



A Study of Demographic Factors Influencing Online Buying Behaviour: Evidence from Indore District of Madhya Pradesh

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ABSTRACT

This study examines demographic characteristics and online buying behaviour among consumers in Indore district of Madhya Pradesh. Primary data were collected during 2024 from 300 respondents through a structured questionnaire using stratified random sampling; the sample comprised 180 urban and 120 rural respondents. Descriptive statistics, cross-tabulation and a Chi-square test of independence were used to analyse purchase frequency and its association with age. The observed distribution of online purchase frequency was 10.00% never, 25.00% rarely, 33.67% occasionally, 20.00% frequently and 11.33% very frequently. The Chi-square test showed no statistically significant association between age group and frequency of online purchases, $\chi^2(16, N = 300) = 2.396, p = .99996$, Cramér's $V = .045$. Accordingly, the null hypothesis was not rejected. Qualitative responses identified convenience, time saving and wider product choice as important motivations, while concerns about payment security, product quality and delivery services were reported as barriers. Descriptive observations also indicated differences across income, education and urban-rural segments; however, these patterns are not interpreted as statistically significant because separate inferential tests for those variables were not available in the study data. The findings suggest that e-commerce strategy in Indore should be guided by observed consumer needs and access conditions rather than broad demographic assumptions alone.

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1. Introduction

The expansion of internet access, smartphones, digital payments and platform-based retail has altered the way consumers search for information, compare alternatives and complete purchases. Online buying behaviour is shaped not only by the availability of digital infrastructure but also by consumers' perceptions of convenience, usefulness, trust, risk and familiarity with online systems. Earlier research has consistently shown that trust, perceived usefulness, ease of use and perceived risk are central to e-commerce adoption and transaction behaviour (Gefen, Karahanna, & Straub, 2003; Pavlou, 2003; Perea y Monsuwé, Dellaert, & de Ruyter, 2004).

In the Indian context, online consumer behaviour is especially relevant because digital access has expanded beyond metropolitan centers and into smaller cities and rural markets. The Internet and Mobile Association of India and Kantar's Internet in India 2023 report reflects the continuing expansion of internet usage across the country. This broader digitalisation creates an important need to understand whether demographic characteristics such as age, gender, income, education and place of residence are systematically related to online shopping behaviour.

Indore district provides a useful setting for such an examination because it includes a large urban population as well as rural consumers who may differ in digital access, exposure to online platforms, payment practices and delivery infrastructure. Previous research in Indore

has shown the importance of convenience, internet-related traits, attitudes and perceived risk among young consumers (Sharma & Sitlani, 2013). Research from other Indian markets has produced mixed evidence regarding demographic effects. Sharma and Jain (2018), for example, reported no significant demographic impact on online purchase intention in Bhopal, while Chincholkar and Sonwaney (2022) found that several demographic variables were associated with product choice in tier-III markets. These mixed findings make local empirical testing important rather than assuming that demographic characteristics automatically produce significant differences in online buying behaviour.

The present study therefore evaluates online buying behaviour among 300 respondents in Indore district. It presents the demographic profile of respondents, describes internet usage and purchase-frequency patterns, identifies motivations and barriers reported by consumers and statistically tests whether age group is associated with frequency of online purchases. Particular care is taken to distinguish descriptive patterns from inferential evidence so that conclusions remain consistent with the statistical results.

2. Review of Literature

Research on online buying behaviour has developed around technology acceptance, perceived risk, trust, convenience and consumer characteristics. Gefen et al. (2003) demonstrated that trust in the online vendor complements perceived usefulness and ease of use in explaining online shopping intentions. Pavlou (2003) similarly integrated trust and perceived risk with the Technology Acceptance Model and showed that e-commerce acceptance depends on both technological evaluations and transaction-related uncertainty. Perea y Monsuwé et al. (2004) concluded that online shopping attitudes are influenced by usefulness, ease of use, enjoyment, consumer traits, situational factors, product characteristics, previous experience and trust.

Indian studies have also examined demographic and contextual effects. Sinha and Kim (2012) investigated factors affecting Indian consumers' attitudes toward online buying and highlighted perceived risks and India-specific concerns related to online transactions. Sharma and Sitlani (2013), in a study of higher-education students in Indore, found that internet traits, attitudinal traits and convenience supported online shopping, while perceived financial, privacy, security and product-related risks discouraged it. Prasad and Sharma (2016) found that demographic factors did not significantly affect online channel usage for food and grocery among urban Indian buyers, although certain socioeconomic characteristics did. Sharma and Jain (2018) also reported that demographic characteristics did not significantly influence online purchase intention among consumers in Bhopal. In contrast, Chincholkar and Sonwaney (2022) found significant demographic differences in product choice during online shopping in tier-III markets. The literature therefore suggests that demographic effects are context-specific and should be established through appropriate statistical testing rather than inferred from descriptive differences alone.

3. Objectives of the Study

- i. To examine the demographic profile of consumers participating in the study in Indore district.
- ii. To describe internet usage and the frequency of online purchases among respondents.
- iii. To test whether age group is significantly associated with frequency of online purchases.
- iv. To identify major motivations and barriers related to online shopping reported by respondents.
- v. To discuss the practical implications of the observed patterns for e-commerce businesses and policymakers.

4. Research Hypothesis

H_0 : There is no significant association between age group and frequency of online purchases.

H_1 : There is a significant association between age group and frequency of online purchases.

5. Research Methodology

- i. **Research Design:** The study adopted a descriptive and analytical cross-sectional research design. Descriptive analysis was used to summarise demographic characteristics, internet usage and purchase-frequency patterns, while inferential analysis was used to test the association between age group and online purchase frequency.
- ii. **Study Area and Period:** The study was conducted in Indore district of Madhya Pradesh during 2024 and covered both urban and rural respondents.
- iii. **Sample and Sampling Technique:** A sample of 300 respondents was selected using stratified random sampling to ensure representation across major demographic categories and urban-rural locations. The final sample included 180 urban respondents (60%) and 120 rural respondents (40%).
- iv. **Research Instrument:** Primary data were collected through a structured questionnaire covering demographic characteristics, internet usage patterns, frequency of online purchases and online shopping experiences. In-depth interviews were also conducted with a subset of respondents to obtain qualitative information regarding motivations and barriers. The available study record does not specify a separate pilot-test or questionnaire reliability coefficient; therefore, no formal claim regarding pre-testing or scale reliability is made in this paper.
- v. **Variables:** The principal demographic variables were age, gender, monthly income, education level and urban-rural location. Online buying behaviour was represented by frequency of online purchases. Motivations and barriers were interpreted from the qualitative responses.
- vi. **Statistical Analysis:** Frequencies and percentages were used for descriptive analysis. A cross-tabulation of age group by online purchase frequency was analysed using the Pearson Chi-square test of independence at the 5% significance level. Cramér's V was reported as an effect-size measure. The analysis does not report correlation or regression coefficients because numerical outputs for such tests were not available in the study data.

6. Results and Discussion

6.1 Demographic Profile of Respondents

Table 1. Demographic Profile of Respondents

Demographic Category	No. of Respondents	Percentage (%)
Age: 18–25 years	75	25.00
Age: 26–35 years	90	30.00
Age: 36–45 years	60	20.00
Age: 46–55 years	45	15.00
Age: 56 years and above	30	10.00
Gender: Male	165	55.00
Gender: Female	135	45.00
Monthly income: Below ₹10,000	60	20.00
Monthly income: ₹10,000–₹20,000	90	30.00
Monthly income: ₹20,000–₹30,000	75	25.00
Monthly income: ₹30,000 and above	75	25.00

Education: Below High School	45	15.00
Education: High School	75	25.00
Education: Undergraduate	105	35.00
Education: Postgraduate and above	75	25.00
Location: Urban	180	60.00
Location: Rural	120	40.00

The sample was demographically diverse. Respondents aged 26–35 years formed the largest age group (30%), followed by those aged 18–25 years (25%). Males constituted 55% of the sample and females 45%. Half of the respondents reported monthly income above ₹20,000. With respect to education, 60% were undergraduates or postgraduates. The sample also included both urban (60%) and rural (40%) consumers, enabling comparison of access and experience across locations.

6.2 Internet Usage Patterns

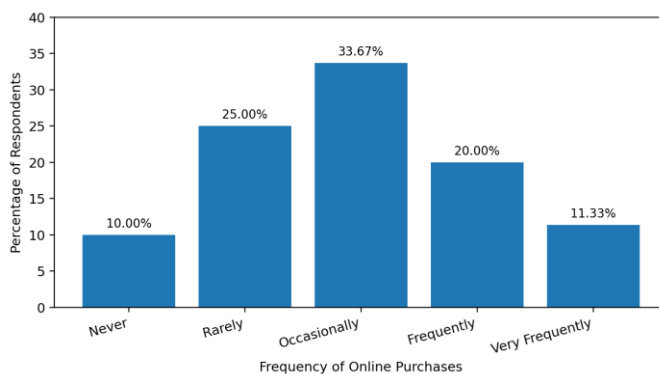
Based on the urban and rural access rates reported in the survey, approximately 84% of respondents had internet access overall. Internet penetration was higher among urban respondents (90%) than rural respondents (75%). The reported primary-device distribution was 70% smartphones, 20% laptops and 10% desktop computers, indicating the central role of mobile access in digital shopping behaviour.

6.3 Frequency of Online Purchases

Table 2. Frequency of Online Purchases among Respondents

Frequency of Online Purchases	No. of Respondents	Percentage (%)
Never	30	10.00
Rarely (once every few months)	75	25.00
Occasionally (once a month)	101	33.67
Frequently (multiple times a month)	60	20.00
Very frequently (weekly)	34	11.33
Total	300	100.00

Figure 1. Frequency of Online Purchases



The largest group of respondents purchased online occasionally (33.67%), followed by those who purchased rarely (25.00%). Frequent buyers represented 20.00% of the sample, while 11.33% purchased online very frequently. Only 10.00% reported never making online purchases. Thus, 65.00% of respondents purchased online at least occasionally, although the intensity of online purchasing varied considerably.

6.4 Age Group and Online Purchase Frequency

The cross-tabulation shows broadly similar purchase-frequency distributions across age groups. For example, the combined proportion of respondents purchasing frequently or very frequently was 30.67% among those aged 18–25 years, 30.00% among those aged 26–35 years, 30.00% among those aged 36–45 years, 33.33% among those aged 46–55 years and 36.67% among respondents aged 56 years and above. These descriptive differences are small and do not support a simple conclusion that younger respondents necessarily purchase online more frequently.

Table 3. Cross-Tabulation of Age Group and Frequency of Online Purchases

Age Group	Never	Rarely	Occasionally	Frequently	Very Frequently	Total
18–25	7	19	26	15	8	75
26–35	8	24	31	18	9	90
36–45	6	15	21	12	6	60
46–55	5	11	14	9	6	45
56 and above	4	6	9	6	5	30
Total	30	75	101	60	34	300

6.5 Chi-Square Test of Independence

Table 4. Chi-Square Test Results

Statistic	Result
Pearson Chi-square (χ^2)	2.396
Degrees of freedom (df)	16
p-value	0.99996
Sample size (N)	300
Cramér's V	0.045
Decision	Fail to reject H_0

The Chi-square test produced $\chi^2(16, N = 300) = 2.396$ with $p = 0.99996$. Because the p-value is substantially greater than the 0.05 significance level, the null hypothesis is not rejected. The analysis therefore does not provide evidence of a statistically significant association between age group and frequency of online purchases. The Cramér's V value of 0.045 also indicates a negligible association.

This result should guide interpretation of the study: age-related differences visible in descriptive frequencies are not statistically meaningful in the present sample.

6.6 Income, Education and Urban-Rural Patterns

The survey narrative indicated that respondents with higher incomes and higher educational qualifications appeared more comfortable with online shopping and urban respondents reported better access conditions than rural respondents. However, the available dataset does not provide complete cross-tabulations or inferential test results for income, education, gender, or location against purchase frequency. These observations are therefore treated as descriptive patterns rather than statistically established associations. This distinction is important because demographic differences may be influenced by internet quality, digital literacy, payment confidence, product category, delivery availability and previous online experience.

6.7 Qualitative Insights: Motivations and Barriers

Interview responses identified convenience, time saving and access to a wider variety of products as common motivations for online shopping. Respondents also valued the ability to compare products and prices without visiting multiple physical stores. At the same time, several barriers were reported, including lack of trust in online payment systems, concerns about product quality and inadequate or inconsistent delivery services in some rural areas. These findings are consistent with established e-commerce research showing that trust, perceived risk, convenience and transaction conditions shape online purchase behaviour (Gefen et al., 2003; Pavlou, 2003; Perea y Monsuwé et al., 2004).

7. Major Findings

- The sample included 300 respondents, of whom 60% were urban and 40% were rural.
- Approximately 84% of respondents had internet access when the reported urban and rural access rates were combined.
- Smartphones were the dominant reported device for internet access, accounting for 70% of primary-device use.
- Online purchasing was common: 65% of respondents purchased online at least occasionally, while 10% reported never purchasing online.

- v. The age-by-purchase-frequency distribution was internally consistent with 30, 75, 101, 60 and 34 respondents across the five purchase-frequency categories.
- vi. The Chi-square test found no significant association between age group and online purchase frequency, $\chi^2(16, N = 300) = 2.396, p = .99996$.
- vii. The effect size for the age-frequency association was negligible (Cramér's $V = .045$).
- viii. Convenience, time saving and product variety were prominent motivations, whereas payment trust, product-quality concerns and delivery issues were important barriers.
- ix. Income, education, gender and urban-rural differences should be interpreted descriptively unless supported by separate inferential tests.

8. Conclusion

The study provides a demographic and behavioural profile of online consumers in Indore district and demonstrates the importance of aligning substantive conclusions with statistical evidence. Online shopping was used by a substantial majority of respondents, with occasional purchasing being the most common pattern. The study also documented differences in internet access between urban and rural respondents and identified convenience, time saving and product variety as major motivations, alongside concerns relating to payment security, product quality and delivery services.

The inferential result is particularly important. The Chi-square test did not establish a statistically significant association between age group and frequency of online purchases. Therefore, the evidence does not support the claim that age significantly influences online purchase frequency in this sample. Likewise, observations concerning income, education, gender and place of residence should not be described as significant relationships unless they are supported by corresponding cross-tabulations and statistical tests. The findings suggest that online buying behaviour in Indore is likely to reflect a combination of demographic context, digital access, trust, convenience, previous experience and platform-related conditions rather than a simple demographic effect.

For businesses, this means that customer segmentation should go beyond age-based assumptions and should incorporate behavioural and access-related variables. For policymakers, improving digital literacy, internet reliability, consumer protection awareness and delivery infrastructure—particularly in less-served locations—may help broaden meaningful participation in e-commerce. Future studies should test income, education, gender, urban-rural location, trust, digital literacy and perceived risk using adequately powered inferential models such as Chi-square tests, ordinal or multinomial regression, or structural models where appropriate.

9. Recommendations

- i. Strengthen digital literacy initiatives, particularly in rural and less digitally experienced consumer groups.
- ii. Improve internet reliability and last-mile logistics in rural and peripheral areas of Indore district.
- iii. Build consumer trust through secure payment systems, transparent return policies, authentication mechanisms and clear grievance redressal procedures.
- iv. Design marketing strategies around observed behavioural segments, purchase frequency, trust, convenience and product preferences rather than relying only on demographic categories.
- v. Conduct separate inferential tests for income, education, gender and urban-rural location before making claims of significant demographic influence.
- vi. Future research should use validated multi-item scales for trust, perceived risk, convenience, digital literacy and purchase intention and should report pilot testing and reliability statistics.

10. Limitations of the Study

- i. The study is geographically limited to Indore district and its findings should not be generalised automatically to other regions.
- ii. The available research record does not report a formal pilot-test or reliability coefficient for the questionnaire.
- iii. The inferential analysis available for this paper tests only the association between age group and online purchase frequency.
- iv. Income, education, gender and urban-rural observations are descriptive because complete inferential outputs for these variables were not available.
- v. Online buying behaviour was measured primarily through self-reported purchase frequency and qualitative responses. It may be affected by recall or response bias. ■

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