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"A STUDY ON CONSUMERS' PREFERENCES TOWARDS ONLINE SHOPPING: AN EMPIRICAL ANALYSIS BASED ON DEMOGRAPHIC CHARACTERISTICS AND STATISTICAL VALIDATION"

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ABSTRACT

The rapid growth of digital technologies has significantly transformed consumer buying behaviour, making online shopping a dominant mode of retail exchange. Understanding consumers' preferences towards online shopping has therefore become essential for businesses and researchers alike. The present study aims to examine consumers' preferences towards online shopping by analysing demographic characteristics and statistically validating preference data. The study adopted a descriptive and analytical research design and relied on primary data collected through a structured questionnaire administered to 400 online consumers. Consumer preferences were measured using a five-point Likert scale. Descriptive statistical techniques were employed to analyse demographic profiles, while data normality was assessed using the Kolmogorov–Smirnov test, Shapiro–Wilk test, and skewness–kurtosis measures. The results revealed that the consumer preference data followed a normal distribution, confirming the suitability of parametric analysis. Demographic analysis indicated that younger consumers, males, unmarried individuals, graduates, and business-class respondents exhibited higher inclination towards online shopping. The findings highlight the strong influence of demographic factors on online shopping preferences and emphasize the importance of statistically validated data analysis in consumer behaviour research. The study offers valuable insights for online retailers to design targeted marketing strategies aligned with consumer expectations.

Key Words: *Online Shopping; Consumer Preference; Demographic Characteristics; Normality Test; Consumer Behaviour.*

I. INTRODUCTION

The rapid advancement of information and communication technologies has significantly transformed traditional modes of commerce, giving rise to online shopping as a dominant channel of retail exchange. The integration of internet connectivity, digital payment systems, and mobile technologies has enabled consumers to access a wide range of products and services without spatial or temporal limitations [1]. Online shopping has evolved from a supplementary retail option to a primary purchasing mode, especially among technology-savvy consumers, reshaping buying behaviour, decision-making processes, and market competition [2].

Consumer preference plays a crucial role in determining the success and sustainability of online retail platforms. Preferences are influenced by multiple factors such as convenience, perceived enjoyment, ease of use, time savings, and accessibility of information [3]. Unlike traditional shopping, online shopping introduces experiential and psychological dimensions including excitement, perceived risk, trust, and technological comfort, which significantly

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affect purchase intention [4]. Understanding these preferences has therefore become essential for marketers, platform developers, and policymakers.

Demographic characteristics strongly influence consumers' online shopping behaviour. Age, gender, marital status, education level, and occupation shape consumers' attitudes toward technology adoption and digital purchasing [5]. Younger consumers tend to show higher engagement in online shopping due to greater familiarity with digital tools and openness to innovation, whereas older consumers often exhibit cautious behaviour driven by security and trust concerns [6]. Similarly, educational background and occupational status influence digital literacy and purchasing confidence, thereby affecting preference patterns [7].

In developing economies, the growth of online shopping is particularly dynamic due to expanding internet penetration, increased smartphone usage, and evolving consumer lifestyles. However, consumer behaviour in such contexts exhibits heterogeneity driven by socio-economic diversity and varying levels of technological exposure [8]. This necessitates empirical investigation using robust statistical techniques to accurately capture preference trends and behavioural patterns across demographic groups.

Statistical validation of consumer preference data is a critical step in behavioural research. Before applying advanced analytical techniques, it is essential to examine whether the collected data satisfy the assumption of normality [9]. Normality testing ensures the appropriateness of parametric analysis and enhances the reliability of interpretations drawn from the study. In this context, the use of established tests such as Kolmogorov–Smirnov and Shapiro–Wilk provides empirical justification for further statistical examination.

The present study is positioned within this analytical framework and seeks to examine consumers' preferences towards online shopping through systematic data collection and statistical validation. By analysing demographic characteristics and preference distributions, the study aims to provide meaningful insights into contemporary online shopping behaviour. The findings are expected to contribute to academic literature and offer practical implications for online retailers seeking to align their strategies with consumer expectations.

II. Literature Review

Online shopping behaviour has been widely examined in consumer behaviour and electronic commerce literature, with researchers emphasizing the role of convenience and time efficiency as primary drivers of online purchase decisions. Studies have consistently shown that consumers prefer online shopping due to ease of access, reduced physical effort, and the ability to compare products across multiple platforms simultaneously [10]. These attributes significantly differentiate online shopping from traditional retail formats and influence overall consumer preference.

Several researchers have focused on the psychological dimensions of online shopping, highlighting factors such as enjoyment, excitement, and perceived usefulness. It has been observed that consumers derive intrinsic satisfaction from browsing online platforms, which enhances engagement and repeat purchase intention [11]. The experiential aspect of online shopping has therefore been recognized as a critical determinant of preference, particularly among younger consumers who associate online shopping with entertainment and novelty.

Demographic variables have been extensively studied to understand variations in online shopping behaviour. Age has emerged as a significant predictor, with younger consumers demonstrating higher adaptability to digital environments and stronger preference for online purchasing [12]. In contrast, older consumers often exhibit resistance due to concerns related to trust, privacy, and transaction security. Gender-based studies suggest that males tend to adopt online shopping earlier and display higher risk tolerance, whereas females emphasize product assurance and post-purchase support [13].

Education level and occupational background have also been identified as influential factors shaping online shopping preferences. Higher educational attainment enhances digital literacy and confidence in using online platforms, thereby increasing purchase likelihood [14]. Similarly, professionals and business-class consumers often prefer online shopping due to time constraints and convenience, while students are motivated by price sensitivity and promotional offers [15]. These findings support the inclusion of demographic profiling in online shopping research.

Trust and perceived risk remain central themes in the literature on online consumer behaviour. Researchers argue that

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concerns related to payment security, data privacy, and product authenticity negatively influence consumer preference [16]. However, improved technological safeguards, brand reputation, and positive prior experiences have been found to mitigate perceived risk and strengthen trust in online platforms, thereby enhancing consumer confidence.

From a methodological perspective, many studies emphasize the importance of validating consumer perception data before applying inferential statistical techniques. Ensuring data normality is considered a prerequisite for reliable behavioural analysis, particularly when parametric tests are employed [17]. Statistical measures such as skewness, kurtosis, and formal normality tests are commonly used to assess the distribution characteristics of consumer preference data.

Recent empirical studies highlight that the combination of descriptive statistics and normality testing provides a robust framework for analysing consumer behaviour datasets [18]. Such approaches allow researchers to draw meaningful inferences while maintaining statistical rigor. This methodological alignment strengthens the credibility of findings and supports the generalizability of results across similar consumer populations.

Despite extensive research on online shopping behaviour, gaps remain in integrating demographic profiling with statistically validated preference measurement in specific regional contexts. Many studies rely on descriptive insights without sufficient emphasis on data distribution characteristics [19]. The present study addresses this gap by combining demographic analysis with rigorous normality testing to provide a statistically sound understanding of consumers' preferences towards online shopping.

III. Research Methodology

The present study adopted a descriptive and analytical research design to examine consumers' preferences towards online shopping. The descriptive approach was used to understand and summarize the demographic characteristics of respondents, while the analytical approach facilitated statistical examination of consumer preference patterns. This research design was considered suitable because the study aimed to analyse existing consumer behaviour based on observed data rather than manipulating any variables or experimental conditions.

The population of the study comprised consumers who actively participate in online shopping. The population universe included individuals from diverse socio-economic and occupational backgrounds such as students, service-class employees, businesspersons, professionals, and household consumers. To ensure practical feasibility and adequate respondent participation, a non-probability convenience sampling technique was employed. A total of 400 respondents were selected for the study, which provided a sufficiently large and diverse sample for meaningful statistical analysis and interpretation of consumer behaviour.

Primary data were collected through a structured questionnaire developed specifically for this study. The questionnaire was designed to capture both demographic information and consumers' preferences towards online shopping. The first part of the questionnaire collected data related to age, gender, marital status, educational qualification, occupation, and income of respondents. The second part consisted of statements measuring consumers' preferences and attitudes towards online shopping, focusing on aspects such as convenience, excitement, technology usage, and overall shopping experience. The questionnaire was administered through both personal interaction and digital platforms to ensure better coverage and response accuracy.

Consumers' preferences towards online shopping were measured using a five-point Likert scale, ranging from strongly disagree to strongly agree. The Likert scale was chosen because it is widely accepted in behavioural and consumer research for measuring perceptions and attitudes, and it allows respondents to express varying degrees of agreement. This scale also enabled the conversion of qualitative perceptions into quantitative data suitable for statistical analysis.

After data collection, the responses were carefully screened for completeness and consistency. Incomplete and ambiguous responses were excluded from the final dataset. The valid responses were coded numerically and entered into statistical software for analysis. Proper data cleaning procedures were followed to minimize errors and ensure the reliability of results.

Descriptive statistical tools such as frequency distribution, percentages, mean, standard deviation, minimum, maximum, range, and interquartile range were used to summarize and interpret the demographic characteristics and consumer preference scores. These measures provided a clear understanding of the distribution and central tendency of

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the collected data.

Before proceeding with inferential statistical analysis, it was necessary to test whether the collected data satisfied the assumption of normal distribution. Normality of the consumer preference scores was examined using the Kolmogorov–Smirnov test and the Shapiro–Wilk test. These tests were applied to determine whether the distribution of data significantly deviated from a normal distribution. The results indicated that the data followed a normal distribution, as the p-values obtained were greater than the 0.05 significance level.

In addition to formal normality tests, skewness and kurtosis values were calculated to assess the degree of deviation from normality. The values obtained fell within the acceptable range of ±2, indicating that the data were symmetrically distributed and suitable for parametric statistical analysis. This confirmed the validity of applying further statistical techniques to analyse consumers' preferences towards online shopping.

IV. Result and Discussion

4.1 First- test of normality

As the subsequent experiments required assumption of normal distribution of the same as the pre-requisite for the analysis, it became necessary to test the veracity of the assumption of normal distribution of collected data. Normality test statistics by 'Kolmogorov- Smirnov test' and 'Shapiro-Wilk test' assesses that whether a particular distribution differs significant from normal distribution (Carver & Nash, 2006). Thus, the responses were tested for veracity of the assumption of normal distribution by K-S test and Shapiro Wilk test for the total score of consumers' preferences for online shopping. The significant value (p-value) for K-S test was found to be 0.255 (greater than 0.05) and for Shapiro-Wilk test was found to be 0.326 (greater than 0.05). This indicated that the distribution of final points does not differ significantly from normal distribution. This inferred that the assumption of normality with respect to the sample chosen was valid.

Table 1 Tests of normality

	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
Consumers' preference for online shopping	0.092	345	0.255	0.958	345	0.326

Skewness and Kurtosis as the measure of deviation from normality were also calculated. It helps to identify whether the data lies under the acceptance region or not. The value suggested by the test is +2 to -2 is acceptable region (George and Mallery, 2009). If the test result's value fall under the range of +2 to -2 is considered that the data does not deviate much from the normal curve and can be said the data is normally distributed. The test result is found favourable as the value of 'Skewness = -0.760' and 'Kurtosis = 1.801'which lies under the acceptance area. Hence, the data used for analysis is normal.

Table 2 Showing skewness & kurtosis

			Statistic	Std. Error
	Mean		3.6941	0.02842
95% Confidence Interval for Mean		Lower Bound	3.6382	
		Upper Bound	3.7500	
Consumers' Preference for Online Shopping	5% Trimmed Mean		3.7146	
	Median		3.6522	
	Variance		0.279	
	Std. Deviation		0.52781	
	Minimum		1.65	
	Maximum		4.91	

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	Range		3.26	
	Interquartile Range		.65	
	Skewness		-0.760	0.131
	Kurtosis		1.801	0.262

4.2 Demographic Characteristics

The tables and graphs are given to measure the profile in terms of age, gender, marital status, higher education status, occupation and income of respondents so that a clear understanding should be made while analyzing the data. Total 400 respondents have been selected for this study those who go for online shopping. This population universe comprises of service class, households, business class and others as per the convenience.

Table 3 Age of respondents (consumers)

Category	Frequency	Percent	Valid%	Cumulative%
<25 Years	176	44.00%	44.00%	44.00%
25-40 Years	116	29.00%	29.00%	73.00%
40-55 Years	68	17.00%	17.00%	90.00%
>55 Years	40	10.00%	10.00%	100.00%
Total	400	100.00%	100.00%	

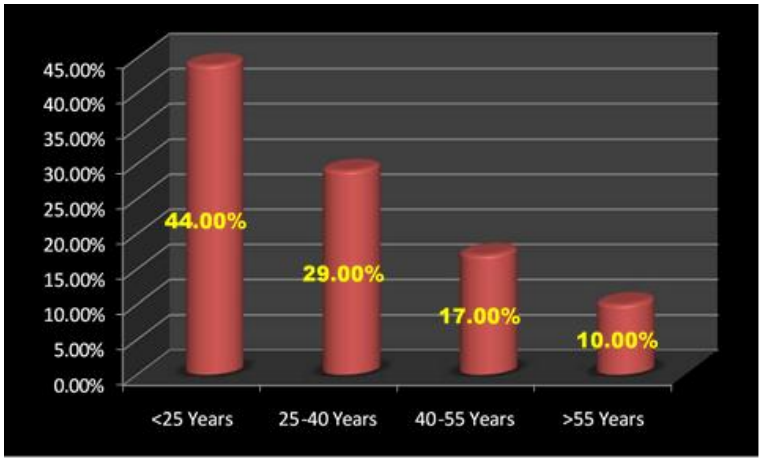

Figure 1 Age of respondents (consumers)

The statistics on age group of respondents it is clear from the given above table and bar chart that 44% consumers belong to <25 years of age group, 29% are between 25-40 age group, 17% are from 40-55 years and remaining 10% are of more than 55 years. It reveals that the majority of the respondents are from <25 years age group. It is evident from the findings of the age group of consumers that youths are more prone to online shopping as they get fun and excitement which is important attributes to motivate. It is said that online shopping is specific made for considering the passions, expectations of upcoming generation. The younger generation is comfortable in accessing the technology and they are also chase the trends easily.

Table 4 Gender of Respondents (Consumers)

Category	Frequency	Percent	Valid%	Cumulative%
Male	232	58.0%	58.0%	58.0%
Female	168	42.0%	42.0%	100.00%
Total	400	100.00%	100.00%	

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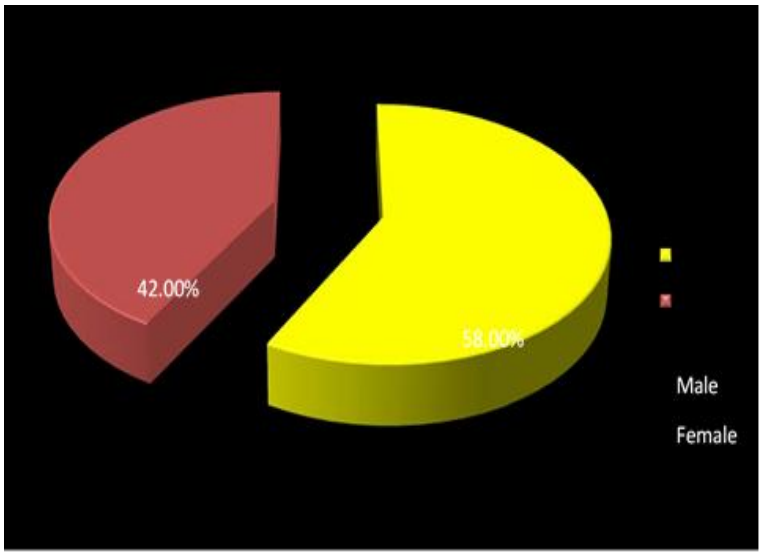

Figure 2 Gender of respondents (consumers)

The table and pie chart given above show that out of 400 consumers, 58% are male and remaining 42% are female. The result mentions that percentage of males is high in compare to females as males are more risk taking and they are calculative so they feel more comfortable with online shopping.

Table 5 Marital status of respondents (consumers)

Category	Frequency	Percent	Valid%	Cumulative%
Married	154	38.5%	38.5%	38.5%
Unmarried	246	61.5%	61.5%	100.00%
Total	400	100.00%	100.00%	

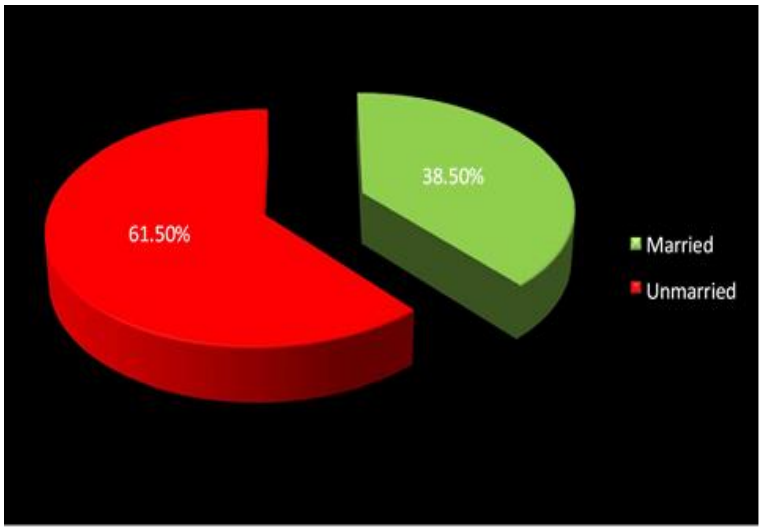

Figure 3 Marital status of respondents (consumers)

The table and pie chart given above show that out of 400 consumers, 38% are married and remaining 61.5% are unmarried. It is evident from the data analysis that unmarried consumers have no liabilities so they even shop for accessories but married consumers are very careful as they have so many responsibilities to take and hence they shop for value of money and as per their requirements. They do not shop for unnecessary things.

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Table 6 Education status of respondents (consumers)

Category	Frequency	Percent	Valid%	Cumulative%
H.Sc	116	29.00%	29.00%	29.00%
Graduate	140	35.00%	35.00%	64.00%
PG	76	19.00%	19.00%	83.00%
Others (Doctorate, M.Phil etc.)	68	17.00%	17.00%	100.00%
Total	400	100.00%	100.00%	

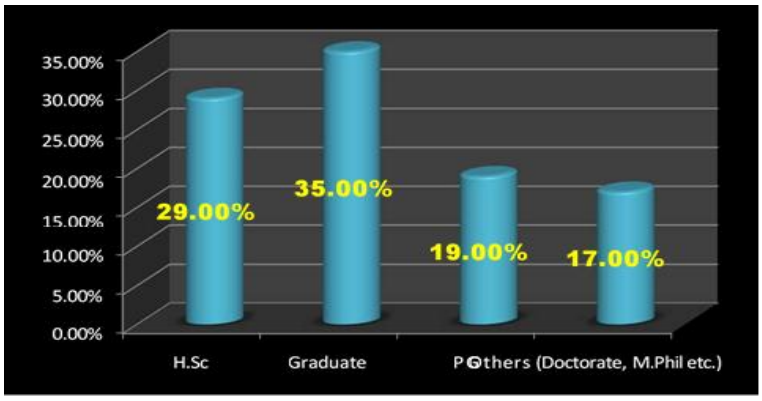

Figure 4 education status of respondents (consumers)

The above-mentioned table and bar diagram reflect the qualification of consumers and it is clear from the data that 29% are from higher secondary schooling, 35% are graduates, 19% are Postgraduates and remaining 17% have others qualifications such as; Doctorate, M.Phil, Diploma, Certification etc. Again the results shows that graduates' percentage is high because this age is a comfort zone and also these graduates are familiar with technology.

Table 7 Occupation of respondents (consumers)

Category	Frequency	Percent	Valid%	Cumulative%
Student	110	27.5%	27.5%	27.5%%
Business	132	33.0%	33.0%	60.5%
Service	68	17.0%	17.0%	77.5%
Others (Professionals)	90	22.5%	22.5%	100.00%
Total	400	100.00%	100.00%	

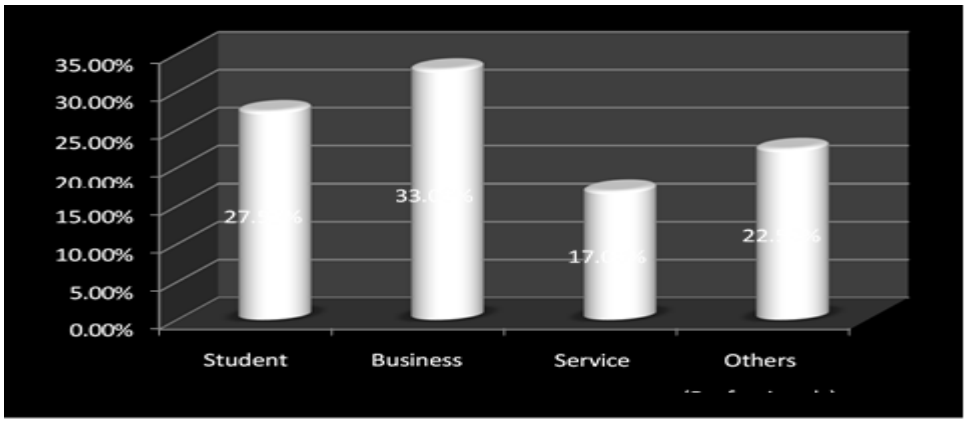

Figure 5 Occupation of respondents (consumers)

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The above-mentioned table and bar diagram reflect the qualification of consumers and it is clear from the data that 27.5% are students, 33% are from business class, 17% are from service class and remaining 22.5% are from professionals such as Doctors, Lawyers, Academicians etc. The result shows that business class are more indulged in online shopping due to lack of time and through online shopping they are able to save their time. For them to spend money is not a big issue so when the past history is considered it is explained that the business class shops more in compare to other classes.

V. CONCLUSION

The present study examined consumers' preferences towards online shopping by integrating demographic analysis with statistical validation of preference data. The findings confirmed that the collected data satisfied the assumption of normality, as evidenced by non-significant Kolmogorov–Smirnov and Shapiro–Wilk test results and acceptable skewness and kurtosis values. This statistical validation strengthened the reliability of subsequent analysis and interpretation.

The demographic analysis revealed that age, gender, marital status, education level, and occupation significantly influenced online shopping behaviour. Younger consumers demonstrated a higher preference for online shopping due to greater technological familiarity and attraction towards convenience and excitement. Male respondents exhibited stronger inclination towards online shopping, possibly due to higher risk tolerance and decision autonomy. Unmarried consumers showed greater engagement in online shopping compared to married respondents, reflecting fewer financial responsibilities and higher discretionary spending. Graduates and business-class respondents emerged as prominent online shoppers, indicating the role of education and time constraints in shaping consumer preferences.

Overall, the study highlights that online shopping preference is a multidimensional phenomenon influenced by demographic and behavioural factors. The use of robust statistical techniques ensured the credibility of the findings and provided a comprehensive understanding of consumer behaviour in the online shopping context. The results of this study can assist online retailers and marketers in developing consumer-centric strategies, improving platform design, and enhancing customer engagement. Future research may extend the scope by incorporating behavioural, psychological, and technological variables across different geographical regions.

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