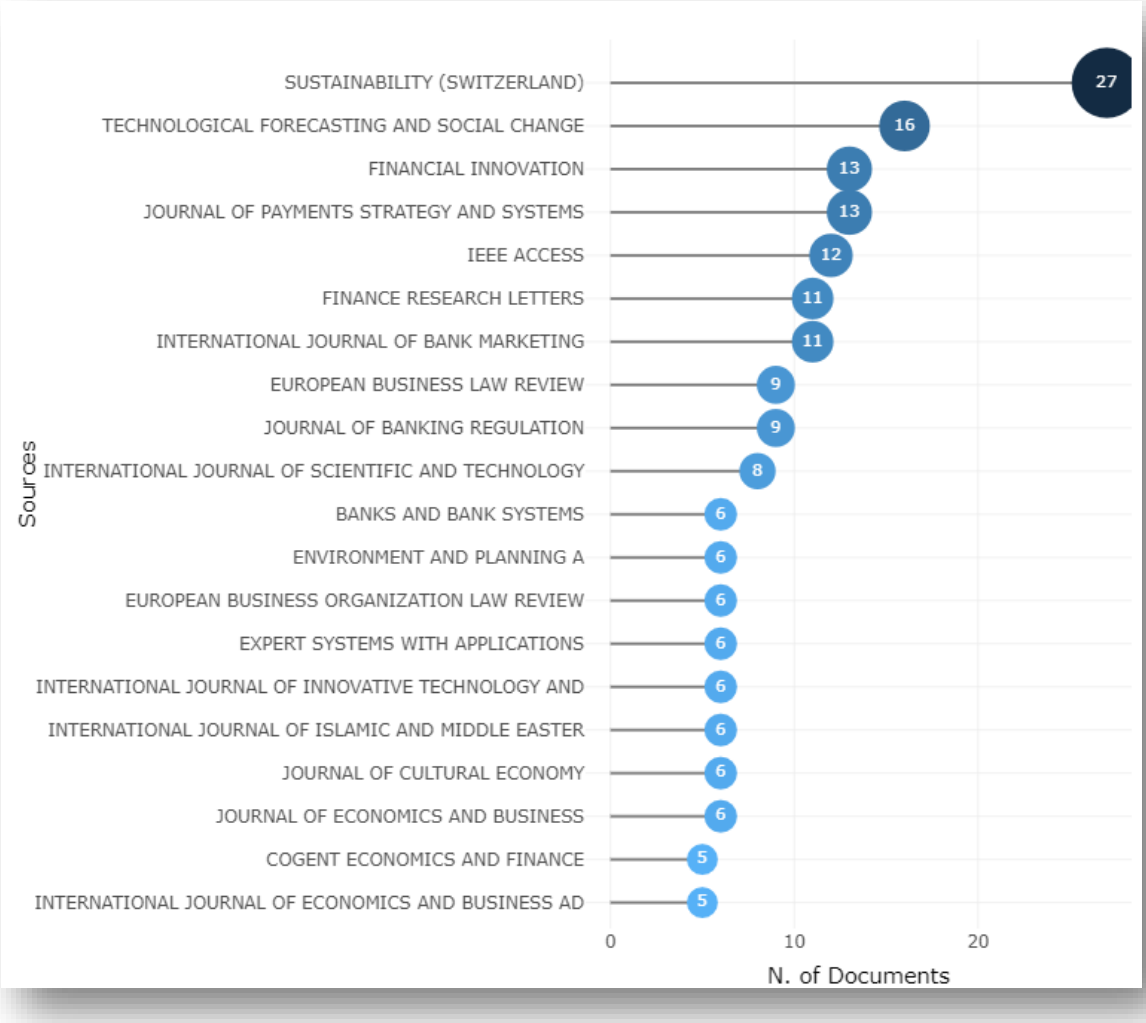
The findings of Table 3 support Figure 2 and emphasize the importance of China, the United Kingdom, and the United States in the field of fintech, as the top three positions are shared among the three, with a slight variation in ranks with respect to different parameters, such as total documents, total citations, and total link strength. China is in first place with 122 documents, whereas the United States won the game in terms of citations and total link strength. Total link strength is a commonly used parameter in the Vos viewer to analyze the influence of one research element (in this case, country) on the others; it measures the association or connectedness of the selected country with the other countries publishing in the same domain. On the other hand, India ranks fourth in terms of the number of documents and seventh in terms of the number of citations but falls out of the top ten in terms of total link strength as a selected criteria.

Most Productive and Influential Journals

Figure 3 lists the most productive journals measured on the basis of the number of publications in the selected time period of the study, i.e., 1980 to 2022. Almost 20 percent (187 out of 901) of total publications are contributed by these top 20 journals, highlighting their importance in the fields of financial technology and financial markets.

Figure 2

Top 20 Productive Journals



The top position is secured by the *Sustainability* journal, with 27 publications, followed by the journal named *Technological Forecasting and Social Change*. The next position is shared by the *Financial Innovation Journal* and the *Journal of Payments Strategy and Systems*. The fact that *Sustainability* journal is the journal with the most publications can be attributed to its semi-monthly publication frequency.

Table 4

Most Productive and Influential Journal (TC: Total citations; NP: Number of Publications; PY start: Publishing Years)

Journal Name	h-index	g-index	m-index	TC	NP	PY start
Business Horizons	2	2	0.333	450	2	2017
Technological Forecasting and Social Change	9	16	3	445	16	2020
Journal Of Management Information Systems	2	2	0.4	363	2	2018
Financial Innovation	7	13	0.875	293	13	2015
Journal Of Economics and Business	3	6	0.6	286	6	2018
Journal Of Money, Credit and Banking	1	2	0.05	260	2	2003
Journal Of Financial Economics	2	3	0.4	218	3	2018
Sustainability (Switzerland)	9	13	1.5	202	27	2017
IEEE Access	8	12	2	184	12	2019
Journal Of Financial Intermediation	2	3	0.667	155	3	2020

Table 4 lists the top ten journals in terms of total citations, as well as their publications and year of publication. The *Sustainability* journal, the one on top with the most publications, slips to the eighth position based on total citations, which shows that this journal, even though it scores highly on productivity, is not the most impactful journal. On the other hand, articles published in the *Business Horizon* journal are having maximum impact, measured by total citations of 450, with only 2 documents. The position of "Technological Forecasting and Social Change" remains the same (second position), irrespective of ranking criteria. *The Journal of Money, Credit, and Banking* has the earliest articles with seminal papers on fintech that can be traced back to understand the concept when it first emerged. Additional information on the h index, g index, and m index given in Table 4 further assesses the quality of journals.

Most Productive and Influential Authors

Out of 2143 authors, Figure 4 shows the top 20 authors from diverse backgrounds (such as finance, information technology, supply chain management, etc.) who have contributed the most papers to the evolution of fintech. The list is dominated by Baber H, Li X, and Okoli TT, with each contributing six papers to the literature on fintech. Following the top three, the second position is shared by four authors with the same number of publications (5 papers each), namely, Liu Y, Tewari DD, Wang J, and Wang L.

Figure 3

Most Productive Authors

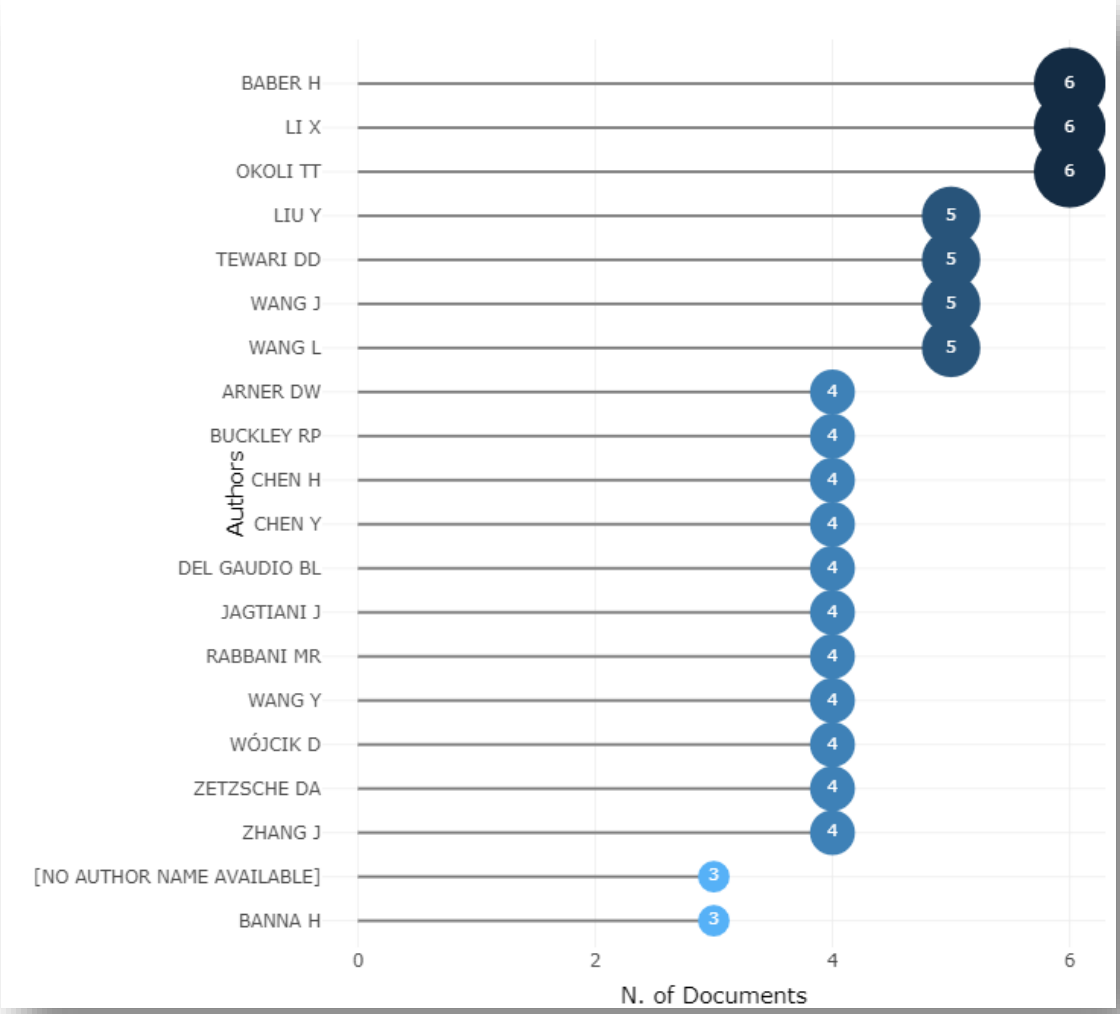


Figure 4 shows that in top 20, most authors belong to one of dominating countries that is either the US, the UK, or China. Table 5 shows the list of most influential authors calculated on the basis of total number of citations received from year of publication till date.

Table 5

Most Influential Authors

Rank	Author Name	Author's Affiliation	h-index	g-index	m-index	TC	NP	PY start
1.	Lee I	"School of Computer Sciences, Western Illinois University, Macomb, IL 61455-1390, U.S.A"	1	1	0.2	360	1	2018
2.	Shin Yj	"Hankyong National University, Anseong 17579, South Korea"	1	1	0.2	360	1	2018
3.	Gomber P	"Chair of e-Finance, Department of Information Systems, Faculty of Economics and Business Administration, at Goethe University of Frankfurt, Germany"	1	1	0.2	357	1	2018
4.	Kauffman Rj	"Professor of information systems, School of Information Systems, Singapore Management University (SMU)"	1	1	0.2	357	1	2018
5.	Parker C	"Assistant professor of supply chain management in the Department of Supply Chain and Information Systems in the Smeal College of Business of Pennsylvania State University"	1	1	0.2	357	1	2018
6.	Weber Bw	"Dean of the Lerner College of Business and Economics at the University of Delaware, where he is a professor of business administration and an affiliated faculty member of the Institute for Financial Services Analytics"	1	1	0.2	357	1	2018
7.	Berger An	"Senior Economist at the Board of Governors of the Federal Reserve System and a Senior Fellow at the Wharton Financial Institutions Centre"	1	1	0.05	260	1	2003
8.	Arner Dw	"Kerry Holdings Professor in Law, University of Hong Kong"	4	4	0.667	236	4	2017
9.	Buckley Rp	"CIFR King & Wood Mallesons Chair of International Financial Law, Scientia Professor, and Member, Centre for Law, Markets & Regulation, UNSW Australia"	4	4	0.667	236	4	2017
10.	Buchak G	"University of Chicago, United	1	1	0.2	216	1	2018

		States”						
11.	Matvos G	“McCombs School of Business, University of Texas at Austin, United States”	1	1	0.2	216	1	2018
12.	Piskorski T	“Columbia Graduate School of Business, United States”	1	1	0.2	216	1	2018
13.	Seru A	“Stanford GSB and the Hoover Institution, United States”	1	1	0.2	216	1	2018
14.	Jagtiani J	“Federal Reserve Bank of Philadelphia, United States; Federal Reserve Bank of Chicago, United States”	3	4	0.6	149	4	2018
15.	Thakor Av	“ECGI, Belgium and Olin Business School, Washington University in St. Louis, United States”	1	1	0.333	148	1	2020
16.	Zhang H	NA	2	3	0.667	139	3	2020
17.	Barberis J	“Senior Research Fellow, Asian Institute of International Financial Law, Faculty of Law, University of Hong Kong, and Founder, FinTech HK”	1	1	0.167	137	1	2017
18.	Lemieux C	“Federal Reserve Bank of Chicago, United States”	2	2	0.4	136	2	2018
19.	Anagnostopoulos I	“Kingston Business School, Department of Accounting, Finance and Informatics, Kingston Hill CampusKT2 7LB, United Kingdom”	2	2	0.4	135	2	2018
20.	Preda A	“Department of Sociology, University of Edinburgh, Adam Ferguson Building, George Square, Edinburgh EH8 9LL, United Kingdom”	1	1	0.059	131	1	2006

Analyzing the details of the authors, their affiliation, and their rank presented in Table 5 further confirms the findings of the most influential country. The list is dominated by authors affiliated with the US, the UK, and China, with the US in first position, highlighting the fact that the US is the most influential country measured by the sum total of citations received by its authors and the total link strength. Findings from US studies are widely accepted and implemented worldwide. The contributions of the most influential authors are as follows: Lee and Shin, securing top positions with 360 citations, have collectively contributed only one paper titled “Fintech: Ecosystem, Business Models, Investment Decisions, and Challenges” (Lee & Shin, 2018), followed by Gomber, Kauffman, Parker, and Weber, who are sharing third, fourth, fifth, and sixth positions, respectively, with a total of 357 citations and have collectively contributed a paper titled “On the Fintech Revolution: Interpreting the Forces of Innovation, Disruption, and Transformation in Financial Services” (Gomber et al., 2018). An interesting fact to note is that authors with recent publications in 2018 have secured the most positions, surpassing those who published in their initial years.

Most Influential Articles

Table 6 shows the most influential articles based on the total number of citations. Top position is secured by the paper of the first and second most influential authors titled "Fintech: Ecosystem, Business Models, Investment Decisions, and Challenges," which is a conceptual paper that aims at highlighting fintech models and challenges faced by financial markets due to the interference of information technology.

Table 6

Most Influential Articles

Paper	Title of paper	DOI	Total Citations	TC per Year
Lee I, 2018, Bus Horiz	"Fintech: Ecosystem, business models, investment decisions, and challenges"	10.1016/j.bushor.2017.09.003	360	72.00
Gomber P, 2018, J Manage Inf Syst	"On the Fintech Revolution: Interpreting the Forces of Innovation, Disruption, and Transformation in Financial Services"	10.1080/07421222.2018.1440766	357	71.40
Berger An, 2003, J Money Credit Bank	"The Economic Effects of Technological Progress: Evidence from Banking Industry"	10.1353/mcb.2003.0009	260	13.00
Buchak G, 2018, J Financ Econ	"Fintech, regulatory arbitrage, and the rise of shadow banks"	10.1016/j.jfineco.2018.03.011	216	43.20
Thakor Av, 2020, J Financ Intermediation	"Fintech and banking: What do we know?"	10.1016/j.jfi.2019.100833	148	49.33
Arner Dw, 2017, Northwest J Intl Law Bus	"FinTech, RegTech, and the Reconceptualization of Financial Regulation"	NA	137	22.83
Preda A, 2006, Soc Stud Sci	"Socio-Technical Agency in Financial Markets: The Case of the Stock Ticker"	10.1177/0306312706059543	131	7.71
Anagnostopoulos I, 2018, J Econ Bus	"Fintech and Regtech: Impact on	10.1016/j.jeconbus.2018.07.003	129	25.80

	Regulators and Banks"			
Neu D, 2006, Account Organ Soc	"Informing technologies and the World Bank"	10.1016/j.aos.2005.07.002	121	7.12
Belanche D, 2019, Ind Manage Data Sys	"Artificial Intelligence in FinTech: understanding robo-advisors adoption among customers"	10.1108/IMDS-08-2018-0368	115	28.75

The list of influential articles includes a mix of conceptual and theoretical papers addressing all aspects of fintech, from fundamental to advanced. These papers collectively talk about how financial markets started accepting the interference of information technologies for the enjoyment of benefits, such as cost efficiency, quick impact, no need to physically move from one place to another, etc.

Science Mapping

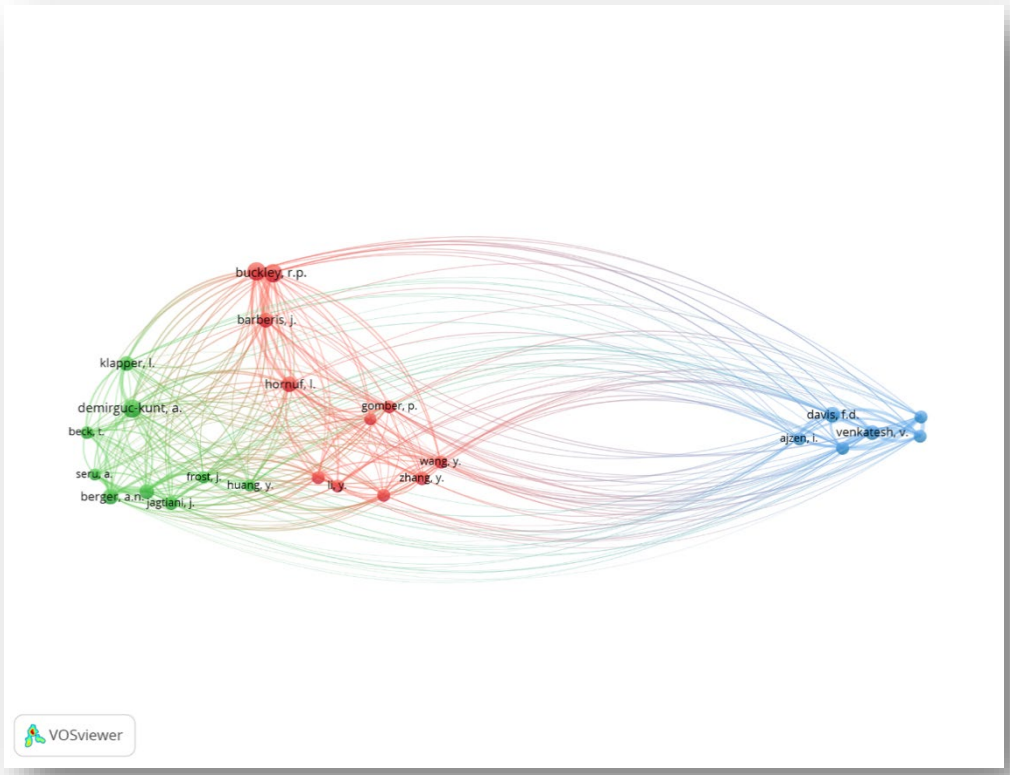
The dictionary meaning of the word "science" is to conduct a systematic study of a construct, whereas "mapping" means to associate one element with the other elements of the dataset. In research, science mapping is done with respect to different constituents to gauge the association between them. For the purpose of this study, it is done with the help of co-citation analysis, bibliographic coupling, and co-occurrence analysis.

Co-citation Analysis of Authors

Figure 5 shows a network visualization of co-citation analysis of authors publishing financial technology. Items are created, viewed, and explored on maps using VOSviewer. Items are the objects of interest, such as the authors in this instance. There is a link between every pair of objects. A link is a connection or relationship between two things, such as the co-citations between the authors in this instance. The strength of each link is indicated by a positive numerical value. The stronger the relationship, the higher this value. The sum of the times two authors has been quoted together is an indicator of a link's strength in this analysis(Jan van Eck & Waltman, 2020).

Figure 4

Co-citation of Authors



Setting threshold of 70 as the minimum number of citations of an author, only 26 meet the criteria and are divided in three clusters red, green and blue which are further analyzed with the help of Table 7. The weight or the circle size is described based on the number of citations, and each author is connected to all other authors with 25 links (the total number of links is always one less than the total number of items presented in the graph).

Table 7

Mapping the Co-citation Clusters of Authors

Cluster	Authors	Citations	Total Link Strength
1. Red	Arner DW	168	1402
	Barberis J	116	759
	Buckley RP	176	1454
	Gomber P	92	651
	Hornuf I	128	852
	Kauffman RJ	77	491
	Li X	89	439
	Li Y	90	429
	Wang J	92	459
	Wang Y	90	501
	Zhang Y	105	399
2. Green	Beck T	86	600
	Berger AN	120	802
	Demirguc-kunt A	177	1057
	Frost J	80	578
	Huang Y	71	665
	Jagtiani J	96	669
	Klapper I	112	719
	Seru A	78	500
	Thakor AV	107	838
3. Blue	Ajzen I	85	777
	Davis FD	130	1096
	Hair JF	92	998
	Ringle CM	86	1052
	Sarstedt M	88	1079
	Venkatesh V	109	988

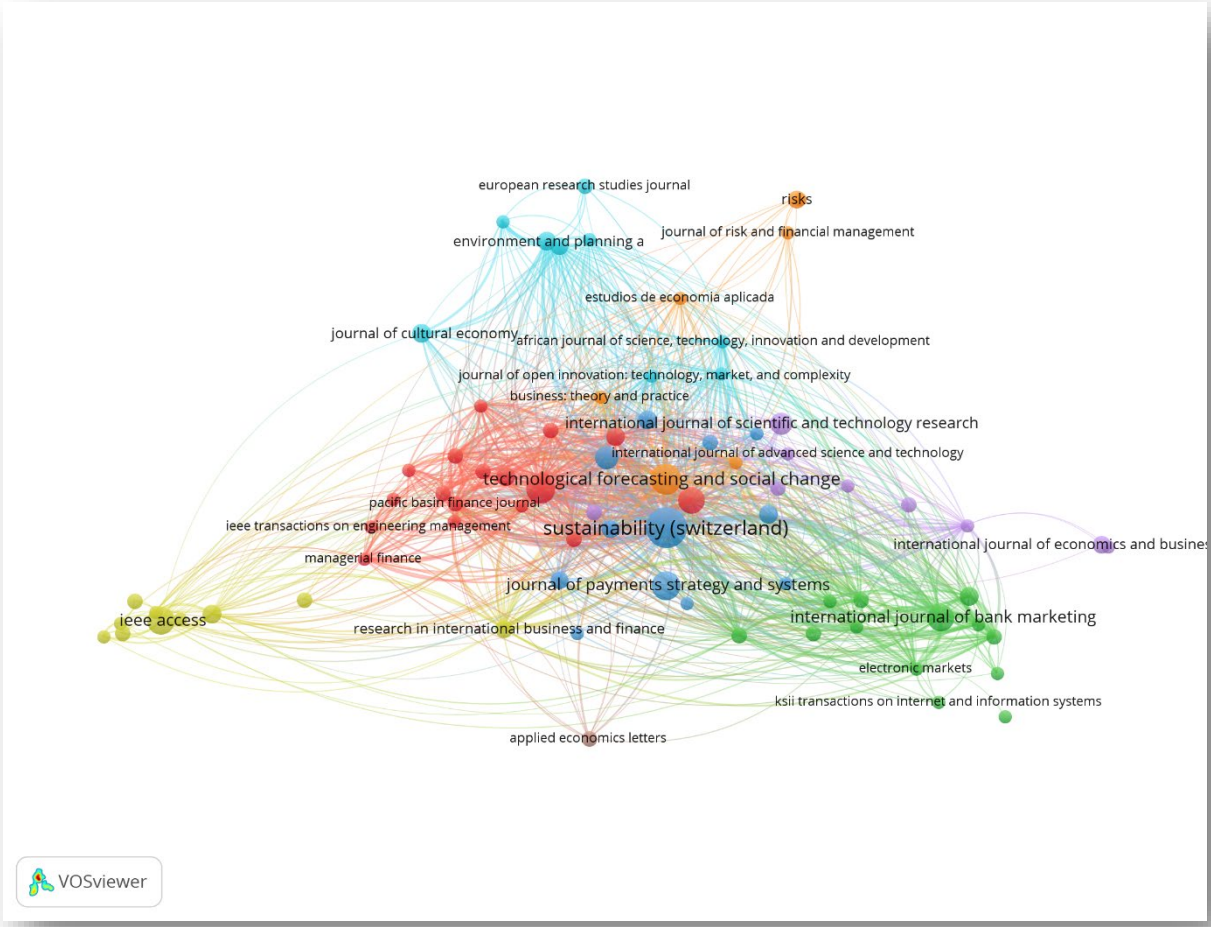
Table 7 shows the elements in each cluster along with the number of citations and total link strength of each item (author). Buckley RP has the most citations and link strength in the first cluster shown in red, supporting its largest circle in network visualization. Similarly, Demirguc-kunt A has the most citations in cluster 2 (green), with 177 and a total link strength of 1057. Davis FD dominates the blue cluster, with 130 citations and 1096 link strengths. Some of the authors have not only co-cited but have also co-authored the studies based on financial technologies, such as the one published by Gomber and Kauffman along with two more titled "On the Fintech Revolution: Interpreting the Forces of Innovation, Disruption, and Transformation in Financial Services," one of the most influential articles. It is interesting to note here that some of the most influential authors are missing from the network visualization of the co-citation analysis of authors, revealing the fact that some of the most influential authors have not cited well with others even though individually they have significant citations.

Bibliographic Coupling of Sources

Figure 6 shows the results for bibliographic coupling of sources. Out of 496 sources, 82 meet the threshold if the minimum number of documents of a source and the minimum number of citations of a source are taken as 3. Out of 82, only 79 are connected with each other, and 8 clusters are formed as shown in the Figure 6.

Figure 5

Bibliographic Coupling of Sources



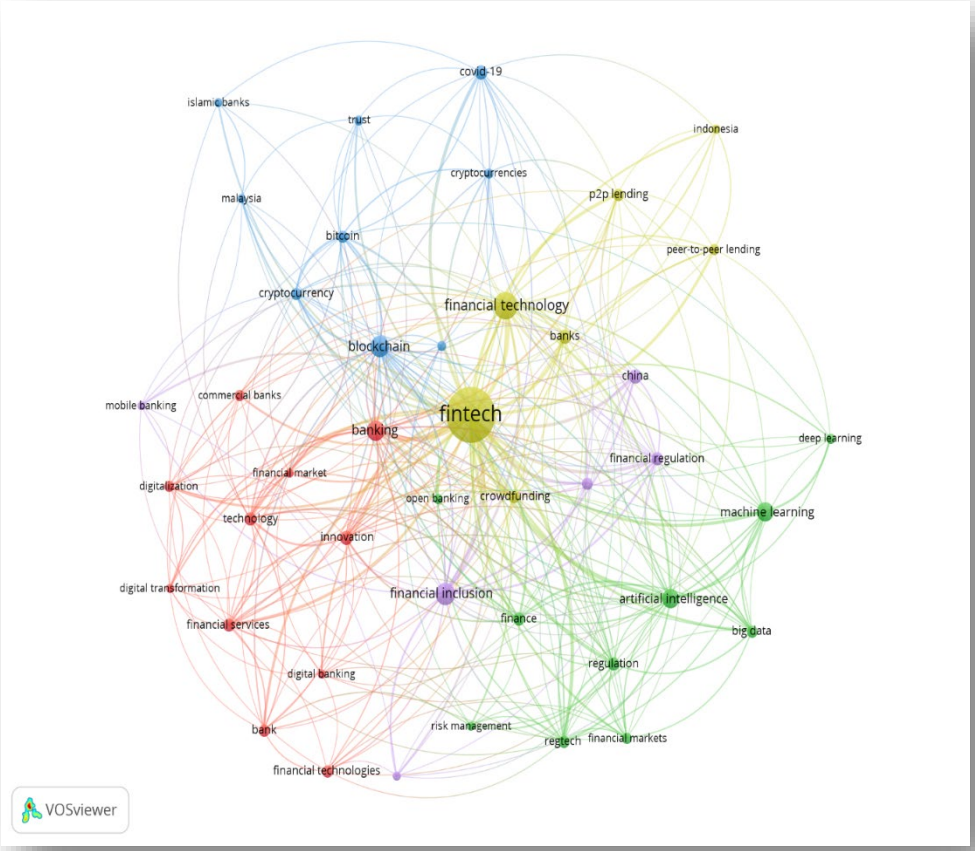
Bibliographic coupling means the strength of a link that indicates the number of cited references two publications have in common. Three journals that are excluded because of zero link strength with other sources from the network are as follows: “Enterprise Development and Microfinance,” “European Business Law Review,” and “European Competition Journal.”

Author’s Keyword Co-Occurrence Analysis

Figure 7 depicts 43 authors' keywords that meet the minimum keyword occurrence threshold of 10. The selected 43 keywords are divided into five clusters, each of which is represented by a different color. Cluster 1, depicted in yellow, with fintech and financial technology as the most widely used keywords with maximum strength, is highlighted as the largest circle, and the underlying reason can be traced back to their presence in the search string.

Figure 6

Author's Keyword Co-occurrence Analysis



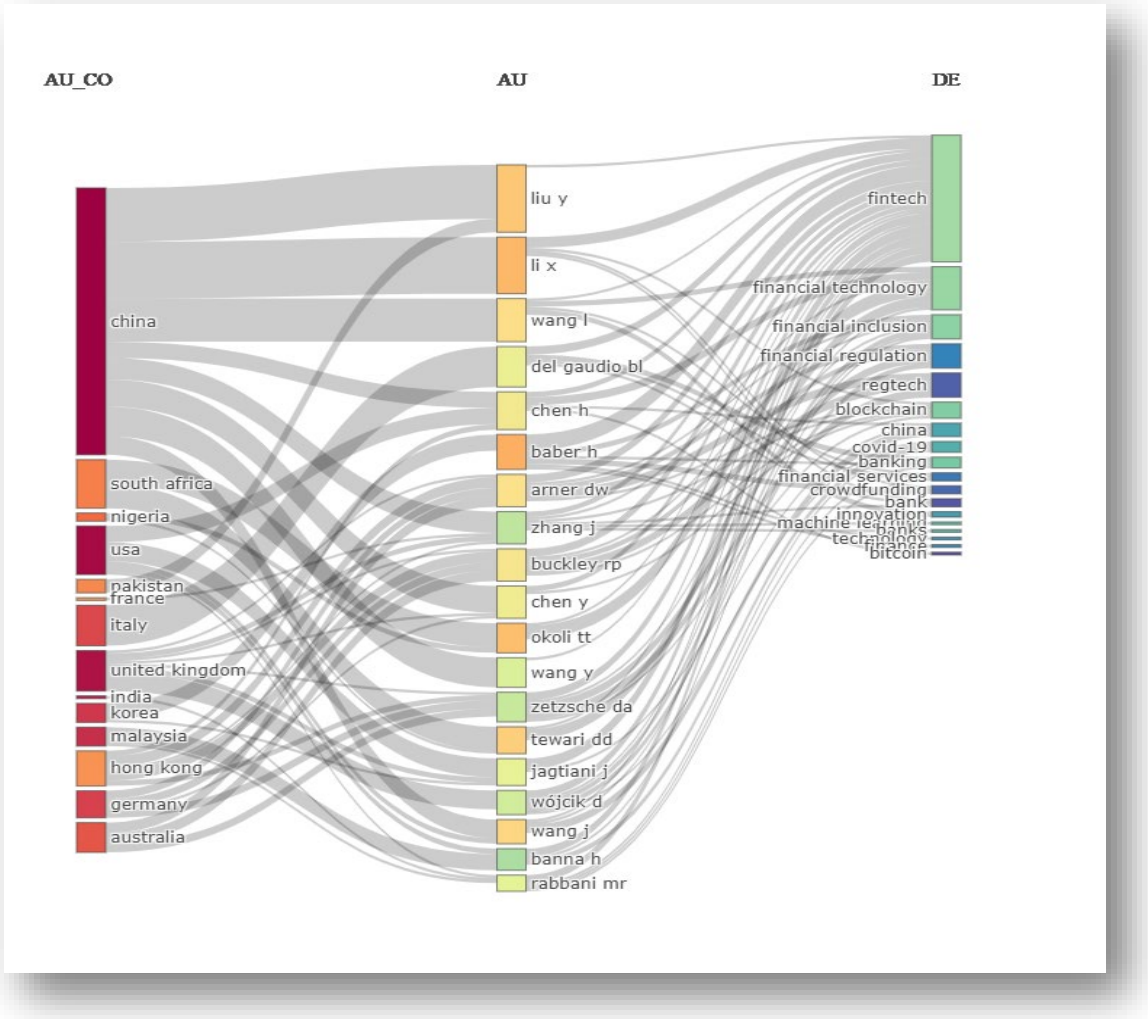
The clusters are formed with some similarities, such as the red cluster containing the most banking terminologies, whereas the green cluster focuses on IT terminologies, such as big data, artificial intelligence, and so on. A blue cluster shows the latest products of FinTech, like blockchain, cryptocurrency, bitcoin, etc. Finally, the purple cluster emphasizes issues, such as financial inclusion, regulation, and stability.

Three Field Plot

Figure 8 depicts a three-field plot that illustrates the interconnectedness of countries, authors, and keywords as measured on the left, middle, and right sides of the plot, respectively. The acronym used in the plot, i.e., AU_CO, which stands for country, AU for authors, and DE for keywords.

Figure 7

Three Factor Plot with Country, Authors and Keywords



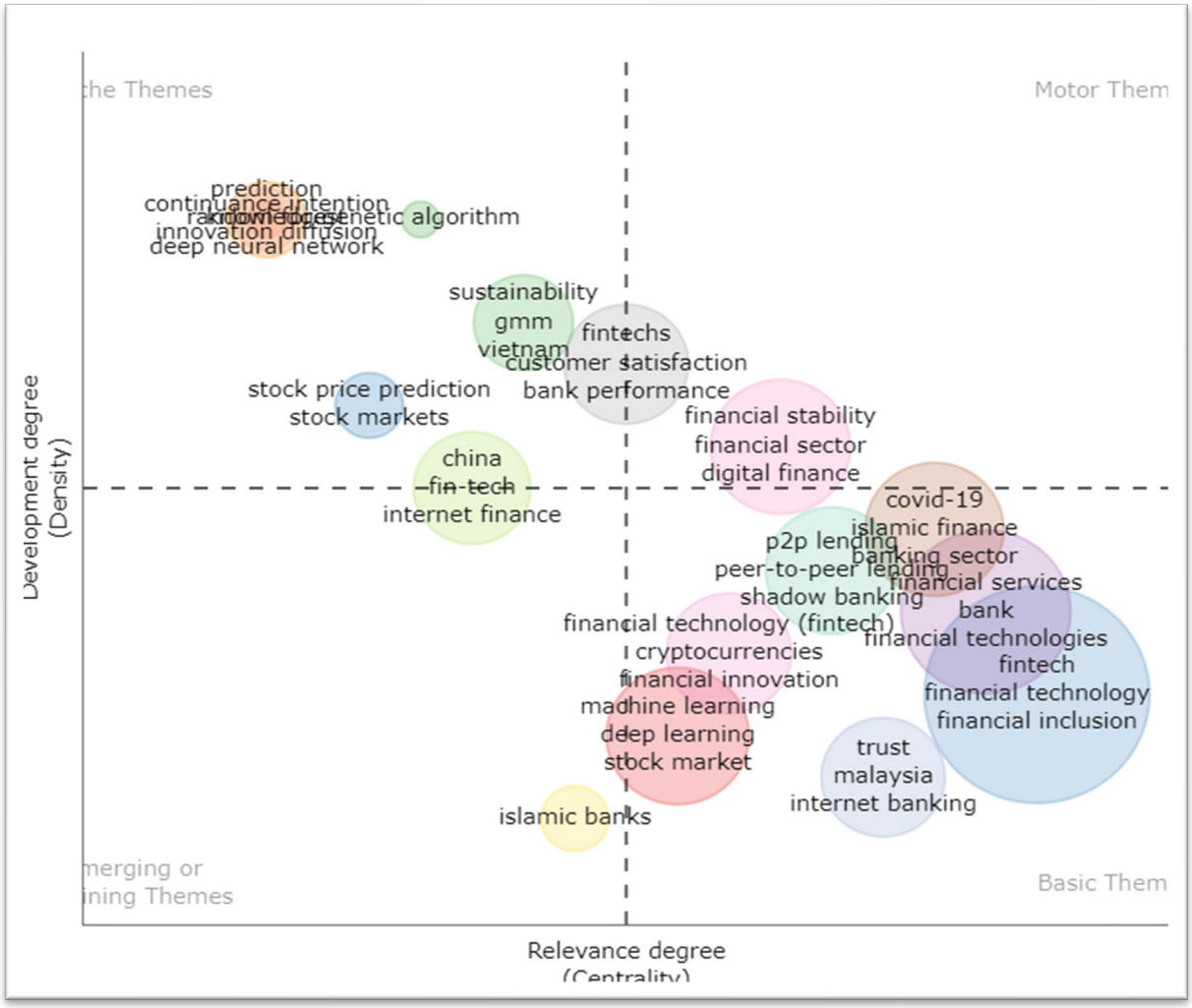
Results show that the studies are distributed across different countries and authors, with most authors affiliated with China. When closely looking at the authors' keywords, it shows China as a selected keyword by some of the authors. FinTech and Financial technology are the most widely used keywords for which connect can be seen with almost all the authors, whereas, other keywords, like financial inclusion, regulation, regtech, bitcoin etc., have connection with few authors.

Thematic Map

Figure 9 shows the thematic map based on the author's keywords used in the selected dataset. The map is divided into four quadrants, namely: niche themes, motor themes, basic themes, and emerging or declining themes. Each quadrant represents a unique combination with a different degree of centrality and density. The X-axis represents centrality, while the Y-axis represents density; closer to the origin represents a low degree value, while farther from the origin represents a high degree value.

Figure 8

Thematic Map based on Author's Keywords



Density denotes the development of the theme, whereas centrality denotes the connectedness of the theme with the other themes (Paule-Vianez et al., 2020). Motor themes score high on both parameters, reflecting well-developed concepts, whereas emerging or declining themes are the ones that score least on both parameters and are the least developed. Basic themes are high on centrality but low on density, which means they are interconnected but not well explored. On the contrary, niche themes have a high density but a low centrality, indicating that they are developed but not closely related to or associated with the other themes. The green bubble on the top left side of the graph (niche themes) highlights the term "sustainability," which provides a scope to future researchers to further explore the association between fintech and sustainable functioning of financial markets.

Conclusion

The purpose of this research is to perform a comprehensive bibliometric analysis of the dataset exported from the Scopus database published in 1980–2022, with an emphasis on the following keywords and their

synonyms: financial technology and financial markets. The two main categories for the study's empirical analysis are performance analysis and science mapping.

Findings suggest that the United States, the United Kingdom, and China are the three prominent countries that have contributed the most papers in the field of fintech and financial markets; the rank order slightly changes with respect to citations and documents, but the top three players remain the same. Further, the maximum number of authors on the list of influential authors belong to one of three countries to further emphasize their role. The top six most influential authors based on citations have contributed two papers in recent years that have changed the direction of research in fintech, namely "Fintech: Ecosystem, Business Models, Investment Decisions, and Challenges" and "On the Fintech Revolution: Interpreting the Forces of Innovation, Disruption, and Transformation in Financial Services." The variation in the results for the top journal as per number of publications and citations is highly influenced by the frequency of each journal's issues, making *Sustainability* the most productive journal, which suggests that citation is the most relevant measure for performance. Further, with the help of thematic analysis, this study suggests themes where fintech proponents need to pay attention for future development, such as sustainability, Islamic banking, customer satisfaction, deep neural networks, internet finance, continuation intentions, robo-advising, etc. Especially after Covid-19 scenario, the relevance and significance of fintech has increased tremendously, as also reflected by increase in number of publications during the pandemic and onwards. Hence, the study becomes all the more relevant in better understanding the soaring role of fintech ensuring sustainability in day-to-day life.

Limitations

Some flaws are inherent in the Biblioshiny and Vos viewer software, such as when generating the graph for most productive authors, "no author name available" appears in place of author at the 19th position. On similar lines, a csv file extracted from the Scopus database by default shows the name of the *Sustainability* journal as "Sustainability Switzerland." Initially, when the csv file was downloaded, it was checked manually to remove any inadvertently entered information. At this stage, it was observed that although the dataset included 901 studies, the csv file showed 908 studies, which was then altered to remove any extra rows and duplications for better analysis. Another limitation is that the software, by default, accepts bibliographic details of the first author. In this study, Lee and Shin are the first and second most influential authors based on the number of citations with their paper titled "Fintech: Ecosystem, Business Models, Investment Decisions, and Challenges," which is also the most influential article, but a point to note here is that Lee is affiliated with a US institute, whereas Shin is affiliated with a South Korean institute. This will add a number to the US publication, making it the most influential country with the highest citations and total link strength.

Scope for Future Research

Various software programs are available today to perform bibliometric analyses, including Gephi, Biblioshiny, Vos viewer, Pajek, Sci2, Citespace, Publish or Perish, and others; however, for ease of use and free availability, this study only used Biblioshiny and Vos viewer, leaving a research gap for future researchers to produce similar work using other software and databases, such as Web of Science, PubMed, and others. With the help of qualitative analysis, such as content, thematic, or sentiment analysis, future researchers can delve deeper into the facts highlighted in this study and provide a conceptual background for identified trends.

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Understanding The Consumer Awareness Towards Sustainable Brand Personality

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[Abstract] This study report aims to pinpoint the awareness of customers toward sustainable brand personality. As a crucial element of a brand's symbolic and emotional characteristics, the concept of brand personality has recently gotten much attention. Consumers perceived human traits connected to a brand are referred to as its brand personality. Marketers and advertisers may use brand personality connections to design more successful tactics that showcase items in a way that speaks directly into the consumer's psyche. Nowadays, research on sustainable brand personality is quite famous globally. Therefore, to maintain a competitive edge and increase sales, businesses must meet the needs of sustainable consumers. As a result, its application in influencing consumer behavior has improved. Data was gathered using the questionnaire method from primary sources. The researcher utilized easy sampling and non-probability sampling. The researcher has collected data from the respondents using a survey method. A total of 100 consumers provided information. The primary goal is to use Chi Square to demonstrate the differences in sustainable brand personality awareness among customers across age groups, genders, geographic regions, and educational levels. According to the survey, urban customers in the 20–40 year age range who make a respectable livelihood tend to be more aware of sustainable brand personalities.

[Keywords] sustainable, brand personality, awareness, consumer behavior

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Introduction

The rate and structure of the Indian economy's development, notably after it was liberalized, has led to significant changes in spending habits. These extensive changes affect almost every aspect of the economy and society. Businesses can no longer take customers for granted because they now have more influence over the market. However, because of the ever-growing variety of goods accessible, people are finding it harder and harder to define preferences and make purchases. As a result, consumers must associate a brand with specific connotations. Brand personality is a critical component of a product's intangible or emotional characteristic that gives it an edge, especially for goods with little physical differences. As a vital element of a brand's symbolic and emotional characteristics, the concept of brand personality has drawn much attention recently. As a result, its application in influencing consumer behavior has increased. Understanding how customers feel and react to behavior-targeting tactics has become vital as the globe advances with internet adoption and ICT growth (Jain & Purohit, 2022). Consumers constantly seek acceptance, which they usually achieve by either improving their sense of self or satisfying their desire for approval in the social group they belong to or wish to join. As a result, people select products or brands representing who they are as individuals and how they want to live. Marketers and advertisers may use brand personality connections to design more successful tactics that showcase items in a way that speaks

directly to the consumer's mind. As a result, brand personality is crucial from both the advertiser's and consumer's perspectives. Because of its proportional relevance to the customer, a brand's personality is more authentic than other parts of the brand. Because it allows a customer to relate to and identify with the goods, if a product's actual results are assessed to be better than or on par with expectations, the customer will be more satisfied, which will work as a new stimulus for an efficient marketing plan. (Panwar et al., 2019**).** A distinct brand personality is a vital factor in developing a great brand. This adds value to the different product from the one being compared to another product. As a result, marketers regard brand personality as a vital attribute that distinguishes a brand from its competitors, determines a brand as distinctive and unpredictable, and contributes to its asset value. Consumers associate the brand's personality with a quick and straightforward decision, often called Emotion. The intense feelings that are directed at someone or something are called emotions (Patharia & Pandey, 2019). While rival brands become more indistinguishable, certain brands will be preferred over others based on their personality.

Literature Review

Review Related to Brand Awareness

Brand awareness, which assesses how much of a brand's presence is in consumers' minds, is one of the most crucial components of brand equity (Aaker, 1991, Keller, 1993**).** Because consumers favor well-known brands even when they are unsure of the product's quality, the brand's recognition aids in the product's ability to be identified as being of high quality (Engel et al. 1978**)**. Brand awareness is the propensity of a prospective customer to perceive or recall that a brand is associated with a specific product category **(**Aaker, 1991). Since cultural backgrounds impact how customers perceive a brand, brand personalities are perceived differently in different cultures **(**Balakrishnan et al., 2009).

Brand awareness is comprised of brand recognition and recall (Huang & Sarigollu, 2012). Consumers must be able to recognize the brand in a variety of settings to establish brand recognition. As evidenced by consumers' ability to recall the brand in multiple locations, brand awareness is correlated with the strength of a brand node or trace in memory. Consumers' capacity to reflect a brand from memory, whether given a product category, a purchase, a usage scenario, or another trigger, is known as brand recall (Keller, 2013**).** Because brand awareness can be a sign of quality and dedication and because it aids consumers in making favorable decisions at the time of purchase, brand awareness is positively correlated with brand equity (Loureiro et al., 2014). Brand association is built on brand awareness. Brand familiarity or awareness is essential in the early phases of brand loyalty. Brand awareness affects brand personality. Advertisements and promotions greatly aid the establishment of brand awareness. The development of BP was directly influenced by brand recognition, which is produced by advertisements and promotions (Bilgili & Ozkul, 2015) Brand awareness can assist in creating a communication plan that avoids a disconnect between customer perception and what the business wants to say about the brand's personality (Keni Keni, 2021).

Review Related to Brand Personality

The self-congruity hypothesis holds that a brand's and a customer's personality are complementary (Sirgy, 1982). Consumer loyalty to a particular brand is increased by brand personality (Fournier, 1998**).** Brands with an upbeat personality may highlight it, encourage consumers' positive attitudes, and foster an emotional bond with the brand (Thomson et al. 2005). According to the self-congruity hypothesis, we can assume that a customer's personality is a composite of numerous dimensions, making interactions between the different elements of a brand's personality possible (Usakli & Baoglu, 2011**).** A subtle aspect of brands,

brand personality, consists of persistent characteristics (Pamuksuz et al., 2020). Customers look for brands whose personalities align with their ideal selves. As a result, brand personality stirs up emotions that lead to brand connection (Ahmad et al., 2021). Marketers may employ brand personality as a communication strategy to foster customer loyalty (Sindhu et al., 2021).

Review Related to Sustainable Brand Personality

Connecting sustainability to brand personality for branding initiatives offers promise and extends beyond profit, growth, and employment goals (Tang & Lam, 2017). Incorporating sustainability into branding as part of a company's primary goal could give it a competitive edge and show customers that it cares about the environment (Kumar & Christodoulopoulou, 2014). According to the triple-bottom-line concept, businesses must act socially and ecologically responsibly to succeed, and by doing so, they can also gain financially. When these three dimensions are combined, they form the sustainability notion. (Gimenez et al., 2012**)** Customers are more likely to focus on brands that make them feel connected to others, connected to something meaningful, and linked to shared values (Arvidsson, 2008). To harmonize the personality of their sustainable brands, businesses should educate themselves on the personality attributes of sustainable consumers. This strategy assists businesses in maximizing their branding, which raises profitability (Paetz, 2021).

Research Gap

Even though there have been several studies on brand personality, studies on sustainable brand personality awareness still need to be made available. Numerous relationship factors, such as brand love, loyalty, purchase intention, and consumer pleasure, have been used in brand personality research. The concept of brand personality has also been explored in several industries, including the automotive, hospitality, and tour-only sectors. However, only some studies have examined consumer awareness of brand personality. Customers view a brand as a critical reflection of who they are. This study aims to establish the awareness level of various consumers of sustainable brand personality.

Research Methodology

This study is exploratory. Convenience sampling was employed in the current study to choose respondents. People between the ages of 10 and 60 make our respondents. The sample size consists of 100 people. The research study selects the New Delhi and NCR Region of Haryana. To gather the data, a structured questionnaire was used. It was split into two sections: the first section had information about the respondent's socio-demographics, while the second contained data on consumer awareness of sustainable brand personality. The data were analyzed with SPSS 26.0.

Hypothesis Development

H_{01}: There is no association between age and awareness of sustainable brand personality.

$H_{02:}$ There is no association between gender and awareness of sustainable brand personality.

$H_{03:}$ There is no association between area and awareness of sustainable brand personality.

$H_{04:}$ There is no association between family income and awareness of sustainable brand personality.

$H_{05:}$ There is no association between education and awareness of sustainable brand personality.

Analysis and Conclusions

Basic Information on the Respondents

We collected quantitative information from statements to get a general idea of the socio-demographic structure.

Table 1

Age of the Respondent

Age	Frequency	Percent
10-20	20	20
20-30	37	37.0
30-40	19	19.0
40-50	12	12.0
50-60	12	12.0
Total	100	100.0

Table 1 shows that among the 100 survey participants, 20% were between the ages of 10 and 20; 20% were between the ages of 30 and 40; 20% were between the ages of 40 and 50; and 12% were between the ages of 40 and 50.

Table 2

Gender of the Respondent

Gender	Frequency	Percent
Female	58	58.0
Male	42	42.0
Total	100	100.0

Table 2 shows that 58 percent of the population is female, and 42 percent is male.

Table 3

Area of Residence of Respondents

Area	Frequency	Percent
Urban	78	78.0
Rural	22	22.0
Total	100	100.0

According to data in Table 3, 78% of people identify as belonging to an urban area, while 22% identify as belonging to a rural area.

Table 4

Family Income of the Respondents

Family Income	Frequency	Percent
Ten lakhs and above	14	14.0
2.5 lakhs-5 lakhs	22	22.0
5-7.5 lakhs	10	10.0
7.5-10 lakhs	10	10.0
less than 2.5 lakhs	44	44.0
Total	100	100.0

The respondent's income dynamics are displayed in Table 4. A total of 44% of the respondents come from households with annual incomes of less than 2.5 lakhs, 22% from families with yearly revenues of between 2.5 lakhs and five lakhs, 14% from homes with annual incomes of 10 lakhs or more, and 10% from households with annual incomes of both 5 and 7.5 lakhs and 7.5 and 10 lakhs.

Table 5

Education of the Respondents

Education	Frequency	Percent
Any other	14	14
Graduation	23	23
Higher secondary education	33	33
Post-graduation	30	30
Total	100	100

In Table 5, education data showed that 33% of respondents had completed higher secondary education, 30% had completed their postgraduate degrees, and 23% had completed their bachelor's degrees. The remaining 14% are those who have taken professional and diploma-level courses.

Association between Socio-Demographic Variables and Awareness of Brand Personality

Association with Age

H01: There is no association between age and awareness of sustainable brand personality.

Table 6

*Age * Levels of Awareness Crosstabulation Count*

		Levels of Awareness			Total
		Low	*Moderate*	*High*	
Age	10-20	1	12	5	18
	20-30	11	18	8	37
	30-40	8	5	8	21
	40-50	5	2	5	12
	50-60	5	3	4	12
Total		30	40	30	100

Table 7

Chi-Square Tests

	Value	d.f	Asymptotic Significance (2-sided)
Pearson Chi-Square	15.950[a]	8	.043
Likelihood Ratio	17.864	8	.022
Linear-by-Linear Association	.407	1	.523
N of Valid Cases	100		

a. 4 cells (16.7%) have expected count less than 5. The minimum expected count is 3.36.

The Pearson chi-square tests revealed that consumer brand personality awareness was high. They have a strong correlation to age, with a chi-square value of.043 (df = 8, N= 100, P0.05, which at 5 degrees of freedom is significant. The null hypothesis is disproved and the alternative is accepted as a result of the aforementioned results. The table above demonstrates the strong association between age and sustainable

brand personality awareness. According to Table 6, all responses have varying degrees of understanding regarding brand personality.

Association with Gender

H02: There is no association between gender and awareness sustainable of brand personality.

Table 8

*Gender * Levels of Awareness Crosstabulation Count*

		Levels of awareness			Total
		Low	*Moderate*	*High*	
Gender	Male	8	22	12	42
	Female	20	26	12	58
Total		28	48	24	100

	Value	d.f	Asymptotic Significance (2-sided)
Pearson Chi-Square	2.993[a]	2	.224
Likelihood Ratio	3.076	2	.215
Linear-by-Linear Association	2.529	1	.112
N of Valid Cases	100		

a. 0 cells (0.0%) have an expected count of less than 5. The minimum expected count is 10.08.

Source: Researcher calculation through SPSS

The Pearson chi-square tests show that at the five degrees of freedom, where the chi-square value is 0.224 (df = 2, N= 100, P>0.05); there is no discernible relationship between gender and customer brand personality awareness. The null hypothesis is accepted, and the alternative hypothesis is disproved in light of the facts presented above. The accompanying data show that sustainable brand personality awareness and gender do not correlate. All respondents had an equal amount of sustainable brand personality awareness,

Association with Area

H03: There is no association between area and awareness of sustainable brand personality.

Table 9

*Area * Levels of Awareness Crosstabulation Count*

		Levels of awareness			Total
		Low	*Moderate*	*High*	
Area	Rural	27	31	20	78
	Urban	1	11	10	22
Total		28	42	30	100

Table 10

Chi-Square Tests

	Value	d.f	Asymptotic Significance (2-sided)
Pearson Chi-Square	8.217[a]	2	.016
Likelihood Ratio	10.259	2	.006
Linear-by-Linear Association	7.294	1	.007

N of Valid Cases	100		

a. 0 cells (0.0%) have an expected count of less than 5. The minimum desired count is 6.16.
Source: Researcher calculation through SPSS

The Pearson chi-square tests revealed that brand personality awareness among consumers and place of residence had a strong connection. The chi-square value is 0.006 (df =2, N=100, P0.05), which is significant at the fifth degree of freedom. In light of the above information, the alternative hypothesis is accepted, and the null hypothesis is rejected. In light of the above information, the alternative view is accepted, and the null hypothesis is rejected. The accompanying table demonstrates the significant association between the area of living and sustainable brand personality knowledge. According to Table 9, each respondent has a distinct awareness of sustainable brand personality.

Association with Family Income

H04: There is no association between family income and awareness of sustainable brand personality.

Table 11

*Family Income * Levels of Awareness Crosstabulation Count*

		Levels of awareness			**Total**
		Low	*Moderate*	*High*	
Family Income	less than 2.5 lakhs	8	6	4	18
	2.5 lakhs-5 lakhs	7	3	10	20
	5-7.5 lakhs	7	3	10	20
	7.5-10 lakhs	6	7	9	22
	Ten lakhs and above	5	8	7	20
Total		33	27	40	100

Table 12

Chi-Square Tests

	Value	**d.f**	**Asymptotic Significance (2-sided)**
Pearson Chi-Square	22.133[a]	8	.005
Likelihood Ratio	23.275	8	.003
Linear-by-Linear Association	1.643	1	.200
N of Valid Cases	100		

a. Four cells (18.33%) have an expected count of less than 5. The minimum desired count is 2.40.

Source: Researcher calculation through SPSS

The Pearson chi-square tests revealed a significant association between consumer brand personality awareness and family income, with a chi-square value of 0.005 (df = 8, N= 100, P0.05) being effective at the fifth degree of freedom. The null hypothesis is rejected in light of the facts above, and the alternative view is accepted. The table, as mentioned above, demonstrates the strong association between family income and sustainable brand personality awareness. According to Table 11, each responder has a distinct association level with sustainable brand personality awareness.

Association with Educational Qualification

H05: There is no association between education and awareness of sustainable brand personality.

Table 13

*Educational Qualification * Levels of Awareness Crosstabulation* ***Count***

		Levels of awareness			**Total**
		Low	*Moderate*	*High*	
Educational Qualification	Higher secondary education	6	9	18	33
	Graduation	5	6	12	23
	Post-graduation	9	4	17	30
	Any other	8	3	3	14
Total		28	22	50	100

Table 14

Chi-Square Tests

	Value	**df**	**Asymptotic Significance (2-sided)**
Pearson Chi-Square	10.076[a]	6	.121
Likelihood Ratio	10.017	6	.124
Linear-by-Linear Association	4.564	1	.033
N of Valid Cases	100		

a. Two cells (16.7%) have an expected count of less than 5. The minimum desired count is 3.08.

As a result of the findings above, the alternative hypothesis is rejected and the null hypothesis is accepted. The Pearson chi-square tests revealed that consumer brand personality awareness and educational qualification have no significant association, with the chi-square value at 0.121 (df = 6, N= 100, P>0.05) being insignificant at the fifth degree of freedom. The table above demonstrates no association between education level and sustainable brand personality awareness. According to Table 13, all respondents had an equal level of sustainable brand personality awareness.

Findings

A sample of 100 respondents for this study were selected from the New Delhi and NCR region of Haryana, ranging in age from 10 to 60. A standardized 5-point Likert scale questionnaire was used to collect the data from these respondents. The data were analyzed using the Chi-square. The study and findings are as follows:

Table 15

Sample Respondents

SNO.	**Dimensions**	**Association with Awareness**
1	Age	Significant
2	Gender	Insignificant
3	Area	Significant
4	Family Income	Significant
5	Education Qualification	Insignificant

- Consumers between the ages of 20 and 40 are more aware of sustainable brand personality than any other age because they believe that brands help them express themselves and that if they continue to use specific brands, their self-image will improve. They consider their brand to be an essential representation of who they are.
- Gender and brand personality awareness are unrelated because both men and women identify with the same connection to the brand.
- People who live in metropolitan areas are more likely to be regular customers because they believe that brands can aid in creating their identity and in gaining social acceptance. As a result, they are more brand conscious than customers from rural areas.
- The consumers' purchasing power and use of brands to express their individuality will increase directly to their income (family income). As a result, customers from higher income groups will be more familiar with brand personalities than those from lower income groups.
- Because both are equally aware of their brand, education level and brand recognition don't seem to go hand in hand.

Conclusion

A valuable framework for describing and differentiating brands is brand personality. It implies that brands have distinctive qualities. Symbolic advantages include societal and personal brand association and perceived exclusivity. Brand image and brand personality are intimately related but are different. Self-congruence influences how customers choose. The consumer will favor the goods that fit with their self-concept, self-image, and personality. Brands having similar personality attributes will be preferred by consumers. The level of sustainable brand personality awareness among customers in Delhi NCR and Haryana is highlighted in this research. According to the survey, urban customers in the 20–40 age range who make a respectable livelihood tend to be more aware of brand personalities. The study only looks at awareness levels; in the future, researchers might focus on how consumers perceive brands and how it affects how they live.

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