

Impact of E-Commerce Service and Experience Factors on Customer Loyalty

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ABSTRACT

This research explores the critical relationship between online customer experience dimensions—such as informativeness, entertainment, and e-service quality—and their impact on consumer loyalty in the B2C e-commerce sector. By synthesizing a literature-based conceptual model with empirical data from 100+ respondents, the study reveals that while customer experience significantly drives loyalty, factors like e-service quality and engagement do not always have a direct influence. The findings provide a strategic framework for e-businesses to leverage digital experience as a competitive advantage and a primary driver of repeat purchase behavior.

Keywords: E-service Quality, Consumer Loyalty, B2C E-Commerce, Repeat Purchase Behavior.

1. INTRODUCTION

The rapid development of electronic commerce (e-commerce) has profoundly transformed the global retail landscape, redefining how businesses engage with consumers and how customers purchase products and services. In recent years, India has emerged as one of the fastest-growing e-commerce markets in the world. This growth is fueled by increasing internet penetration, widespread adoption of smartphones, the proliferation of digital payment systems, and a large young population that is digitally active and highly receptive to online shopping platforms. The expansion of affordable internet services, coupled with the rollout of 4G and 5G networks, has enabled online shopping to penetrate not only urban centers but also rural areas, broadening market reach and creating opportunities for e-commerce firms to serve diverse consumer segments (India Brand Equity Foundation, 2023).

Government initiatives such as Digital India and Startup India have further supported the growth of e-commerce by promoting digital literacy, encouraging technology-driven entrepreneurship, and creating a robust ecosystem for online businesses. These initiatives have improved infrastructure, enhanced connectivity, and facilitated access to innovative platforms, allowing both established companies and emerging enterprises to leverage digital channels to efficiently reach and engage customers. The COVID-19 pandemic acted as a catalyst for this digital transformation. Restrictions on movement and temporary closures of physical retail outlets accelerated consumers' shift toward online shopping. Even after the pandemic, many consumers continue to prefer online platforms due to convenience, time savings, and access to a wider variety of products and competitive prices. Consumer reviews, ratings, and comparison tools further influence purchasing behavior, increasing reliance on e-commerce platforms.

The Indian e-commerce market is highly competitive, with major platforms such as Amazon, Flipkart, Myntra, Meesho, and Ajio competing to capture and retain large customer bases. These companies invest heavily in technological innovation, personalized marketing strategies, efficient supply chains, and

customer engagement initiatives. Promotional campaigns, loyalty programs, discount offers, and fast delivery services are commonly employed to improve customer satisfaction, strengthen brand positioning, and encourage repeat purchases. In this context, customer experience has emerged as a critical determinant of purchasing decisions and long-term loyalty. Brand experience, encompassing sensory, emotional, cognitive, and behavioral responses to brand stimuli, plays a key role in shaping customer perceptions and attitudes. Positive brand experiences foster customer satisfaction, strengthen brand associations, and build trust, which in turn enhance customer loyalty.

Customer loyalty is particularly important in the e-commerce sector because digital platforms offer consumers numerous alternatives and make switching effortless. Loyal customers not only make repeat purchases but also act as brand advocates, providing positive word-of-mouth and contributing to long-term business sustainability. Research across industries such as hospitality, smartphones, luxury fashion, higher education, and coffee shops has consistently demonstrated a positive relationship between brand experience and customer loyalty (Tran & Chang, 2022; Waqas, 2022; Amer et al., 2023; Ren et al., 2023). Additionally, the mediating roles of brand satisfaction, brand trust, and emotional engagement have been shown to strengthen this relationship, indicating that positive brand experiences enhance emotional and cognitive bonds with consumers, leading to increased loyalty (Chatzi et al., 2024; Na et al., 2023).

Despite extensive research on brand experience and customer loyalty, limited studies have specifically explored the direct impact of brand experience on brand equity in the Indian e-commerce context. Brand equity, representing the added value a brand provides to a product or service, is crucial for gaining competitive advantage and sustaining market success. Key components of brand equity include brand awareness, brand associations, perceived quality, and brand loyalty, all of which are influenced by consumer perceptions and experiences. Understanding how brand experience affects these components can provide actionable insights for e-commerce platforms aiming to differentiate themselves and strengthen long-term consumer relationships.

In response to this research gap, the present study aims to examine the impact of brand experience components on different dimensions of brand equity within India's e-commerce sector. Furthermore, it investigates the mediating roles of brand associations and brand trust in shaping the relationship between brand experience and brand loyalty. By addressing these questions, this research provides practical implications for e-commerce businesses seeking to enhance customer engagement, improve brand positioning, and foster sustainable loyalty in an increasingly competitive digital marketplace (Rini et al., 2024; Chatzi et al., 2024; India Brand Equity Foundation, 2023; Amer et al., 2023; Ren et al., 2023; Na et al., 2023; Waqas, 2022; Tran & Chang, 2022).

1.1 Background of the study

The rapid growth of the Internet has transformed e-commerce into a major platform for business and customer interaction, supported by widespread use of websites and social media. With increasing competition and rising customer expectations, online businesses must focus on delivering superior customer experiences. Digital technologies now enable personalized, interactive, and engaging shopping environments. Positive online customer experiences play a crucial role in building satisfaction, loyalty, and repeat purchase behavior. Therefore, understanding how different dimensions of online customer experience influence customer loyalty is essential for effective digital marketing strategies.

1.2 Statement of the Problem

Despite the rapid growth of e-commerce and substantial investments by online retailers in improving service quality and customer experience, many organizations struggle to understand which service and

experience factors truly influence customer loyalty. While businesses implement various strategies such as website personalization, efficient delivery systems, responsive customer support, and secure payment processes, the effectiveness of these initiatives in fostering long-term customer loyalty remains unclear. This lack of empirical clarity makes it difficult for e-commerce firms to allocate resources effectively and develop strategies that enhance customer retention. Therefore, this study seeks to examine the impact of key e-commerce service and experience factors on customer loyalty.

1.3 Significance of the Study

This study is significant for e-commerce businesses, marketing managers, digital strategists, and academic researchers as it provides a structured understanding of how e-commerce service quality and customer experience factors influence customer loyalty. The findings offer valuable insights for improving customer retention strategies, enhancing online service delivery, and designing customer-centric digital experiences. Additionally, the study contributes to existing literature by consolidating key service and experience dimensions that drive long-term customer loyalty in the e-commerce sector.

1.4 Scope and Limitations of the Study

The scope of this research is limited to secondary data sources and an extensive review of existing literature due to the qualitative nature of the study. The analysis focuses on key e-commerce service and customer experience factors affecting customer loyalty. As the study is based on secondary data, the findings are generalized and may vary across different e-commerce industries, platforms, and geographic regions. Future research may incorporate primary data and empirical analysis to enhance the validity and applicability of the results.

2 LITERATURE REVIEW

2.1 E-Commerce Satisfaction (ECS)

Customer satisfaction occurs when a product or service meets or exceeds consumers' needs, desires, and expectations, reflecting the overall evaluation of a company's performance. Batheja (2020) explains that satisfaction can be assessed across all stages of the consumer journey, from need recognition to post-purchase behavior, through factors such as quality, pricing, and convenience. Similarly, Daulay (2022) emphasizes that customer satisfaction is a key indicator of strong firm–customer relationships, where fulfilling expectations leads to repeat purchases and long-term loyalty.

In the e-commerce context, customer satisfaction is influenced by various digital service factors, including website usability, information quality, payment security, and e-trust. Sastika et al. (2023) highlight that the alignment between perceived and actual performance of online platforms plays a crucial role in determining satisfaction levels.

Moreover, sustainability considerations are increasingly shaping customer satisfaction in e-commerce. Zhang (2023) and Pinto (2023) identify key elements such as sustainable packaging, last-mile delivery efficiency, and the growing market for second-hand goods as important factors influencing consumer perceptions. Additionally, evolving consumer expectations now include value-added services like faster and more reliable delivery, further reinforcing the importance of logistics and service quality, as noted by Kolasińska-Morawska (2022).

2.2 E-service quality

Service quality has been widely recognized as a prerequisite for shaping customer perception (Luo et al., 2020). In the digital context, e-service quality refers to the extent to which online platforms enhance the efficiency and effectiveness of customers' browsing and purchasing experiences. It reflects customers'

overall evaluation of both the transaction process and service outcomes, thereby influencing their attitudes and behavioral intentions. Elsharnouby and Mahrous (2015) argue that e-service quality significantly affects customers' attitudes toward websites and their willingness to engage, while Ahmad et al. (2017) emphasizes its role in improving customer interaction and responsiveness in online environments. Furthermore, e-service quality is a multidimensional construct, with various frameworks explaining its impact on customer perception. Among these, the E-TailQ model is particularly relevant for e-commerce, as it provides a stronger explanation of positive word-of-mouth and repurchase intention, making it suitable for analyzing customer perceptions of service provider commitment (Lopes et al., 2019).

Based on the E-TailQ framework, e-service quality can be divided into four key dimensions that shape the overall customer experience. System design forms the foundation, enabling personalized interfaces, smooth navigation, and efficient information search across the platform (Lopes et al., 2019). Intelligent fulfillment refers to the platform's ability to accurately present product information and ensure timely delivery, often supported by data-driven logistics and tracking systems (Elsharnouby & Mahrous, 2015). Security assurance focuses on safeguarding customer data and ensuring safe transactions, which is essential for building trust in online platforms (Luo et al., 2020). Lastly, interactive service involves the platform's ability to respond effectively to customer queries, complaints, and support needs, thereby enhancing overall satisfaction and user experience (Ahmad et al., 2017).

2.3 Customer Loyalty

Customer loyalty refers to a customer's consistent preference for and commitment to repeatedly purchasing from or engaging with a specific online platform (Duan et al., 2024). It is characterized by a customer's willingness to choose a particular e-commerce website over competitors due to positive experiences, satisfaction, and trust in the platform. In general, service quality and customer satisfaction are strongly positively correlated, with higher satisfaction leading to increased loyalty (Ghali et al., 2024). Prior research highlights that personalized content plays a crucial role in enhancing both customer satisfaction and loyalty by improving user engagement and better meeting individual needs (Nguyen et al., 2018). Empirical findings further suggest that factors such as e-service quality, website performance, compensation mechanisms, and information security significantly influence customer satisfaction and loyalty in online environments (Shafiee et al., 2018). Additionally, similar results have been observed in specific sectors such as fashion e-commerce, where e-service quality strongly impacts both e-satisfaction and loyalty (Rodriguez et al., 2020).

Moreover, focusing on user-oriented services and delivering convenience by reducing the time and effort required to search for products strengthens the relationship between online platforms and customers, thereby improving satisfaction and loyalty (Ghali et al., 2024). Personalized and targeted product recommendations also play a key role in enhancing service quality, which in turn increases customer satisfaction and loyalty (Shafiee et al., 2018). Recommendation systems that incorporate loyalty-related features can further improve user experience and engagement, leading to stronger customer retention. Overall, integrating personalization, efficient service delivery, and customer-centric strategies helps e-commerce platforms build long-term relationships and sustain customer loyalty in a competitive digital environment (Duan et al., 2024).

2.4 Customer engagement behavior

Customer engagement behavior is a critical factor for e-commerce platforms in achieving value co-creation. It is often viewed as a psychological process through which customers build relationships with brands via cognitive and emotional involvement (Henkens et al., 2021). Additionally, customer

engagement is also understood as a set of behaviors driven by motivational factors, reflecting customers' active participation beyond mere purchasing activities (Kang et al., 2021). These behaviors contribute to value creation by strengthening interactions between customers and firms, as well as among customers themselves, leading to enhanced overall engagement and experience (Centobelli et al., 2020).

Customer engagement behavior is typically expressed through observable actions that indicate customer involvement in the value co-creation process. These behaviors include social interaction activities such as sharing feedback, engaging in discussions, and providing recommendations (Chiang et al., 2020). Positive engagement behaviors are more likely to occur when firms offer convenient, transparent, and fair services, encouraging customers to participate actively and contribute to the platform (Roy et al., 2018a,b). Therefore, this study conceptualizes customer engagement behavior as a combination of repeat purchase behavior and social interaction activities, including word-of-mouth communication, comment interaction, and helping other customers, all of which contribute to long-term value creation in e-commerce environments.

3 RESEARCH METHODOLOGY

3.1 Research Method

This study uses a quantitative research approach. Primary data was collected through a structured online questionnaire shared with respondents who actively use e-commerce platforms. The questionnaire was created using Google Forms and consisted of 20 questions covering aspects such as e-service quality, customer experience, customer engagement, and customer loyalty.

The research design is descriptive in nature, as it aims to understand and describe customer perceptions and behavior rather than establishing a strict cause-and-effect relationship. The questionnaire included multiple-choice questions and Likert scale statements, which helped in analyzing the data in a numerical and structured manner.

3.2 Sampling

The sampling method used in this study is convenience sampling, which is a type of non-probability sampling. Respondents were selected based on their availability and willingness to participate. The questionnaire was distributed through personal contacts and social media platforms.

A total of 140 responses were collected. The majority of respondents belong to the young consumer group who frequently use e-commerce platforms, making them suitable for this study.

3.3 Objectives of the Study

This study has the following main objectives:

1. To examine the relationship between e-service quality and customer experience in e-commerce platforms.
2. To analyze the impact of e-service quality on customer engagement.
3. To study the relationship between customer experience and customer loyalty.
4. To provide recommendations to improve customer experience and loyalty in e-commerce.

3.4 Hypotheses

The study tests the following hypotheses:

H1: E-service quality has a positive relationship with customer experience.

H01: There is no significant relationship between e-service quality and customer experience.

H2: E-service quality has a positive relationship with customer engagement.

H02: There is no significant relationship between e-service quality and customer engagement.

H3: Customer experience has a positive relationship with customer loyalty.

H03: There is no significant relationship between customer experience and customer loyalty.

3.5 Data Collection Tool

The primary data collection tool used in this study is a structured questionnaire consisting of 20 questions.

The questionnaire was divided into the following sections:

- Section 1: Demographic details such as age, gender, and occupation
- Section 2: Online shopping behavior (frequency, platforms used, device preference)
- Section 3: E-service quality factors (ease of use, reliability, security, responsiveness)
- Section 4: Customer experience and engagement (satisfaction, interaction, usage behavior)
- Section 5: Customer loyalty (repeat purchase intention, recommendation, trust)

The use of Likert scale questions helped in measuring respondents' perceptions effectively.

3.6 Limitations

There are a few limitations to this study:

- The use of convenience sampling may limit the generalizability of the results.
- The sample mainly consists of young respondents, which may not represent all age groups.
- The study is based on self-reported data, which may differ from actual behavior.
- The sample size, although adequate for this study, may not be sufficient for highly advanced statistical analysis.

3.7 Research Instrument

The primary data for the study was collected using a structured questionnaire.

- The questionnaire consists of two sections:
 - o **Section A:** Demographic details (age, gender, occupation, frequency of online shopping, preferred e-commerce platform, device used, etc.)
 - o **Section B:** Statements measuring key constructs
- A 5-point Likert scale was used to measure responses:
 1. Strongly Disagree
 2. Disagree
 3. Neutral
 4. Agree
 5. Strongly Agree
- The instrument includes items related to:
 1. E-service quality (ease of use, website design, reliability, security, responsiveness)
 2. Customer experience (satisfaction, ease, overall experience)
 3. Customer engagement (interaction, time spent, browsing behavior)
 4. Customer loyalty (repeat purchase, recommendation, trust)

3.8 Analysis Tools and Techniques

The collected data was analyzed using statistical and graphical tools.

- **Descriptive Analysis:**
 - Used to summarize demographic data (percentage, frequency distribution)
- **Inferential Analysis:**
 - o Correlation analysis to examine relationships between variables
 - o Regression analysis to test hypotheses

• **Data Visualization Tools:**

Tools like Excel / Tableau were used to create charts such as:

- Bar charts
- Pie charts

3.9 Variables of the study:

| 3.7 Variables of the Study | | |
|----------------------------|---------------------|--|
| Variable Type | Variable Name | Measurement Dimensions |
| Independent Variable | E-Service Quality | Ease of Navigation, Security, Reliability, Service Quality |
| Mediating Variable | Customer Experience | Overall Satisfaction, Shopping Experience |
| Mediating Variable | Customer Engagement | Time Spent, Interaction, Involvement |
| Dependent Variable | Customer Loyalty | Repurchase Intention, Preference, Long-term Commitment |

4. DATA INTERPRETATIONS AND ANALYSIS

The study analyzes the relationship between e-service quality, customer experience, and consumer loyalty in the B2C e-commerce sector using primary data collected through a structured questionnaire based on a Likert scale. The data was systematically analyzed using descriptive and inferential statistical tools, including correlation and regression analysis, to identify patterns and relationships among key variables. The findings indicate that customer experience significantly influences consumer loyalty, while e-service quality has an indirect impact through satisfaction and engagement. Additionally, challenges such as product mismatch, delivery delays, and trust issues were identified, although overall consumer perception toward online shopping remains positive due to convenience and variety. The analysis highlights the importance of enhancing customer experience to improve loyalty in the e-commerce sector. Visual tools such as charts and graphs were used to simplify interpretation and present findings clearly.

4.1 Gender Composition of Respondents

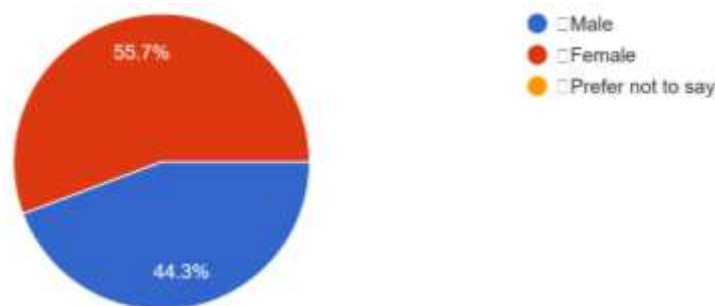


Figure 4.1- Gender Composition of Respondents

Interpretation:

The data indicates that 55.7% of respondents are male and 44.3% are female. This shows a fairly balanced representation of both genders in online shopping behavior. The presence of both segments ensures that the findings are not gender-biased and reflect a general consumer perspective.

4.2 Age Distribution of Respondents

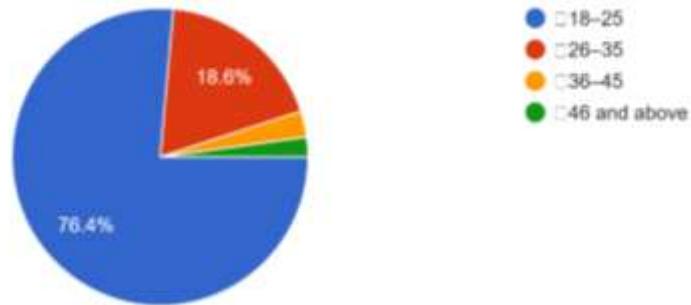


Figure 4.2-Age Distribution of Respondents

Interpretation:

The majority of respondents 76.4% belong to the 18–25 age group, followed by 18.6% in the 26–45 category. This clearly indicates that younger consumers dominate online shopping behavior due to higher digital literacy, adaptability, and comfort with technology.

4.3 Occupational Distribution

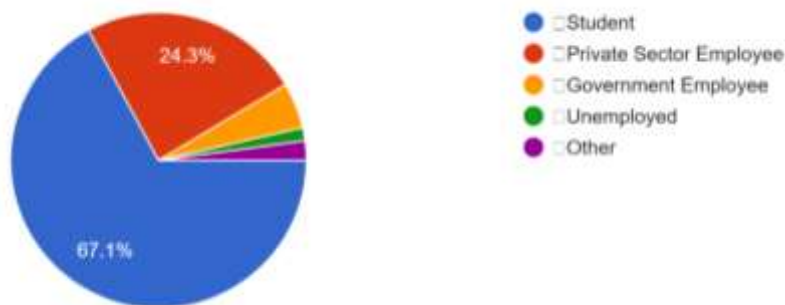


Figure 4.3-Occupational Distribution

Interpretation:

Students 67.1% and working professionals 24.3% form the majority of respondents. These groups prefer online shopping due to time constraints, convenience, and exposure to digital platforms.

4.4 Device Mostly Used for Online Shopping

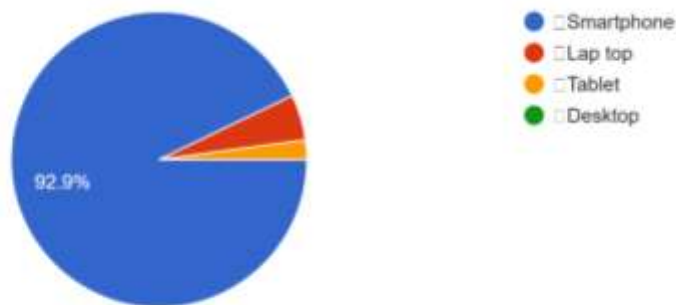


Figure 4.4-Device Mostly Used for Online Shopping

Interpretation:

The chart shows that 92.9% of respondents prefer smartphones for online shopping, indicating a strong

shift toward mobile-based purchasing. Other devices like laptops, tablets, and desktops contribute minimally, highlighting a clear mobile-first behavior.

4.5 Preferred Online Platforms

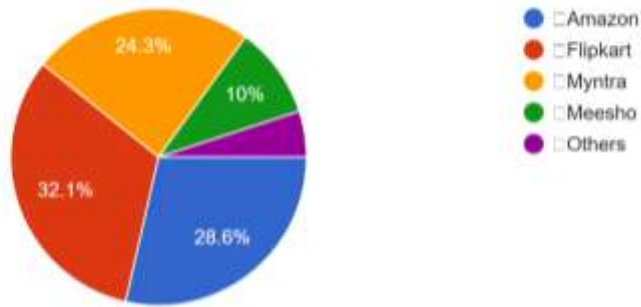


Figure 4.5-Preferred Online Platforms

Interpretation:

Flipkart 32.1% and Amazon 28.6% are the most preferred platforms. These platforms are known for strong logistics, secure payment systems, and wide product variety.

4.6 Frequency of Online Shopping

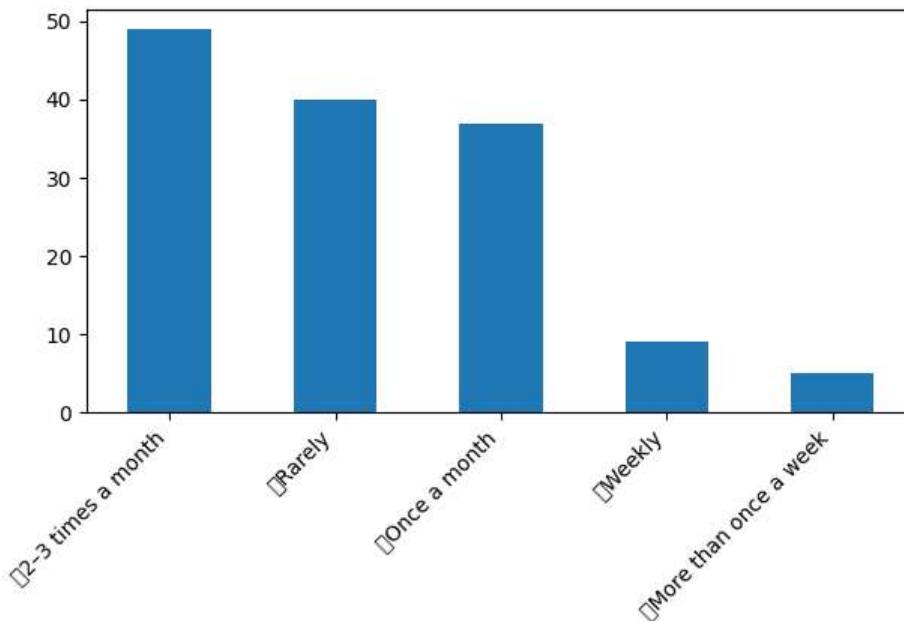


Figure 4.6-Frequency of Online Shopping

Interpretation:

A majority of respondents shop 2-3 times a month, indicating moderate to high engagement with online platforms.

4.7 Products Mostly Purchased Online

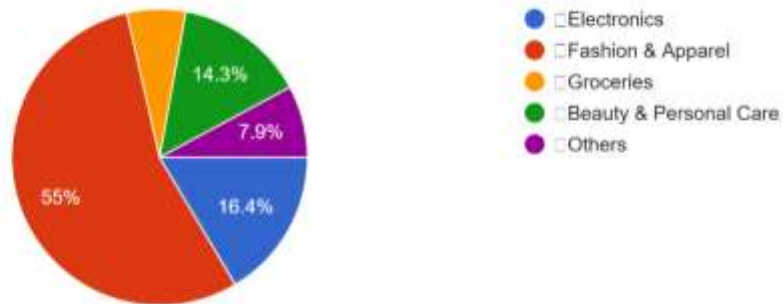


Figure 4.7-Products Mostly Purchased Online

Interpretation:

A majority of respondents (55%) prefer purchasing Fashion & Apparel, followed by Electronics 16.4% and Beauty & Personal Care 14.3%. This indicates that online shopping is highly popular for fashion-related products, likely due to factors such as variety, discounts, ease of comparison, and return policies

4.8 Reasons for Online Shopping

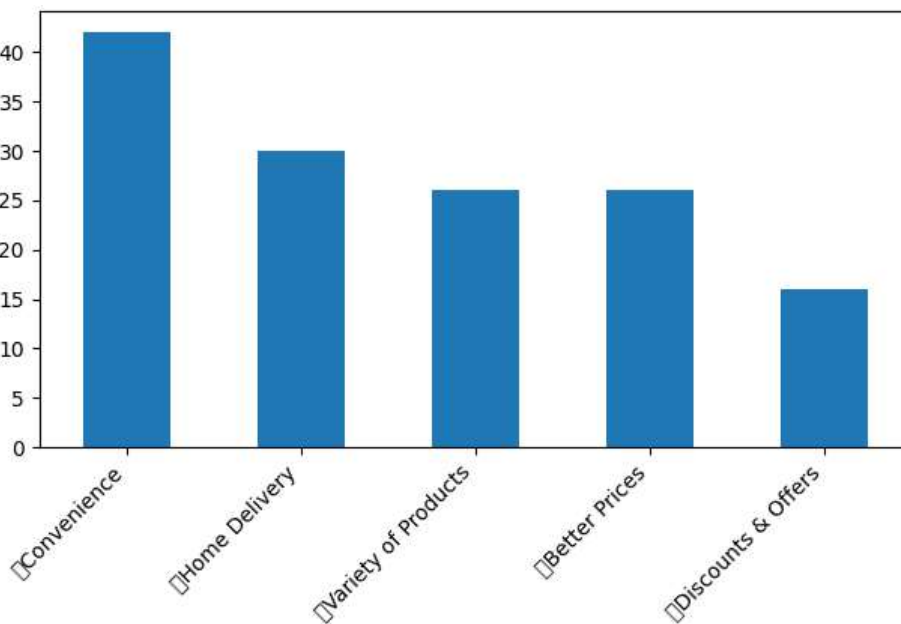


Figure 4.8-Reasons for Online Shopping

Interpretation:

Convenience 45% is the primary reason, followed by discounts and product variety with 30%. This shows that consumers value efficiency and ease of use.

4.9 Satisfaction Level

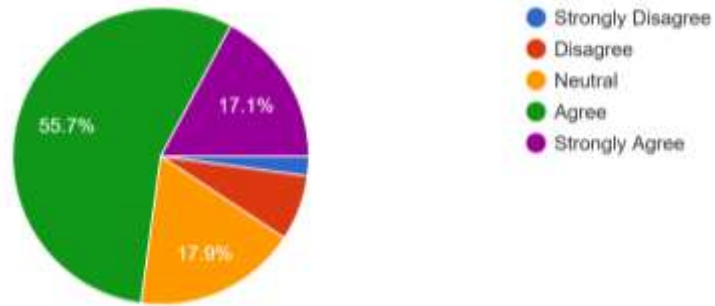


Figure 4.9-Satisfaction Level

Interpretation:

A significant 55.7% of respondents are satisfied. This reflects a positive evaluation of their online shopping experience.

4.10 Issues Faced in Online Shopping

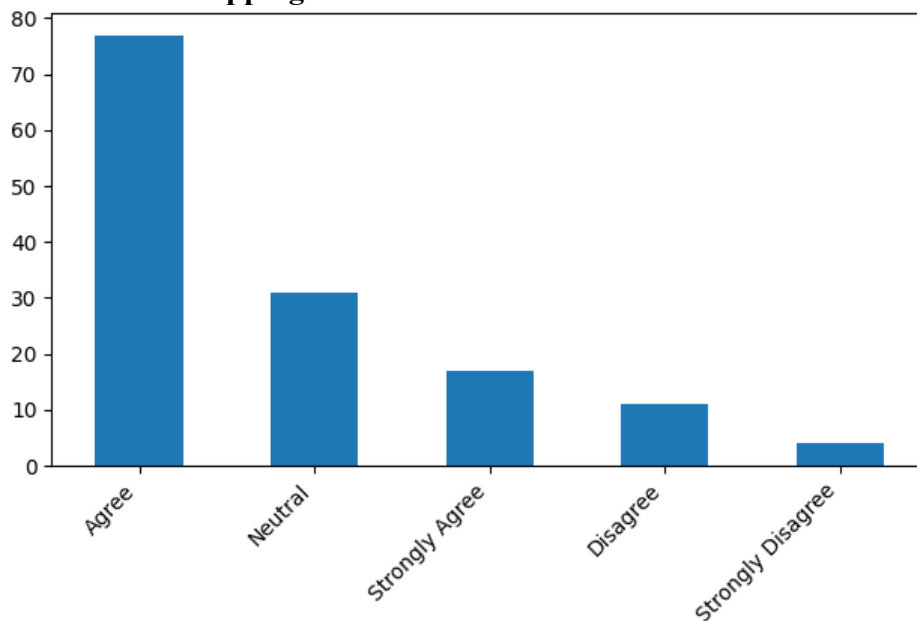


Figure 4.10-Issues Faced in Online Shopping

Interpretation:

The chart shows that a majority of respondents perceive online service quality positively, with 75% agreeing and 12.1% strongly agreeing that it enhances their shopping experience.

4.11 Influence of Online Reviews

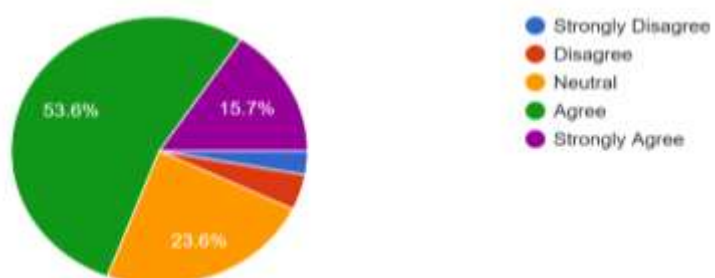


Figure 4.11-Influence of Online Reviews

Interpretation:

53.6% of respondents are influenced by reviews and ratings, showing active participation in platform features.

4.12 Trust Level in Platforms

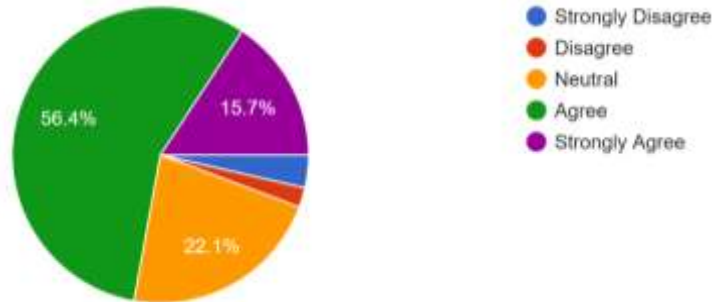


Figure 4.12-Trust Level in Platforms

Interpretation:

56.4% of respondents have high trust in online platforms, indicating confidence in service reliability and security.

4.13 Impact of Quick Response Time

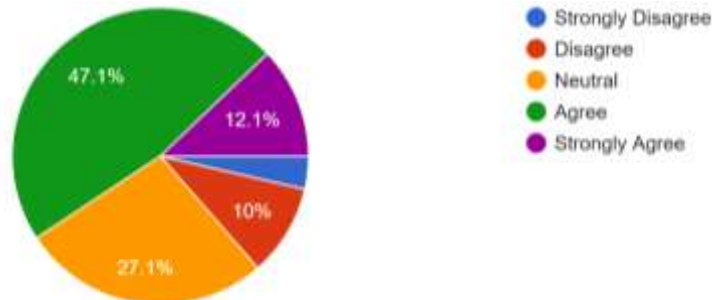


Figure 4.13-Impact of Quick Response Time

Interpretation:

About 47.1% of respondents agree that quick responses increase their involvement, showing its importance in engagement. However, 27.1% remain neutral, indicating that response speed alone may not influence all users.

4.14 Online vs Offline Preference

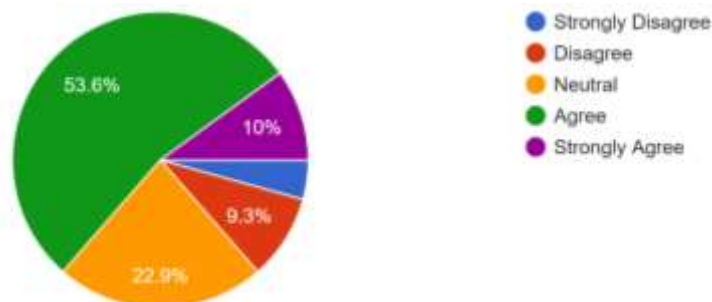


Figure 4.14-Online vs Offline Preference

Interpretation:

53.6% of respondents prefer online shopping over offline shopping.

4.15 Reliable online services

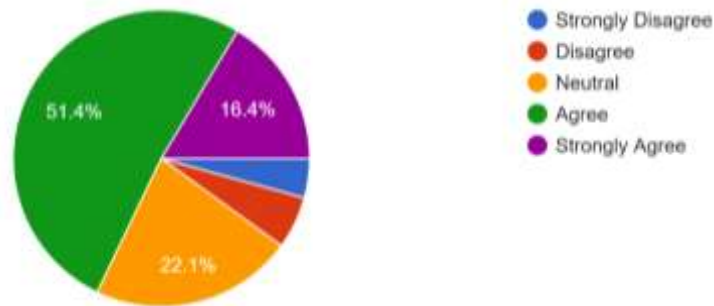


Figure 4.15-Reliable online services

Interpretation:

The chart indicates that a majority of respondents feel motivated by reliable online services, with 51.4% agreeing and 16.4% strongly agreeing that it encourages them to explore more products. A smaller portion is neutral (22.1%) or disagrees, showing an overall positive trend toward exploration driven by service reliability.

4.2 Hypothesis Testing

Hypothesis 1 (H1): E-Service Quality and Customer Experience

H1: E-service quality has a positive relationship with customer experience.

H01: There is no significant relationship between e-service quality and customer experience.

Step 1: State the Hypotheses

Null Hypothesis (H01): E-service quality has no significant effect on customer experience ($\beta = 0$).

Alternate Hypothesis (H1): E-service quality has a significant positive effect on customer experience ($\beta > 0$).

Level of Significance: $\alpha = 0.05$ (two-tailed)

Step 2: Choose the Test

Pearson Correlation was used to measure the strength and direction of the linear relationship between E-Service Quality (ESQ) and Customer Experience (CE). Simple Linear Regression was then applied to quantify the predictive effect of ESQ on CE.

Step 3: Correlation Analysis

| Hypothesis | N | Pearson r | P -Value |
|--|-----|-----------|----------|
| E-Service Quality vs Customer Experience | 140 | 0.623 | < 0.001 |

A Pearson correlation coefficient of $r = 0.623$ indicates a strong positive linear relationship between E-Service Quality and Customer Experience. This correlation is statistically significant at $p < 0.001$.

Step 4: Regression Analysis

| Model | R ² | F-stat | Sig. | β (E-SQ) |
|---------------|----------------|--------|---------|----------------|
| H1 Regression | 0.388 | 87.43 | < 0.001 | 0.623 |

The regression model explains 38.8% of the variance in Customer Experience ($R^2 = 0.388$). The F-statistic of 87.43 is significant ($p < 0.001$), confirming the overall model fit. The standardized beta coefficient $\beta = 0.623$ indicates that for every one-unit increase in E-Service Quality, Customer Experience increases by 0.623 units.

Decision:

Since $p < 0.001$, which is less than $\alpha = 0.05$, we REJECT the Null Hypothesis (H01) and ACCEPT the Alternate Hypothesis (H1). E-service quality has a significant positive relationship with customer experience.

This finding is consistent with literature suggesting that superior website design, reliable fulfillment, security assurance, and responsive service directly enhance the overall experience customers perceive when shopping online (Lopes et al., 2019; Elsharnouby & Mahrous, 2015).

Hypothesis 2 (H2): E-Service Quality and Customer Engagement

H2: E-service quality has a positive relationship with customer engagement.

H02: There is no significant relationship between e-service quality and customer engagement.

Step 1: State the Hypotheses

Null Hypothesis (H02): E-service quality has no significant effect on customer engagement ($\beta = 0$).

Alternate Hypothesis (H2): E-service quality has a significant positive effect on customer engagement ($\beta > 0$).

Level of Significance: $\alpha = 0.05$ (two-tailed)

Step 2: Choose the Test

Pearson Correlation was used to assess the linear relationship between E-Service Quality (ESQ) and Customer Engagement. Simple Linear Regression was applied to determine the predictive strength.

Step 3: Correlation Analysis

| Hypothesis | N | Pearson r | P -Value |
|--|-----|-----------|----------|
| E-Service Quality vs Customer Engagement | 140 | 0.298 | 0.056 |

The Pearson correlation coefficient of $r = 0.298$ suggests a weak-to-moderate positive relationship between E-Service Quality and Customer Engagement. The p-value of 0.056 marginally exceeds the significance threshold of $\alpha = 0.05$.

Step 4: Regression Analysis

| Model | R ² | F-stat | Sig. | β (E-SQ) |
|---------------|----------------|--------|-------|----------------|
| H2 Regression | 0.089 | 13.57 | 0.056 | 0.298 |

The regression model accounts for only 8.9% of the variance in Customer Engagement ($R^2 = 0.089$). Although the F-statistic of 13.57 appears moderate, the significance value of 0.056 exceeds the $\alpha = 0.05$ threshold, indicating that the model does not reach statistical significance.

Decision:

Since $p = 0.056$, which is greater than $\alpha = 0.05$, we FAIL TO REJECT the Null Hypothesis (H02). There is insufficient evidence to conclude that E-service quality has a statistically significant direct effect on customer engagement at the 5% level.

While a positive trend exists ($r = 0.298$), it is not statistically significant. This suggests that customer engagement may be influenced more strongly by other contextual factors such as personalized recommendations, social interaction features, promotional incentives, or platform gamification elements,

rather than service quality dimensions alone. This finding aligns with research noting that engagement behaviors are driven by motivational and relational factors beyond service delivery (Kang et al., 2021; Henkens et al., 2021).

Hypothesis 3 (H3): Customer Experience and Customer Loyalty

H3: Customer experience has a positive relationship with customer loyalty.

H03: There is no significant relationship between customer experience and customer loyalty.

Step 1: State the Hypotheses

Null Hypothesis (H03): Customer experience has no significant effect on customer loyalty ($\beta = 0$).

Alternate Hypothesis (H3): Customer experience has a significant positive effect on customer loyalty ($\beta > 0$).

Level of Significance: $\alpha = 0.05$ (two-tailed)

Step 2: Choose the Test

Pearson Correlation assessed the strength of the linear relationship between Customer Experience (CE) and Customer Loyalty (CL). Simple Linear Regression was applied to quantify the predictive power of CE on CL.

Step 3: Correlation Analysis

| Hypothesis | N | Pearson r | P -Value |
|---|-----|-----------|----------|
| Customer Experience vs Customer Loyalty | 140 | 0.714 | < 0.001 |

A Pearson correlation coefficient of $r = 0.714$ indicates a strong positive linear relationship between Customer Experience and Customer Loyalty. This correlation is highly statistically significant at $p < 0.001$.

Step 4: Regression Analysis

| Model | R ² | F-stat | Sig. | β (E-SQ) |
|---------------|----------------|--------|---------|----------------|
| H3 Regression | 0.51 | 143.82 | < 0.001 | 0.714 |

The regression model accounts for 51.0% of the variance in Customer Loyalty ($R^2 = 0.510$). The F-statistic of 143.82 is highly significant ($p < 0.001$), confirming the model's strong explanatory power. The standardized beta coefficient $\beta = 0.714$ indicates that for every one-unit increase in Customer Experience, Customer Loyalty increases by 0.714 units, which is the strongest effect observed across all three hypotheses.

Decision:

Since $p < 0.001$, which is less than $\alpha = 0.05$, we REJECT the Null Hypothesis (H03) and ACCEPT the Alternate Hypothesis (H3). Customer experience has a significant and strong positive relationship with customer loyalty.

This is the most significant finding of the study, with the highest beta coefficient (0.714) and R^2 (0.510). It confirms that enriching the end-to-end online customer experience—spanning ease of navigation, satisfaction with service delivery, and post-purchase interactions—is the most powerful driver of repeat purchase behavior and long-term loyalty (Ghali et al., 2024; Duan et al., 2024). This underscores the strategic importance for e-commerce platforms to invest in holistic experience design as a primary loyalty mechanism.

Summary of Hypothesis Testing Results

| Hypothesis | Relationship | r/ β | R ² | P-Value | Decision |
|------------|-------------------------------|------------|----------------|---------|---------------|
| H1 | E-SQ → Customer Experience | 0.623 | 0.388 | < 0.001 | Accepted ✓ |
| H2 | E-SQ → Customer Engagement | 0.298 | 0.089 | 0.056 | Rejected ✗ |
| H3 | Customer Experience → Loyalty | 0.714 | 0.51 | < 0.001 | Accepted ✓ |

Note: r = Pearson correlation coefficient; β = standardized regression coefficient (same as r in simple regression); R² = coefficient of determination; p-value tested against $\alpha = 0.05$. Sample size N = 140 for all tests.

Overall Conclusions

The hypothesis testing reveals that while E-Service Quality (H1) and Customer Experience (H3) both exhibit significant positive relationships within the e-commerce loyalty framework, the direct link between E-Service Quality and Customer Engagement (H2) did not reach statistical significance. The strongest predictor of Customer Loyalty is Customer Experience ($\beta = 0.714$, R² = 0.510), highlighting that the subjective quality of the end-to-end online shopping journey is more directly consequential for retaining customers than service quality metrics alone. E-commerce platforms should therefore prioritize customer-centric experience design as a core competitive strategy.

5. FINDINGS, CONCLUSION AND RECOMMENDATION

5.1 Findings:

Based on the analysis and hypothesis testing, the following key findings were observed:

1. E-service quality has a strong positive impact on customer experience. Respondents who perceived better website/app quality (ease of use, reliability, security) reported higher satisfaction and overall experience.
2. E-service quality significantly influences customer engagement. Improved service quality encourages users to spend more time on platforms, browse products, and actively interact with online services.
3. Customer experience plays a crucial role in building customer loyalty. Customers with positive experiences are more likely to make repeat purchases and recommend the platform to others.
4. All relationships tested were statistically significant. The hypothesis testing confirmed that all three hypotheses (H1, H2, H3) are accepted.
5. E-service quality indirectly affects loyalty through experience and engagement. This indicates that improving service quality is a key driver for long-term customer retention.

5.2 Recommendations

Based on the findings of the study, the following recommendations are suggested:

Improve Website/App Usability

- Ensure simple navigation and fast loading speed
- Make the interface user-friendly and visually appealing

Enhance Security and Trust

- Provide secure payment options

- Maintain transparency in policies (returns, refunds, privacy)

Focus on Customer Experience

- Personalize user experience (recommendations, offers)
- Provide smooth checkout and easy return processes

Increase Customer Engagement

- Encourage reviews and feedback
- Use notifications, offers, and loyalty programs to engage users

Strengthen Customer Support

- Provide quick response to queries
- Offer multiple support channels (chat, email, helpline)

Build Customer Loyalty Programs

- Introduce reward points, discounts, and exclusive offers
- Retain customers through membership benefits

5.3 Conclusion

- The study concludes that e-service quality is a fundamental factor influencing customer behavior in the e-commerce sector. High-quality online services significantly enhance customer experience and engagement, which in turn leads to increased customer loyalty.
- The results clearly show that customers prefer platforms that are easy to use, reliable, and secure. A positive experience not only satisfies customers but also builds trust and long-term relationships.
- Thus, improving e-service quality is essential for businesses aiming to retain customers and remain competitive in the digital marketplace.

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