

Evaluating M-SERVQUAL Dimensions for Enhancing Customer Engagement in Indian Quick Commerce Apps

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Abstract

The emergence of quick commerce apps in India has transformed consumer purchasing behaviors, emphasizing the need for superior service quality to maintain customer engagement. Mobile app service quality refers to the overall user perception of an app's performance, including aspects like reliability, performance, ease of use, security, and the value of the content or services it provides. This study collects data through structured surveys with a target sample size of 603 respondents which ensuring a diverse representation of consumer opinions. The primary tool for this study was a questionnaire designed using a five-point Likert scale to measure respondents' perceptions and attitudes. This study applied SPSS, PLS-SEM through SmartPLS4 for data analysis. This approach allows a thorough assessment of both the measurement and structural models, which provide more reliable and precise estimates. These findings aim to provide actionable insights for improving Q-commerce service quality, thereby fostering stronger customer engagement and long-term business growth in this competitive sector.

Keywords: *Quick Commerce, M-SERVQUAL, Customer Engagement, Mobile Applications*

I. INTRODUCTION

Wireless and mobile technologies have brought about great revolutions in the mobile commerce environment with the proliferation of smartphones and tablets in addition to other handheld devices. Mobile devices have become a commonplace item in consumers' lives and are driving growth in a variety of industries, including trade, commerce, entertainment, tourism and health. All of these have been made possible by the internet, wireless technology and business apps. Transactions are conducted over public or private networks and mobile commerce refers to any sales or purchases made through the use of mobile devices. Customers can now use mobile devices to access online purchasing platforms thanks to advancements in e-commerce. Mobile phones have benefited greatly from the rise in wireless technology use in addition to their inherent docility, ubiquity, and personalization (Khanna & Khatana, 2022).

The use of mobile apps in large-scale e-commerce retailing is expected to become increasingly popular. As a result, some researchers suggest that the impact of design aesthetics on how consumers adopt and use

these apps should be examined in the context of the fast-paced growth of the e-commerce industry (al, 2018).

Mobile phones are thought to be the most significant communication tool that individuals utilize for both personal and professional reasons (Omar, 2021). Due to its widespread use, mobile phones are now considered India's best equalizer in terms of technology. Additionally, it has aided in the expansion and advancement of Indian e-commerce. As a result, using smartphones or mobile phones has become a crucial tool for boosting e-commerce's expansion in India. Many Indians have begun embracing cellphones as a means of accessing the internet to meet their everyday demands. Smartphones are now being sold for less because of technological advancements. The activities of smartphone users include the use of various applications and their propensity to use them regularly (Rathod, 2020). The quick commerce market size has grown exponentially in recent years. It will grow from \$83.31 billion in 2023 to \$104.10 billion in 2024 at a compound annual growth rate (CAGR) of 25.0%. The growth in the historic period can be attributed to urbanization, changing lifestyle,

Transportation infrastructure, e-commerce growth, and demographic changes (OpenPR, 2024).

Mobile commerce applications extend beyond traditional e-commerce, encompassing location-based services, mobile payments and quick commerce. Rapid technological development, changing consumer habits and changing market dynamics are all major factors driving the retail industry's current seismic change. Quick Commerce a rapidly growing industry that allows customers to shop for a large range of products and have them delivered in a remarkably short amount of time is one of the most prominent disruptors in this environment. Q-commerce has emerged to meet customers' growing demand for speed, convenience and a seamless shopping experience. Unlike traditional e-commerce, Q-commerce focuses on ultra-fast fulfillment often completing deliveries within hours or even minutes. (Singh, 2024).

The value that the customer looks for while making a purchase also influences the consumer's purchasing behavior or habit. Traditionally or supermarkets have been the places to buy groceries. But the rise of online marketplaces has been a major factor in shifting consumer buying habits, particularly for individuals who value time and convenience more than anything else. Companies in the space, such as Zepto, Swiggy Instamart, Blinkit, and Dunzo, are essentially redefining how fast the product can be delivered, whereby service quality is a complete differentiator (Ranjekar, 2023). Therefore, even when the customer is not in the store, mobile commerce applications can give businesses the chance to showcase their brands and shopping experiences. This is corroborated by earlier research showing that smartphone-based mobile shopping has drastically altered the market in a short period of time. In fact, it now controls the majority of the internet retail business. Smartphones are mostly used for communication, but they may also be used for online shopping thanks to a variety of apps and mobile internet features (Zariman, 2022). The market for mobile application stores is expected to grow from US\$165.9 billion in 2022, according to globenewswire.com. Certain service functionalities that are unavailable on other web platforms can be distributed via mobile applications. Mobile app-based purchasing has a number of clear benefits over both online and physical shopping. (Marriotta, 2018).

Impulsively, traditional retailers who had previously exclusively run physical stores realized how important electronic mobile sales and distribution. (Huma, 2025)

II. LITERATURE REVIEW

2.1 Mobile App Service Quality (MASQ)

Mobile Shopping Partner Apps expands traditional and electronic services of sellers who have been brick-and-mortar retained by an additional mobile channel that provides a digital partner to the customer that supports the shops within and outside the stores using mobile technology. A two-fold approach is followed in this thesis. First, a structured literature review is conducted to identify the dimensions of candidates to develop a scale to measure the service quality of mobile shopping partner apps (Wulfert, 2019). It was found that quality of the mobile app service was a significant spillover effect on satisfaction and recurring intentions (Lin, 2024). Another study shows that the consequences of this examination screen that each MASQ and SERCON strongly guide pleasure, which results in the retention of young clients (Huma, 2025). In other cases, the importance of effective use of intelligent regional mobile applications and highlights the need for legislators to address the main factors that affect the quality of the smart district mobile service (Darmawan, 2020).

H1: There is a significant relationship between MASQ and Customer Engagement.

2.2 Web Design

Web design is defined as a various elements that make a website both visually attractive and functional, emphasizing aspects to shape user perception, build trust, and enhance satisfaction (Cyr, 2008). The well-structured search functions and filters help users quickly find relevant information, thereby simplifying the customer journey and reducing cognitive load (Ali, 2024). This ease of navigation ensures that users do not get frustrated while interacting with the app, leading to higher satisfaction (Al-Shamaileh, 2023). The results of past research also show that, along with trust, web design also positively impacts the relationship between customer satisfaction and E-Servqual (Venkatakrishnan, 2023). In another study, website design quality played a more important role in affecting repurchase intention in the North and South American e-commerce industry (Wilson, 2019) In

another research, website service quality also significantly influences e-commerce website customer loyalty variable in Indonesia (Wijaya, 2021)

H2: There is a significant relationship between Design and MASQ.

2.3 Efficiency

Efficiency is defined as the ease of connecting with a speed to the banking site without hassle (Parasuraman, 2005). The main reason people choose to shop online is the convenience due to its less effort and time consumption compared to traditional shopping (Kim, 2006). The research shows that as mobile apps grow rapidly and give more preference **to high quality than ever**. It suggests that using proven quality models and listening to user feedback will keep apps reliable and useful. It also highlights the **key role of QA teams and the need to keep checking app quality even after launch** (Zahra, 2013). Another study found that Efficiency has a significant impact on M-banking service quality (Shankar A. D., 2020) and act as a most significant variable along with compliance system availability and privacy (Sheu, 2022).

H3: There is a significant relationship between Efficiency and MASQ.

2.4 Fulfillment

Fulfillment refers to activities that ensure customers receive what they ordered, including the time of delivery, order accuracy, and delivery condition (Blut, 2016). Customers often feel more regret after shopping online. Unlike in stores, they can't see or check the product before buying it (Liao T.H., 2013). Fulfillment has a significant impact on e-service quality in Indonesian E-commerce (Utami, 2024). Order fulfillment plays a key role in shaping how customers perceive the quality of an online service (Ashiq, 2024). Another study also assert that fulfillment significantly influences overall e-service quality (Sasono, 2021) . Fulfillment plays a major role in shaping how customers perceive e-service quality (Rita, 2019). In case of GoFood application along with design, customer security, fulfillment affects overall e-service quality in Malang. (Yogatama, 2022)

H4: There is a significant relationship between Fulfillment and MASQ.

2.5 Responsiveness

Responsiveness refers to how quickly and effectively an online service or provider helps customers. Particularly when they run into issues or need support while using a website. (Parasuraman, 2005). In case of e-service quality, Responsiveness had the positive influence on e-satisfaction of online shoppers in Malaysia (Ting, 2016). Another study found that the link between responsiveness and customer satisfaction varies depending on the customer's gender. (Jing, 2023). The previous study states that reliability along with responsiveness, and assurance and trust act as a mediating factor influencing customer loyalty in mobile app delivery services in Selangor, Malaysia (Abdullah, 2022). Another study (Lal, 2021) found that responsiveness also has a positive impact on perception of visitors of the website. Chang (Chang, 2008) found that responsiveness contributes positively to customer satisfaction in the realm of e-commerce.

H5: There is a significant relationship between Responsiveness and MASQ.

2.6 Security

Security in e-commerce refers to a website's capability to safeguard the personal and financial information of customers from unauthorized access, misuse or loss, thereby fostering trust and confidence in online transactions (Parasuraman, 2005).

Given the strong importance of perceived security, the study concludes that a greater sense of security leads to a higher perceived quality of the service. It also reveals that users are more likely to use e-services when they believe the service quality is high (Taherdoost, 2017). Privacy and security along with website design, responsiveness, efficiency, reliability, ease of use and system availability are prominent measures of e-Service Quality on various context (Shankar A. &, 2020). In other study, security along with websites, design, responsiveness lead to increased levels of perceived value (Tzavlopoulos, 2019). Another finding indicates that a strong information security system has a positive impact on the perceived quality of service in e-commerce platforms (Wijaya, 2021). Rita revealed that three dimensions of e-service quality, security/privacy along with website design and fulfillment significantly impact the overall perception of e-service quality (Rita, 2019). The security with information management, reliability and trustworthiness has a

positive and direct influence on customer satisfaction (Barusman, 2019).

H6: There is a significant relationship between Security and MASQ.

2.7 Customer Engagement

Customer engagement is also described as the emotional connection that customers develop through their continuous interactions with a brand or company (Bansal, 2016). Previous research suggests that e-service quality leads to greater customer engagement. Customer trust and perceived risk act as key mediators in this relationship, influencing how e-service quality ultimately impacts customer engagement behavior (Fan, 2022). In another study, customer experiences are influenced by e-service quality, customer engagement alongside with loyalties with B2C E-commerce (Sukendia, 2021). Electronic service quality has a significant positive impact on customer engagement. Service recovery quality influences customer loyalty both directly and indirectly by enhancing customer engagement (Hu, 2021). Another study found that convenience, assurance and security each have a strong positive influence on customer satisfaction. Higher customer satisfaction significantly enhances all three aspects of customer engagement behaviour like repeat purchases, online word-of-mouth and customer referrals (Dongxu, 2023). Another study indicates that website service quality enhances customer satisfaction which in turn positively affects customer engagement behaviors (CEBs) and brand loyalty. Customer satisfaction partially mediates the relationship between hotel website service quality and customer engagement behaviors within the hotel industry (Vo, 2020).

III. METHODOLOGY

The research was conducted using online Google Forms, which proved to be an efficient and effective

method for collecting data. The exploration of the model can be proposed in this study to consist of the seven constructs. A purposive sampling technique was used with 603 respondents from India engaging with Q-commerce apps through mobile. The online questionnaire was distributed via a URL link on Whatsapp groups and Instagram. The questions can be divided into two sections. The First set of questions can be concentrated on the demographic characteristics, and the Second set of questions can have 27 questions, which can reflect the customer engagement with Q-commerce apps.

The study employed the M- M-SERVQUAL framework, which measures responses on a Likert five-point scale. The Conceptual foundations were gathered from the secondary sources of papers, journals, and through databases such as Google Scholar, Science Direct, Springer, Emerald, and Research Gate.

IV. DATA ANALYSIS AND RESULTS

The model estimation process utilized SmartPLS4, which relies on a component-based method and imposes fewer constraints on residual distribution and sample size. First, the reliability and validity of the measurement model were examined. Then the structural model was analyzed to test the hypotheses along with the t-values and p-values for each factor. The evaluation included reviewing standardized item loadings, Average Variance Extracted (AVE), and Composite Reliability (CR). The result revealed that all values of the constructs are well beyond the criteria to be suggested and, thus, show great reliability and convergent validity for the scale applied to the scenario of assessing the M-SERVQUAL dimensions with regard to Indian quick commerce apps enhancing customer engagement.

TABLE 1 CHARACTERISTICS OF PARTICIPANTS

Characteristics	Values	Frequency	Percentage (%)
Gender	Male	373	61.86
	Female	230	38.14
Age	Below 20	90	14.90
	20 - 40	302	50.00
	40 – 60	146	24.17
	Above 60	66	10.93
	School	96	16.67
	Graduate	214	37.15

Education Qualification	postgraduate	199	34.55
	Postgraduate and above	66	11.46
	No formal education	1	0.17
Employment Status	Student	211	35.00
	Employed	206	34.16
	Unemployed	66	10.94
	Self-employed	91	15.09
	Retired	29	4.81
Monthly family income	Below ₹40,000	199	33.00
	₹40,000 – ₹80,000	241	39.97
	₹80,000 – ₹120,000	120	19.90
	Above ₹120,000	43	7.13

Source: Primary Data computed by using SPSS 27.0

Table 1 shows the demographic characteristics of respondents. The respondents were predominantly male (61.86%), with women comprising 38.14%. Nearly half of the respondents were between 20 and 40 years old (50.00%), followed by 24.17% in the 40–60 age group. Most were well-educated, with 37.15%

graduates and 34.55% postgraduates. Students (35.00%) and working individuals (34.16%) made up the largest occupational categories. In terms of income, 33.00% reported less than ₹40,000 monthly and 39.97% earned between ₹40,000–₹80,000, reflecting a primarily middle-income profile

TABLE 2 RESULTS OF MEASUREMENT MODEL

	Cronbach Alpha Value	CR values	AVE values
Efficiency	0.903	0.962	0.771
Fulfilment	0.885	0.931	0.739
Responsiveness	0.805	0.808	0.720
Security	0.792	0.792	0.706
Design	0.778	0.782	0.529
Customer Engagement	0.804	0.810	0.630

Source: Primary Data computed by using SPSS 27.0

4.1 Assessment of the Measurement Model

To verify the validity and reliability of the constructs and the items that correspond to them, the measurement model is evaluated. All of the Cronbach's Alpha values were over the permissible threshold of 0.7, ranging from 0.778 to 0.903. The Composite Reliability (CR) values also showed a high degree of internal consistency and reliability with

values ranging from 0.782 to 0.962. With AVE values ranging from 0.529 to 0.771, all constructs were found to meet the 0.7 threshold for Cronbach's alpha and CR Value, 0.5 threshold for AVE, guaranteeing sufficient convergent validity. The entire factor loading values was above the suggested threshold value of 0.7, and the majority was above 0.8, suggesting that the observed variables and their corresponding constructs had high associations.

TABLE 3 HYPOTHESES TESTING FUNCTION

H	Relationship	SD	T-value	P-value	Decision
H1	DS→MASQ	0.099	3.249	0.001	Significant

H2	EF → MASQ	0.049	1.344	0.179	Not Significant
H3	FF → MASQ	0.044	0.804	0.421	Not Significant
H4	MASQ → CE	0.078	8.881	0.000	Significant
H5	RS → MASQ	0.098	3.037	0.002	Significant
H6	SC → MASQ	0.098	2.037	0.042	Significant

Source: Primary Data compound by using SmartPLS 4

*H- Hypotheses, DS- Design, EF- Efficiency, FF- Fulfilment, RS- Responsiveness, SC- Security, MASQ- Mobile App Service Quality, CE- Customer Engagement.

4.2 Structural Model Assessment

The research indicates that the mobile app service quality of the Q commerce app has a significant impact on customer engagement. ($t = 8.881, p = 0.000$). Thus, H4 was supported. Mobile App service Quality is significantly impacted by design. H1 ($t = 3.249, p = 0.001$) is thus supported. The variables responsiveness ($t = 3.037, p = 0.002$) and security ($t = 2.037, p = 0.042$) were also found to have a significant impact on the mobile service quality of Q-commerce. Thus, H5 and H6 were accepted.

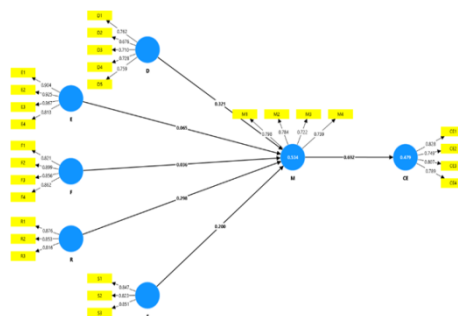
Furthermore, it was shown that the mobile service quality of Q-commerce was not significantly impacted by both efficiency ($t = 1.344, p = 0.179$) and fulfillment ($t = 0.804, p=0.421$). Thus, H2 and H3 are not supported.

TABLE 4 HETERO TRAIT-MONOTRAIT (HTMT) RATIO

	CE	WD	EF	FF	MS	RP	SE
CE							
WD	0.887						
EF	0.098	0.124					
FF	0.232	0.153	0.146				
MS	0.882	0.851	0.121	0.166			
RP	0.836	0.767	0.084	0.146	0.794		
SE	0.873	0.924	0.058	0.095	0.809	0.794	

Source: Primary Data compound by using SmartPLS3

Table 4 evaluates the discriminant validity of the data, the Heterotrait-Monotrait ratio (HTMT) was used. Sufficient discriminant validity was confirmed by the HTMT values for every construct being below the critical



value of 0.9. These results show that the conceptual constructs in the study are correctly and consistently represented by the measuring model.

Fig No.1 PLS-SEM Output

V. DISCUSSION

To verify the validity and reliability of the constructs and the items that correspond to them, the measurement model is evaluated. All of the

Cronbach's Alpha values were over the permissible cutoff of 0.7, ranging from 0.758 to 0.903. The Composite Reliability (CR) values also showed a high degree of internal consistency and reliability, with values ranging from 0.760 to 0.962. With AVE values ranging from 0.529 to 0.771, all constructs were found to meet the 0.5 threshold, guaranteeing sufficient convergent validity.

This study advances knowledge of how customer engagement in the Indian fast commerce industry is influenced by design, responsiveness, security, efficiency, fulfillment, and overall mobile app service quality. The findings show that security, responsiveness, and design have a big influence on the quality of mobile app services. This outcome is consistent with other research showing that safe platforms, quick replies, and intuitive design are critical for improving customer happiness.

This study demonstrates that a number of factors support improving the quality of mobile app services and encouraging user interaction. In particular, a well-designed interface guarantees smooth navigation and lessens users' cognitive load, and prompt answers to user inquiries increase user happiness and confidence. Furthermore, by guaranteeing data confidentiality and privacy, security measures are essential in fostering user confidence. The results indicate that the total impact of mobile app service quality on customer engagement was significant, even though efficiency and fulfillment had less of an influence. This suggests that in the setting of rapid commerce, users place a higher value on design, responsiveness, and security than on efficiency and fulfillment. According to the findings, consumers who value excellent service, especially in areas that directly affect their pleasure and trust, are the ones driving the rapid commerce sector in India. Efficiency and fulfillment have a significant role in the entire service ecosystem, even if they are less important. According to this study, quick commerce platforms should prioritize improving app design, guaranteeing fast responsiveness, and putting strong security measures in place. In the dynamic world of digital commerce, these elements are essential for maintaining competitive advantage and promoting client engagement.

VI. CONCLUSION

The M-SERVQUAL factors were assessed in this study in order to determine how they affected user engagement in Indian fast commerce apps. The results demonstrate how important design, responsiveness, and security are in determining the quality of mobile app services and, consequently, user engagement. These elements are necessary to guarantee client happiness and trust, both of which are necessary to build enduring loyalty. Although they are a component of the ecosystem of service quality, efficiency, and fulfillment had a less noticeable impact on customer involvement in this situation. This implies that customers of swift commerce place a higher value on user-friendly design, fast replies, and strong security than on operational effectiveness and fulfillment guarantees. The report emphasizes how crucial it is to make investments in user-centric app designs, provide real-time responsiveness, and put strict security measures in place in order to improve user experiences. In order to stay ahead of the competition and forge closer bonds with its users, platforms need to concentrate on these aspects as rapid commerce grows in India. Additional aspects of service quality and how they interact with changing consumer preferences may be the subject of future studies, particularly as the rapid commerce environment becomes more dynamic. In the field of digital commerce, this study offers practitioners practical insights to maximize service quality and promote long-term client engagement.

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