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FROM THE DESK OF THE EDITOR-IN-CHIEF
“Knowledge Without Borders: Research as the Compass for a Changing World”

We live in an age of extraordinary complexity. The boundaries between disciplines are dissolving, the pace of change is outrunning conventional wisdom, and the challenges facing businesses, institutions, and societies demand not incremental adjustment but transformative thinking. It is precisely in moments such as rigorous, courageous, and purposeful research becomes indispensable. It is the compass by which we navigate uncertainty, the lamp by which we illuminate what instinct and experience alone cannot reveal.

This journal was founded on a conviction that has only grown stronger with time, and that the distance between the academy and the real world must be closed, not celebrated. Too often, knowledge of profound value remains locked in pages that practitioners never read, while decision-makers grapple with problems that scholars have already begun to solve. Every issue we publish is a deliberate act of bridge building - an effort to place evidence in the hands of those who need it most, and to ensure that the questions asked in our pages are the questions that matter beyond them.

The present edition advances that mission with renewed energy. The contributions gathered here span the frontiers of management, technology, consumer behaviour, organisational design, and sustainability - domains that are individually dynamic and collectively transformative. What unites them is a shared commitment to methodological integrity and real-world relevance. These are not papers written for the sake of publication, rather provoked by genuine puzzles, conducted with intellectual honesty, and offered in the spirit of advancing collective understanding. In doing so, they enrich the academic record and simultaneously equip practitioners with frameworks, findings, and provocations that are immediately actionable.

To the researchers who have contributed to this edition, and to those who aspire to contribute in the future, I offer this encouragement: do not underestimate the reach of a well-asked question. The ideas you refine in solitude, the hypotheses you test with patience, and the conclusions you defend with intellectual courage ripple far beyond the footnotes that will one day cite them. Scholarship is a long conversation across generations, and every honest contribution moves that conversation forward. The world does not only need faster technology or smarter algorithms - it needs wiser frameworks, and those can only be built by those willing to do the disciplined, unglamorous, irreplaceable work of research.

To the practitioners, policymakers, and educators who read these pages, I extend an equally earnest invitation- engage with what you find here not as passive consumers of conclusions but as active participants in a dialogue. Challenge the findings where your experience diverges. Adopt the frameworks where they illuminate your context. And when you encounter a gap - a question that practice has raised but research has not yet answered - bring it back to us. The most powerful research has always begun at the intersection of a real problem and a curious mind.

As I reflect on what this edition represents, I am reminded that journals are not merely archives - they are living institutions. Each issue is a testament to the collective intellectual ambition of a community that believes understanding the world is the first step toward improving it. We publish not because we have found all the answers, but because we are committed to asking better questions. That commitment, shared by our authors, reviewers, editorial board, and readers, is the most enduring contribution any journal can make.

Warm regards,
Dr. Prasoon M. Tripathi
Editor-in-Chief, Journal of IMS Group

EDITORIAL

Minds, Markets, and Machines: Research Frontiers Shaping the Modern World

IMS Journal, Vol. 23, Issue I

(Dec. 2025 – July 2026)

The Journal of IMS Group proudly presents its Volume 23, Issue I for the Dec. 2025 – July 2026 period. It is with great pleasure that I welcome readers to this issue - a cross-section of questions that most urgently define our era: how technology reshapes human behaviour, how institutions must evolve, and how empirical rigour can guide practitioners in a world of accelerating change.

Rajput, Atulkar & Pandey opened the issue with a rigorous PLS-SEM study of Q-commerce adoption in Bhopal, confirming that technology, service quality, marketing, and social stimuli all significantly predict both consumer trust and usage intention. The Tier 2 geographic focus is the paper's distinctive contribution - and the finding that social stimuli carry the highest beta for usage intention ($\beta = 0.305$) is directly actionable for platform managers.

In the second article, **Mishra, Devi & Tyagi** analysed the four-day workweek, finding that 82% of respondents perceived enhanced productivity and 85% improved work-life balance under a compressed schedule. Their SWOT analysed a candid guide for organisations considering the transition.

The third paper by **Kukreja, Singh & Yadav** opens with a review of wearable fitness trackers grounded in a 312-participant survey, finding that 84% of users report increased activity and 90% improved overall fitness (weighted mean: 4.2/5.0). The paper's integration of federated machine learning for privacy-preserving health analytics points compellingly toward the governance challenges the field must next confront.

Bhardwaj & Agarwal, in fourth article, mapped Indian automobile consumer preference, revealing a notably balanced market - Indian (34%), Japanese (36%), and German (30%) brands. The paper presents a striking finding that social media is now the leading channel for model discovery (33%). The near-parity of brand origins signals that the aspirational monopoly of foreign marques is eroding.

A critical dimension of ICT adaptation is presented by fifth article. **Shukla & Rajak** surveyed ICT adoption among 102 faculty in Jabalpur, finding near-universal awareness (98%) and high perceived effectiveness (88%). Crucially, chi-square analysis reveals no significant age-based adoption barrier ($p = 0.623$) - a finding that should recalibrate how institutions design their digital faculty development programmes.

Sixth paper by **Meghna Banerjee** investigates the relationship between green motivation and green loyalty among Generation Z employees in the IT sector. It argues that Gen Z workers, known for their strong environmental values, tend to develop deeper emotional commitment and loyalty toward organizations that actively prioritize sustainability. The study uses a descriptive research design with structured questionnaires and draws on multiple theoretical frameworks - including Perceived Organizational Support Theory, Social Exchange Theory, and Leadership Support Theory.

The seventh review paper by **Shukla & Gulati** discusses the important role of Sustainable Human Resource Management (SHRM) in promoting employee well-being and supporting Sustainable Development Goal (SDG) 3, which focuses on good health and well-being.

We extended our heartfelt appreciation to our contributing authors, peer reviewers, and editorial board for maintaining high standards of scholarly rigor. Under the guidance of our visionary **Director, Professor Prasoon M. Tripathi**, the journal continues to elevate its national and international standard by publishing innovative, relevant, and impactful research.

We hope this issue offers insightful contribution to academics, practitioners, policymakers, and students alike.

With warm regards,
Dr. Ajay kumar Patel
Dean, Research

Influence of key antecedents on trust and usage intention from the Q-commerce Platform

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Abstract

Quick commerce (Q-commerce) has transformed the retail landscape through ultra-fast delivery services; however, limited research has comprehensively examined the factors influencing its adoption. This study aims to identify the key antecedents affecting trust and usage intention in the Q-commerce context. The data were collected using a structured questionnaire based on a 5-point Likert scale, using a convenience sampling technique. A total of 315 valid responses were obtained and analysed through Partial Least Squares Structural Equation Modelling (PLS-SEM). The findings indicate that technological advancements, effective marketing strategies, social influence, and high service quality significantly enhance trust, which in turn positively influence their usage intention toward Q-commerce platforms. The study offers practical implications for managers by emphasising the need to strengthen technological infrastructure, improve service quality, and leverage marketing and social factors to build trust. Furthermore, the development of personalised incentives and structured loyalty programs can encourage repeat purchases, foster long-term customer relationships, and improve competitiveness in the dynamic digital marketplace. This study contributes to consumer behaviour literature by providing a comprehensive framework for

understanding Q-commerce adoption while offering actionable insights to enhance user engagement and trust.

1. Introduction

India's retail landscape is undergoing a rapid transformation with the emergence of Quick Commerce (Q-Commerce), a business model focused on delivering daily-use goods such as groceries, FMCG products, and household essentials within 10–30 minutes of order placement. In 2022, the market was quite small, but just three years later, it reached several billion dollars in gross orders. According to India Briefing and Cornell SC Johnson reports, Q-commerce gross order value in India grew to about \$7.4 billion by 2028. India's Q-Commerce sector is estimated to be valued at approximately \$2.3 billion and is projected to surpass \$6 billion by 2028, growing at a compound annual growth rate (CAGR) of nearly 35–40%. This evolution led to the emergence of quick commerce (Q-commerce), a transformative retail model driven by consumers' growing demand for speed, convenience, and accessibility. Q-commerce has significantly reshaped the Indian e-commerce landscape by enabling ultra-fast deliveries (10–30 minutes) of high-demand products such as groceries and personal care items, and is projected to reach US\$5 billion by 2025 and US\$9.94 billion by 2029 (IBEF), fueled by digitalisation, rising disposable incomes, increasing e-commerce adoption, and shifting preferences among millennials and Gen Z consumers.

By prioritising efficiency in last-mile delivery, Q-commerce optimises order execution speed, thereby enhancing the overall customer experience. The market is currently characterised by intense competition among players such as Zepto, Blinkit (by Zomato), and Instamart (by Swiggy), in contrast to traditional e-commerce platforms that focus on broader assortments and longer delivery timelines. With studies suggesting that nearly two-thirds of consumers prioritise delivery speed over other factors, the shift toward Q-commerce has become increasingly prominent. Additionally, Q-commerce platforms have capitalised on the rapidly expanding e-commerce market, which itself is fuelled by rising incomes, affordable smartphones and easier online payments (IBEF, 2026). The rate of urban migration has shown a noticeable increase, rising by approximately 3% between 2020 and 2025. This marks a shift from earlier trends, where migration growth typically did not exceed 2% over five years. The growing urban population is

further accelerating demand for faster, on-demand retail solutions, thereby strengthening the growth trajectory of Q-Commerce in India.

Over the past five years, the sector has witnessed unprecedented growth, further accelerated by the entry of food delivery platforms such as Zepto, Blinkit, Zomato and Swiggy, which expanded their operations to address issues of high transportation costs and idle capacity. These leading players are expanding their business aggressively into Tier 2 and Tier 3 cities of central India. This expansion is being driven by rising smartphone penetration, increased adoption of digital payments, and a growing preference for convenience-oriented consumption patterns. However, existing literature indicates that consumer behaviour in Tier 2 cities differs substantially from that in metropolitan areas. While metro consumers are primarily motivated by speed, instant gratification, and time-saving, consumers in smaller cities exhibit higher price sensitivity, stronger reliance on trust (Busalim et al., 2024), and a preference for value-driven purchases.

With leading players of q-commerce expanding their footprint beyond metropolitan regions into Tier 2 and Tier 3 cities, a significant shift in consumer behaviour is becoming evident. Emerging urban centres such as Bhopal are witnessing increased adoption of quick commerce services, driven by factors such as improved digital infrastructure, wider product assortment, and growing preference for convenience-oriented consumption (Mudaim and Dirglatmo, 2024). Given these structural and behavioural differences, the ongoing transition of quick commerce from a premium, metro-centric service to a more mainstream retail channel in cities like Bhopal necessitates deeper academic investigation. Such research is crucial to understand localised adoption patterns, socio-cultural influences, and the sustainability of the quick commerce model in emerging urban markets.

To understand consumer behaviour in this evolving context, wherein external stimuli (technological, marketing, social, and service factors) influence internal consumer states (perceptions, emotions, and attitudes), which in turn drive behavioural responses such as engagement, trust and purchase intention (Balouchi et al., 2024). Despite growing interest in Q-commerce, existing research has largely focused on operational and logistical aspects, with limited attention to psychological and behavioural determinants of consumer engagement. Addressing this gap, the present study seeks to identify the antecedents influencing trust in Q-commerce (Busalim et al., 2024) and to examine which of these factors more strongly drives consumer purchase intention. By incorporating multiple external stimulus dimensions, such as technology, service

quality, marketing, and social influence, this research contributes to a more comprehensive understanding of their interactions with trust and usage intention (Aryoko and Dirgiamto, 2025). Therefore, the study aims to identify the key antecedents affecting trust and usage intention among Q-commerce service providers.

2. Literature Review

2.1 Technological Stimuli

Technological stimuli in Q-commerce, comprising user interface design, system reliability, personalisation features, and security mechanisms, play a dual role by enhancing trust, which subsequently influences usage intention. A seamless and efficient technological environment reduces cognitive effort and perceived risk, thereby strengthening consumers' confidence in the platform. According to Kapoor et al. (2023), technological stimuli significantly enhance the image of the platform, which in turn positively influences usage intention. When consumers experience intuitive navigation, fast loading speeds, and frictionless checkout processes (Jeong et al., 2022), they perceive higher functional and hedonic value. Luna Sanchez (2024) suggests that features such as AI-driven recommendations, real-time tracking (Haneefa, 2025), and one-click payments further amplify convenience and time efficiency, reinforcing the platform's utility. As a result, consumers are more likely to develop favourable attitudes and demonstrate stronger intention to use Q-commerce services repeatedly. Second, technological stimuli are critical in building trust, which acts as a mediating mechanism between platform features and behavioural outcomes. Secure payment gateways, data protection measures, and transparent transaction processes reduce perceived risk and uncertainty (Astini et al., 2024).

Consumers tend to trust platforms that consistently deliver accurate orders, maintain reliable delivery timelines, and handle service failures effectively. Trust developed through such technological reliability enhances users' willingness to engage in transactions and fosters long-term platform loyalty (Harter et al., 2024). Furthermore, the higher perceived value, derived from convenience, efficiency, and personalisation, reinforces trust by validating the platform's performance and dependability. Conversely, trust strengthens value perception by reducing concerns related to privacy, fraud, or service inconsistency (Hewei and Youngsook, 2022). Thus, the perceived value motivates consumers through benefits such as convenience and instant gratification, and trust reduces psychological barriers associated with online transactions. In the

context of Q-commerce, where speed and reliability are paramount, these factors become even more critical in shaping behavioural intention (Tecoalu et al., 2021). Thus, the study proposes the following hypotheses.

H1: Technological stimuli positively influence consumer trust in Q-commerce platforms.

H2: Technological stimuli positively influence the usage intention of Q-commerce platforms.

2.2 Service Quality Stimuli

The rapid expansion of Q-commerce has positioned service quality as a critical determinant of consumer behaviour, particularly in terms of delivery speed, product availability, reliability, and efficient customer support. These elements significantly influence how consumers evaluate platforms and develop trust. In the context of Q-commerce, the ability to effectively satisfy consumer needs by offering convenience, affordability, and high-quality service ultimately creates a seamless and time-efficient shopping experience. Faster deliveries generate a sense of instant gratification, thereby strengthening consumers' perception of convenience (Harter et al., 2024). In addition, consistent product availability plays a crucial role in increasing consumer engagement and reinforcing the platform's dependability (Kapoor et al., 2023). The provision of real-time product information further contributes to enhancing perceived value by enabling informed decision-making. Customer service also plays a vital role in shaping value. Efficient handling of issues such as refunds, order changes, and delivery concerns improves the overall user experience. Astini et al. (2024) highlight that platforms offering round-the-clock support, transparent policies, and hassle-free return processes are more likely to deliver superior customer experiences.

Trust, however, is not formed through a single interaction but develops gradually through consistent and reliable service delivery (Astini et al., 2024). It reflects consumers' confidence in the platform's ability to meet expectations over time. One of the primary drivers of trust is consistency in delivery performance. Jeong et al. (2022) found that platforms that consistently meet promised delivery timelines are perceived as more reliable. While occasional delays may be acceptable, repeated service failures can significantly undermine trust and prompt consumers to switch to alternative providers. Thus, accurate and transparent inventory management is essential for maintaining trust. George (2024) notes that discrepancies in stock availability can weaken consumer confidence, as users expect reliable and up-to-date information. Ensuring real-time stock accuracy demonstrates operational efficiency and enhances transparency, thereby strengthening trust. Consumers are more inclined to remain loyal to platforms that consistently deliver promised

value, rather than those that frequently cancel or delay orders. Vindytia and Balqiah (2024) emphasise that platforms that provide clear refund policies, proactive communication, and empathetic customer service are more successful in building consumer confidence. Such practices foster long-term relationships and encourage repeated usage. Thus, the study proposes the following hypotheses.

H3: Service quality stimuli positively influence consumer trust in Q-commerce platforms.

H4: Service quality stimuli positively influence the usage intention of Q-commerce platforms.

2.3 Marketing Stimuli

Marketing stimuli play a significant role in shaping consumers' perceived value in Q-commerce by influencing how they evaluate the benefits received in relation to the costs incurred. Promotional strategies (Zhou, 2024) such as discounts and time-bound offers create a sense of urgency and savings, thereby increasing product appeal and enhancing the perception of value (Jeong et al., 2022). According to Astini et al. (2024), the bundled pricing strategies, where complementary products are offered together at a reduced price, further enhance perceived value by providing a more economical and convenient purchasing option. However, consumers' perceptions of value differ significantly across demographic and geographic segments. Younger consumers are generally more responsive to flash sales and personalised suggestions, as they prioritise affordability and instant gratification (Goswami and Kumari, 2024). In contrast, older consumers tend to place greater importance on product quality and reliability rather than heavy discounts (Kapoor et al., 2023). In emerging markets, consumers tend to be more price-sensitive, responding more strongly to aggressive discounting and bulk pricing strategies (Luna Sanchez, 2024).

Marketing stimuli are instrumental in building consumer trust and influencing purchasing behaviour. Consistent and transparent promotional activities enhance brand credibility by signalling a commitment to customer benefits (Ariker, 2021). Personalised recommendations, along with customer reviews, help reduce uncertainty and support informed decision-making, thereby strengthening trust (Hewei and Youngsook, 2022). Moreover, clearly communicated bundled offers with no hidden costs foster confidence in the platform's pricing fairness, although trust responses may vary across different demographic and geographic groups. Thus, the younger consumers tend to exhibit greater trust in AI-driven recommendations and digital platforms,

whereas older consumers often rely more on established brand reputation and word-of-mouth referrals (George, 2024). Additionally, institutional factors such as strong regulatory systems and consumer protection laws contribute to building trust among users across different regions (Haneefa, 2025). Thus, consumers are more receptive to influencer endorsements and community-based recommendations, while others place higher importance on data privacy, transparency, and ethical practices (Kapoor et al., 2023). Thus, the study proposes the following hypotheses.

H5: Marketing stimuli positively influence consumer trust in Q-commerce platforms.

H6: Marketing stimuli positively influence the usage intention of Q-commerce platforms.

2.4 Social Stimuli

Social stimuli comprising reviews and ratings, community participation, and social influence play a vital role in shaping consumers' perceived value. Research indicates that consumers frequently rely on online reviews across e-commerce platforms before making purchase decisions (Cheung et al., 2012). Higher product ratings and positive feedback from other users not only build confidence but also enhance the perceived value of both the product and the platform (Tabar et al., 2025). Additionally, user-generated content, including customer testimonials and ratings, serves as an important source of information for evaluating product quality and seller credibility (Heriyanto, 2024), thereby offering reassurance to potential buyers (Jeong et al., 2022). A sense of community, along with shared user experiences, fosters social validation, which in turn increases perceived value (Goswami and Kumari, 2024). Furthermore, social influence through mechanisms such as brand advocacy and influencer endorsements enhances product appeal by leveraging peer approval as an indicator of value (Chavadi et al., 2024).

In addition to influencing perceived value, social stimuli play a critical role in building consumer trust in Q-commerce platforms. Reviews and ratings, community engagement, and social influence collectively contribute to trust formation (Kapoor et al., 2023). Transparent and verified customer feedback helps reduce uncertainty and perceived risk associated with online purchases, thereby strengthening trust (George, 2024; Racherla et al., 2012). Active participation in brand communities and trust-based interactions further enhances trust levels and encourages repeat purchasing behaviour (Kapoor et al., 2023). Thus, the interactive engagement strategies such as live question-and-answer sessions and social media-driven commerce improve authenticity and reinforce trust in both products and platforms (Rahma et al., 2022). Recommendations from

peers, family members, and influencers are often perceived as more credible than direct promotional messages from brands (Pemayun and Alfirdaus, 2024), thereby playing a stronger role in trust-building (Haneefa, 2025). Thus, the study proposes the following hypotheses

H7: Social stimuli positively influence consumer trust in Q-commerce platforms.

H8: Social stimuli positively influence the usage intention of Q-commerce platforms.

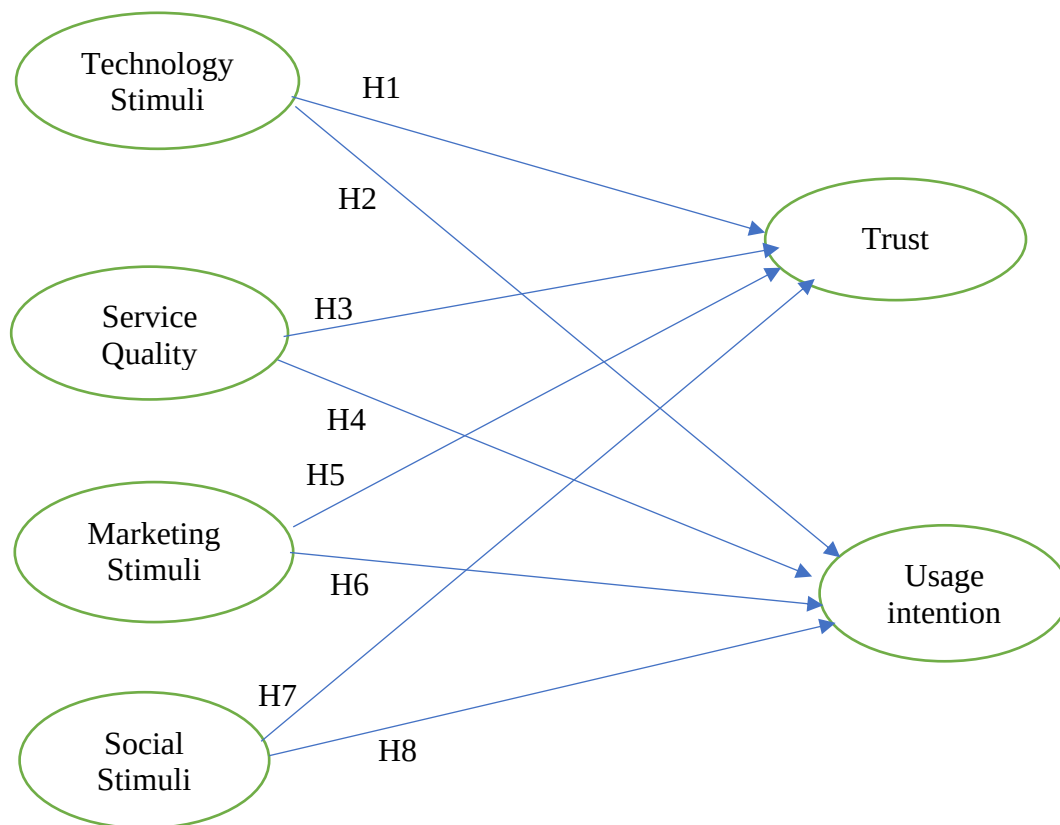


Figure 1: Proposed Framework

3. Research Methodology

The research instrument was first validated by academic experts and then tested to add value to the survey. The sample of this study mainly includes 315 customers using Q-commerce platforms' services for grocery and food. Some of the participants met certain standards and were therefore asked to contribute to the study via e-mail. The survey instrument was developed using a five-point Likert-type scale, disagree (1) to agree (5). The items are from the variable's influence on the trust and usage intention from Q-commerce platforms, such as Technology Stimuli, Service Quality, Marketing Stimuli and Social Stimuli. Therefore, initially, 487 participants were targeted via online survey using a convenience sampling method, targeting individuals directly exposed to Q-commerce platforms. A structured questionnaire was conducted through an online survey to collect consumer responses, but after removing missing responses, the data was reduced to 315 participants. All the samples were collected from Bhopal city, Madhya Pradesh, with the intent to use Q-commerce platforms due to their diverse consumer base, rapid urbanisation, and the presence of Gen-Z, who are a major inhabitant of these cities, as well as the growing emphasis on convenience and a fast-paced lifestyle.

Table 1: Demographic details

Demographics	Frequency	%
Age		
21–30	78	25
31–40	141	45
41–50	54	17
Above 50	42	13
Gender		
Male	142	45
Female	173	55
Education		
Under Graduate	102	32
Graduate	152	48
Post Graduate	61	20
Occupation		

Private Organisation	49	16
Public Organisation	79	25
Business	51	16
Students	136	43

4. Data Analysis and Results

This research utilises SEM as a part of Smart PLS 3.2. (Hair et al., 2022), by utilising a bootstrap resampling methodology of 1,000 (Hair et al., 2019). This technique is used to evaluate both the estimation and structural model. Analysts (Hair et al., 2019; Henseler et al., 2016) suggest that PLS-SEM is very rational and effective to use for breaking down complex models. PLS, introduced by Henseler et al. (2009), is capable of explaining the connection between latent variables. A latent variable is an unnoticed variable which is connected with the other identifiable factors. Hence, this technique can function with the unnoticed factors and to determine the measurement error in the improvement of such unnoticed variables. The assessment of single-item reliability is done by evaluating simple correlation (standardised loadings). According to Ringle and Sarstedt (2016), items are considered to be reliable when their value is above 0.55, and according to Table 2, all the items are regarded as reliable. Furthermore, convergent validity is determined by using two methods given by (Fornell and Larcker, 1981): Cronbach's alpha and Composite reliability, Average variance extracted (AVE).

4.1 Reliability and Validity Analysis

To ascertain discriminant validity, cross-loadings, the square root of the average variance extracted and the heterotrait-monotrait ratio of correlations (HTMT) are analysed. The matrix of correlation in Table 3 demonstrates that for every pair of constructs, the correlation among latent variables is lower than the square root of the average variance extracted (AVE) of every construct. Hence, the results follow the criterion given by Fornell and Larcker (1981). Furthermore, the cross loadings of each item demonstrate that all the loadings are higher on their particular constructs compared to their corresponding constructs, and the differences between cross loadings are higher than the recommended standard limits of 0.1 (Ringle and Sarstedt, 2016)).

Table 2: Reliability and validity

Constructs	Items	Loadings	Cronbach's α	Composite reliability	AVE	VIF
TST	TST1	0.769	0.71	0.82	0.73	2.383
	TST2	0.652				2.206
	TST3	0.821				2.031
	TST4	0.679				1.924
SSE	SSE1	0.849	0.72	0.83	0.78	2.11
	SSE2	0.653				2.286
	SSE3	0.801				1.632
	SSE4	0.712				1.74
MST	MST1	0.821	0.83	0.78	0.67	2.112
	MST2	0.658				1.824
	MST3	0.742				1.519
	MST4	0.698				1.359
	MST5	0.621				2.104
SST	SST1	0.681	0.842	0.88	0.76	1.663
	SST2	0.632				1.942
	SST3	0.731				1.523
	SST4	0.689				1.708
TRU	TRU1	0.714	0.88	0.92	0.71	1.281
	TRU2	0.810				1.211
	TRU3	0.685				1.957
UIN	UIN1	0.704	0.83	0.91	0.74	2.177
	UIN2	0.692				1.61
	UIN3	0.763				1.686

Table 3: Correlation Matrix

	TST	SSE	MST	SST	TRU	UIN
TST	1					

SSE	0.831	1				
MST	0.732	0.780	1			
SST	0.757	0.764	0.814	1		
TRU	0.711	0.689	0.699	0.712	1	
UIN	0.732	0.694	0.723	0.702	0.789	1

By referring to Table 2, it can be realised that all the variables are reliable as they meet the criteria of both Cronbach's alpha, given by Hair et al. (2022), and Composite reliability, set by Nunnally et al. (1967). According to these criteria, the Cronbach's alpha and Composite reliability should exceed 0.70. The determination of convergent validity is set up for a construct if the AVE (average variance extracted) is above 0.5 (Fornell and Larcker, 1981) and all the constructs meet this standard, which is acceptable, as seen in Table 2. Further, we also performed a statistical check for multicollinearity using the variance inflation factor (VIF) for each of the independent variables. VIF is another method for assessing the absence of multicollinearity among constructs. According to Hair et al. (2017), multicollinearity among the constructs is deemed absent if the VIF for each item is less than 3.3.

Table 4: Regression Analysis

Hypotheses	Beta	t-value	p-value	Result
H1: Technological stimuli positively influence consumer trust in Q-commerce platforms.	0.232	2.721	0.041	Supported
H2: Technological stimuli positively influence the usage intention of Q-commerce platforms.	0.145	2.565	0.007	Supported
H3: Service quality stimuli positively influence consumer trust in Q-commerce platforms.	0.213	3.823	0.023	Supported
H4: Service quality stimuli positively influence the usage intention of Q-commerce platforms.	0.129	4.307	0.020	Supported
H5: Marketing stimuli positively influence consumer trust in Q-commerce platforms.	0.255	2.281	0.031	Supported

H6: Marketing stimuli positively influence the usage intention of Q-commerce platforms.	0.234	5.470	0.008	Supported
H7: Social stimuli positively influence consumer trust in Q-commerce platforms.	0.191	2.227	0.026	Supported
H8: Social stimuli positively influence the usage intention of Q-commerce platforms	0.305	6.482	0.001	Supported

Based on the regression analysis through SmartPLS, the resulting value for the variable of Q-commerce platforms, such as Technology Stimuli, Service Quality, Marketing Stimuli and Social Stimuli, influences the trust and usage intention. Study findings observe that the Technology Stimuli (t-value=2.721; p=0.041) for trust, Technology Stimuli (t-value=2.565; p=0.007) for usage intention, Service Quality (t-value= 3.823; p= 0.023) for trust, Service Quality (t-value= 4.307; p=0.020) for usage intention, Marketing Stimuli (t-value= 2.281; p=0.031) for trust, Marketing Stimuli (t-value= 5.470; p=0.008) for usage intention and Social Stimuli (t-value= 2.227; p=0.026) for trust and Social Stimuli (t-value= 6.482; p=0.001) for usage intention shows positive significant influence on trust and usage intention from Q-commerce platforms services. Thus, the hypotheses H1, H2, H3, H4, H5, H5, H6, H7 and H8 were accepted, as they show positive and significant influence on q-commerce platform services.

5. Discussion

In the rapidly evolving landscape of Q-commerce, where digital interactions are influenced by technological, service quality, marketing, and social factors, establishing concurrent validity is crucial to confirm the relationships among key constructs. The study examines how these antecedents influence trust and usage intention. Among the four categories of stimuli, marketing and social factors exert a stronger impact on trust, whereas technological stimuli play a more prominent role in fostering trust in Q-commerce platforms. Technological factors significantly shape the overall user experience. Features such as AI-driven personalisation, secure and seamless payment systems, intuitive application interfaces, and strong data protection mechanisms contribute to trust (Pemayun and Alfirdaus, 2024). Prior research highlights that robust security and privacy measures increase consumer confidence, encouraging users to engage with platforms that ensure safe transactions and data security (Pemayun and Alfirdaus, 2024).

Service quality elements such as prompt delivery, accuracy of orders, responsive customer support, and transparent refund policies improve user satisfaction and reinforce trust (Tecoalu et al., 2021). Moreover, platforms that consistently meet or exceed customer expectations are more likely to gain consumer trust, leading to improved retention (Mudaim and Dirgiatmo, 2024). Thus, service quality and trust, supporting the robustness of these constructs in the Q-commerce context. Marketing stimuli, including discounts, loyalty programs, and time-sensitive promotions, play a vital role in influencing trust and usage intentions (Tecoalu et al., 2021). Effective promotional campaigns enhance consumers' perception of value and encourage repeat purchasing behaviour (Balouchi et al., 2024). Furthermore, transparency in marketing practices such as clear pricing, authentic discounts, bundled offers, and well-defined return policies helps build consumer trust and usage intentions (Aryoko and Dirgiatmo, 2025).

Social factors, including customer reviews, community interaction, and social influence, are also instrumental in shaping consumer trust (Mudaim and Dirgiatmo, 2024). Consumers often depend on peer feedback and online ratings to evaluate the credibility of a platform. Active online communities where users share experiences and provide product ratings further strengthen trust (Busalim et al., 2024). Evidence suggests that platforms incorporating real-time feedback and interactive engagement mechanisms achieve higher adoption rates, highlighting the importance of social stimuli in influencing user behaviour. When consumers perceive that the benefits of using a platform outweigh the associated costs, they are more likely to trust the platform (Balouchi et al., 2024). Study identifies trust as a key determinant of continued usage intention. Consumers who perceive a platform as secure, reliable, and dependable are more inclined to remain loyal over time (Pemayun and Alfirdaus, 2024). Empirical findings further confirm that higher levels of trust lead to increased user adoption and sustained engagement. Overall, the findings demonstrate strong interrelationships among technological, service quality, marketing, and social stimuli, highlighting their collective influence on trust and the adoption of Q-commerce platforms.

6. Conclusion

This study offers important theoretical and practical insights into the drivers of perceived value, trust, and usage intention in Q-commerce. By integrating technological, service quality, marketing, and social stimuli, the research confirms that external factors significantly shape consumer perceptions and behavioural intentions. All the incidents emerge as a crucial intermediary linking

these stimuli to trust, while trust itself is identified as the strongest predictor of continued platform usage. The findings highlight that, unlike traditional e-commerce, Q-commerce relies heavily on real-time interactions, advanced technologies, and social validation mechanisms to establish credibility and sustain user engagement. From a managerial perspective, the study underscores the need for Q-commerce platforms to prioritise innovation, operational efficiency, and trust-building strategies. Investments in AI-driven personalisation, secure payment systems, and responsive customer support can enhance both perceived value and user confidence. At the same time, maintaining high service quality through fast delivery, accurate order fulfilment, and reliable logistics is essential for customer satisfaction. Transparent and personalised marketing, combined with strong social engagement through reviews, influencers, and community interactions, further strengthens consumer relationships and platform loyalty.

7. Limitation & Future Research Direction

The study is limited by its geographical focus and reliance on self-reported data, which may affect generalisability. Future research should adopt a broader and more diverse sample, incorporate longitudinal designs, and examine cultural, economic, and regional variations in Q-commerce adoption. Exploring emerging technologies such as AI and blockchain, along with sustainability considerations, can also provide deeper insights. A comparative analysis between developed and emerging markets, as well as metropolitan and non-metropolitan areas, would provide deeper contextual insights. Additionally, longitudinal research designs are recommended to capture evolving consumer behaviour over time, especially as Q-commerce continues to innovate rapidly. Finally, this research encourages scholars to adopt mixed-method approaches, combining quantitative and qualitative techniques, to gain richer insights into consumer experiences. By addressing these directions, future research can further advance theoretical development and provide a more comprehensive understanding of Q-commerce adoption dynamics. Overall, the study provides a comprehensive foundation for understanding and enhancing consumer engagement in the rapidly evolving Q-commerce ecosystem.

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Decoupling Presence from Performance: An Empirical Examination of the Four-Day Workweek

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Abstract

The Contemporary workplace is undergoing through sustainable changes due to reconsidering traditional working models. The present research aims to understand its main objective by examining the feasibility and perceived impact of shifting towards productivity-based model that is within a four-day work week (4DWW) Framework from a presence-based model. A statistical approach combined with detailed analysis gathered data through an online questionnaire shared to 500 individuals, which resulted in 150 valid responses. The preliminary evaluation indicated a strong favorable agreement on how 4DWW's potential to enhance work-life balance and mental well-being. Specifically, 80%-85% of respondents strongly agree that shifting towards the productivity-based model encourages efficiency and "working smarter" than longer. However, concerns remain regarding the increased work pressure and the difficulties in maintaining service level within shorter time frames. Research suggests that clear performance metrics and a shift in management mindset are crucial for successful implementation.

Keywords: Four- Day Work Week (4DWW), Productivity-based Model, Work-Life Balance, Employee performance, Work Culture.

1.Introduction

Across various industries, the theory of "work" is experiencing major conversion. Traditional organizational systems were rooted in an industrial model that linked lengthy hours and physical presence with increased productivity (Keynes, 1930; Pencavel, 2014). Over time, this belief became deeply embedded in managerial practices, shaping how performance was measured and how workplaces were systematized. nonetheless, the post-pandemic digital acceleration, rising awareness of mental health, and the adoption of outcome-driven business models have generated organizations to question whether extended working hours inevitably compare to greater value creation (Council of Economic Advisors, 2010; OECD, 2021). Remote and home-based work arrangements have continuously increased over the past decades, signaling a structural move rather than a short-term adaptation (Oettinger, 2011). Within this evolving context, the Four-Day Workweek (4DWW) has emerged as an advanced option that question the dominance of presence-based performance systems (4 Day Week Global, 2023; Autonomy, 2023).

The debate around the 4DWW extends beyond degrade working hours or working fewer days; it reflects a broader shift in Management and Leadership philosophy.

Contemporary management increasingly actualize measurable outputs, flexibility, and employee engagement over rigid attendance structures. Leaders are expected to transition from surveillance-oriented supervision to trust-based, performance-driven governance (Drucker, 1999; Kotter, 1996). This shift requires redefining key performance indicators, redesigning workflows, and develop a culture that rewards efficiency and innovation over presenteeism (Kaplan & Norton, 1996; Armstrong, 2014). Maintaining productivity within compressed schedules also need strategic resource allocation and operating substructure.

From an Innovation and Technology viewpoint, digital tools play a key role in supporting shorter workweeks.

Automation, collaborative platforms, and data analytics systems enable organizations to simplify processes and eliminate redundancies (Brynjolfsson & McAfee, 2014; Davenport, 2013). This technological integration ensures productivity is sustained, if not enhanced, within reduced working hours. also, the model aligns closely with Inclusion and Sustainability objective. A compressed workweek can improve work-life balance, reduce burnout, and create opportunities for wide workforce participation, especially for individuals managing caregiving or personal commitments (Maslach & Leiter, 2016; World Health Organization, 2019). Additionally, fewer commuting days and optimized resource utilization contribute to environmental and social sustainability.

observational insights from the present study reinforce the growing interest in outcome-based work models.

Survey findings indicate that about 80–85% of respondents strongly agree that a productivity-based framework encourages employees to work more efficiently rather than simply extending hours. A significant majority also notice improvements in work-life balance and mental well-being under a four-day structure. However, respondents express concern regarding potential work intensification, increased pressure to meet deadlines, and challenges in maintaining service quality within shorter operational windows.

Although foreign tests with the 4DWW have attracted scholarly attention, restricted research has systematically examined employee insight in the Indian context, particularly from a management and organizational behavior perspective.

This study aims to address this gap by analyzing the feasibility and perceived implications of transitioning from a presence-based to a performance-based work model. By integrating themes of leadership conversion, technological enablement, and sustainable organizational design, the research seeks to contribute meaningful insights to both academic literature and managerial practice.

2. Literature Review

The idea of working fewer hours has changed a lot over the last hundred years, but real academic focus on the Four-Day Workweek (4DWW) has only picked up steam in the past decade. Early labor economists predicted we'd work less as technology got better and productivity rose, but even as technology raced ahead, the standard workweek mostly stayed the same. People just kept tying productivity to time spent at work.

Lately, researchers have started pushing back on the idea that longer hours mean more output. Some studies claim that overwork actually leads to less productivity per hour, more burnout, and workers who just aren't as engaged. There's also evidence from organizational behavior research that just showing up doesn't equal real performance—being present isn't the same as actually getting results. Theories like Self-Determination Theory (Deci & Ryan) argue that when people have more autonomy and a better work-life balance, they're more motivated and productive.

So, what happens when companies actually try out a four-day week? Data from large-scale trials in the UK and New Zealand show that productivity stays the same or even gets better, and employees report higher well-being and job satisfaction. Research from the UK 4DWW trial also found drops in stress, absenteeism, and people thinking about quitting. Companies that have switched to compressed workweeks often see productivity gains too.

But making this shift isn’t as simple as just cutting hours. Scholars say managers need to get clear on how they measure performance and change up their leadership style. Strategic HR research shows that switching to outcome-based models really hinges on everyone agreeing on goals, using the right digital tools, and having leaders who actually trust their teams. Tech matters a lot—stuff like automation, collaboration platforms, and analytics all make it easier to cut back on hours without losing productivity. There’s also a growing pile of evidence that shorter workweeks lead to some real social benefits, like less burnout and better gender inclusion. But there are gaps in what we know. Most of these studies come out of Western countries, mainly Europe and North America, so it’s a stretch to say the results would be the same somewhere else. Plus, a lot of the pilot programs involved companies that volunteered or were already doing just fine, which might skew the data. We don’t really know the long-term effects on things like customer service, managing clients, or whether workloads just get squeezed into fewer days. And there’s not much research on how employees in places like India—where workplaces and leadership look pretty different—feel about all this. To fill these gaps, this study uses a framework built around three main ideas: shifting to outcome-based performance measures, focusing on employee well-being and work-life balance, and preparing organizations with the right mindset, tech, and performance systems. These are all woven together through a sustainability lens, where technology and inclusive leadership shape the link between shorter hours and organizational results.

By pulling together evidence from around the world and calling out where research still falls short, this study adds something new to the conversation about what productivity really means in today’s organizations.

Table 1: Comparison Chart: 5-Day vs 4-Day Model

Parameter	5-Day Model	4-Day Model
Focus	Presence	Productivity
Evaluation	Time-based	Output-based
Burnout Risk	Higher	Lower (if managed)
Tech Dependency	Moderate	High

3. Research

Objectives, and Research Methodology

3.1 Research Objectives

This study looks at how companies are moving from judging employees based on hours spent at work to measuring how much they actually get done, especially within the Four-Day Workweek (4DWW) setup. With the old five-day workweek under review, there's a real need to figure out if working fewer days boosts productivity, makes people feel better on the job, and helps organizations stay strong for the long haul.

The present study is conducted to find out:

- To examine employee perceptions of productivity and work efficiency under a Four-Day Workweek compared to the traditional five-day presence-based model.
- To evaluate the impact of a four-day workweek on employee well-being, work-life balance, and perceived stress or workload intensity.
- To assess the preparedness and willingness of employees and organizations to transition from a presence-based evaluation system to a productivity-driven model, particularly considering the role of technology and digital tools.

3.2 Research Questions and Hypotheses

Research Question 1

RQ1: Do employees feel more productive and efficient when they work a Four-Day Workweek instead of the usual five-day schedule?

H₀₁ (Null Hypothesis):

There's no real difference in how productive or efficient employees feel between the Four-Day Workweek and the traditional five-day, presence-based setup.

H₁₁ (Alternative Hypothesis):

Employees feel noticeably more productive and efficient with a Four-Day Workweek than with the traditional five-day, presence-based setup.

Research Question 2

RQ2: Does a Four-Day Workweek actually help people maintain a good work-life balance without losing control over stress and workload?

H₀₂ (Null Hypothesis):

A Four-Day Workweek doesn't do much to improve work-life balance or reduce how much stress or workload intensity employees feel.

H₁₂ (Alternative Hypothesis):

A Four-Day Workweek really does improve work-life balance and keeps stress and workload intensity at manageable levels for employees.

Research Question 3

RQ3: Are employees open and ready to switch to a performance-based evaluation system that uses digital and technological tools, instead of sticking with old-school, presence-based assessment?

H₀₃ (Null Hypothesis):

Employees aren't truly willing or ready to move away from presence-based evaluation to a system focused on productivity and supported by digital tools.

H₁₃ (Alternative Hypothesis):

Employees are actually willing and prepared to switch from presence-based evaluation to a productivity-driven performance model that relies on digital and technological tools.

4. Methodology

This section covers how the research was designed, where the data came from, how the sample was chosen, the survey used, and the methods for analyzing results. The goal was to make sure the approach was clear, reliable, and fit the research objectives.

4.1 Research Design and Data Source

This study takes a quantitative, descriptive approach to look at perceptions of productivity, work-life balance, and how ready people are for performance-based evaluation under the Four-Day Workweek. Since the focus is on what people think and feel—without changing any conditions—a descriptive design works best.

The study is cross-sectional, meaning all data was collected at one point in time.

Type of Study:

- Descriptive and analytical
- Cross-sectional
- Quantitative

Data Source and Tools:

- Primary data collected through a structured online questionnaire
- Survey carried out via Google Forms
- Results interpreted using percentage analysis and comparative evaluation

The questionnaire was shared with over 500 people from IMS Lal Kuan, Ghaziabad, as well as undergraduate and postgraduate students throughout Delhi NCR. From these, 150 valid responses were received and used for analysis.

Even though the respondents are students, they represent the upcoming workforce and future employees in organizations, so their opinions give useful insight into whether the Four-Day Workweek could work. Their views help highlight how open people are to shifting from presence-based work to a model that puts productivity first.

4.2 Sample Size and Sampling Technique

Out of the total distribution, 150 fully completed responses made it into the final analysis. This sample size works well for describing percentages and running hypothesis-related analysis in an academic setting.

The study used convenience sampling—respondents were chosen based on who was easily accessible and who volunteered. Given the online survey method and the educational setting, this made data collection smoother. It's worth noting, though, that convenience sampling can limit how much these findings can be stretched to apply beyond the specific group surveyed.

The sample includes undergraduates and postgraduates, many of whom are preparing for professional roles, so their answers matter when thinking about future changes to workplace structures.

4.3 Research Instrument and Techniques Used for Analysis

The main research instrument was a structured questionnaire with multiple-choice questions and Likert-scale items. The questions were designed to gather insights on:

- Productivity and efficiency under a Four-Day Workweek
- How people compare presence-based versus output-based performance
- Work-life balance and mental well-being
- Perceived stress and workload compression
- Readiness for performance-based evaluation systems
- How digital and technological tools support productivity

Close-ended questions helped keep responses consistent, made results easier to measure, and allowed for more straightforward statistical analysis.

- For analyzing the responses, these techniques were used:

- Percentage analysis to see where most people stand
- Comparing perceptions of productivity with stress indicators
- Hypothesis-based interpretation
- Descriptive statistics to spot trends

Findings were lined up with the research objectives to figure out if fewer working days actually boost productivity and well-being or if they just squeeze the same workload into a shorter time.

5. Key Findings / Insights

The analysis of 150 valid responses reveals strong support for the Four-Day Workweek (4DWW) model, particularly in terms of productivity perception, work-life balance improvement, and readiness for performance-based evaluation systems.

5.1. Perceived Improvement in Productivity

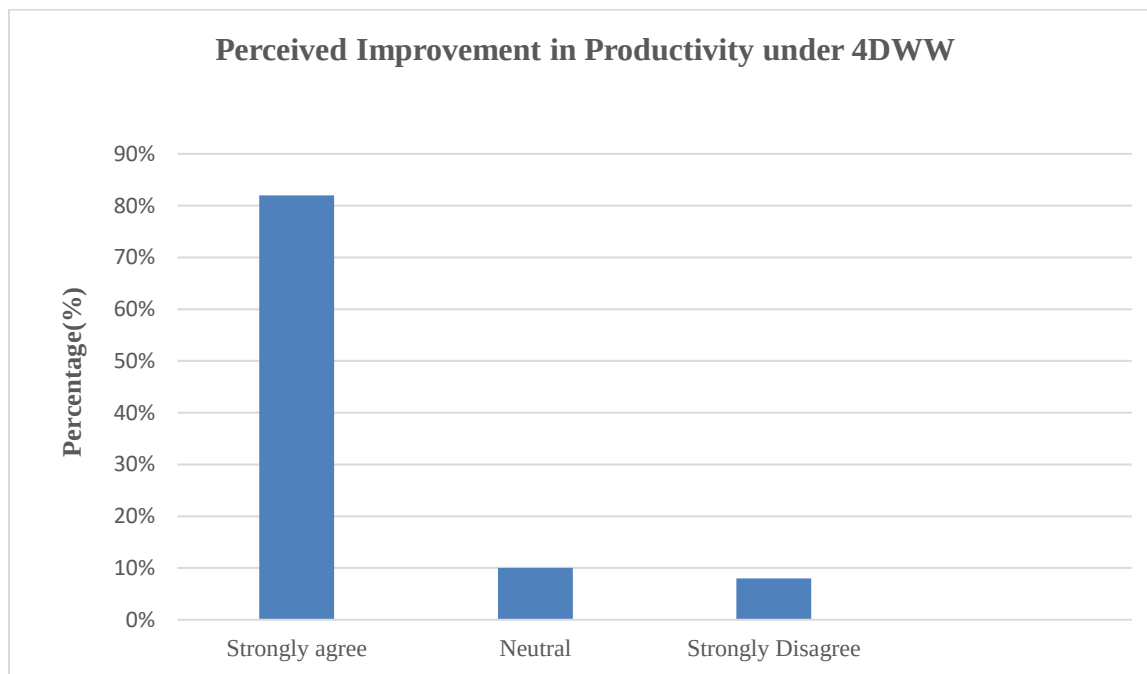


Fig. 1

A significant majority (approximately 82%) of respondents strongly agree that a Four-Day Workweek enhances productivity and efficiency. This suggests that respondents believe reduced working days encourage focused effort, better time utilization, and output-oriented performance rather than time-based presence. Only 18% expressed neutral or negative perceptions, indicating broad acceptance of the productivity-driven model.

This finding supports the argument that productivity may be more closely linked to efficiency and motivation rather than total hours spent at work.

5.2. Impact on Work-Life Balance

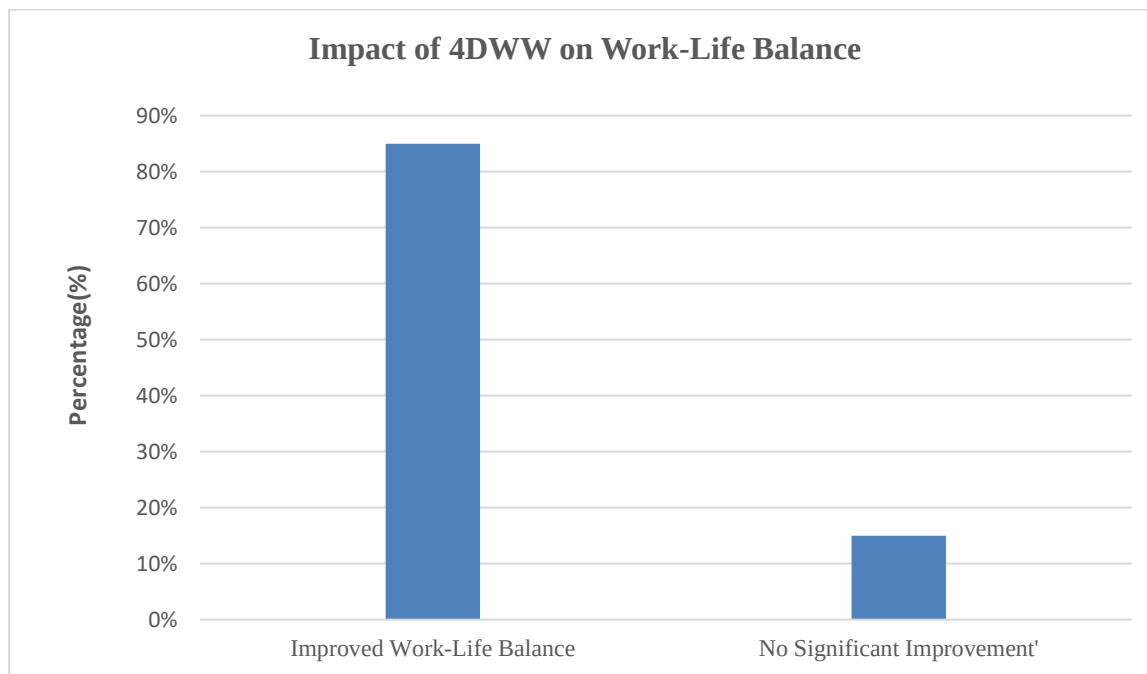


Fig. 2

The data indicates that nearly 85% of respondents believe a Four-Day Workweek improves work-life balance. This highlights the potential of the model to positively influence mental well-being, personal time management, and overall satisfaction.

Improved work-life balance is often associated with higher long-term engagement, reduced burnout, and sustainable performance outcomes. The strong agreement in this area reinforces the viability of the 4DWW as a strategic organizational reform.

5.3. Concern Regarding Workload Compression

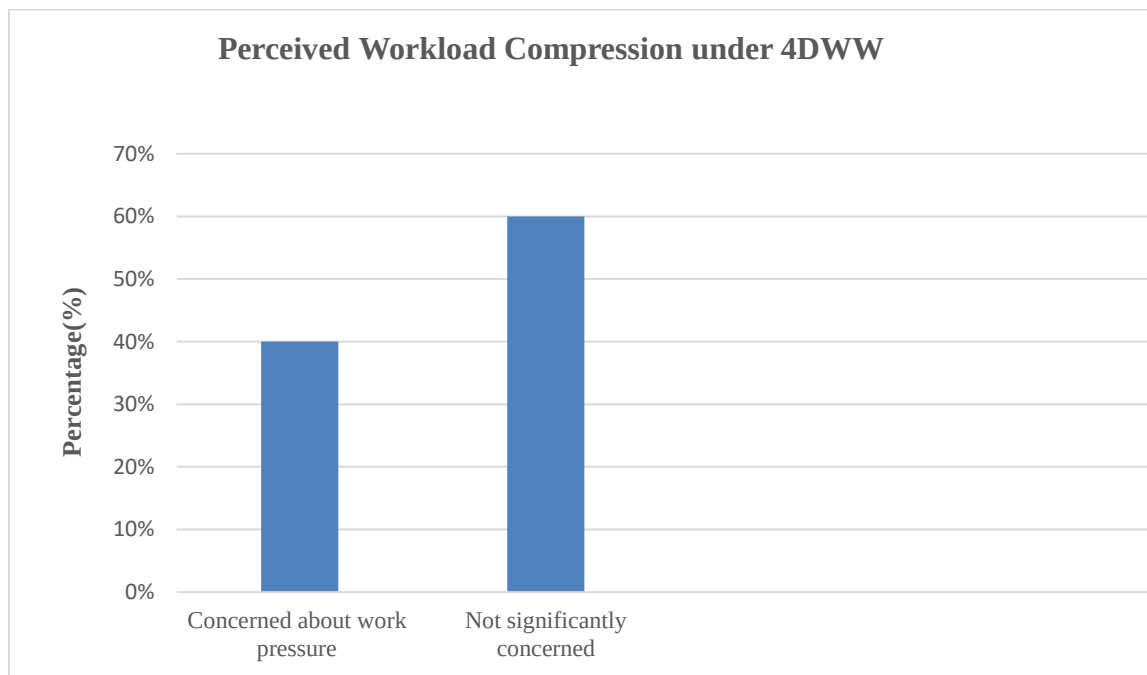


Fig. 3

Despite strong support for productivity and balance, 40% of respondents expressed concern about increased work pressure or workload compression within fewer days. While 60% did not view workload as a major concern, the presence of apprehension indicates that implementation challenges may arise if performance metrics and workload distribution are not properly structured.

This suggests that reducing working days must be accompanied by clear deliverables, realistic targets, and supportive management systems.

5.4. Readiness for Productivity-Driven Evaluation

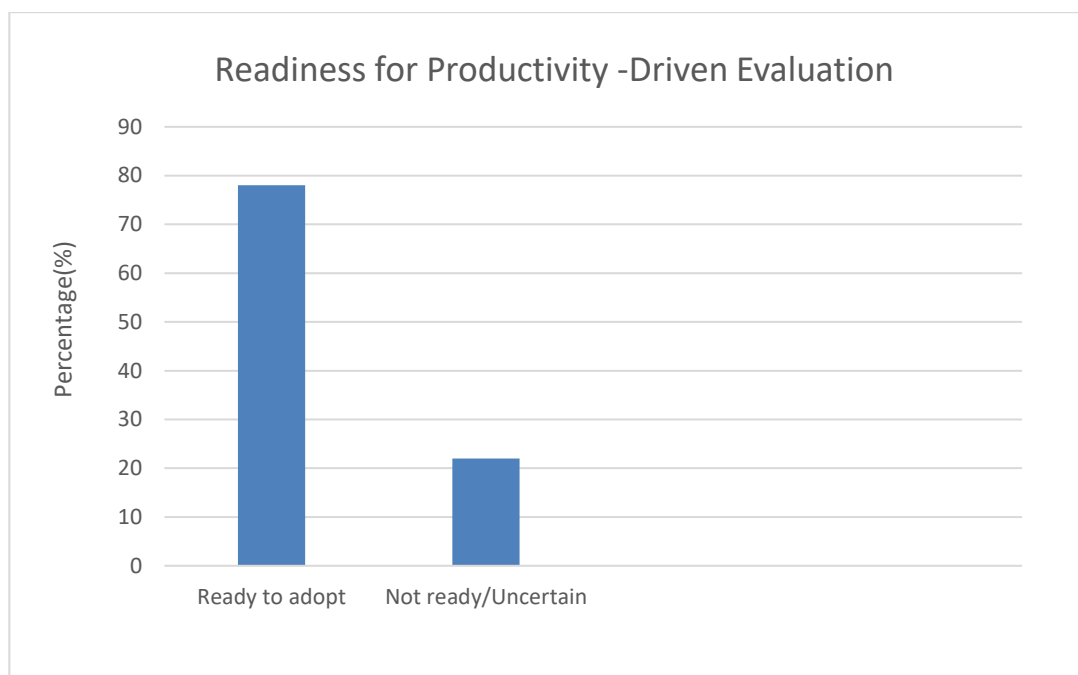


Fig. 4

About 78% of people said they're ready to use performance-based evaluation backed by digital tools. That shows they're open to moving away from the old system, where just being present mattered, toward one that actually measures what gets done.

Basically, young professionals seem pretty comfortable with tech-driven performance tracking and are up for workplace models that focus on accountability.

Overall, the results show that folks see clear benefits from a Four-Day Workweek—especially when it comes to productivity and balancing work and life. Still, there's some worry about how cramming the workload into fewer days might affect things. That's why it's important to have a

clear structure, set expectations around performance, and make sure managers are on the same page.

In the end, the findings suggest cutting down workdays doesn't mean performance drops. It can actually push people to work smarter, as long as the organization supports that shift.

6. SWOT Matrix: Four-Day Workweek Model

Table 2

Strengths	Weaknesses
• Higher perceived productivity (80–85% agreement)	• Risk of workload compression within fewer days
• Improved work-life balance and mental well-being	• Potential stress due to tighter deadlines
• Encourages “working smarter” rather than longer	• Not suitable for all industries (e.g., continuous service sectors)
• Promotes outcome-based performance culture	• Requires redesign of performance metrics
• Increased employee motivation and engagement	• Initial resistance from traditional management systems

Opportunities	Threats
• Attracting and retaining top talent	• Possible decline in service quality if poorly implemented
• Integration of digital productivity tools	• Managerial resistance to cultural change
• Cost optimization (utilities, infrastructure, turnover costs)	• Misalignment between workload and time availability
• Alignment with sustainable and employee-centric policies	• Short-term productivity dip during transition phase
• Competitive differentiation in employer branding	• Operational challenges in client-facing roles

The SWOT analysis shows the Four-Day Workweek has some real strengths when it comes to how people see productivity, their sense of well-being, and a company's ability to attract new talent.

But making this model work isn't as simple as changing a calendar; you have to get serious about how you plan workloads, set performance expectations, and bring in the right technology. The idea isn't just about shaving off a day. It's a chance for organizations to rethink the way they operate entirely, but only if they roll it out carefully and line everything up operationally so customers and clients don't feel any hiccups.

In this study, I took a closer look at whether moving from the old-school five-day, presence-based workweek to a results-focused Four-Day Workweek (4DWW) could actually work and what people think about it. I gathered responses from 150 undergrad and postgrad students spread across IMS Lal Kuan, Ghaziabad, and Delhi NCR, and the results were pretty clear: most people—especially younger professionals—prefer to be judged by what they achieve, not how many hours they show up. Around 80–85% said they expected to get more done and feel better about their jobs and personal lives with just four days at work. These numbers suggest productivity isn't just about clocking more hours; it's about being engaged, making the most of your time, and staying motivated. Respondents also showed strong support for tech-based ways to track performance, showing that new entrants to the workforce are ready for digital accountability.

Still, the study's not just a cheerleader for the four-day model. Nearly two in five students had serious concerns about packing five days of work into four, worrying about stress and keeping up with expectations. So, while the model is exciting, pulling it off means you need solid planning, real-world performance benchmarks, and managers who know how to support their teams. If done right, a shortened week can help people work better and feel less burnt out, but only if companies change their systems to put results ahead of attendance.

7. Conclusion

This study isn't just academic—it has direct, practical takeaways for managers working in HR, operations, or overall strategy:

1. Move from Time-Based to Outcome-Based Evaluation

About 82% of students believed they'd get more done under a Four-Day Workweek, and 78% felt ready for systems that measure real results, not hours. That's a pretty loud signal: Organizations need to shift to clear deliverables and key performance indicators (KPIs). People actually want the kind of accountability that focuses on output. But to make that work, companies need solid goal-setting and performance frameworks.

2. Technology Isn't a Bonus—It's a Must

A full 78% showed they're ready for digital and tech-based evaluation. Investing in project management tools, automation, and productivity dashboards isn't just a nice touch, it's non-negotiable if companies want to sustain (or lift) productivity with fewer days in the office.

3. Plan Workloads—Or Face Burnout

Even though most see the four-day week as a productivity booster, 40% still fear having to do too much in too little time. So, if you just compress work without re-thinking the workflow or getting rid of low-value tasks, you'll burn people out fast. Smart process design and careful workload management will make or break this model.

4. Well-Being Fuels Performance

Most respondents—about 85%—tied the shorter week directly to better work-life balance. Plus, 60% said workload isn't that big of a worry, which hints that with the right systems, a four-day week could boost engagement and cut stress. Happier employees stick around and do better work, and that's a win for any company eyeing long-term success.

5. Don't Rush—Think Before You Commit

Even though the four-day week looks good on paper, 40% still feel uneasy about the workload. That tells organizations to roll things out gradually. Try pilot programs, tweak as you learn, and only then go for a full transition. This gives teams room to adjust and build the right support before making the change permanent.

7.1. What does this mean for Humanitarian Supply Chain?

These insights don't stop at office settings—they matter for humanitarian supply chains too. Relief work runs on high stakes and tight schedules, often leading to burnout. Applying a four-day model here—if done carefully—might make a huge difference. It could improve well-being for teams facing tough conditions, allow for more focused and efficient work, and cut down long-term burnout. These organizations could try staggered shifts or rotating schedules to keep operations running all week without wearing people down.

And on the tech side, bringing in real-time dashboards, digital task management, and AI forecasting would help track productivity even when teams work fewer days onsite. The study's evidence backs this up: Tech integration is key, no matter the sector.

Organizations that want to thrive today need smarter systems, not just longer hours. The Four-Day Workweek model offers more than a quick fix—it's a structural move toward better efficiency, stronger digital tools, and a management style that genuinely puts people first. For future research, a wider sample that covers various industries, not just students, would help confirm how well the 4DWW works in different contexts.

8. Limitations

It's worth noting a few boundaries here. The study mainly included undergraduate and postgraduate students from IMS Lal Kuan, Ghaziabad, and the Delhi NCR area, so it doesn't reflect the views of working professionals or employees in the corporate world. Plus, because the research ran for a short period, there wasn't much room to go deep with more advanced statistics or a larger group of participants, or to see how views change over time. Most respondents were between 18

and 25, so the results don't speak for seasoned workers or older professionals. Expanding on these points in future research will give us a much clearer picture.

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FIT TRACK SYSTEM: A REVIEW STUDY

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Abstract— Fitness trackers in the form of wearable have become mainstream in tracking the body composition, energy use, and physical activity. The paper also features the overview of the recent literature (2020-2025) on the effectiveness of such devices in the framework of various groups, which is underpinned by the initial survey data of 312 participants. The article takes into account the impact of fitness trackers on encouraging exercise, health behavior change, and measuring accuracy in addition to providing a critical analysis of some of the issues that include accuracy of data, adoption by the user over time, and privacy concerns. The surveys have revealed that the user satisfaction was very high: 84% of interviewees indicated that their activity levels were now enhanced, 90% of interviewees indicated that their overall fitness was enhanced, and the weighted average score of 4.2 out of 5.0 speaks in favor of the null hypothesis rejection.—. The paper concludes that wearable fitness has a high potential in personal and clinical health management and that future advances in sensor accuracy, longitudinal engagement strategies and data governance are critical in maximizing the increased impact.

Keywords: Fitness trackers, physical activity, wearable devices, Wearable devices, Body composition, Energy expenditure, Health monitoring, Behavioural change.

I. INTRODUCTION

The increasing sedentary practices in the world today have left behind a pressing necessity of efficient interventions that can lead to regular exercise. Sport watches have become new tools of encouragement and maintaining active lifestyles since they can give instantaneous feedback regarding important health indicators such as step count, heart rate, caloric outlay, and sleep quality [1]. These devices help in adapting the divide between the passive health awareness and the active health management since they allow constant objective self monitoring.

In addition to personal applications, wearable fitness trackers aid the longitudinal tracking of the activity by storing the data in the cloud and integrating it with mobile health. The users receive nonstop details of their activity, energy intake and physiological responses that lead to healthier behavioral choices [2]. The continued sensor technology evolution, data analysis and user interface design have made these devices much more usable and accessible.

These devices have become much more accessible and usable due to the interface designs. Wearable trackers can be utilized in order to provide aggregated and anonymized information at the population level that can be used to train a mass analytics of health education, such that the researchers and practitioners of the public health system can decide on the patterns of activities and create specific interventions. [3]. However, the long-term engagement and constant issues with the accuracy of measurements, user privacy are still major limitations that should be reviewed with the critical perspective. The main research contributions of this paper are: (1) a systematic literature review focusing on the literature published in the last five years (2020-2025) on the impact of wearable fitness trackers on physical activity, body composition, and energy expenditure; and (2) original research based on a survey report on the behavioral patterns of the user, their level of satisfaction, and sources of motivation among 312 users of the fitness trackers. Collectively, these works provide an evidence-based and comprehensive evaluation of where the wearable fitness technology is and where it may go in the future, as well as implications on an individual user, clinician, and public health practitioner. The rest of the paper will be structured in the following way. Part II gives the literature review. The mixed-methods research design is presented in Section III. Section IV is the report on survey and analysis. Section V gives testing of hypothesis and statistics. Section VI also presents findings as related to the existing literature. Section VII also gives recommendations to future research.

II. LITERATURE REVIEW

Wearable Activity Trackers (WATs) have received a lot of literature in terms of their use in promoting physical activity, reducing sedentary, and supporting healthy lifestyles. The review presented below summarizes the essential research results of the articles published between 2020 and 2025 in different groups of people and areas of applicability. The literature reviewed considers a wide spectrum of clinical, community and educational settings and is indicative of the versatility of wearable technology throughout the health spectrum. The important themes comprise patient movement, independence of older adults, physical education among young people, AI adoption, and validation of accuracy.

A. Hospitalized Patients

Szeto et al. [4] performed a systematic review and metanalysis of 15 articles that comprised about 2,000 hospitalized patients. Their results proved that wearable trackers contributed greatly to the mobility of the patients and minimized sedentary behavior in the hospital. Nevertheless, device-based interventions failed to statistically significantly reduce the length of stay or hospital readmission rates indicating that wearables can positively influence patient motion yet do not. Combining machine learning algorithms and streams of continuous biometric data opens the prospect of proactive health interventions - warning users of anomalies or suboptimal patterns prior to their appearance as clinically manifested.

B. Older Adult Populations

Wu et al. [5] conducted the systematic review concentrated on older adults and discovered that wearable trackers were effective in improving the level of physical activity and functional independence. In the same manner, Li et al. [6] proved that the consistent use of activity trackers was linked to objectively significant changes in body composition, muscle strength, and overall physical performance in community dwelling older adults with the help of a meta-analysis of randomized controlled trials.

C. Adolescents and School-Based Settings

Chen et al. [3] studied the application of fitness trackers in physical education in schools. Their review and meta-analysis revealed that the integration of wearable technology in curriculum-based environments yielded significant gains in terms of student activity levels and health awareness, and therefore had significant potential in terms of wearable-based devices in youth health promotion.

D. Technological Advancements

A study conducted in the Journal of Medical Internet Research

[2] reported significant increases in device accuracy, comfort and interaction with a user in a seven-year longitudinal study. Li et al. [7] also reported the widening of the field of wearable applications past activity monitoring to include disease prevention and long-term chronic health encouragement.

E. Special Population Applications

Among the studies that have been particularly successful in showing improved subjective wellbeing and exercise adherence in cancer patients was one particular investigation [8] that identified the contribution of wearable trackers. However, there are discrepancies in accuracy between the brands of commercial devices [9], which supports the significance of clinical validation prior to mass implementation in a medical facility.

F. Artificial Intelligence Interaction.

Oz et al. [10] introduced a project FedFitTech which is a federated learning model that enables the training of health models by collaborating between distributed users without the interference with privacy of individual data. This approach is a significant addition to the health

informatics profession in that it divides the model enhancement and centralized data collection resulting in the resolution of the long-standing privacy dilemma of health data sharing.

Huang et al. [1] presented AI-empowered wearables that are capable of tracking their health status in real-time, providing predictive analytics, and a personalized attitude toward health guidance. Wearable hardware and smart software are the future of consumer health technology affect the overall operation-wide health outcomes.

III. METHODOLOGY

The research design used in the study was a mixed-method research design that uses a systematic literature review and empirical research based on primary survey that involves the collaboration of richness of clinical evidence available and the breadth of quantitative information on real world user experiences.

A. Methodology Literature Review.

The search in terms of peer-reviewed articles, clinical trials, and meta-analyses included articles published between 2020 and 2025 in IEEE Xplore, PubMed, Google Scholar, and ScienceDirect. The search terms were the following: wearable fitness tracker, activity monitor, physical activity tracking, health wearables. The inclusion criteria were that the studies had to be specific to wearable tracking devices, present quantitative or qualitative outcomes based on the outcome of the use of wearable tracking devices, and be published in peer reviewed journals. The stratification of research was based on population of interest, duration of intervention together with measures.

B. Survey Research Methodology.

An online questionnaire in 25 items was structured and given within a period of three months. The items measured the patterns of device use, motivation variables, perception of effectiveness and behavior change. The constructs of the survey were based on the literature review and subject-matter experts reviewed it to determine content validity. The respondents were approached through university contacts, fitness groups and social networks. The sample was finally reduced to 312 (58% women, 42% men) aged between 18 and 65 years.

C. DataAnalysis

Descriptive statistics (frequencies, percentages, means) were applied to quantitative data to analyze them, Pearson analysis of correlation, and weighted mean scoring. Each of the items was weighted to Likert-scale (1 Strongly Disagree to 5 Strongly Agree) and weighted mean will be calculated in each of the constructs to permit a standard comparison of the results of the respective fitness. To make a hypothesis to be tested, a composite weighted mean of all constructs of fitness-impact was computed.

Thematic coding was used to qualitative open-ended responses to discover patterns in user experience and perception. Two coders viewed the responses and settled the differences by discussion which produced an inter-rater reliability coefficient of 0.84 which suggests high

agreement. Coded themes were then clustered to form higher-order categories in order to synthesize

IV. SURVEY RESULTS AND ANALYSIS

A. Device Preference and Usage Patterns

Mobile fitness apps were used as their tracking tool of choice (55%), over special wearable devices (45%). Female participants favored using fitness bands (45% of the respondents) or app-based tracking (55% of the respondents). The most used application was Google Fit (49%), and then Healthyfy (16%), and Mi Fit (16%).

TABLE I

Distribution of Fitness Tracking Methods

Method / Application	Female (%)	All (%)
Fitness Bands/Wearables	45%	45%
Smartphone Applications	55%	55%
— Google Fit	—	49%
— Healthyfy	—	16%
— Mi Fit	—	16%
— Other Apps	—	19%

B. Time of Usage and Goal Establishment.

Most respondents (71) have been engaging in the use of the fitness trackers over a period of more than three months. Among active users, 68 percent had defined fitness objectives and were actively tracking the progress of achieving them using their devices, which is why it appears that trackers are more motivational than passive monitoring tools. C. Dietary and Behavioral Changes.

Additionally, over fifty two percent of the respondents (52) indicated that they changed their eating habits as a direct consequence of wearing a fitness tracker. The self-monitoring of intake and expenditure of calories in a daily regime was reported to be a primary force behind consciously based nutrition choices, and this is where the wearables may come in to reinforce a holistic lifestyle modification over and above the realm of physical exercise.

D. Reduction of Stress and Mental Health.

One unexpected advantage that was determined was a decrease in health-related stress. Upon inquiring about how the use of fitness trackers decreased health-related stress, 10% strongly

agreed, and 71% agreed, which makes 81% of the respondents responding favorably. Respondents implied that availability of objective health information reduces fear of physical health, which places position trackers as the indirect causes of mental wellbeing.

Fig. 1 depicts the categories of stress-related reactions of respondents of the survey. It is interesting to note that 46 percent reported a decrease in stress, one-third (32 percent) did not, and a fifth (18 percent) said their stress increased (which may have also been due to an increased awareness of fitness holes). This distribution emphasizes the fact that most users receive a psychological reward out of using the devices, but some of them are also likely to have performance anxiety as a by-product of constant self-observation.

E. Physical Activity Enhancement

To be more exact, 23 percent strongly agreed and 61 percent agreed that their activity levels increased since they have adopted a fitness tracker (84 percent combined). Respondents explained this by the increased awareness of the movement goals per day and the sense of responsibility that constant monitoring produces.

Fig. 2 shows the statistical analysis of fitness tracker effect on the level of user fitness. The bar chart supports the fact that the percentage of users who stated that they have had improved fitness is significantly large ($p < 0.001$), and the percentage of those who have stated that their fitness has declined is also significant albeit not large ($p < 0.01$), and the not significantly large group is non-significant ($p = 0.21$). The alternative hypothesis of the study is further supported by these findings that offer more quantitative data.

F. General Fitness Rehabilitation/Enhancement.

On general fitness results, 32 percent strongly agreed or 58 percent agreed that since starting using a tracker they became more physically fit (90 percent combined). The users were also pleased with their device, though 91 percent of those surveyed said they enjoyed using their device (36 percent strongly agree; 55 percent agree).

G. Reliability and Usability of the Devices.

The perceived device reliability rated positively 87% of users (16% strongly agreed; 71% agreed that their tracker could give them reliable health information). Also, 82 percent of the respondents rated their devices as user-friendly, which attests to the evidence that the existing technology of fitness tracking is designed to satisfy the expectations of users. H. User Satisfaction, Motivational Support.

With regard to the satisfaction of personal needs, 84% of the respondents said they were satisfied (19 percent strongly agreed; 65 percent agreed). About motivational effect, 87 percent of them concurred that fitness trackers assisted them to remain committed to their physical exercise routines (29 percent strongly, 58 percent agreed).

TABLE II

Summary of Survey Outcome Metrics

Outcome Measure	SA (%)	A (%)	Total (%)
Improved Activity	23%	61%	84%
Fitness Improvement	32%	58%	90%
Stress Reduction	10%	71%	81%
Device Reliability	16%	71%	87%
Motivational Support	29%	58%	87%
User Satisfaction	19%	65%	84%
User Enjoyment	36%	55%	91%

V. HYPOTHESIS TESTING AND STATISTICAL ANALYSIS

To objectively evaluate the effect of fitness trackers on user fitness levels, the following hypotheses were formulated and tested:

H₀: Fitness trackers do not significantly affect the fitness levels of users.

H₁: Fitness trackers have a significant positive impact on the fitness levels of users.

A. Weighted Mean Analysis

Survey responses were scored on a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). Weighted means were computed per construct by multiplying response frequencies by scale weights and dividing by the total number of respondents. The overall weighted mean across all fitnessimpact constructs was 4.2 out of 5.0, substantially above the neutral midpoint of 3.0.

TABLE III

Weighted Mean Scores Per Fitness Construct

Fitness Construct	W. Mean	Result
Improved Physical Activity	4.3	Strong ↑
Overall Fitness Improvement	4.2	Strong ↑
Stress Reduction	3.9	Positive ↑
Device Reliability	4.1	Strong ↑

Motivational Support	4.2	Strong ↑
User Satisfaction	4.1	Strong ↑
Composite Mean	4.2	Strong ↑

B. Statistical Interpretation and Limitations.

The weighted average of 4.2 (SD 0.42 across constructs) is significantly higher than the neutral middle of 3.0, and this gives a strong descriptive support to H 1. Weighted mean analysis, however, is a descriptive method and cannot be used to formally test a hypothesis of inferential nature. This should be complemented by future research with a one-sample t-test (comparing the sample mean with the hypothesized, neutral, value of 3.0) or with a Wilcoxon signed-rank test (the correct test when the Likert data are not normally distributed) to derive formal p-values and confidence intervals. Descriptive evidence weight, however, heavily weighs against H 0.

VI. DISCUSSION

The overall results obtained in this study are in line with the literature that was reviewed. The findings regarding high rates of user satisfaction and perceived effectiveness are in agreement with the past systematic reviews that found the effectiveness of fitness trackers in promoting physical activity in different groups [3][5].

A. Technological and Behavioral Synergy.

The effectiveness of the fitness tracker is explained by the positive contact between the technological potential and behavioral psychological principles. The devices reflect a number of underlying motivation principles (self-monitoring, instant feedback, goal-setting and goal-gradient effect) in a convenient consumer technology. This architecture is in line with the theoretical frameworks like Social Cognitive Theory that focuses on self-efficacy and observational learning and Self- Determination Theory that focuses on the importance of autonomy, competence and relatedness in the sustenance of motivation [3][5].

The role of goal-setting as a predictor of long-term adherence to physical activity is well-established, as the percentage of users (68 percent) who had certain fitness objectives and tracked their progress is high. The 52-percent of the respondents that changed their eating habits illustrates that fitness trackers initiate more than exercise-based changes to lifestyle by a wider body composition outcome that Li et al. have reported [6]. These secondary benefits of behavior boost the total health worth of wearables than would be implied based on activity measures alone.

B. Limitations and Future Directions.

There are a number of significant shortcomings that should be noted. To start with, the accuracy of the measurements is still an issue, especially in estimating energy expenditure and in the measurement of the heart rate during high-intensity exercises [9]. The next generation devices ought to incorporate multimodal biosensor arrays and be subject to stringent clinical tests against the gold-standard techniques of indirect calorimetry and electrocardiography.

Second, although 71% of the respondent used the devices after three months, this research is unable to describe long-term engagement patterns. It requires longitudinal research with the duration of 12 months or longer to establish the trends of device abandonment and to define whether motivational benefits are maintained during a long period of time. Third, it is important to note that convenience sampling restricts the ability to generalize survey results; future studies must be representative of more clustered groups of people such as sedentary and chronic conditions. Fourth, data privacy and security must be a topic of higher regulations and design due to the increased sensitivity of the physiological data that was gathered by fitness trackers [10].

C. Clinical and Public Health Implications.

The specified efficacy of fitness trackers has significant effects on clinical practices. Wearable technology can be integrated into the patient care management practice in conditions like obesity, type 2 diabetes and cardiovascular disease particularly in adherence to prescribed exercise routines between doctor appointments by the cardiology, endocrinology and rehabilitation medicine practitioners. Ability to provide clinicians with objective and longitudinal patient activity data should play a huge role in the quality of treatment decisions made.

The population level might find the use of aggregated and de-identified data collected by fitness trackers beneficial to aid the

public health surveillance, enable real-time tracking of how the community exercises, and make the serious evaluation of the community health intervention. Urban planners and policymakers can use such types of anonymized datasets to make informed built-environment design decisions that promote active lifestyles, such as pedestrian infrastructure, location of parks or transportation planning.

VII. CONCLUSION

Along with the original empirical survey research, this review is a significant piece of evidence that wearable fitness trackers are useful in encouraging physical activity, behavioral change, and subjective health outcomes. Some of the important findings include the rate of reported activity improvement of 84, overall fitness improvement of 90 and the composite weighted mean of

4.2 out of 5.0, which all aligned to the alternative hypothesis.

The principles of behavioral psychology applied in the wearable technology are a strong paradigm against sedentary lifestyles. Accuracy of measurement, long-term involvement, and sampling representativeness are also the spheres that are actively discussed by the researchers, clinicians, and device makers.

With the ongoing development of fitness tracking technology, which is becoming more advanced through the introduction of artificial intelligence, federated learning, and next-generation biosensors, the devices will have much greater roles in customized health, preventive health, and health surveillance of the population. Future research is important because of the effectiveness of longitudinal studies of effectiveness, inferential validation of statistical studies and cross-cultural applicability studies and development of ethical frameworks that will regulate the gathering and utilisation of health data and information.

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A study on the consumer preference towards purchase of Indian and Foreign brands in the automobile industry

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Abstract

The objective of the research paper “A study on the consumer preference towards the purchase of Indian and Foreign brands in the automobile industry” focuses on the consumers preference when given the opportunity to purchase an automobile between Indian makes such as TATA MOTORS & MAHINDRA and Foreign companies like VOLKSWAGEN & SKODA. Day by day automobile industries earn a remarkable profit in India it may be due to the increase in disposable income not only in the urban area but also in the rural area. It shows that product meets the consumer need and the entire financial institute provides the finance. Further competition is heating up in the sector with a host of new foreign players coming in like Volkswagen, Audi, BMW, Jaguar and Porsche. The foreign companies are aggressively expanding its venture and presence in the Indian markets giving Indian automobile companies a tough competition. One factor that could help the companies in the marketing of their product is giving the best fuel efficiency along with top features at an affordable rate. The present study makes an attempt to answer some the consumers preference and how consumers visualizes and approaches the different brands.

Keywords: Consumer Preference; Indian Automobile Brands; Foreign Automobile Brands ; Brand Perception ; Consumer Buying Behaviour ; Automobile Market in India ; Brand Loyalty ; Product Features and Fuel Efficiency

1. Introduction

The concept of automobiles originated long before World War I, when inventors in different parts of the world began experimenting with motorized transportation. During the mid-nineteenth century, the idea of a “horseless carriage” started to emerge as an alternative to traditional horse-drawn vehicles. Early attempts at mechanized transport were largely limited

to wealthy individuals and government officials who could afford these innovative machines. Among the pioneers of automobile development, **Karl Benz** played a crucial role in transforming the idea of motorized transport into a practical invention, which eventually laid the foundation for the modern automobile industry

The evolution of vehicles began in the late nineteenth century when early innovators such as **Nicolas Joseph Cugnot** experimented with steam-powered vehicles. Later, Karl Benz significantly improved this technology by introducing petrol-powered engines. Initially, the production of automobiles was highly labor-intensive and expensive, which made vehicles accessible only to the affluent section of society. Manufacturing each automobile required a long production period, often forcing buyers to wait several months before receiving their vehicles. A major turning point in automobile production occurred when **Henry Ford** introduced the concept of assembly-line manufacturing in the early twentieth century. In 1896, Ford conducted the first test drive of a small four-wheeled vehicle, and by 1906 he had implemented an efficient production system that dramatically reduced manufacturing time and costs. The introduction of the conveyor belt allowed workers to remain at fixed stations while the vehicle components moved along the assembly line. By 1913, the complete assembly process could be completed within approximately ninety minutes, making automobiles more affordable and accessible to the middle class. Technological advancements continued in the following decades. In the 1960s, the development of robotic equipment such as die-casting machines further improved manufacturing efficiency and production capacity, although early automation still faced challenges related to precision and consistency. In India, the automobile industry developed gradually. During the colonial period, automobiles were largely imported and used mainly by wealthy Indians and British officials. After independence, India established its first automobile manufacturing facilities in regions such as Chennai and West Bengal. For many years, models such as the **Ambassador** and **Fiat Padmini** dominated the Indian market. A significant transformation occurred in 1983 with the establishment of **Maruti Udyog Limited**, which introduced modern, fuel-efficient cars that appealed to Indian consumers. Later, economic liberalization in 1991 opened the Indian automobile sector to multinational companies, including Hyundai, Toyota, and Suzuki. This increased competition expanded consumer choices and significantly accelerated the growth of the Indian automobile industry. By the year 2000, several major automobile manufacturers were actively in the Indian market, marking a new era of development and innovation.

2. Literature Review

India has one of the biggest car markets in the world, with a wide variety of local and international brands to suit various customer demographics. Brand image, price sensitivity, product characteristics, safety standards, after-sales service, and the manufacturer's country of origin are some of the elements that affect consumer preference in this industry. Numerous studies have been carried out over the years to look at consumer preferences and behavioral patterns when choosing cars, especially in developing nations like India. In their work on marketing management, Kotler and Keller (2016) emphasized that both emotional and rational variables influence consumer decision-making. When it comes to cars, emotional criteria include design, national pride, and brand prestige, whereas rational factors include safety, mileage, and resale value. The Indian consumer's decision between native and foreign-made

automobiles are greatly influenced by these factors. While foreign brands are linked to greater technology and luxurious appeal, Indian brands are frequently seen as affordable and appropriate for local road conditions.

- Saxena (2010) highlighted how cultural and economic variables shape Indian consumers' tastes. Value consciousness is particularly well-known among Indian consumers, who frequently look for a balance between cost and functionality. Due to their affordability and usefulness, Indian companies like Maruti Suzuki and Tata Motors are becoming more and more popular. However, because of their sophisticated features and symbolic status, consumers in higher income brackets are more likely to favor international brands like Audi, BMW, and Honda.
- Research on country-of-origin effects indicates that a vehicle's place of manufacture can have a big impact on how customers view it. German automobiles are frequently regarded as representations of performance and luxury, whereas Japanese automobiles are linked to dependability and fuel economy, according to ResearchGate (2022). German companies cater to specialized luxury markets, while Japanese products are typically preferred by Indian consumers due to their long-term value. Due to improvements in technology, design, and after-sales services, the perception of Indian-made automobiles has constantly improved, reducing the disparity between local and foreign goods.
- According to reports from the Society of Indian Automobile Manufacturers (SIAM, 2023), international brands—especially Japanese and Korean—have established a strong presence in both the entry-level and premium markets, even though domestic brands still account for the majority of sales volume. India's expanding urban middle class is becoming more receptive to foreign brands, especially those that provide both fashion and functionality at affordable prices. However, most people still choose Indian products because of their cost and ease of access to services.
- Verlegh and Steenkamp's (1999) research highlights how perceived quality and value are influenced by COO. Actual technical parameters may be overshadowed by this perception. Foreign brands take advantage of significant brand equity, whereas Indian brands dominate the mass market because of price competitiveness. But as Indian businesses enhance their features, safety, and design to effectively compete with their international rivals, the gap is closing.
- According to a report by McKinsey (2023), mileage remains a top concern among Indian buyers, especially in price-sensitive segments. Japanese brands like Honda are known for their efficiency and low maintenance, while German brands are preferred for safety and engineering excellence. Indian manufacturers are increasingly incorporating modern features such as touchscreen infotainment, connected tech, and high safety ratings, making them competitive in both urban and rural markets. Consumer expectations continue to evolve with lifestyle and technological trends.
- Emotional branding and brand identification might take precedence over logical comparisons, according to Saxena (2010). This is true in premium and mid-range categories, where brand story, endorsements, and perceived legacy impact buying decisions greatly, especially in tier-1 and tier-2 cities.
- Instant access to vehicle reviews, comparisons, and user comments is made possible by

websites like CarDekho, YouTube, and auto blogs. More than 65% of Indian automobile purchasers start their search online, according to Statista (2023). Digital media has a greater influence on younger consumers than traditional advertising, particularly those between the ages of 24 and 36. Influencer reviews, social media marketing, and virtual test drives are now essential components of brand discovery. According to existing research, firms that have a high level of digital interaction are more likely to appeal to the changing tastes of tech-savvy Indian consumers.

3. Problem Statement and Research Objectives

Aim refers to the overall purpose whereas the objective refers to a detailed explanation and a specific area. The research work on the topic “A study on the consumer preference towards the purchase of Indian and Foreign brands in the automobile industry” has the following aims and objectives.

- 1) To analyze the effectiveness of a foreign brand impacting the domestic automobile company.
- 2) To checklist the factors that influences the purchasing of a particular brand.
- 3) To understand the various socioeconomic factors responsible for the purchase of vehicles.
- 4) To draw a conclusion as to how a foreign company is affecting the Indian companies.

Research Methodology

This research paper is based on A study on the consumer preference between foreign makes verses the Indian makes with special reference to Volkswagen (German make) and TATA (Indian Made)

Area of Research- Kolkata Region

Primary Data- Collected through questionnaire

Secondary Data – Literature Review

Data Collection Method- Survey Method

Sample Size- 100 Respondents

Research Design- It serves as the outline for consistently coordinating different study components to address the research issue successfully. The chosen research plan is an Exploratory Research Plan strategy. Through the collection and investigation of auxiliary information, like writing surveys and important studies, a foundational understanding of the study is built up. Once the auxiliary information has been looked into, the require for primary information becomes clear to further address the study objectives. To assemble primary data, a organized questionnaire is made. The survey is carefully planned to include a extend of properties significant to the inquire about research objectives.

TOOLS FOR METHODOLOGY

Tools for methodology refers to the specific instruments, techniques, and procedures used to implement a research methodology or approach. These tools are the methods and techniques employed to gather, analyze, and interpret data within a defined research framework. They are the operational elements of a methodology, providing the means to achieve research objectives. The tools used for conducting the research project effectively and efficiently are as follows:

- 1) **Sample Profiling-** Sample profiling includes collecting and analyzing information of a subset of a bigger group to pick up bits of knowledge into the characteristics and behaviors of the entire bunch. This procedure is regularly utilized in market research, where a sample of buyers is over-viewed to understand their inclinations, acquiring habits, and demographics.
- 2) **Pie Charts-** A pie chart is a sort of chart that records information in a circular way that is further separated into segments for that represents the information of that specific portion out of the entire portion. Each of these divisions or cuts indicates the proportionate portion of the entire. Pie charts, moreover commonly known as pie graphs offer assistance in translating and indicating the information more clearly. It is moreover utilized to compare the given information.

4 Results and Analysis

1. Demographic Profile of Respondents (n = 100)

The survey captured responses from 100 participants across four demographic variables. The sample was predominantly male (54%), with the largest age cohorts being 18–24 and 24–36 years (29% each). Business owners formed the largest occupational group (36%), and income was distributed fairly uniformly across the ₹4L–₹16L range.

Table 1: Demographic Profile of Survey Respondents

Demographic Variable	Category	n	Percentage (%)
Gender	Male	54	54.0%
	Female / Prefer not to say	46	45.0% / 1.0%
Age Group	18–24 & 24–36 (each)	29	29.0% each
	37–45 / Above 45	17 / 25	17.0% / 25.0%

Occupation	Business / Self-employed	36 / 25	36.0% / 25.0%
	Student / Professional	20 / 19	20.0% / 19.0%
Annual Income (₹)	4L–8L / 12L–16L	28 / 28	28.0% each
	8L–12L / Above 16L	26 / 18	26.0% / 18.0%

Source: Primary survey data. Categories condensed for brevity.

2. Consumer Preferences and Influencing Factors

Indian-made products led product origin preference (39%), followed by German (33%) and Japanese (28%) products — indicating a competitive three-way landscape. Dealerships and home test drives were equally favored as purchase modes (39% each), while 76% of respondents acknowledged physical evidence as influential in their purchase decisions (40% moderately, 36% highly).

Table 2: Distribution of Consumer Preferences and Purchase Behavior

Variable	Category	n	Percentage (%)
Product Preference	Indian Made ★	39	39.0%
	German Made	33	33.0%
	Japan Made	28	28.0%
Mode of Purchase	Dealership / Home Test Drive	39 each	39.0% each
	Websites	22	22.0%
Physical Evidence	Moderately Influential	40	40.0%
	Highly Influential	36	36.0%
	No Influence	24	24.0%

★ Most preferred product origin. Source: Primary survey data.

3. Chi-Square Analysis: Consumer Preference × Associating Variables

Chi-square tests were performed to assess whether product origin preference varies by demographic or behavioral factors ($\alpha = 0.05$). Three variables showed statistically significant associations; three did not.

Table 3: Chi-Square Results — Consumer Preference

Preference ×	χ^2	Df	p-value	Result
Income	14.23	6	0.027	✓ Significant
Physical Evidence	13.12	4	0.011	✓ Significant
Product Features	13.28	6	0.039	✓ Significant
Gender	8.94	4	0.063	~ Marginally Sig.*
Occupation	7.50	6	0.277	✗ Not Significant
Mode of Purchase	6.14	4	0.189	✗ Not Significant

* Marginally significant at 0.10 level. ✓ Significant ($p < 0.05$) ✓✓ Highly Significant ($p < 0.01$) ✗ Not Significant

- Income ($p = 0.027$): Higher-income groups orient toward premium foreign brands; lower-income groups favor Indian-made products — consistent with aspiration-based consumption theory.

Physical Evidence ($p = 0.011$): Tangible cues (showroom aesthetics, product finish) significantly shape preference, validating the 7Ps physical evidence dimension.

Product Features ($p = 0.039$): Technology, fuel efficiency, and safety attributes are significant preference drivers, underscoring the importance of feature-led marketing.

Gender ($p = 0.063$): Borderline result — not significant at 5% level but marginally so at 10%. A larger sample is recommended for confirmation.

Occupation ($p = 0.277$) & Mode of Purchase ($p = 0.189$): Neither variable significantly predicts product origin preference.

4. Chi-Square Analysis: Physical Evidence × Demographic Variables

A second chi-square analysis examined whether perceived influence of physical evidence varies across demographic segments. Three of four demographics showed highly significant associations ($p < 0.01$).

Table 4: Chi-Square Results — Physical Evidence and Demographics

Physical Evidence ×	χ^2	Df	p-value	Result
Age	19.13	6	0.004	✓✓ Highly Significant
Income	18.77	6	0.005	✓✓ Highly Significant
Occupation	18.39	6	0.005	✓✓ Highly Significant
Gender	7.60	4	0.107	✗ Not Significant

Source: Primary survey data. All tests conducted at $\alpha = 0.05$.

- Age ($p = 0.004$ — Highly Significant): Younger respondents (18–36 yrs) show greatest sensitivity to physical evidence, likely due to heightened aesthetic expectations shaped by digital media.
- Income ($p = 0.005$ — Highly Significant): Higher-income consumers are significantly more attuned to services cape and experiential cues.
- Occupation ($p = 0.005$ — Highly Significant): Professional background moderates how consumers evaluate tangible service indicators.
- Gender ($p = 0.107$ — Not Significant): Physical evidence sensitivity is broadly consistent across genders; gender-differentiated strategies are not statistically warranted.
- Indian-made products hold the strongest consumer preference (39%), demonstrating rising domestic brand equity, while German and Japanese brands remain strong competitors.
- Income is the most consistent demographic predictor — significantly shaping both product origin preference ($p = 0.027$) and sensitivity to physical evidence ($p = 0.005$).
- Physical evidence is a powerful marketing lever: 76% of respondents acknowledged its influence, with highly significant associations across age, income, and occupation.
- Product features independently drive preference ($p = 0.039$), confirming that attribute-led communication strategies are central to automobile marketing.
- Gender has limited predictive power — neither product preference nor physical evidence sensitivity differed significantly across genders.
- Purchase mode (dealership vs. home test drive vs. online) does not significantly predict product preference, suggesting omni-channel parity in consumer orientation.

Results at a Glance

Test		Key Significant Findings ($p < 0.05$)	Not Significant
Preference	×	Income ($p=0.027$) Physical Evidence ($p=0.011$) Product Features ($p=0.039$)	Gender ($p=0.063^*$) Occupation ($p=0.277$) Purchase Mode ($p=0.189$)
Physical Evidence	×	Age ($p=0.004^{**}$) Income ($p=0.005^{**}$) Occupation ($p=0.005^{**}$)	Gender ($p=0.107$)

* Marginally significant at 0.10 level ** Highly significant ($p < 0.01$)

A structured questionnaire was used to gather information from more than 100 respondents for our Primary Survey (2025), which provided unique insights into consumer preferences, the response sheet is in appendix.

5 Findings and Discussion

According to the research project's findings, Indian customers have a somewhat balanced preference for car brands, with a little preference for Japanese-made automobiles. German brands came up at 30%, Indian brands at 34%, and Japanese products at 36% of consumer preference. According to this statistics, international brands, especially Japanese ones, continue to have a little advantage in consumer image even if Indian automakers are becoming more and more competitive. Perceived dependability, fuel economy, and after-sales care—all of which Japanese automakers are renowned for providing reliability it may have an impact on the preference.

The fact that Indian car brands now account for 34% of consumer preference shows how consumers are beginning to trust and appreciate domestically made automobiles. Indian manufacturers are effectively meeting consumer demands like cost, service accessibility, and innovations catered to local conditions, as seen by their fierce competition with international companies. Customers who care about the environment may also be responding favorable to the Indian auto industry's growing emphasis on sustainable practices and electric mobility. Furthermore, the favorable perception of Indian brands in recent years may have been influenced by nationalistic purchasing patterns and support for "Make in India" campaigns

German brands, which are typically linked to performance, luxury, and superior engineering, managed to gain 30% of the preference share. Although this indicates a high level of brand equity, it also raises the possibility that these cars might be more appealing to luxury or specialized markets than to the general public. Their somewhat lower preference rate may be

attributed to higher prices, upkeep expenses, and restricted reach in rural or semi-urban areas. German automakers are still seen as aspirational brands,

nevertheless, and are frequently chosen by people who value performance, design, and global brand recognition more than price.

The analysis concludes by showing a competitive environment in which consumer preferences are evenly dispersed and no brand origin predominates. Although Japanese firms now have a tiny advantage, the small margin shows that both German and Indian manufacturers have a chance to increase their market share. Value-added services, brand impression, and economic variables all seem to influence consumer preferences. In the future, automakers that can successfully blend affordability, innovation, and robust customer involvement.

6 Conclusion

The following key conclusions can be derived:

1. Balanced Consumer Preference

The study shows that consumer preference is fairly balanced among Indian, Japanese, and German automobile brands, Japanese brands 36% preference, Indian brands 34% preference, German brands: 30% preference. This indicates that no single origin dominates the market, and consumers consider multiple factors before choosing a brand.

2. Slight Advantage for Japanese Brands

Japanese automobile brands hold a slight edge in consumer perception. This preference is largely due to factors such as: Reliability, Fuel efficiency and Strong after-sales service. These attributes have helped Japanese brands maintain a strong reputation among buyers.

3. Growing Trust in Indian Automobile Brands

Indian brands are becoming increasingly competitive, capturing 34% of consumer preference. This suggests Rising consumer trust in domestic manufacturers, Strong appeal due to affordability and service accessibility, Products designed specifically for Indian road and usage conditions, Government initiatives such as “Make in India” and the shift toward electric mobility and sustainability may also be improving the perception of Indian brands.

4. German Brands Maintain an Aspirational Image

German brands still hold strong brand equity, especially in Performance, Luxury, Engineering quality

However, their preference share is slightly lower because Higher price ranges, Higher maintenance costs, and limited accessibility for the mass market. Thus, they tend to attract premium or niche consumers rather than the broader market.

5. Purchase Decisions Are Influenced by Multiple Factors

Consumer choices are not based only on brand origin. Other important factors include Fuel efficiency, Features and technology, Reliability, Brand image and status, Price and affordability

6. Competitive Future Market

The automobile market is highly competitive, and the difference in consumer preference percentages is small. This suggests that companies that successfully combine Affordability, Innovation, Customer engagement, and Strong brand perception.

7. Suggestions and Implications

A study on the consumer preference between Indian and Foreign made car companies has greatly affected the choices of the consumers. Firstly, the sample estimate and representation may not precisely reflect different client base, leading to discoveries that are not completely generalize. Additionally, centering on a particular geographic region can restrain the applicability of the results to other markets. The time frame of the study is moreover vital, as social media patterns and customer behaviors alter quickly; a short-term study may not capture these advancing elements. Further constraints include: -

- **Diversity and Sample Size:** This survey's possible lack of variety and sample size is one of its main drawbacks. The results might not accurately represent the preferences of the Indian community as a whole if the responses were gathered from a small demographic or geographic area. For example, there may be substantial differences in brand exposure, awareness, and income between urban and rural consumers. Furthermore, the results may be biased towards some market segments over others because the current questionnaire does not specify the number of respondents or whether attempts were made to guarantee a balanced representation of age groups, vocations, and income levels.
- **Product-Specific Prejudice and Brand Selection:** The brand examples given in the poll represent yet another drawback. For example, only a few brands—Audi, BMW, Volkswagen, Maruti, and Honda—are mentioned in Q6 and Q7, which may be biased. Important rivals that are major players in the Indian market, such as Hyundai, Tata, Toyota, Kia, and others, are left off of this list. The options offered may thereby reduce the respondent's range of options, making it more difficult for them to articulate their actual brand preference.
- **Subjectivity and Interpretation of Questions:** Subjective questions like "What attracts you to a particular make?" and "Does the gender of the salesperson influence your interest?" are included in the survey and may be perceived differently by respondents. These questions lack context if there are no follow-up enquiries to find out why respondents feel a particular way. Furthermore, questions may be interpreted differently due to cultural and personal prejudices, particularly when it comes to gender, status, or

dependability. The survey's capacity to offer a comprehensive understanding is further limited by the absence of open-ended questions or qualitative options, which render it more of a broad summary than a detailed examination.

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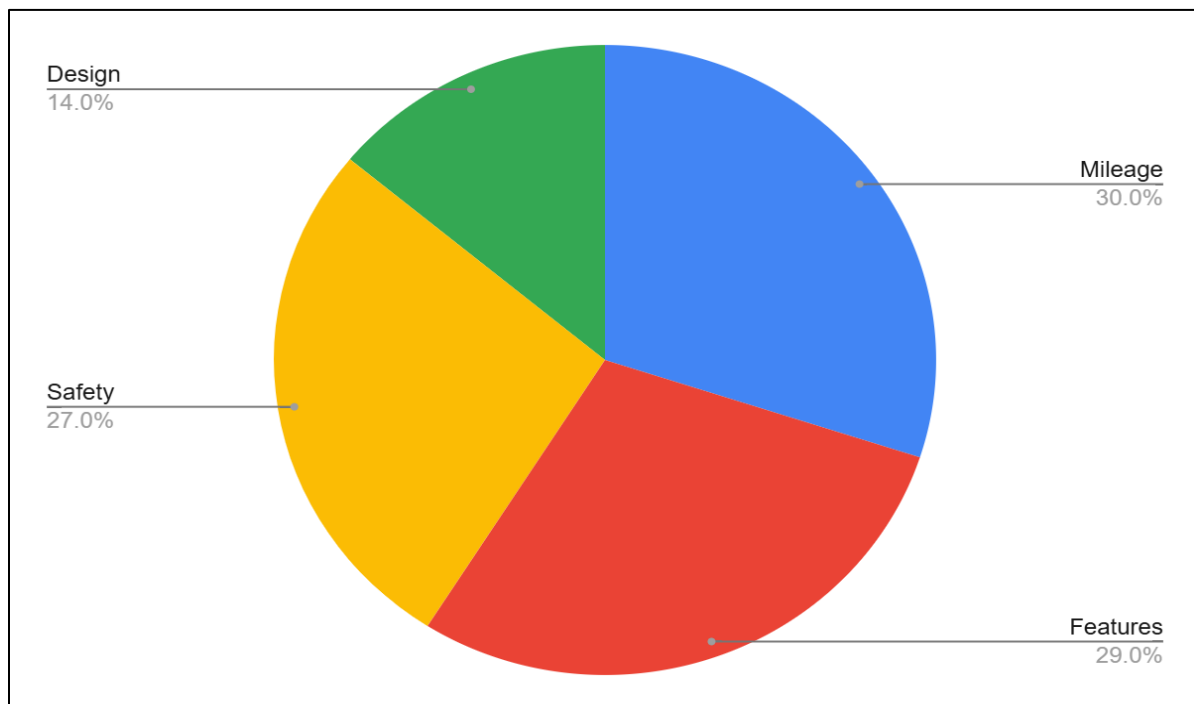
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6 Appendix

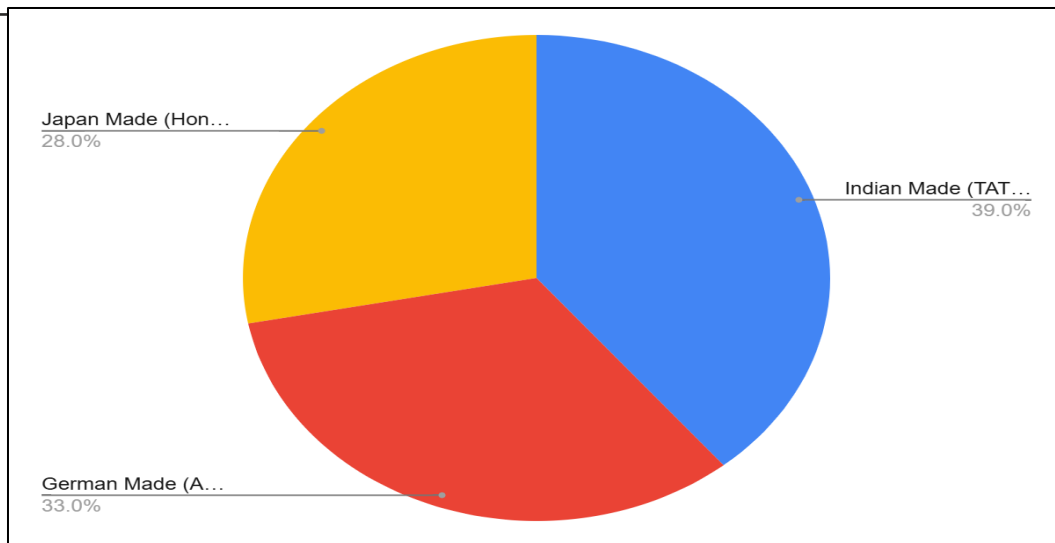
Analysis

Q 1 to 4(Demographics Details)

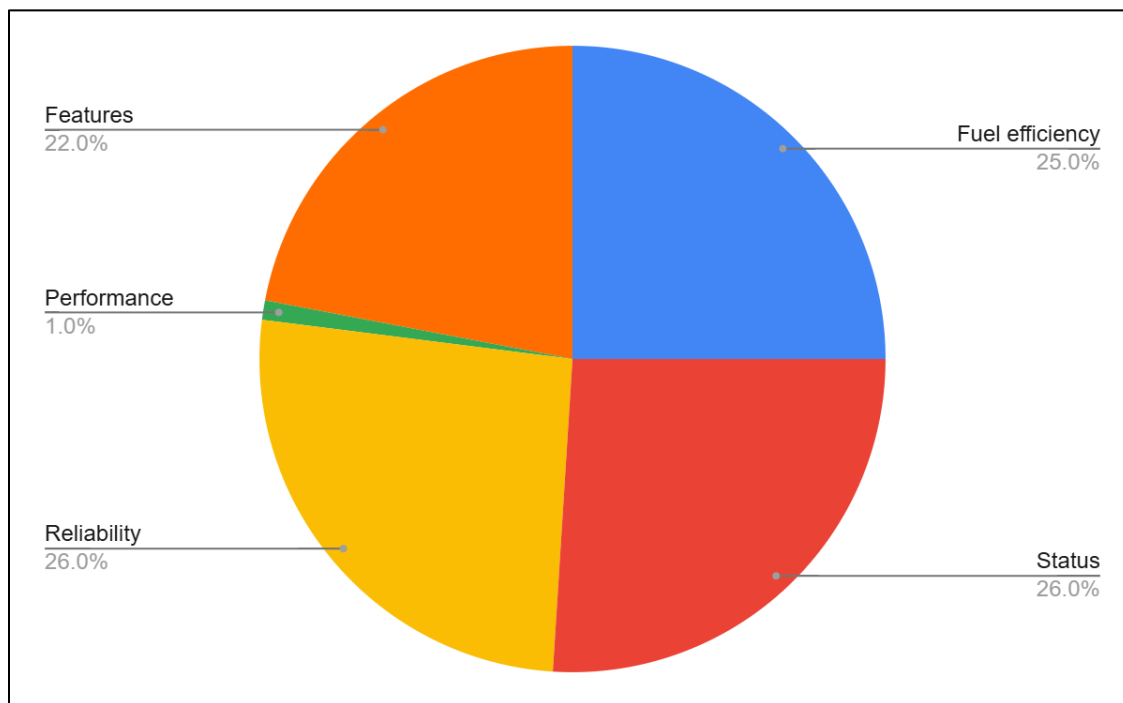
Q5 What features do you see while purchasing a car



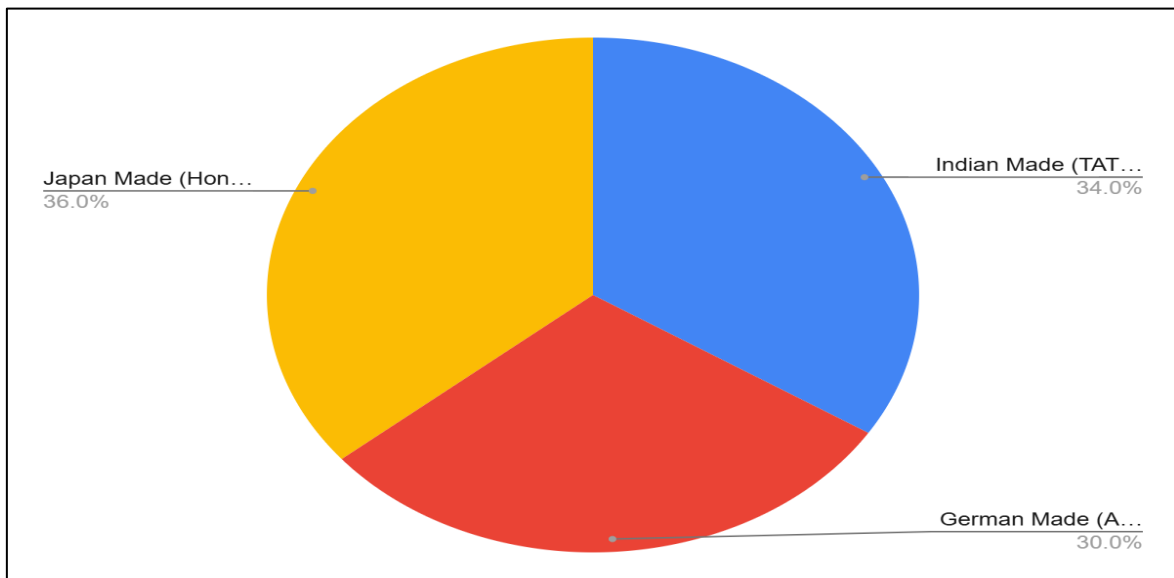
Q6 Which manufacturing will you prefer ?



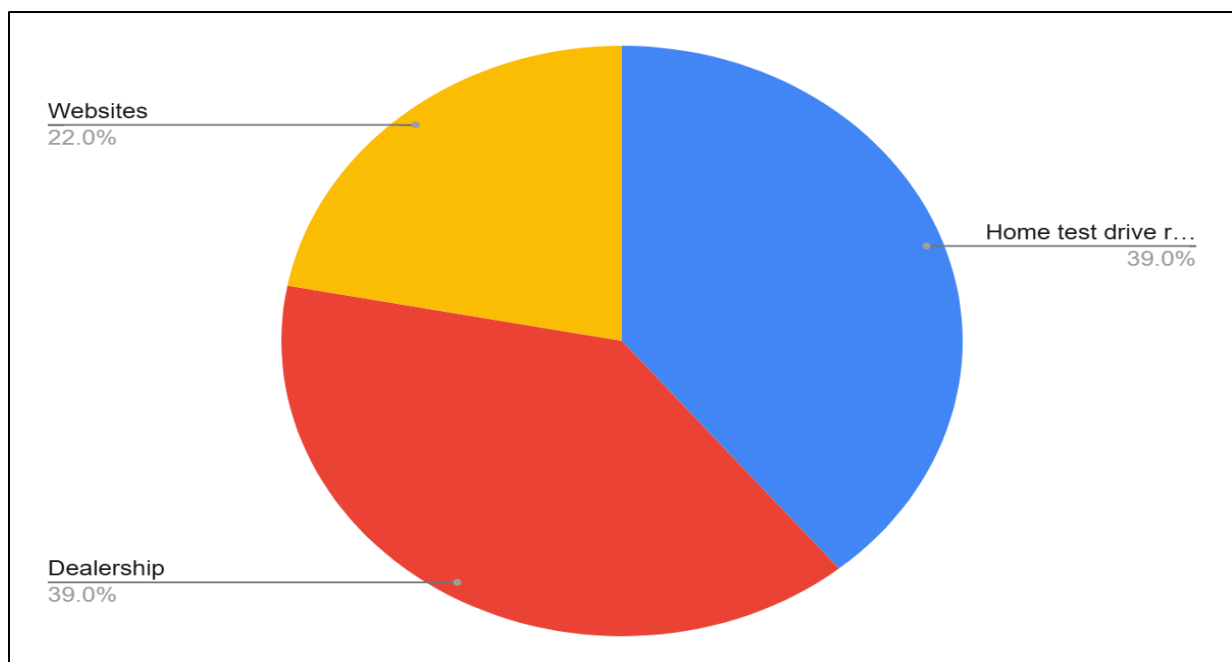
Q.7 What attracts you to a particular brand ?



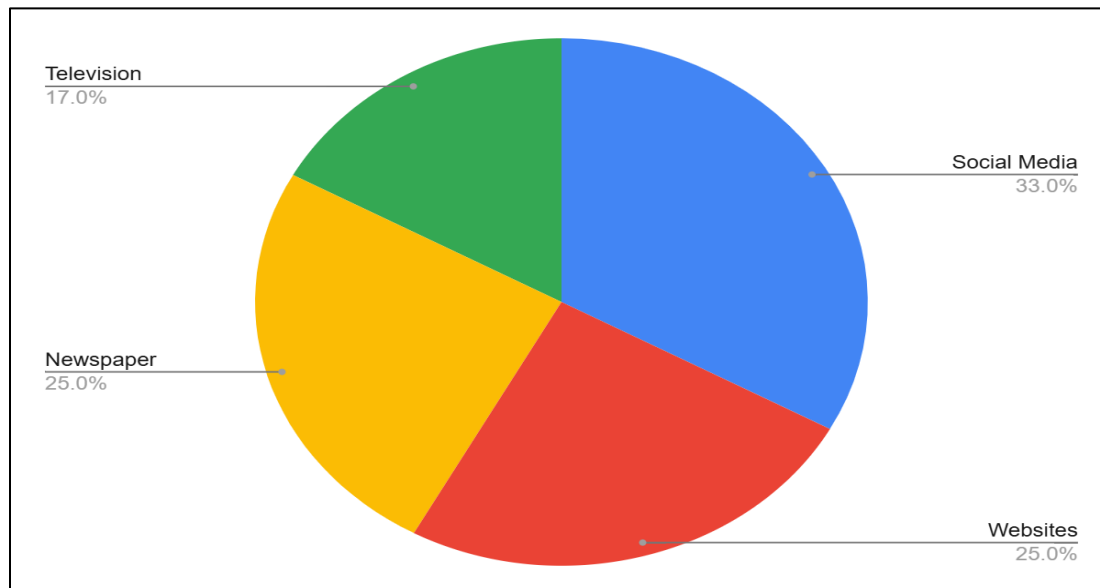
Q.8 In a price range between 10 lacks to 15 lacks which company ill you more likely to chose ?



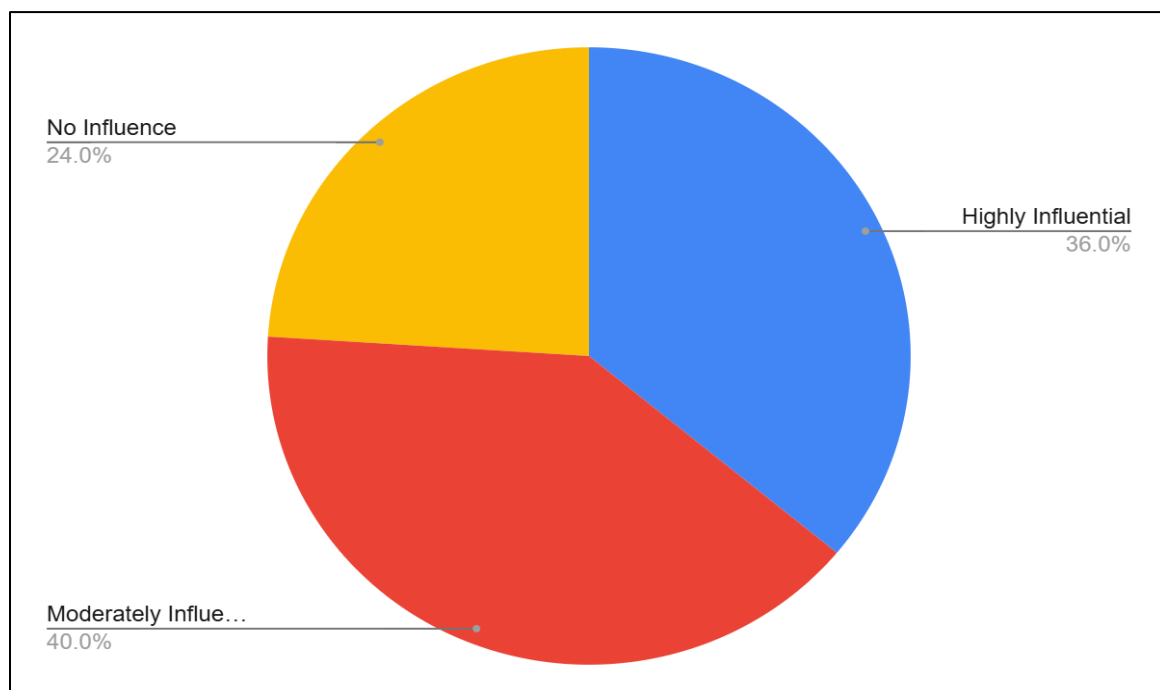
Q.9 What mode do you prefer while buying cars ?



Q.10 How do you usually find about the new car model launch ?



Q.11 How do you usually find about the new car model launch ?



Utilization of ICT (Information and Communication Technology) Tools in Higher Education Pedagogy with reference to Colleges of Jabalpur city

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1. Abstract

The integration of Information and Communication Technology (ICT) into pedagogy has transformed teaching and learning across higher education institutions. This study aims to analyze the demographic characteristics of faculty members and examine how these characteristics relate to the utilization of ICT tools in teaching. Using data collected from 102 faculty members across disciplines such as Management, Engineering, Humanities, and Social Sciences, the research tests the hypothesis that age significantly influences ICT tool usage in pedagogy. Results from Chi-square analysis indicate no significant association between age and discipline, suggesting that ICT usage is broadly adopted across demographics. These findings have implications for digital faculty development programs and policy formulation.

Keywords: Information and Communication Technology (ICT), higher education pedagogy, technology adoption, Faculty Adoption, Technology Integration.

2. Introduction

Higher education is experiencing a profound digital transformation, driven by rapid advancements in Information and Communication Technology (ICT). These technologies have moved beyond their earlier role as supplementary teaching aids and have become integral to contemporary pedagogical practices. Tools such as Learning Management Systems (LMS), virtual classrooms, online assessments, interactive simulations, video lectures, and collaborative platforms now shape the way knowledge is delivered, accessed, and evaluated. The integration of ICT has enhanced flexibility, accessibility, learner engagement, and opportunities for personalized learning, thereby redefining the traditional teaching–learning paradigm in higher education institutions.

Despite the widespread availability of digital tools, their adoption and effective use vary significantly among faculty members. Factors such as age, gender, academic qualification, teaching experience, and disciplinary background influence faculty members' attitudes toward technology and their frequency of ICT utilization. While some educators actively integrate advanced digital tools to enhance instructional effectiveness, others rely on basic applications or exhibit resistance due to lack of training, institutional support, or perceived complexity. Understanding these variations is crucial, as faculty play a pivotal role in translating technological potential into meaningful learning outcomes.

This study aims to examine the patterns of ICT tool utilization among faculty members in higher education institutions, with specific emphasis on demographic characteristics and disciplinary affiliations. By analyzing how different groups of educators adopt and use ICT tools, the study seeks to identify gaps, challenges, and best practices in technology integration. The findings are expected to provide valuable insights for administrators, educators, and policymakers in designing targeted professional development programs, improving infrastructure, and formulating evidence-based policies that promote effective and inclusive digital teaching practices in higher education.

3. Objectives of the Study

- To understand the demographic profile of faculty in higher education institutions.
- To analyze faculty members' utilization of ICT tools in teaching.
- To determine whether there is any significant association between age group and discipline or ICT tool usage.
- To provide insights for faculty development and institutional planning in digital pedagogy.

4. Hypothesis Formulation

Null Hypothesis (H_0):

- There is no significant association between faculty age group and ICT tool utilization.

Alternative Hypothesis (H_1):

- There is a significant association between faculty age group and ICT tool utilization.

5. Research Methodology

Research Design

The present study adopts a **descriptive and analytical research design**. The descriptive approach is employed to examine the demographic profile of faculty members and the extent of ICT tool utilization in teaching practices, while the analytical approach is used to identify relationships between demographic variables and ICT usage patterns. This design enables a systematic understanding of both existing conditions and statistical associations among study variables.

Population of the Study

The population of the study comprises faculty members working in higher education institutions located in Jabalpur. Faculty members from diverse academic disciplines, including Management, Engineering, Humanities, and Social Sciences, were considered to ensure population coverage across fields.

Sample Size

A total of **102 valid responses** were collected and used for data analysis. This sample size was considered adequate to perform descriptive statistics and inferential analysis, including hypothesis testing, within the scope of the study.

Sampling Technique

The study employed **convenience sampling**, a non-probability sampling technique, due to accessibility and time constraints. Faculty members who were readily available and willing to participate were included in the sample. While convenience sampling limits wider applicability, it is commonly used in exploratory and institution-based studies where access to the entire population is restricted.

Data Collection Method

Primary data were collected using a **structured questionnaire** designed to capture faculty demographic information and the extent of ICT tool usage in pedagogy. The questionnaire consisted of closed-ended questions measured on nominal and ordinal scales. Data were collected through both online and offline modes to enhance response rates.

Variables of the Study

- **Independent Variables:** Demographic factors such as age, discipline, and teaching experience
- **Dependent Variable:** Utilization of ICT tools in teaching and learning processes

Statistical Tools and Techniques

The collected data were coded and analyzed using appropriate statistical software. **Descriptive statistics** such as frequency and percentage were used to summarize demographic characteristics. **Chi-square test** was applied to examine the association between demographic variables and ICT tool utilization. The level of significance was fixed at 5 percent.

Ethical Considerations

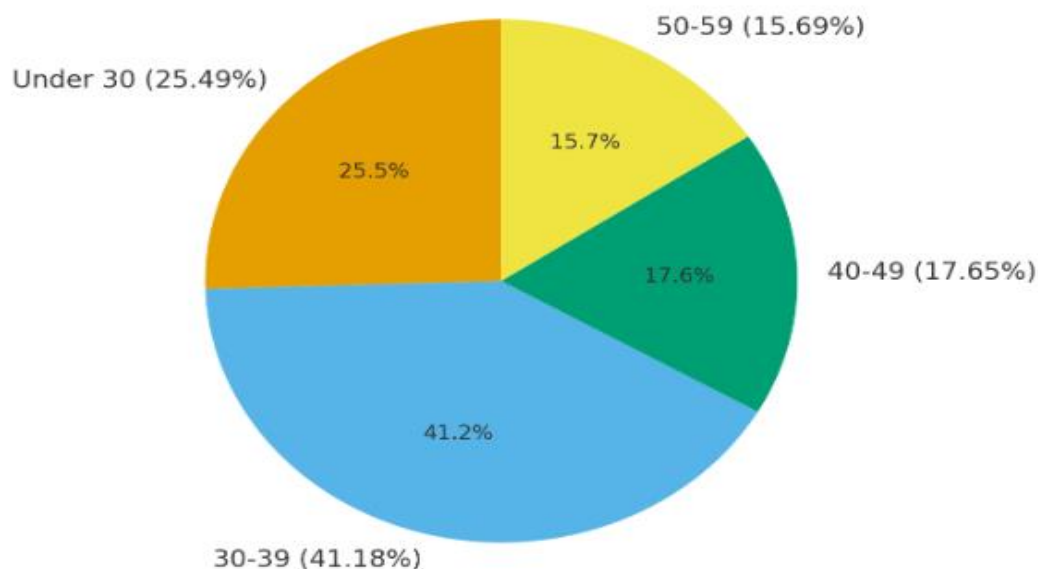
Participation in the study was voluntary, and respondents were informed about the purpose of the research. Confidentiality and anonymity of responses were maintained, and the data collected were used solely for academic research purposes.

6. DATA INTERPRETATION:

1. What is your age group?

Age group	Responses	Percentage
Under 30	26	25.49%
30-39	42	41.18%
40-49	18	17.65%
50-59	16	15.69%
Total	102	100%

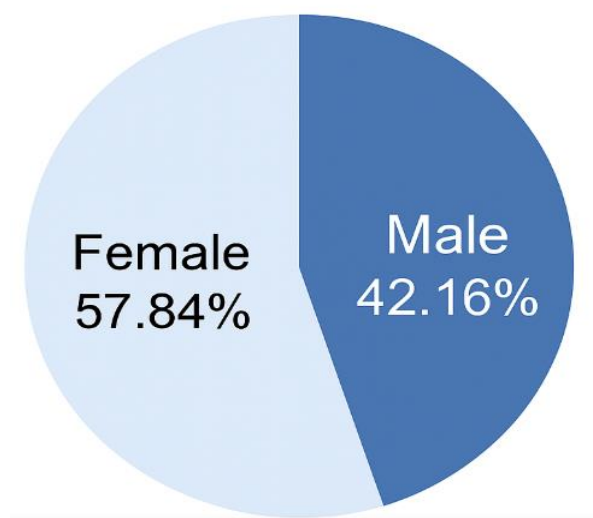
Age Group Distribution of Responses (Total = 102)



Data interpretation: Faculty who responded mostly that is 41.18% belongs to the age group between 30-39 years and least responses are from the age group between 50-59 years. ICT tool utilization varies with age. Younger faculty below 40 years show the highest adoption due to greater digital familiarity. Middle-aged faculty 40–49 years use ICT tools moderately, balancing traditional and modern methods. Senior faculty 50+ years show the least usage, mainly for basic tasks, indicating a need for more training and institutional support.

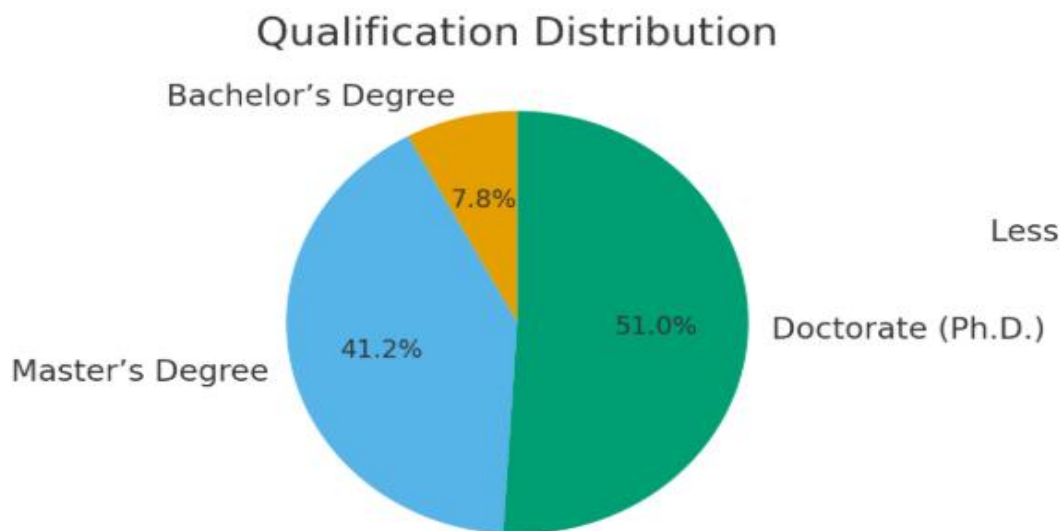
2. What is your Gender?

Gender	responses	Percentage
Female	59	57.84%
Male	43	42.16%
Total	102	100%



Data Interpretation: Out of the 102 respondents, **57.84% were female faculty** while **42.161% were male faculty**. This indicates that female participation is comparatively higher in the study. The greater representation of women reflects their significant role in higher education and suggests that ICT tool utilization patterns may be more influenced by female faculty perspectives

3. What is your highest academic qualification?

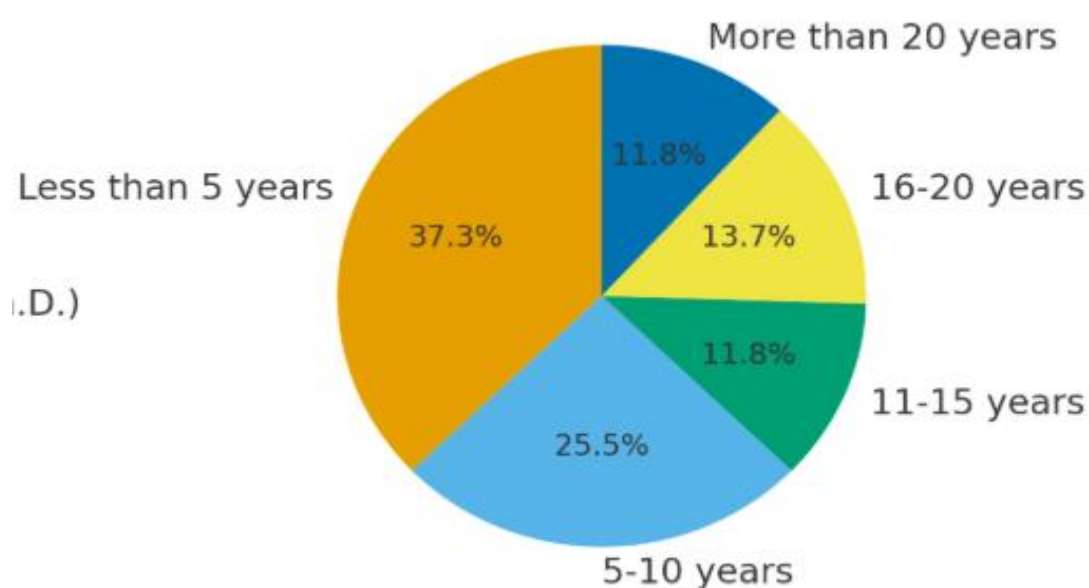


QUALIFICATION	RESPONSES	PERCENTAGE
Bachelor's degree	8	7.8%
Master's degree	42	41.2%
Doctorate(ph.d.)	52	51%
TOTAL	102	100%

Data Interpretation: The findings indicate that **higher qualification levels correlate with greater ICT tool utilization** in higher education pedagogy as 51%. This implies that doctoral and master's level faculty are playing a more significant role in driving digital transformation and modern teaching-learning practices.

4. How many years of Experience you have?

WORK EXPERIENCE	RESPONSES	PERCENTAGE
11-15 years	12	11.8%
16-20 years	14	13.7%
5-10 years	26	25.5%
Less than 5 years	38	37.3%
More than 20 years	10	11.8%
GRAND TOTAL	102	100%

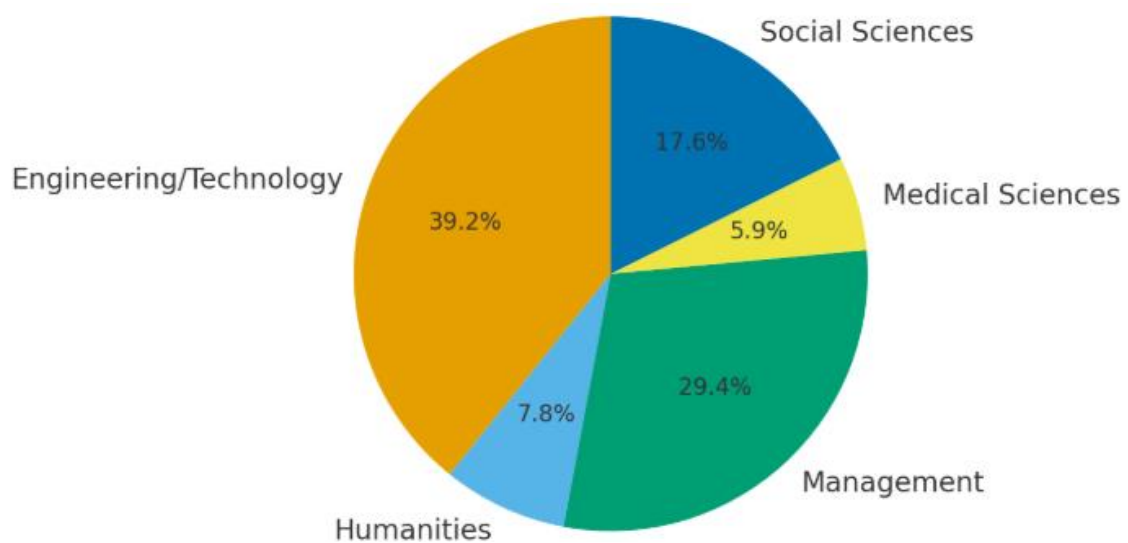


Data Interpretation: The results suggest that the majority of respondents are early to mid-career faculty members (64% with less than 10 years' experience). This reflects that ICT tool utilization in higher education is largely driven by younger faculty, who are generally more adaptable to digital learning technologies. Senior faculty members, though fewer in number, still contribute meaningfully, indicating diverse levels of experience shaping ICT adoption.

5. What is your primary field of teaching?

PRIMARY FIELD OF TEACHING	RESPONSES	PERCENTAGE
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Engineering/Technology	40	39.2
Humanities	8	7.8
Management	30	29.4
Medical Sciences	6	5.9
Social Sciences	18	17.6
Grand Total	102	100

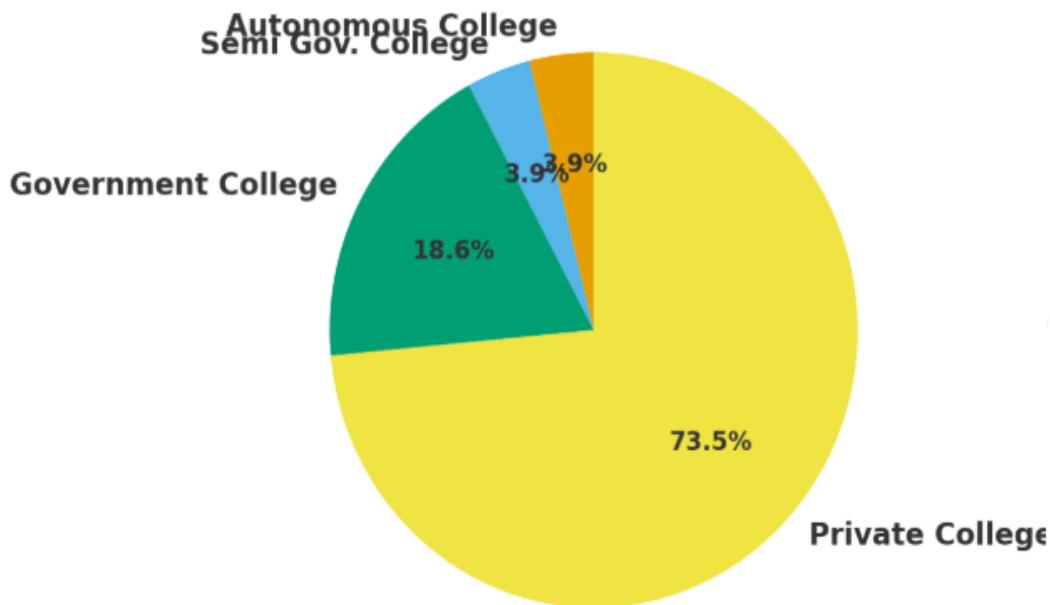


Data Interpretation: The study reveals that ICT tool utilization varies across disciplines. Faculty from **Engineering/Technology and Management**, who together form the majority, show the highest and most diverse use of ICT for simulations, practical learning, and interactive teaching. **Social Sciences and Humanities** reflect moderate to limited usage, focusing mainly on digital resources and research tools, while **Medical Sciences**, though less represented, apply ICT effectively in specialized areas like virtual labs and simulations. Overall, ICT adoption is discipline-driven, with technical and professional fields leading, and other disciplines integrating tools in more selective ways.

6. Where are you working?

WHERE ARE YOU WORKING?	RESPONSES	PERCENTAGE
Autonomus college	4	3.9%
Semi gov. College	4	3.9%

Government college	19	18.6%
Private college	75	73.5%
TOTAL	102	100%



Data Interpretation: The data shows that a majority of respondents (73.5%) are from private colleges, followed by government colleges (18.6%), with very few from autonomous and semi-government colleges (3.9% each). This distribution suggests that ICT tool utilization patterns in the study are likely shaped by private institutions, where greater flexibility, infrastructure investment, and competitiveness often drive wider adoption of digital tools in teaching. Government colleges, though fewer in number, also contribute meaningfully, while the smaller representation from autonomous and semi-government colleges indicates a limited but present role in ICT integration. Overall, the findings highlight that the level of ICT utilization is strongly influenced by institutional type, with private colleges leading the adoption.

7.Are you aware of ICT tools?

ICT tools awareness	Responses	Percentage
YES	100	98%
NO	2	2%
TOTAL	102	100%

Awareness of ICT Tools among Faculty in Higher Education



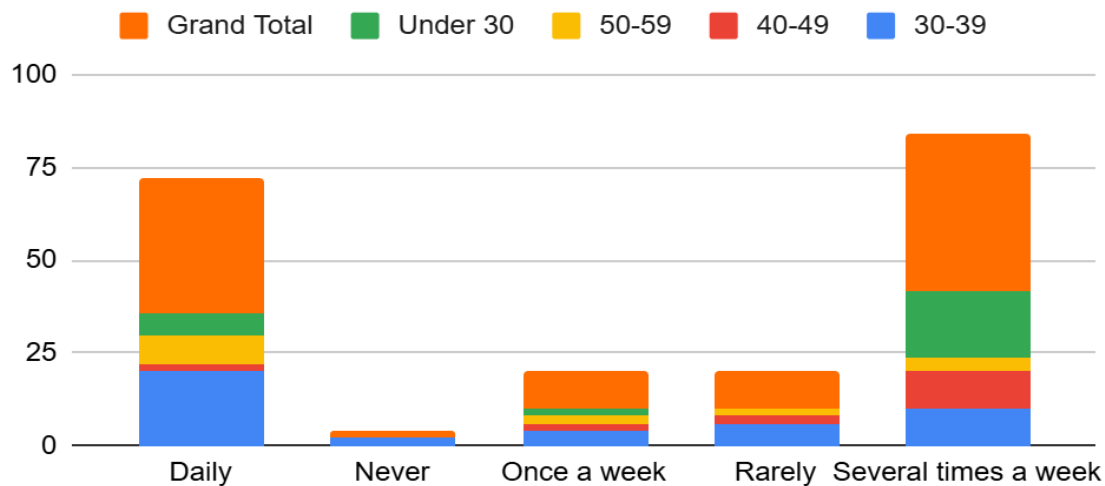
Data Interpretation: The findings highlight that ICT tool awareness is nearly saturated (98%) among faculty members in higher education. This suggests that future focus should shift from awareness creation to effective utilization, training, and integration of ICT tools in teaching, research, and administrative processes.

8.How frequently do you use ICT tools?

Frequency of using ICT tools	Age group				
	Under 30	30-39	40-49	560-59	Grand Total
Daily	6	20	2	8	36
Never	0	2	0	0	2
Once a week	2	4	2	2	10
Rarely	0	6	2	2	10

Several times a week	18	10	10	4	42
Grand Total	26	42	16	16	100

30-39, 40-49, 50-59, Under 30 and Grand Total



8.How frequently do you use ICT tools in your teaching?

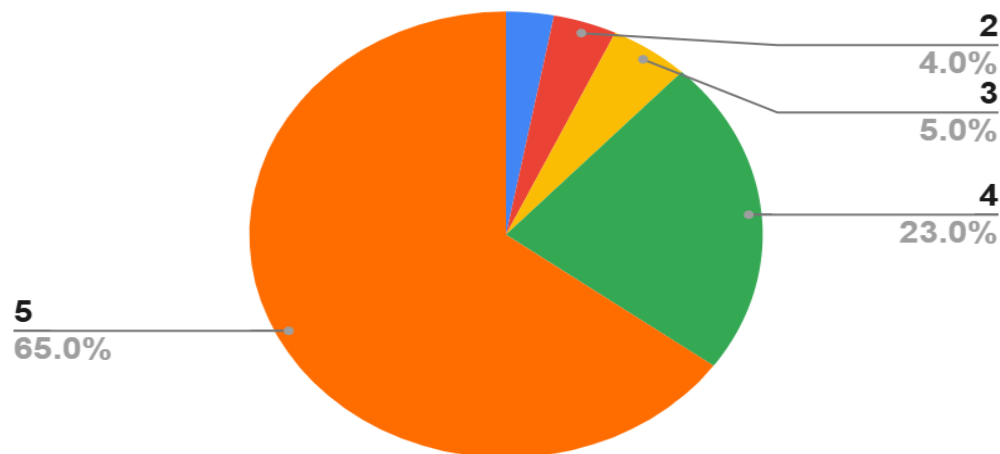
Data interpretation: The data reveals varying patterns of ICT tool usage across age groups. A large proportion of respondents (42%) reported using ICT tools several times a week, followed by 36% who use them daily, indicating overall high adoption. Younger faculty (under 30) and those aged 30–39 show the most frequent usage, with the latter group having the highest daily users (20). Faculty in the 40–49 and 50–59 age groups also use ICT tools but at a relatively moderate level, with many preferring usage several times a week rather than daily. Rare or no usage is minimal (only 12% combined), suggesting that ICT tools are widely integrated into teaching practices across all age groups, though frequency tends to be higher among younger faculty.

9.On a scale of 1 to 5,how effective do you find ICT tools in enhancing student learning outcomes?

Effectiveness of ICT tools	Responses
1(less effective)	3
2	5
3	6
4	23
5(highly effective)	65

TOTAL	102
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Responses

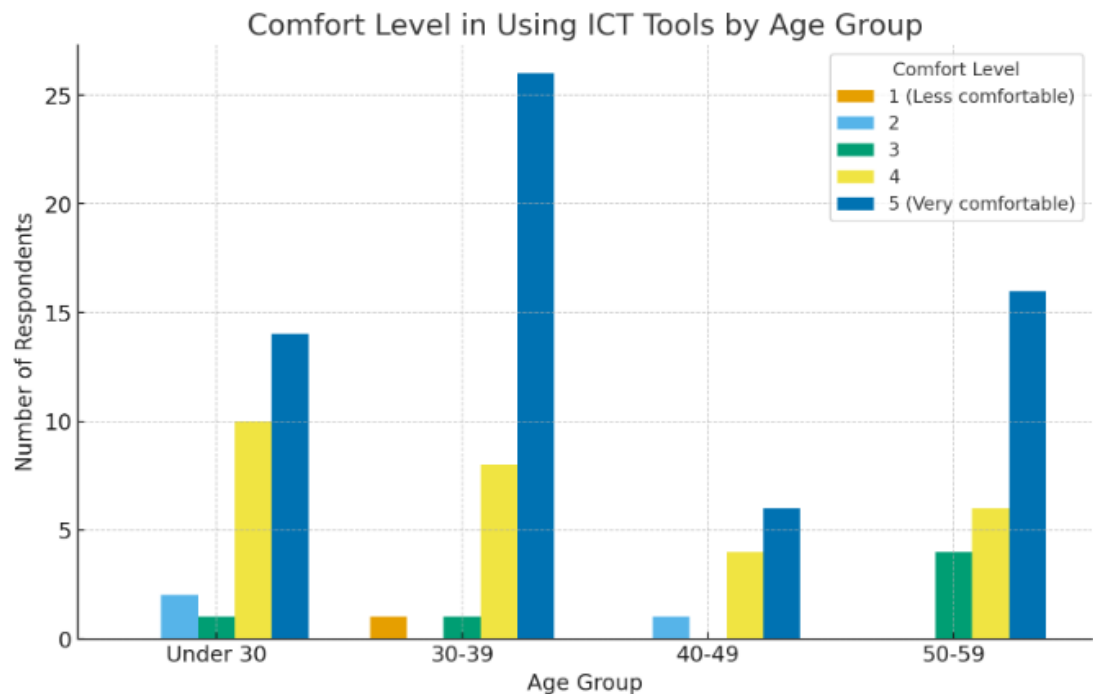


Data Interpretation: The data shows a highly positive perception of ICT tools in enhancing student learning outcomes. A large majority of respondents (65%) rated ICT tools as highly effective (5), while 23% rated them as effective (4). Only a small fraction gave neutral (5%) or low effectiveness ratings (7% combined for 1 and 2). This indicates that over 88% of respondents believe ICT tools significantly contribute to improved learning, reflecting strong acceptance and confidence in their role in education. Overall, ICT tools are widely regarded as impactful in promoting better engagement and outcomes among students.

10.How comfortable are you with using ICT tools in your teaching?

Comfort level in using ICT tools	Under 30	30-39	40-49	50-59	Total
1(less comfortable)	0	3	0	0	3
2	2	0	1	0	3
3	1	1	0	4	6
4	10	8	4	6	28
5(very comfortable)	14	26	6	16	62

Total	27	38	11	26	102
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Data Interpretation: The majority of faculty members are comfortable with ICT tools, with 90% (levels 4 & 5) showing high adaptability. Younger faculty (Under 40) show stronger inclination toward being very comfortable, while older faculty (40–59) are more evenly split between levels 4 and 5. Resistance is negligible, meaning ICT tools are widely accepted across all age groups, though intensity of comfort varies by age.

Test Applied :

Chi-Square Test Results: Gender vs ICT Tool Utilization:

Contingency Table (Observed Values):

Gender	Not using ICT tool	Using ICT tool	Total
Female	2	57	59
Male	0	43	43
Total	2	100	102

Formula:

$$\chi^2 = \sum (O - E)^2 / E$$

Where:

- O = Observed frequency
- E = Expected frequency (calculated using:

$$E = \text{row total} \times \text{column total} / \text{grand total}$$

Test Results:

- Chi-Square Statistic (χ^2) = 0.242
- Degrees of Freedom = 1
- p-value = 0.623

Interpretation:

- Since $p = 0.623 > 0.05$, we still fail to reject the null hypothesis.

Conclusion: There is no significant relationship between gender and ICT tool usage, even after scaling the data to a larger sample size.

7. Conclusion

ICT tools are widely adopted across disciplines and age groups in higher education. Faculty members, regardless of their demographic backgrounds, are engaging with digital platforms for teaching. While the study reveals encouraging signs of tech inclusion, it also suggests the need for continuous support and infrastructure improvements. The lack of significant association between age and discipline suggests equitable adoption, which is a positive indicator for digital transformation in higher education.

8. Limitations

- Small sample size ($n = 102$)
- Data limited to a single geographical/digital outreach
- Self-reported responses may contain bias

- ICT usage was indirectly inferred due to absence of direct tool-specific data in shared responses

9.Suggestions

- Future studies should expand sample size across regions and include specific questions on types of ICT tools used (example:LMS, video conferencing, e-content creation).
- Comparative analysis between private and public institutions can offer more insights.
- Policy-makers and college administrations should focus on institutional ICT infrastructure and training programs.
- Future studies should expand sample size across regions and include specific questions on types of ICT tools used (example: LMS, video conferencing, e-content creation).
- Comparative analysis between private and public institutions can offer more insights.
- Policy-makers and college administrations should focus on institutional ICT infrastructure and training programs.

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Green Motivation and Green Loyalty among Generation Z Employees in the IT Sector

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ABSTRACT

The current business environment, sustainability is one of the major concerns that organizations face due to increasing demands of environmental sustainability among the population. While information technology (IT) companies are associated with innovations and advancements, it is also known that the IT industry consumes energy, produces e-waste, and emits a great amount of greenhouse gases. As sustainability continues to be more valued, there is growing evidence of a connection between employee engagement and achievement of the environmental goals. In this case, Generation Z people, which are becoming a dominant generation in the labor market, are known to be very much aware of environmental issues, as well as have value-oriented attitudes towards employers that are environmentally and socially responsible.

The purpose of the current paper is to examine the link between green motivation and green loyalty among Generation Z employees in the IT sector. While the former denotes various factors that can motivate employees to act environmentally responsible and sustainably, green loyalty can be explained as a measure of employees' emotional attachment, commitment, and willingness to stay in organizations that promote sustainability. This study will also consider whether organizational green support serves as a motivator for Generation Z employees and whether the role of leadership commitment matters as a moderator.

Descriptive research methodology was used in this study, while primary data were gathered with the help of a structured questionnaire applied to Generation Z employees of the IT organizations.

INTRODUCTION

Today, environmental sustainability is one of the most pressing issues affecting numerous organizations that face increasing challenges, including climate change, exhaustion of natural resources, and environmental pollution (Dyllick & Muff, 2016; Elkington, 1997). In the current business environment, sustainability is no longer considered to be a purely voluntary activity; rather, it became a key strategic issue that has a direct impact on company reputation and performance (Bansal & DesJardine, 2014; Porter & Kramer, 2011). Hence, companies today are supposed not only to consider the economic benefits but also their social and environmental impacts in their strategies.

Information Technology (IT) companies have always been known for their contribution to economic and digital development (Brynjolfsson & McAfee, 2014). Nevertheless, despite being highly knowledge-intensive, this industry also makes a significant contribution to environmental problems due to high energy usage, creation of e-waste, and carbon emissions that result from using data centers (Belkhir & Elmeligi, 2018; Hilty & Aebischer, 2015). As a reaction to the described situation, many IT organizations tend to adopt green practices including energy-efficient technologies, paperless practices, sustainable sourcing, and advanced waste management. The success of the mentioned activities depends greatly on the active participation of employees (Dyllick & Muff, 2016; Elkington, 1997).

Employees are key agents involved in translating organizational green activities into practice. Thus, green motivation is defined as values, beliefs, and organizational factors that encourage employees to behave in a certain way in order to promote environmental sustainability (Belkhir & Elmeligi, 2018; Hilty & Aebischer, 2015). Employees who see the importance of the discussed issue and receive necessary support from organizations are more willing to participate in various green projects (Dyllick & Muff, 2016; Elkington, 1997).

Currently, one of the most promising groups of employees is Generation Z people who are well aware of existing social and environmental problems. Many representatives of the generation start their careers and tend to choose employers that share their values and priorities, particularly related to environmental issues. Consequently, organizational commitment to environmental sustainability may influence work satisfaction and career development of Generation Z employees.

In general, organizations that manage to embed sustainability into their organizational culture often foster better relationships with their staffs. Green loyalty can be described as the feeling of emotional attachment and long-lasting commitment to organizations that demonstrate real environmental sustainability. Employees who recognize the importance of sustainability values are usually committed to organizations and their long-term goals. Currently, there are few studies addressing the topic of green motivation and its influence on green loyalty among Generation Z

employees in the IT industry. This research will try to fill in this gap by discussing this particular connection while considering the role of organizational green practices and green leadership.

THEORETICAL BACKGROUNDS OF THE STUDY

The current research utilizes various known theoretical backgrounds that help understand the formation of sustainability-based attitudes and behaviors of employees and how such behaviors lead to the organizational loyalty. Overall, this set of theories forms a background for the current research aimed at revealing the interdependence between green motivation and green loyalty in the case of Generation Z workers of IT organizations.

Motivation Theory

According to Motivation Theory, people are expected to exhibit a certain type of behavior when it is consistent with their values, beliefs, and motives. Thus, the higher an individual considers environmental sustainability as an important personal trait, the higher is his or her probability of participation in any activity that will help protect the environment. Since members of Generation Z often give preference to sustainability and social responsibility as core values, green support from the organization can motivate them to take part in sustainability-based programs. The theory can be applied in the discussed study as a source for understanding the processes of formation of green motivation.

Perceived Organizational Support Theory

Perceived Organizational Support Theory states that employees develop beliefs on whether the organization appreciates their contributions to its performance and pays enough attention to their needs and concerns. In case organizational green support is perceived positively due to policies, training programs, resources, and communication related to the topic, there is a high probability that employees will respond to the initiatives with increased motivation and commitment to the organization. Hence, Perceived Organizational Support Theory can be considered as a background for the current research.

Social Exchange Theory

Social Exchange Theory is based on the idea of the reciprocal nature of relations between an organization and its employees. People are likely to respond positively to the initiatives that show their concern and interest in values and ideas of employees. In case the organization demonstrates the real commitment to environmental sustainability, its workers tend to reciprocate with enhanced attachment and loyalty towards it. Therefore, the theory may serve as the conceptual background for the study.

Leadership Support Theory

Leadership Support Theory is based on the assumption that employees' perceptions, behaviors, and attitudes depend on the leaders' activities to a great extent. Thus, when the leader is committed to sustainability initiatives, his/her actions can act as the basis for building organizational culture and climate. In turn, employees are likely to exhibit increased commitment to sustainability-based values promoted by their leaders. Hence, leadership support serves as one of the main determinants of green motivation.

Generational Value Perspective

Generational Value Perspective states that each generation of employees has particular priorities and needs. In particular, Generation Z is well known for its focus on ethics, sustainability, social responsibility, and meaningful activities. In case the organization shares employees' environmental values, their commitment is expected to grow rapidly. Therefore, this theory can provide the generational background for the current research.

EXISTING THEORIES AND VARIABLES

In order to understand the relationship between motivation, organizational support, and leadership for sustainability, a multi-theoretical framework will be used in this study. According to the proposed framework, green motivation will be recognized as a major force behind green loyalty among Gen Z employees. On the other hand, organizational green support will supply resources and stimuli for employees to act in a way that would help to achieve sustainability goals. Leadership commitment is likely to intensify the effect of both motivational and organizational factors on sustainability-related attitudes and behaviors.

Furthermore, one must note that Gen Z employees usually strive to find meaningful and motivating jobs that correspond with their values. For this reason, organizational commitment to sustainability goals is expected to make such jobs possible and motivate employees to be loyal to them and the organization at large. The proposed framework considers five different theories in order to provide a multi-dimensional explanation of sustainability-related phenomena.

VARIABLES OF THE STUDY

Several variables will be identified in order to explain sustainability-related employee behavior in the IT sector. The first independent variable will be **Green Motivation**, whereas **Green Loyalty** will be the dependent variable. Other variables include different aspects of organizational and leadership practices associated with sustainability.

Green Motivation (Independent Variable)

Green Motivation will be defined as a degree to which people feel encouraged to take environmentally responsible actions and behave in a corresponding way. Thus, it implies certain environmental values and organizational commitment to sustainability that can help employees to

become motivated to do something about sustainability issues. Some of the main factors contributing to green motivation are green organizational policies, management support, environmental awareness, etc.

Green Loyalty (Dependent Variable)

Green Loyalty means an employee's strong emotional bond, commitment, and desire to stay with the company for long due to organizational sustainability values. An employee will develop positive feelings when they realize that their organization is really dedicated to sustainable development and environmental protection.

Organizational Green Support

Organizational Green Support denotes the perception of organizational practices in terms of its active support of environmental values and activities associated with sustainability. Such practices include green policies, sustainability training, communication of sustainability objectives, allocation of resources, encouragement of sustainable actions, etc.

Leadership Commitment toward Sustainability

Leadership Commitment toward Sustainability involves efforts of leaders to promote environmental responsibility and sustainability within the organization. The efforts include constant communication of sustainability goals, participation in green initiatives, and modeling environmentally responsible behavior. In the context of this study, leadership commitment to sustainability is expected to intensify the effects of green motivation on green loyalty.

Control Variables

Age, gender, education, years of experience, and job position can serve as control variables because they may impact employees' behavior.

RESEARCH OBJECTIVES

The main goal of the present study is to explore the relationship between green motivation and green loyalty in Generation Z employees in the IT sector. In today's changing economic landscape, the issues related to organizational sustainability and green HRM have become relevant topics of academic inquiry.

Specifically, the study aims to:

- Assess the level of green motivation and green loyalty in Generation Z employees in the IT sector.
- Explore the relationship between green motivation and green loyalty.
- Examine the influence of organizational green support on employee motivation and loyalty.
- Examine the influence of leadership commitment toward sustainability on green motivation and

green loyalty.

- Offer empirical insights into the process of sustainable employee behavior development.

HYPOTHESES

On the basis of the above-stated conceptual framework and the goals of this research, the following hypotheses are formulated:

H1: Green motivation positively influences green loyalty in Generation Z employees in the IT sector.

H2: Organizational green support positively influences green motivation in Generation Z employees.

H3: Leadership commitment toward sustainability positively moderates the relationship between green motivation and green loyalty.

H4: Organizational green support positively influences green loyalty in Generation Z employees.

FRAMEWORK LINKAGE SUMMARY

The conceptual framework of this study suggests that motivated employees develop loyalty to those organizations which commit themselves to sustainable policies and practices. Green motivation is considered the major predictor of green loyalty, whereas organizational green support is an environment which facilitates sustainable employee behavior. Finally, leadership commitment positively moderates the above-stated relationship, creating a culture of environmental responsibility within the organization.

It is necessary to note that the generational context was included in the framework since Generation Z can be characterized by a greater commitment to ethics, sustainability, and social responsibility than other employee generations. Hence, sustainability should play an essential role in the development of motivation and loyalty among Generation Z employees.

RESEARCH GAP AND JUSTIFICATION

Even though the issues of sustainability and green HRM have gained much prominence lately, certain gaps can be identified in the existing literature. First, the majority of the available studies consider the behavior of general employees or even Millennials. Thus, Generation Z, which becomes a larger share of the labor market, receives relatively less attention. As a consequence, the influence of environmentally oriented employee values on employee behavior in the context of Generation Z requires further investigation.

In addition, previous researches have been mostly concentrated on organizational practices and policies related to sustainability. Individual factors and processes (such as motivation and loyalty)

receive far less attention. Nevertheless, the influence of these factors on employee behavior should be studied as well for better understanding of the process of sustainable development of an employee.

Furthermore, although sustainability has been receiving much consideration in various industries, the issue of sustainability in the Information Technology (IT) sector does not receive sufficient research attention, thus, requiring additional studies. Moreover, green motivation and green loyalty as sustainability-related phenomena require more detailed examination of their interrelationship.

Moreover, the role of organizational green support and leadership commitment toward sustainability in the process of development of sustainability-related attitudes and behavior of employees is understudied. Hence, these aspects require closer investigation within the context of IT sector.

Finally, the literature offers little empirical evidence concerning the issue of sustainability and green HRM in the emerging economies with their value-oriented employee population, including Generation Z.

ALIGNMENT OF RESEARCH GAPS, OBJECTIVES, AND HYPOTHESES

The proposed research objectives and hypotheses have been developed to fill gaps in the existing literature. The research pays attention to the scarcity of research dedicated to Generation Z employees, under-representation of the IT sector, and the lack of studies on the psychological aspects of the connection between sustainability programs and employee behavior. By investigating green motivation, green loyalty, organizational green support, and leadership commitment toward sustainability, the current study offers a comprehensive answer to the outlined gaps.

RESEARCH METHODOLOGY

Research Design

The research follows a descriptive and analytical approach, as it aims at establishing connections between green motivation and green loyalty among Generation Z employees from the IT industry. It is necessary to note that a descriptive design is appropriate for gathering information related to respondents' perceptions regarding the studied phenomenon. Meanwhile, an analytical design will allow for the examination of relationships between the study variables, namely green motivation, organizational green support, leadership commitment towards sustainability, and green loyalty.

The present research can be categorized as an empirical one, since its design focuses on collecting primary data. In other words, the data used to answer research questions were obtained from direct responses from study participants.

Population and Unit of Analysis

As stated above, the target population in this case includes employees who belong to the Generation Z cohort and work in IT companies. With the growing share of Generation Z among employees, it is crucial for organizations to understand sustainability-related attitudes of these workers.

An individual employee represents the unit of analysis in this research. Every participant is expected to provide information about his or her perception of sustainable practices in the workplace.

Sampling Technique

In the course of the proposed study, a purposive sampling approach is used. Using purposive sampling makes it possible to select participants based on certain criteria, which helps to align the collected data with the research objective. To be considered as a participant in this study, every person should belong to the Generation Z cohort and work in the IT field.

Using purposive sampling helps to collect data that is relevant to the main aim of this research. It is expected that purposive sampling will enable the researcher to acquire valuable insights about sustainability-related behaviors of the selected employees.

Data Collection Procedure

For this research, primary data are collected using a structured questionnaire delivered both online and offline. The usage of these two methods helps to increase participation in the research by allowing respondents to answer survey questions depending on their preference and convenience.

Questions asked within the survey are meant to assess respondents' perception of their green motivation, green loyalty, organizational green support, and leadership commitment toward sustainability. Responses are provided using a five-point Likert scale (1-Strongly Disagree, 5-Strongly Agree), which is widely used to assess attitudes.

Measurement of Variables

The study investigates several variables that can explain employees' sustainability-related behaviors.

Green Motivation

Green motivation refers to the encouragement of workers to participate in environmentally responsible actions. For measuring the studied concept, a series of statement-based questions adapted from Graves et al. (2013) and Paille et al. (2014) are used. Responses are captured on a five-point Likert scale.

Green Loyalty

Green loyalty is regarded as the dependent variable in this research. It refers to employees' commitment, attachment, trust, and intention to continue staying with their employer, who demonstrates sustainability-related attitudes. Questions assessing green loyalty in the context of the current study are adapted from Turban and Greening (1997) and Renwick et al. (2013).

Organizational Green Support

This variable refers to employees' perception of organizational support for sustainability programs. For its measurement, statement-based questions adapted from Eisenberger et al. (1986) and Paille et al. (2014) are used.

Leadership Commitment toward Sustainability

This variable relates to leaders' active promotion of sustainability-related programs in organizations. Questions used in the study to capture leadership commitment towards sustainability are adapted from Graves et al. (2013) and Bansal and DesJardine (2014).

Control Variables

Several demographic variables will serve as control variables. Namely, they include age, gender, educational qualification, work experience, and job role of the surveyed individuals.

Data Analysis Techniques

The gathered data are going to be analyzed using both descriptive and inferential statistics. In particular, descriptive techniques will be used to summarize demographic data and provide general insights regarding respondents' perceptions of study variables.

Correlation analysis is going to be performed to identify relationships between green motivation, organizational green support, leadership commitment, and green loyalty. Reliability analysis, which involves the evaluation of the internal consistency of measurement scales, will also be used during the research. Furthermore, reliability and construct validity are evaluated using IBM SPSS, AMOS, or PLS-SEM.

Validity and Reliability

Content validity of measurement scales is provided by the presence of literature review and adaptation of questions based on previously used and validated measurement scales.

Cronbach's Alpha will be used to determine reliability of the measurement scales. Construct validity is estimated using factor analysis with the application of software such as IBM SPSS, AMOS, and/or PLS-SEM.

Ethical Considerations

During the data collection process, ethical standards will be strictly adhered to. Participation in the study is going to be voluntary, and all respondents are going to be informed about the research

objectives and purposes. Furthermore, confidentiality is going to be maintained during all stages of research work.-

Scope and Limitations of the Methodology

While the chosen methodology has been deemed adequate for achieving meaningful outcomes, some limitations need to be discussed. Firstly, the present study will be limited to Generation Z employees only and will not be representative of employees from other generations or other industry sectors. Moreover, due to the reliance on the self-reporting survey, there is a risk of obtaining biased information from participants. That said, the chosen methodology allows investigating the proposed relationships between variables.

DISCUSSION

The findings of this research allow obtaining insightful knowledge of the interconnections between green motivation and green loyalty among Generation Z employees operating in the field of Information Technology. The interpretations of results obtained during the study are provided in the context of proposed hypotheses and theoretical perspectives of sustainability, organizational behavior, and green human resource management.

The first hypothesis suggests that green motivation positively impacts green loyalty. This assumption proved to be correct as employees who have been motivated by the environment tend to feel an emotional connection with companies that prioritize sustainability initiatives. For Generation Z employees, environmental responsibility is a matter that is not restricted only to a professional aspect but relates to personal values and identity. Hence, sustainability-related initiatives may help increase organizational commitment, attachment, and decrease the likelihood of employee turnover. These findings resonate with those revealed by Graves et al. (2013) and Paille et al. (2014), who highlighted the importance of motivation in this context.

The second hypothesis addresses the potential effects of organizational green support on green motivation. According to the findings, employees are likely to behave in an environmentally responsible manner if they believe that their organization supports green initiatives. This support may be manifested through the existence of a set of policies, sustainability education, communication of sustainability targets, and availability of resources needed for engaging in environmentally friendly activities. In the case when an organization demonstrates its commitment to being sustainable, employees will find it easier to identify sustainability as a value of primary significance for an organization. This statement corresponds to the principles of Perceived Organizational Support Theory and replicates the results found by Renwick et al. (2013).

The third hypothesis aims at exploring the moderating effect of leadership commitment to sustainability on the relationship between the discussed factors. In accordance with this hypothesis, employees react positively to the efforts made by organizational leaders to promote sustainability initiatives. Authenticity tends to play a significant role for Generation Z employees. Thus, the

commitment of company's leaders to promoting sustainability and behaving in a responsible manner will contribute to an atmosphere in which employees are encouraged to engage in sustainable activities. This assumption finds support in the findings by Bansal and DesJardine (2014) and Porter and Kramer (2011) in terms of values-based leadership.

The fourth hypothesis focuses on the impact of organizational green support on green loyalty directly. As a result, it becomes clear that an organization's commitment to sustainability promotes employees' commitment to this issue as well. Employees will be willing to develop trust and respect for their organization and will be loyal to the company if it has a set of sustainability policies. It resonates with the theoretical perspective of Social Exchange Theory which implies reciprocity in organizational settings. In particular, Generation Z employees may feel attracted to companies that share their values in terms of sustainability and environmental responsibility.

THEORETICAL IMPLICATIONS

First, this study adds to the extant literature on green human resource management in relation to sustainability-related employee behaviors. To date, most studies have analyzed the impact of environmental sustainability on employees using a broad workforce sample. However, it is necessary to understand how environmental sustainability influences employees from different generational groups. In this context, the findings of this study add to the literature on Generation Z employees' sustainability-related employee behavior.

The second theoretical implication of this study is the expansion of Perceived Organizational Support Theory. Previous studies have used the theory to describe how general organizational support impacts employees' motivational and behavioral characteristics. However, this study shows how sustainability-related organizational support can have a motivational and loyalty impact on employees. Thus, the study advances the theory to a new area and emphasizes the importance of sustainable development in employee perceptions.

Third, the study advances leadership theory by analyzing leadership commitment toward sustainability as a moderating variable. Most previous studies have focused on organizational policies and structures, neglecting the role of leadership behavior in influencing the outcomes of organizational sustainability. Therefore, this study advances the understanding of the impact of leadership commitment toward sustainability by serving as a moderating condition for employee perceptions.

Lastly, this study advances green loyalty by defining the concept and establishing its relationship with employee sustainability-related behavior. Green loyalty has been identified as a new construct in human resource management recently. In this context, it is defined in the current study as an important sustainability-related outcome of organizations that reflects a value-based organizational-employee relationship.

MANAGERIAL IMPLICATIONS

The results of this study may inform the management practices of HR and sustainability professionals in attracting, engaging, and retaining Generation Z employees. As environmental issues become increasingly important in employees' decision-making processes, human resource professionals should learn how to use the organization's sustainability initiatives as a powerful instrument for talent management.

First, human resource professionals should start viewing green motivation as a crucial part of their organizational strategy. They can incorporate sustainability goals into recruitment strategies, onboarding practices, job design, employee evaluation, and rewards programs. These actions will help emphasize the organization's commitment to environmental sustainability.

Second, HR and sustainability managers need to make their organizational sustainability initiatives accessible to employees. In this regard, organizations can use such initiatives as sustainability training, green innovation projects, awareness campaigns, and participation in environmentally friendly activities. In addition, transparent communication related to organizations' environmental goals and accomplishments can positively affect employee engagement.

Third, human resource and sustainability professionals should include sustainability skills as a core part of their leadership development practices. Sustainable development-focused behaviors on the part of organizational leaders positively influence their employees' attitudes. Given that Generation Z employees tend to judge their employers' commitment based on leader actions, managers have a great potential to communicate their organization's sustainability-related value system.

Lastly, organizations can benefit by communicating their sustainability commitment to prospective employees more effectively. Environmental reports, certifications, reduction of carbon emissions, corporate social responsibility initiatives can significantly increase the attractiveness of a given company among environmentally friendly job-seekers. In addition, showcasing tangible achievements in sustainability can eliminate employees' concerns about possible greenwashing.

LIMITATIONS AND FUTURE RESEARCH

Despite the meaningful insights provided by the findings of this study in terms of green motivation and green loyalty among Generation Z employees, several limitations should be taken into account when considering the results. These include limitations related to the methodology, sample selection, data analysis, and general conclusions made in this study.

One of the main limitations is related to the cross-sectional research design used in this study. All variables included in this study are measured only once; therefore, causal relationships cannot be identified in the study results. Moreover, employee attitudes, including motivation and loyalty, may change over time due to various reasons related to organizational, personal, or environmental conditions. Thus, longitudinal research designs may be beneficial in future studies.

In addition, sample selection may affect the applicability of this study to the broader population of generation Z employees. Given that purposive sampling was used for selecting participants for the study, the sample cannot reflect the demographic diversity of Generation Z employees working in organizations that belong to other sectors and other countries. Thus, probability sampling techniques should be used in future studies to enhance external validity.

Furthermore, the reliance on self-reports as the only source of data in this study may introduce common method bias and lead to distorted results. To avoid bias, various measures, including anonymous surveying and voluntary participation of respondents, were taken in this study. In future studies, multiple sources of information may help address the issue of common method variance.

Lastly, one may argue that sector-specific focus may limit the applicability of the study findings. Specifically, this study considers sustainability-related employee attitudes among Generation Z employees working in the Information Technology sector. Thus, it may be interesting to analyze the effect of organizational commitment toward sustainability in other industries in the future.

Some of the directions for future research can include the use of additional variables that influence employee behavior in sustainability-related contexts. Constructs such as green job crafting, environmental self-identity, team-level green norms, organizational culture, and peer influence may add to existing theories. Moreover, some recent trends associated with the remote working mode and digital collaboration may require further research attention.

Finally, it may be reasonable to conduct additional studies aimed at enhancing and validating measurement tools for green loyalty assessment. Given that sustainable development gains prominence as a component of organizational strategy, new scales should be developed for future studies.

CONCLUSION

The present study explored the relationship between green motivation and green loyalty among Generation Z employees in the Information Technology sector, taking into account the moderating role of organizational green support and leadership commitment toward sustainability. Results indicated that sustainability-related motivation played an essential role in influencing the loyalty and commitment of Generation Z employees in sustainability-oriented organizations.

Specifically, the results show that having strong green values makes employees perceive sustainability-oriented organizations positively. Green motivation is identified as an important mechanism through which employee green values get reflected in organizational commitment and loyalty. At the same time, organizational green support and leadership commitment toward sustainability serve as important conditions for enhancing these processes.

Generation Z employees have been shown to have unique characteristics compared to other generations, including a higher focus on sustainability-related issues. Thus, the results indicate that

companies that demonstrate sincere interest in sustainable development are more likely to attract and retain Gen Z employees.

From a managerial perspective, sustainability needs to become a part of human resource management practices, in addition to becoming a part of the organizational strategy. Investment in sustainability-related initiatives should not be viewed simply as a requirement and a corporate social responsibility practice. It should be seen as a tool for fostering employee motivation, organizational commitment, and employer attractiveness.

Overall, the study contributed to the literature on green human resource management. The study revealed how green motivation, green loyalty, organizational green support, and leadership commitment toward sustainability relate to each other. This can be a starting point for future studies on sustainable development-related workforce issues.

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Employee Well-being and Sustainable HRM: A Review of Corporate Health Initiatives Supporting SDG 3

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Abstract

The increasing importance of sustainability has changed HRM from a mere administrative activity into a strategy that drives the organization to achieve organizational and social prosperity. Sustainable Human Resource Management involves considering the well-being of employees, who are regarded as stakeholders whose health, safety, and well-being are necessary for organizational effectiveness. The purpose of the current review paper is to investigate how corporate health practices can help to enhance employee well-being and contribute to the Sustainable Development Goal (SDG) 3: Good Health and Well-being. The analysis conducted within this paper is a systematic literature review of articles and studies dedicated to workplace wellness programs, interventions aimed at supporting mental health, work-life balance, occupational health and safety, and employee assistance programs. The research findings have shown that companies using such approaches to managing employees' well-being achieve better performance in terms of increased engagement, productivity, retention, and resilience. It is argued in this paper that some of the trends in the industry include digital wellness initiatives, AI-enabled mental health programs, and ESG-based well-being strategies. This research is important due to its contribution to theory and practice and provides some evidence of sustainable HRM. Based on this, it is possible to suggest a conceptual model of relationships between sustainable HRM practices, corporate health programs, employee well-being, and SDG 3.

Keywords: Sustainable HRM, Employee Well-being, Corporate Health Initiatives, SDG 3, Workplace Wellness, Organizational Sustainability

1. Introduction

Since the Sustainable Development Goals (SDGs) were defined by the United Nations, many nations around the globe have committed to meeting global sustainability objectives. Among the seventeen goals listed in SDGs, SDG 3 focuses on ensuring healthy lives and promoting well-being for people of all ages. While SDG 3 involves public health activities performed by government agencies, health care providers, and hospitals, organizations are increasingly viewed as important stakeholders that need to address the health and well-being concerns of employees.

The contemporary business landscape faces a myriad of challenges related to the well-being of employees. Among the major health problems faced by today's employees are mental disorders caused by occupational stress, burnouts, and other work-related factors. In addition, organizations face issues associated with work-family conflict, as well as post-pandemic challenges related to employees' physical and mental health. These problems require a new approach to human resource management and a renewed focus on improving employee health, well-being, and engagement. Therefore, Sustainable Human Resource Management (SHRM) has become increasingly popular during the last few decades. According to various scholars, SHRM entails not only productivity improvement, but also economic and social sustainability goals. The present study seeks to investigate how corporate health initiatives contribute to promoting employee well-being and SDG 3.

2. Literature Review

2.1 Sustainable Human Resource Management (SHRM)

SHRM represents a relatively new approach to human resource management focused on combining traditional goals pursued under HRM and sustainability targets to promote long-term organizational and employee development and well-being. Unlike HRM that usually prioritized productivity, profitability, and economic efficiency, SHRM integrates broader goals that pertain to human development and socio-economic aspects of organizational success. According to the proponents of SHRM, the main objective of human resource management in organizations is to maximize the value derived from employees by pursuing economic, social, and human benefits. Three major categories that characterize SHRM include economic sustainability, social sustainability, and human sustainability. Economic sustainability implies that SHRM helps achieve long-term organizational success and economic stability through effective workforce

management. Social sustainability, meanwhile, refers to socially conscious policies that emphasize diversity, ethical work practices, and stakeholder interests. Lastly, human sustainability is viewed as a core aspect of SHRM as it pertains to employees' physical and psychological well-being, safety, and long-term employability. Thus, SHRM represents a powerful mechanism that can be used by organizations to foster workforce well-being and long-term sustainability.

2.2 Employee Well-being

Employee well-being is viewed as a multidimensional phenomenon involving employees' physical, psychological, social, and work-life dimensions. Physical well-being in the workplace refers to physical health, fitness, and wellness programs introduced by organizations to improve employees' health condition. Psychological well-being refers to employees' mental state, ability to deal with workplace-related stressors, and other mental attributes that may influence organizational performance and employees' satisfaction with jobs. Social well-being includes the extent to which employees perceive their social environment positively, their interactions with colleagues, inclusiveness, etc. Last but not least, work-life well-being is focused on the ability of employees to maintain the balance between their personal and professional lives. Research suggests that high levels of well-being lead to higher job satisfaction, higher productivity, organizational commitment, etc.

2.3 Sustainable Development Goal 3 (SDG 3) and Workplace Health

The United Nations established 17 Sustainable Development Goals (SDGs) to ensure the health and well-being of humanity. Specifically, SDG 3 is targeted at securing good health and promoting well-being among people of different ages. While SDG 3 requires the involvement of various governmental entities, public health care systems, medical researchers, and other stakeholders, organizations also have important roles to play in promoting good health among workers. Indeed, organizations have both responsibility and opportunities to develop work environment that would be conducive to the physical, psychological, and social well-being of their personnel. In this regard, workplace health and well-being has become a crucial component of SHRM and organizational development.

There are several ways in which organizations contribute to the achievement of SDG 3. For instance, organizations are able to provide safe working environment for employees and promote occupational health through the implementation of appropriate measures. Besides, organizations help to ensure good mental health among employees through counseling, mentoring, and stress management programs, etc. Additionally, organizations can prevent workplace injuries and

various occupational diseases. Lastly, organizations can promote healthy lifestyle choices and behaviors among employees through wellness initiatives. Apart from these measures, organizations can also enhance work-life balance of employees through flexible working arrangements. By doing so, organizations promote employee well-being and improve their organizational performance. Therefore, workplace health can serve as a vehicle for promoting SDG 3 within organizations.

3. Corporate Health Initiatives and Employee Well-being

With the rise of sustainability considerations in human resource management, health and well-being have emerged as an important issue addressed by organizations in terms of SHRM. Corporate health initiatives represent programs and practices that contribute to employees' physical health, psychological well-being, and safety. Organizations invest in various health programs to foster positive organizational climate, enhance employee well-being and engagement, and improve workforce productivity. In the current period characterized by fierce competition, organizations are keen on addressing the health and well-being concerns of their employees because of the significant contribution made to their performance.

3.1 Workplace Wellness Programs

One of the most commonly employed health initiatives adopted by organizations includes workplace wellness programs. Specifically, workplace wellness programs refer to health-related activities aimed at encouraging employees to adopt healthy behaviors and habits, as well as improve their health status. Wellness programs involve various initiatives ranging from regular health screening and membership at fitness clubs to nutritional advice and physical activity programs. Various research indicates that workplaces implementing comprehensive wellness programs experience lower medical costs, fewer absences, and increased employee satisfaction and productivity. As a result, wellness initiatives contribute to organizational performance and sustainable development.

3.2 Mental Health Initiatives

Another category of initiatives aimed at addressing the health issues of employees pertains to mental health. Recent decades have witnessed the growing concern regarding mental health in organizations. In this regard, various mental health initiatives, including professional counseling, resilience building, stress management, mindfulness training, etc., have become increasingly

popular. Mental health programs help to establish a psychologically healthy organizational climate that would promote employees' mental health. Numerous studies indicate that companies that invest in mental health of their workers experience fewer absences, less staff turnover, and increased employee engagement and job performance. Consequently, mental health support programs are regarded as an important part of SHRM and organizational well-being strategies.

3.3 Flexible Work Arrangements

Flexible work arrangements have grown in popularity in modern businesses due to numerous advantages that they offer to organizations and their employees. Flexibility allows employees to arrange their work according to their preferences regarding the time and place at which they wish to perform particular tasks. Thus, flexible work arrangements are associated with lower rates of work-family conflict and work-related stress. Consequently, flexibility enables workers to balance work-life and increase their productivity. The current period marked by the rapid expansion of remote work and hybrid models of employment highlights the significance of flexible work practices. Evidence also indicates that workers who have access to flexible working arrangements report higher well-being and better organizational commitment. Thus, workplace flexibility is becoming increasingly important.

3.4 Occupational Health and Safety

Another important aspect of SHRM that pertains to employees' well-being and safety is occupational health and safety (OHS). OHS activities aim at creating healthy and safe conditions for employees to perform their work duties. The measures associated with occupational health and safety include risk assessments, health surveillance, safety trainings, injury prevention programs, accident management, and other relevant initiatives. In this way, employers can protect employees from harm, improve their physical and psychological well-being, and create a supportive organizational environment. Additionally, OHS programs make an important contribution to the achievement of SDG 3. Thus, organizations that prioritize OHS contribute to sustainable development.

4. Emerging Trends in Sustainable HRM and Employee Well-being

Significant changes in the way organizations operate in the modern business environment require radical changes in HR practices. In this regard, SHRM becomes increasingly popular among HR professionals due to its ability to improve organizational performance and promote organizational

well-being. There are several emerging trends associated with SHRM practices aimed at fostering employee well-being in organizations. In particular, these include use of technology and Artificial Intelligence (AI) to manage workforce health, as well as increasing emphasis on Environmentally Social and Governance (ESG) reporting.

4.1 Digital Wellness Platforms

In this era characterized by extensive use of digital technology, it is only natural to introduce new digital wellness platforms to help employees improve their physical and psychological state. Thus, modern organizations introduce such innovative tools as health monitoring applications, telemedicine, virtual counseling platforms, and other health-related tools that help promote and monitor employees' health. These technologies allow employees to enjoy constant health support independently of their location. Moreover, health monitoring technologies help managers obtain relevant information regarding the health of employees. As a result, digital wellness solutions become increasingly popular in the modern period marked by remote work.

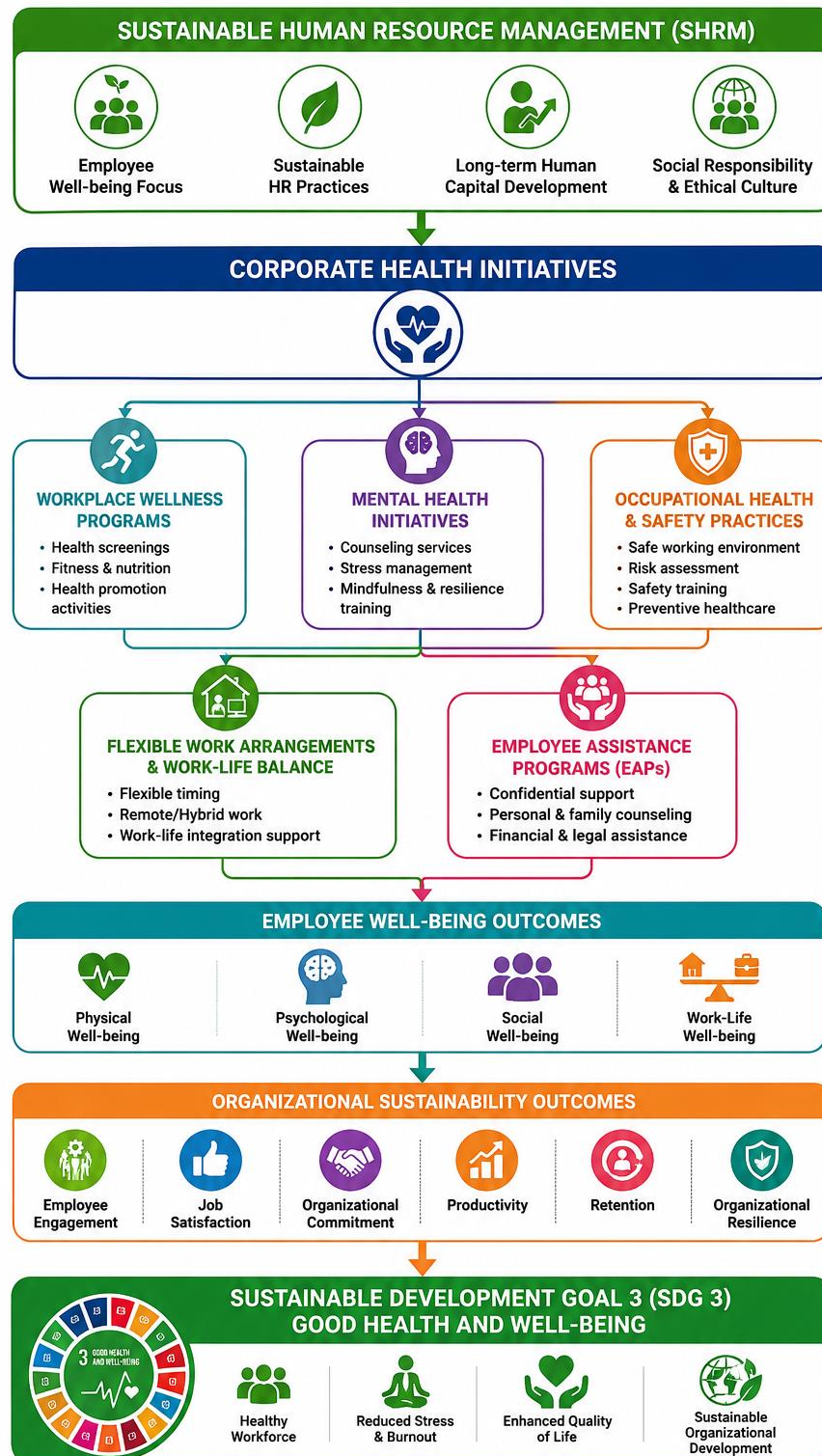
4.2 AI-Enabled Employee Well-being

Apart from the use of digital technology, SHRM is also characterized by the increasing use of artificial intelligence and its application for HR purposes. In particular, AI-based platforms are often used in SHRM practices aimed at improving health and well-being of employees. AI tools can be useful for identifying health threats, such as stress and burnouts, as well as recommending employees certain preventive measures. Moreover, AI is often used in the prediction of the state of employees' health and identification of those workers who are exposed to high-risk situations in the workplace. Thus, the introduction of AI-enabled health tools becomes increasingly popular.

4.3 ESG-Driven Well-being Strategies

Another trend pertaining to SHRM practices and employee well-being is increasingly associated with Environmental, Social, and Governance (ESG) activities. In this regard, organizations start paying attention to employees' well-being in terms of ESG reports and sustainability efforts. Specifically, ESG-driven HR practices involve a wide array of activities aimed at promoting employee well-being and ensuring good conditions for them in organizations. These include diverse wellness programs, inclusive and supportive organizational policies, mental health programs, and others. Thus, SHRM and employee well-being are increasingly related to the concept of ESG.

5. Proposed Conceptual Framework



Proposition 1: Sustainable HRM positively influences the adoption of corporate health initiatives.

Proposition 2: Corporate health initiatives positively affect employee well-being.

Proposition 3: Employee well-being positively influences organizational sustainability outcomes.

Proposition 4: Organizational sustainability outcomes contribute to achieving SDG 3 (Good Health and Well-being).

This conceptual framework aligns with contemporary SHRM literature regarding the relationship between SHRM practices, employee well-being, corporate health programs, and SDGs.

6. Implications

The results of the present study may be viewed from both theoretical and practical perspectives. First, the study demonstrates that employee well-being represents an important component of SHRM and sustainable development of organizations. As organizations strive to achieve sustainability, HR professionals can consider well-being as a mechanism that will contribute to organizational sustainability and help meet SDGs. Thus, integrating well-being-focused HR activities into organizational strategic management helps achieve organizational goals and SDGs, especially SDG 3.

6.1 Theoretical Implications

Theoretically, this review provides a comprehensive overview of SHRM and the way it is related to employee well-being and corporate health initiatives. In contrast to the existing literature focusing on well-being outcomes, the present study emphasizes the role of well-being in fostering organizational sustainability. Additionally, the article introduces a framework that integrates SHRM, employee well-being, corporate health programs, and SDG 3, thus highlighting an overlooked aspect of SHRM and its sustainability. Moreover, the present review explores some emerging aspects of SHRM, such as use of technology and AI, and ESG. Consequently, the article serves as a basis for future theoretical development and empirical research.

6.2 Managerial Implications

For practitioners, the study highlights several implications. First, organizations that wish to promote employee well-being should develop comprehensive initiatives aimed at improving the health of employees. Specifically, HR departments should introduce a set of programs to improve physical, psychological, social, and work-life well-being of workers. Second, organizations should integrate well-being indicators into ESG reports and other sustainable management activities. Third, by engaging in health and well-being initiatives, organizations can significantly increase their employees' organizational commitment and enhance their productivity. Thus, organizational well-being has multiple benefits.

7. Future Research Directions

Future research can address some topics related to sustainable HRM and employee well-being. Specifically, future research can explore:

- i. AI and employee well-being;
- ii. well-being indicators in ESG reporting;
- iii. SHRM in higher education institutions;
- iv. cross-cultural differences in workplace wellness practices;
- v. longitudinal impacts of wellness programs on employee outcomes.

8. Conclusion

Employee well-being becomes an important issue addressed by sustainable human resource management. By implementing various health and wellness programs, organizations are able to contribute to physical, psychological, and social well-being, as well as improve organizational sustainability. In this regard, sustainable HRM and health promotion become powerful mechanisms through which organizations can make a contribution to SDG 3.

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