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Digital Service Quality as a Driver of Satisfaction and Loyalty in Mobile Banking: Insights from Pakistan

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Abstract
The rapid growth of mobile banking technology has intensified competition, underscoring service quality (SQ) as a critical factor in consumer performance. This study examines the relationship between digital banking SQ, e-customer satisfaction (E-CSAT), and e-customer loyalty (E-CLOY) within Pakistan's financial sector. Using the E-S-QUAL theory, the research analyzes five MBSQ dimensions: Website Efficiency, Responsiveness, Convenience, User-Friendliness, and Security & Privacy. A quantitative study collected data from 279 mobile banking users via non-probability purposive sampling. Data analysis using PLS-SEM confirmed that all five MBSQ dimensions favorably and significantly affect both E-CSAT and E-CLOY. Crucially, E-CSAT positively impacts E-CLOY, serving as a key driver of customer retention. The findings provide clear guidance for enhancing digital service strategies in developing markets.

Keywords: Banking Application, SERVQUAL, E-Customer Satisfaction, E-Customer Loyalty

Introduction

The global landscape has been fundamentally reshaped by the advent of computing systems, which have driven an unprecedented digital transformation across industries. Among these, the banking sector has experienced one of the most profound shifts, as digital technologies have revolutionized how financial services are delivered and consumed (Omotayo, 2020). Customers are increasingly relying on mobile and online platforms to perform banking transactions remotely, permanently altering the operational dynamics of financial institutions. This transformation has not only created new and efficient channels for customer interaction but also elevated expectations regarding accessibility, reliability, and service experience (Raza et al., 2020). The evolution of electronic banking traces back to the 1970s with "home banking" conducted via telephones (Shannak, 2013), progressed through cable television–based transactions in the 1980s (Kalakota & Whinston, 1997), and culminated in the launch of full-service online banks during the mid-1990s (Chou & Chou, 2000). These technological advancements have paved the way for contemporary mobile banking, where customers expect seamless, secure, and personalized financial experiences. Consequently, for banks to remain competitive in the digital economy, a comprehensive understanding of how service quality influences customer satisfaction and loyalty has become an imperative. Service quality has long been recognized as a cornerstone of success in service marketing and a key determinant of consumer satisfaction and retention (Parasuraman et al., 1985). The SERVQUAL and E-SERVQUAL models have traditionally been employed to measure this construct, underscoring the importance of meeting or exceeding customer expectations in the service delivery process. In today's competitive business environment, financial institutions face constant pressure to innovate while maintaining superior service performance. The growing adoption of e-banking globally fosters competitiveness and innovation, yet disparities remain between developed and developing nations (Yang et al., 2023; Ayinaddis et al., 2023). In many developing economies, including Pakistan, digital banking adoption is expanding rapidly but still faces structural and

behavioral barriers (Firdous, 2017; Amin, 2016). Customers often encounter issues such as low system reliability, insufficient security assurances, and limited user-friendliness—factors that diminish satisfaction and discourage loyalty. These challenges underscore the need for continuous enhancement in mobile banking service quality (MBSQ) to ensure a positive customer experience and strengthen trust in digital financial systems. Customer satisfaction, widely regarded as a central concept in marketing theory, represents the degree to which a service meets or exceeds customer expectations (Sureshchandar et al., 2002; Pizam & Ellis, 1999). In the banking context, satisfaction not only determines client retention but also drives cross-selling opportunities and long-term profitability. To sustain satisfaction, banks must adapt their digital service delivery models in response to evolving customer preferences and technological innovations. Seamless, user-friendly interfaces, rapid responsiveness, and proactive customer support are now considered essential elements of quality service delivery. Recent technological innovations, including Artificial Intelligence (AI), are transforming the banking landscape by improving efficiency, mitigating fraud, and enhancing compliance (Doumpos et al., 2022). In Pakistan, the State Bank of Pakistan (SBP) and Financial Services Authority (FSA) have encouraged digital financial inclusion, recognizing mobile banking as a key driver of accessibility and economic growth (SBP & FSA, 2020). However, despite regulatory support and growing adoption, service quality gaps remain prevalent, posing challenges to customer satisfaction and long-term loyalty. The problem lies in the persistent gap between customer expectations and the actual quality of mobile banking services offered in developing economies. Although mobile banking applications have become increasingly common, many users in Pakistan still experience inconsistent service quality, security concerns, and limited trust in digital systems. Studies have shown that poor service quality contributes to low user satisfaction and hindered adoption of digital financial services (Khatri & Upadhyaya-Dhungel, 2013; Banstola, 2008; Khatoon et al., 2020). This gap not only affects user experience but also limits financial inclusion and the banking sector's overall digital transformation. Furthermore, most existing research on mobile banking service quality, satisfaction, and loyalty has been conducted in developed economies such as those in Europe and Southeast Asia (Baptista & Oliveira, 2016; Baabdullah et al., 2019; Tam & Oliveira, 2016). Limited empirical evidence exists on how these relationships operate within the Pakistani context, where cultural, economic, and technological factors may shape consumer behavior differently (Rabbani et al., 2022a–b; Khan et al., 2021). The absence of localized research creates a significant gap in understanding how service quality dimensions influence customer satisfaction and loyalty in emerging digital ecosystems. Therefore, this study aims to investigate the impact of Mobile Banking Service Quality (MBSQ) on E-Customer Satisfaction and E-Customer Loyalty in Pakistan's commercial banking sector. By adopting the E-S-QUAL framework, this research examines the multidimensional aspects of service quality—specifically website efficiency, responsiveness, security and privacy, user-friendliness, and convenience—and evaluates their collective and individual influence on customer satisfaction and loyalty. Despite rapid digital transformation in Pakistan's banking industry, mobile banking platforms continue to face critical challenges in delivering consistent, reliable, and secure services that meet customer expectations. These shortcomings in service quality have led to declining satisfaction levels, reduced customer trust, and lower loyalty intentions among users. While prior research in developed countries has established the relationship between service quality, satisfaction, and loyalty, there remains a lack of contextual evidence in developing economies like Pakistan. This gap underscores the need for a systematic investigation into how mobile banking service quality influences e-customer satisfaction and loyalty, thereby informing strategies to strengthen customer retention, trust, and financial inclusion. Through this inquiry, the study contributes to both theory and practice by extending the application of the E-S-QUAL model to an emerging market context and offering actionable insights for policymakers and banking practitioners. Understanding these dynamics will

assist banks in enhancing digital service quality, improving customer satisfaction, and fostering long-term loyalty—key components for sustaining competitiveness in the digital age.

Literature Review

Theoretical Background

The e-service quality literature traces to scales by Zeithaml et al. (2002) and Parasuraman et al. (2005), with Wolfinbarger and Gilly (2003) defining e-SQ along the transaction journey. In the absence of face-to-face contact, customers judge quality primarily via the interface (Carlson & O'Cass, 2010). Banking studies apply and adapt SERVQUAL/E-SERVQUAL across contexts: Malaysia (Ariff et al., 2013), Turkey (Yilmaz et al., 2018), and Pakistan (Raza et al., 2015; Raza et al., 2020), consistently linking efficient, secure, user-friendly portals to higher satisfaction and loyalty. Recent work reinforces continuous improvement as a lever for experience quality (Kamboj, Sharma, & Sarmah, 2022) and documents segment-specific drivers among youth (Jahan & Shahria, 2021) and market-specific features in Nepal (Gautam & Kumari, 2023). Beyond banking, e-commerce evidence mirrors this satisfaction–loyalty mechanism (Sheu & Chang, 2022), while reviews of online banking UX outline research priorities for better digital journeys (Chauhan, Akhtar, & Gupta, 2022). Empirical studies consistently show that superior service quality elevates satisfaction and, in turn, loyalty—across online banking (Amin, 2016; Kahandawa & Wijayanayake, 2014) and mobile-banking settings where simplicity, convenience, safety, and responsiveness matter (Islam & Himel, 2015; Ghosh & Barua, 2014). Collectively, these findings suggest financial institutions should prioritize secure, responsive, usable apps and continuous enhancements to sustain satisfaction and foster durable loyalty (Raza et al., 2020).

Development of Hypotheses

Mobile Banking Quality and E-customer Satisfaction

The hypothesis posits a positive relationship between e-customer satisfaction and the quality of banking services. Rod et al. (2009) emphasized that product quality, online information systems, and customer service are pivotal determinants of satisfaction in online banking. Consistent with this, Vierdwiyani and Syafarudin (2020), Lee and Lin (2005), Shih (2004), and Zeglat et al. (2016) confirmed that online service quality strongly influences customer satisfaction across industries. In e-commerce and banking contexts, Tabash et al. (2019) identified responsiveness as a key predictor of consumer happiness, while Khan et al. (2021) found that empathy, confidence, accessibility, consistency, and tangibility significantly enhance satisfaction. Collectively, these studies underscore that higher service quality—characterized by reliability, responsiveness, and user-centric design—drives e-customer satisfaction in digital banking environments.

H1. Quality of mobile banking services affects e-customer satisfaction.

Quality of mobile banking services and with e-customer loyalty

Existing literature consistently confirms that service quality directly influences consumer retention across industries. Within online banking, the E-S-QUAL dimensions—efficiency, fulfillment, system availability, and privacy—are recognized as key drivers of customer loyalty (Zeithaml, Parasuraman, & Malhotra, 2005; Khan, Zubair, & Malik, 2019). Similarly, in online purchasing contexts, factors such as web performance, information security, ease of use, and dependability significantly shape loyalty (Shafiee & Bazargan, 2018; Bai, Cui, & Ye, 2014). Collectively, these studies highlight the interdependence of service quality, satisfaction, and loyalty across digital platforms. Customer loyalty—manifested as repeat usage, preference for specific applications, and willingness to recommend—emerges as the ultimate outcome of consistently positive service experiences (Khan et al., 2019).

H2. Quality of mobile banking services affects e-customer loyalty.

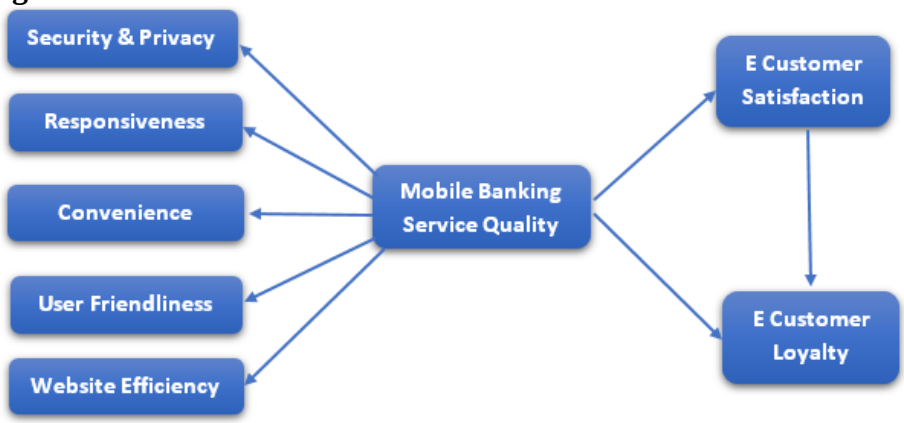
E-customer satisfaction and loyalty

Research consistently underscores the pivotal role of customer satisfaction in fostering loyalty, though findings vary across physical and virtual markets. In online and e-commerce contexts, studies by Bai, Cui, and Ye (2014), Kiran and Diljit (2017), Anderson and Srinivasan (2003), and Lin et al. (2006) reveal a strong positive link between satisfaction and loyalty, indicating that higher satisfaction drives repeated use and commitment to specific platforms. Satisfied customers, emotionally connected to a brand, tend to adopt new digital channels and maintain enduring relationships (Baabdullah et al., 2019; Lee & Chung, 2009; Levy & Hino, 2016). High satisfaction reduces negative behavioral intentions and strengthens retention (Al-Wugayan, 2019; Athanassopoulos, 2001; Keisidou et al., 2013). Empirical evidence from banking and e-commerce further validates this association: Amin (2016) found satisfaction to be a strong predictor of loyalty in Malaysian banks, while Sampaio et al. (2017) reported similar outcomes in mobile-banking contexts across Brazil, India, and the United States. Additional studies confirm satisfaction as a central determinant of customer retention and loyalty (Saleem et al., 2016; Desai, 2019), with satisfaction and trust acting as key mediators between service quality and loyalty (Liao & Chiang, 2005).

H3. E-customer satisfaction mediates relationship between mobile banking quality and e-customer loyalty.

Research Framework

Fig: 1



Research Methodology

This study adopted a deductive quantitative approach to examine the relationship between mobile banking service quality, e-customer satisfaction, and loyalty in Pakistan. Primary data were collected through a structured questionnaire based on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree). A descriptive research design was used, targeting mobile banking users of commercial banks. Purposive sampling ensured the inclusion of active users. Of 300 questionnaires distributed, 279 valid responses were received, representing a 93% response rate. The questionnaire measured five dimensions of service quality—website efficiency, responsiveness, convenience, user-friendliness, and security & privacy—and their influence on satisfaction and loyalty. Respondents were individuals with at least six months of experience using mobile banking applications. Face and content validity were confirmed through expert review by one marketing and one education specialist. Construct reliability and internal consistency were verified through composite reliability and Cronbach's alpha values above 0.7, following Hair et al. (2017). Sample adequacy was determined using Daniel Soper's a priori power analysis (Faul et al., 2007), which indicated a minimum requirement of 170 respondents. The final dataset of 279 responses ensured sufficient statistical power. Data were analyzed using SPSS for descriptive

statistics and SmartPLS (PLS-SEM) for hypothesis testing. The analysis followed the procedures of Fornell and Bookstein (1982), Hair et al. (2016), and Wong (2013), assessing both measurement and structural models. The non-probability purposive sampling technique was applied for its cost-effectiveness and suitability for exploratory, context-specific research (Sekaran, 2010; Neuman, 2013; Sharma, 2017). The final instrument comprised items adapted from validated sources and pretested for clarity and language accuracy. It included demographic variables such as age, gender, qualification, occupation, duration of mobile banking use, and city of residence.

Table 1: Instrument

Construct	No. of Items	Source(s)
Convenience	6	Jahan and Shahria (2022); Achieng and Ingari (2015); Islam and Himel (2015)
User Friendliness	5	Jahan and Shahria (2022); Silvia Sanz-Blas, Carlos Lassala-Navarré, Carla Ruiz-Mafe, and Joaquin Aldas-Manzano (2011)
Security & Privacy	6	Sheu and Chang (2022); Jahan and Shahria (2022); Achieng and Ingari (2015)
Responsiveness (Customer Service)	5	Jahan and Shahria (2022)
Website Efficiency	5	Sheu and Chang (2022)
E-Customer Satisfaction	5	Jahan and Shahria (2022); Sheu and Chang (2022)
E-Customer Loyalty	5	Jahan and Shahria (2022); Sheu and Chang (2022); Silvia Sanz-Blas, Carlos Lassala-Navarré, Carla Ruiz-Mafe, and Joaquin Aldas-Manzano (2011)

Data Analysis and Results

This chapter presents the empirical results obtained from the data analysis and interpretation of the relationships between mobile banking service quality, e-customer satisfaction, and e-customer loyalty. Statistical analyses were conducted using SPSS and SmartPLS (PLS-SEM). The analysis followed a two-step approach, beginning with the evaluation of the measurement model to establish the reliability and validity of the constructs, and proceeding with the assessment of the structural model to test the proposed hypotheses.

Descriptive Statistics

A total of 279 valid responses were included in the analysis out of 300 questionnaires distributed, yielding a 93% response rate, which is considered satisfactory for quantitative research in behavioral studies (Sekaran & Bougie, 2016). The demographic characteristics of respondents covered gender, age, qualification, occupation, duration of mobile banking use, and city of residence. Most respondents were active users of mobile banking services and represented a variety of educational and professional backgrounds, reflecting a balanced representation of Pakistan's urban banking population. This diversity enhances the generalizability of findings to the broader context of digital banking in developing economies.

Table 1: Demographic Characteristics of Respondents

Variable	Category	Frequency	Percentage
Gender	Male	170	60.9
	Female	109	39.1
Age	18–25 years	90	32.3
	26–35 years	120	43
	36–45 years	45	16.1
	46 years and above	24	8.6
Education	Bachelor's	110	39.4
	Master's	130	46.6
	Doctorate	39	14

The descriptive results confirmed that the data were suitable for further analysis, showing no major issues with missing values or extreme outliers. Normality and reliability tests indicated that the dataset met the assumptions for Partial Least Squares Structural Equation Modeling (PLS-SEM).

Measurement Model Evaluation

The measurement model was assessed to determine the reliability and validity of the constructs before proceeding to hypothesis testing. The model includes three main constructs: Mobile Banking Service Quality, E-Customer Satisfaction, and E-Customer Loyalty.

Indicator Reliability and Convergent Validity

Item reliability was examined through outer loadings. All indicator loadings exceeded the recommended threshold of 0.70, confirming that each item contributes significantly to its corresponding construct (Hair et al., 2016). Composite reliability (CR) and Cronbach's alpha were used to assess internal consistency. All values were greater than 0.70, establishing strong internal reliability. Average Variance Extracted (AVE) values for all constructs were above 0.50, demonstrating adequate convergent validity (Fornell & Larcker, 1981; Nunnally & Bernstein, 1994).

Table 2: Convergent Validity

Construct	Item	Outer Loading	Cronbach's α	Composite Reliability	AVE
Convenience	Con-1	0.695	0.86	0.851	0.558
	Con-2	0.680			
	Con-3	0.728			
	Con-4	0.806			
	Con-5	0.766			
	Con-6	0.797			
E-Customer Loyalty	Loy-1	0.799	0.815	0.879	0.675
	Loy-2	0.852			
	Loy-3	0.854			
	Loy-4	0.769			
	Loy-5	0.831			
Responsiveness	Res-1	0.830	0.906	0.911	0.735
	Res-2	0.846			
	Res-3	0.868			
	Res-4	0.899			
	Res-5	0.843			
E-Customer Satisfaction	Sat-1	0.732	0.745	0.837	0.586
	Sat-2	0.765			
	Sat-3	0.754			
	Sat-4	0.741			
	Sat-5	0.832			
Security & Privacy	Sec-1	0.842	0.857	0.918	0.701
	Sec-2	0.897			
	Sec-3	0.901			
	Sec-4	0.766			
	Sec-5	0.791			
	Sec-6	0.817			
User Friendliness	UF-1	0.756	0.881	0.889	0.687
	UF-2	0.836			
	UF-3	0.855			
	UF-4	0.861			
	UF-5	0.833			
Website Efficiency	Web-1	0.785	0.882	0.898	0.708
	Web-2	0.858			
	Web-3	0.851			
	Web-4	0.869			
	Web-5	0.842			

These results confirm that the indicators consistently represent their underlying latent constructs and are suitable for inclusion in the structural model.

Discriminant Validity

Discriminant validity was assessed using two complementary methods: the Fornell–Larcker criterion and the Heterotrait–Monotrait ratio (HTMT). According to the Fornell–Larcker criterion, the square root of AVE for each construct exceeded its inter-construct correlations, indicating that each construct is distinct from others. Similarly, all HTMT ratios were below the conservative threshold of 0.85 (Henseler et al., 2015), confirming satisfactory discriminant validity.

Table 3: Fornell–Larcker Criterion Matrix

Construct	CON	LOY	RES	SAT	SEC	USER	WEB
Convenience (CON)	**0.747**						
E-Customer Loyalty (LOY)	0.450	**0.821**					
Responsiveness (RES)	0.489	0.555	**0.858**				
E-Customer Satisfaction (SAT)	0.471	0.679	0.624	**0.765**			
Security & Privacy (SEC)	0.496	0.481	0.667	0.533	**0.837**		
User Friendliness (USER)	0.651	0.467	0.604	0.490	0.715	**0.829**	
Website Efficiency (WEB)	0.503	0.576	0.555	0.614	0.542	0.556	**0.841**

Table 4: Heterotrait–Monotrait Ratio (HTMT)

Construct	CON	LOY	RES	SAT	SEC	USER	WEB
Convenience (CON)	—						
E-Customer Loyalty (LOY)	0.502	—					
Responsiveness (RES)	0.534	0.620	—				
E-Customer Satisfaction (SAT)	0.535	0.786	0.706	—			
Security & Privacy (SEC)	0.547	0.534	0.729	0.590	—		
User Friendliness (USER)	0.740	0.526	0.670	0.547	0.789	—	
Website Efficiency (WEB)	0.563	0.647	0.608	0.685	0.593	0.618	—

These results affirm that the constructs in this study are empirically unique and measure different aspects of mobile banking experiences.

Higher Order Construct of Mobile Banking Service Quality

Given that mobile banking service quality comprises multiple dimensions, a Higher Order Construct (HOC) model was applied to capture its multidimensional nature. The HOC integrates five first-order reflective constructs: Website Efficiency, Responsiveness, Convenience, User-Friendliness, and Security & Privacy.

The outer loadings of each dimension on the higher-order construct exceeded 0.70, confirming the reflective nature of the model and adequate contribution of each sub-dimension. The composite reliability and AVE values were above 0.70 and 0.50, respectively, supporting convergent validity.

Table 5: Higher Order Construct of Mobile Banking Service Quality

Relationship	Coefficients	Sample Mean (M)	Standard Deviation (ST DEV)	t Statistic	p Value
MBSQ → Convenience	0.747	0.747	0.048	15.539	0.000
MBSQ → Responsiveness	0.823	0.824	0.041	19.863	0.000
MBSQ → Security & Privacy	0.860	0.861	0.022	39.068	0.000
MBSQ → User Friendliness	0.865	0.864	0.026	33.623	0.000
MBSQ → Website Efficiency	0.769	0.768	0.043	17.821	0.000

This hierarchical modeling approach is consistent with prior research (Hair et al., 2017) and provides a robust structure for analyzing how the combined dimensions of service quality influence customer satisfaction and loyalty.

Structural Model Evaluation

Once the measurement model met all reliability and validity criteria, the structural model was evaluated to test the study's hypotheses. The bootstrapping method with 5,000 subsamples was applied to assess path coefficients, t-values, and significance levels (Chin, 1998; Hair et al., 2016). The structural model results revealed significant and positive relationships among all the key constructs. Mobile banking service quality had a strong and direct influence on e-customer satisfaction ($\beta = 0.672$, $p < 0.001$), indicating that higher perceived service quality substantially enhances customer satisfaction. Similarly, mobile banking service quality also exhibited a positive and significant impact on e-customer loyalty ($\beta = 0.300$, $p < 0.001$), suggesting that superior service quality directly contributes to greater customer retention and continued usage. Moreover, e-customer satisfaction was found to have a significant effect on e-customer loyalty ($\beta = 0.477$, $p < 0.001$), demonstrating that satisfied customers are more likely to remain loyal to their respective banks. In addition, e-customer satisfaction played a mediating role between service quality and loyalty ($\beta = 0.321$, $p < 0.001$), confirming that the influence of service quality on loyalty is partially channeled through customer satisfaction. These results collectively indicate that improved mobile banking service quality not only enhances customer satisfaction but also strengthens loyalty, both directly and indirectly, through the mediating effect of satisfaction.

Table 6: Path Coefficients

Hypothesis	Path	β	Standard Deviation (STDEV)	t Statistic	p Value	Result
H1	MBSQ → E-Customer Loyalty	0.300	0.081	3.722	0.000	**Accepted*** **
H2	MBSQ → E-Customer Satisfaction	0.672	0.047	14.222	0.000	**Accepted*** **
H3	E-Customer Satisfaction → E-Customer Loyalty	0.477	0.090	5.283	0.000	**Accepted*** **
H4 (Mediation)	MBSQ → E-Customer Satisfaction → E-Customer Loyalty	0.321	0.062	5.147	0.000	**Accepted*** **

These findings confirm all proposed hypotheses (H1–H3), supporting the theoretical model. The positive path coefficients validate that improvements in mobile banking service quality dimensions—especially responsiveness and user-friendliness—enhance satisfaction, which in turn fosters customer loyalty. These results align with prior findings by Agapito et al. (2013) and Woosnam et al. (2020), emphasizing the importance of perceived service excellence in digital financial services.

Model Predictive Relevance

Model predictive accuracy was evaluated using R^2 and Q^2 statistics. The R^2 value for E-Customer Satisfaction was 0.451, indicating that 45.1% of the variance in satisfaction is explained by service quality. The R^2 for E-Customer Loyalty was 0.510, showing that satisfaction and service quality jointly explain 51% of loyalty variance. The Q^2 values, computed using cross-validated redundancy (Geisser, 1974; Henseler et al., 2009), were positive for both satisfaction and loyalty constructs, confirming the model's predictive relevance.

Table 7: Coefficient of Determination (R^2) and Predictive Relevance (Q^2)

Construct	R^2	Q^2
E-Customer Loyalty	**0.510**	**0.378**
E-Customer Satisfaction	**0.451**	**0.444**

The coefficient of determination (R^2) values indicate that the model explains 51.0% of the variance in e-customer loyalty and 45.1% of the variance in e-customer satisfaction, signifying moderate to substantial explanatory power (Hair et al., 2016). The predictive relevance (Q^2) values of 0.378 for loyalty and 0.444 for satisfaction are both greater than zero, confirming that the model has strong predictive validity. These results demonstrate that mobile banking service quality and satisfaction collectively provide reliable and meaningful predictions of customer loyalty. The high Q^2 values further validate that the model possesses sound predictive capability, reinforcing the robustness of the structural relationships established in this study.

Discussion

The findings of this study provide strong empirical evidence supporting the hypothesized relationships between Mobile Banking Service Quality (MBSQ), E-Customer Satisfaction (E-CSAT), and E-Customer Loyalty (E-CLOY) in Pakistan's digital banking sector. Results from the

structural model confirm that all proposed paths are statistically significant at $p < .001$, emphasizing that service quality plays a decisive role in shaping satisfaction and loyalty among mobile banking users. The analysis revealed that mobile banking service quality has a strong and positive influence on e-customer satisfaction ($\beta = 0.672$, $t = 14.222$, $p < .001$). This indicates that users who perceive higher levels of service quality in mobile banking applications tend to report greater satisfaction. The results are consistent with earlier findings by Rod et al. (2009), Parasuraman et al. (2005), and Raza et al. (2020), which highlight that quality of service delivery significantly determines satisfaction in online banking environments. Among the five dimensions of service quality—website efficiency, responsiveness, security and privacy, user friendliness, and convenience—the loadings of security and privacy ($\beta = 0.860$) and user friendliness ($\beta = 0.865$) were the highest, signifying that a secure, intuitive, and reliable system is central to user satisfaction. These findings correspond with previous studies by Amin (2016) and Islam and Himel (2015), who emphasized the role of usability and safety features as the main satisfaction drivers in digital banking within developing economies. The relationship between service quality and loyalty was also significant ($\beta = 0.300$, $t = 3.722$, $p < .001$), demonstrating that superior mobile banking services encourage continued use and strengthen customer loyalty. Although the direct impact of service quality on loyalty was moderate, it reflects the importance of consistent service excellence in retaining users over time. This outcome aligns with the findings of Khan et al. (2019) and Shafiee and Bazargan (2018), who observed that reliability, responsiveness, and system performance are major determinants of loyalty in online financial services. The moderate effect size also indicates that loyalty is not solely shaped by functional aspects of service quality but is strongly mediated by emotional satisfaction and perceived trust in the banking institution. E-customer satisfaction was found to significantly influence loyalty ($\beta = 0.477$, $t = 5.283$, $p < .001$) and served as a key mediating factor between service quality and loyalty ($\beta = 0.321$, $t = 5.147$, $p < .001$). This mediation confirms that satisfaction operates as a psychological bridge linking customers' perceptions of service quality to their loyalty behaviors. These findings reinforce the theoretical propositions of the E-S-QUAL model (Zeithaml, Parasuraman, & Malhotra, 2005) and support empirical evidence from Amin (2016) and Sampaio et al. (2017), which established that satisfaction is an essential mechanism through which perceived service quality drives loyalty in digital banking contexts. In the context of Pakistan's evolving digital banking landscape, these findings are particularly significant. They suggest that banks must not only focus on improving functional attributes such as speed, reliability, and security but also deliver emotionally satisfying and confidence-building experiences to strengthen long-term customer engagement. The strong explanatory power of the model ($R^2 = 0.451$ for satisfaction; $R^2 = 0.510$ for loyalty) indicates that service quality and satisfaction together explain a substantial portion of customer loyalty variance. This provides further empirical support for the multidimensional nature of service quality and its central role in determining customer attitudes and behavioral intentions. Overall, the results validate that mobile banking service quality is a comprehensive construct encompassing both technical and experiential dimensions. Customers value applications that are secure, convenient, and easy to navigate, while also providing reliable and responsive support. High-quality mobile banking experiences enhance user satisfaction and reinforce trust, which in turn lead to sustained loyalty and long-term relationship continuity. These outcomes are in harmony with previous literature (Kahandawa & Wijayanayake, 2014; Raza et al., 2020; Kiran & Diljit, 2017) and extend the applicability of the E-S-QUAL framework to developing financial markets. The findings thus highlight that delivering superior mobile banking services is not only a technological challenge but also a strategic imperative for banks aiming to build customer satisfaction, foster loyalty, and maintain competitiveness in the digital era.

Conclusion

This study examined the impact of mobile banking service quality on e-customer satisfaction and e-customer loyalty within Pakistan's commercial banking sector. Using the E-S-QUAL framework, five dimensions of service quality—website efficiency, responsiveness, convenience, user-friendliness, and security & privacy—were analyzed to understand their combined and individual effects on customer behavior. The empirical findings confirmed that service quality significantly influences both satisfaction and loyalty among mobile banking users. The structural model demonstrated that higher perceived service quality leads to increased customer satisfaction ($\beta = 0.672$, $p < 0.001$), while satisfaction itself plays a crucial mediating role between service quality and loyalty ($\beta = 0.321$, $p < 0.001$). Furthermore, satisfaction directly enhances loyalty ($\beta = 0.477$, $p < 0.001$), establishing it as a critical predictor of customer retention and engagement. The results affirm that mobile banking users evaluate their experiences holistically, valuing efficiency, security, and ease of use. High-performing service quality dimensions not only create immediate satisfaction but also nurture trust, preference, and long-term loyalty toward digital banking platforms. The study reinforces the importance of maintaining superior mobile banking standards to sustain competitiveness in an increasingly digital financial environment.

Theoretical Implications

This study contributes to the growing body of literature on e-service quality and consumer behavior in digital financial services. It extends the application of the E-S-QUAL model to the Pakistani mobile banking context, providing empirical validation of its dimensions in a developing economy. The research also integrates service quality, satisfaction, and loyalty into a single structural model, demonstrating how satisfaction mediates the relationship between perceived service quality and customer loyalty. This finding reinforces theoretical propositions from prior models such as SERVQUAL (Parasuraman et al., 1985) and E-S-QUAL (Parasuraman et al., 2005), which suggest that service quality is a precursor to satisfaction and behavioral loyalty. Furthermore, the inclusion of a higher-order construct for service quality supports multidimensional conceptualization, aligning with the work of Hair et al. (2017) and Zeithaml et al. (2002). The study provides a nuanced understanding of how perceived quality operates through satisfaction to shape digital loyalty, offering a theoretical bridge between traditional service quality models and modern e-banking frameworks.

Managerial Implications

The findings of this study carry several practical and strategic implications for bank managers, policymakers, and digital transformation leaders seeking to strengthen Pakistan's mobile banking ecosystem. First, banks must acknowledge that enhancing mobile banking service quality, particularly in areas such as responsiveness, security, and user-friendliness, has a direct and measurable impact on customer satisfaction and loyalty. As demonstrated by the results, improvements in these dimensions can significantly elevate customer perceptions of value, trust, and confidence in digital banking platforms. Financial institutions should therefore prioritize app stability, system reliability, and seamless user interface design to ensure consistent service delivery. Integrating real-time customer support and intuitive navigation enhances customer convenience and reduces frustration, fostering both short-term satisfaction and long-term loyalty. Second, the strong mediating role of satisfaction identified in the analysis underscores the necessity of proactive customer experience management. Satisfaction does not occur passively—it must be cultivated through deliberate actions such as collecting ongoing feedback, monitoring performance analytics, and implementing user-driven design enhancements. Banks should develop structured mechanisms to capture and act on customer feedback in real time, using predictive analytics and AI-driven insights to anticipate issues before they escalate. Regular updates to

improve transaction speed, error handling, and personalization will further reinforce satisfaction and strengthen emotional engagement with the bank's mobile services. Third, data privacy and cybersecurity must be treated as core elements of digital strategy, not merely regulatory requirements. The findings show that perceptions of security and privacy have among the strongest impacts on customer satisfaction. This highlights the need for robust encryption protocols, transparent data policies, and effective fraud detection systems. Communicating these protections clearly to users builds emotional assurance, particularly in emerging markets like Pakistan, where digital trust remains fragile. Banks should invest in continuous cybersecurity training for staff, implement multi-factor authentication, and adopt industry best practices to mitigate potential risks. Fourth, banks should reposition mobile banking platforms as strategic assets rather than supplementary channels. The mobile interface represents the primary point of customer contact in the digital era, shaping not only transactional convenience but also brand perception and customer relationship quality. To leverage this potential, institutions must ensure that the customer journey—from login to transaction completion—is seamless, fast, and secure. Enhancing integration across digital channels such as ATMs, web banking, and call centers can provide a unified and frictionless experience that reinforces customer trust and loyalty. Fifth, banks should promote financial literacy and digital inclusion initiatives to expand mobile banking adoption. Many users, especially in rural or underserved areas, remain hesitant due to limited understanding of digital platforms. Public–private partnerships, educational campaigns, and user-friendly app interfaces can help address these barriers. By simplifying onboarding processes and reducing technical complexity, banks can broaden their user base while strengthening overall satisfaction. Sixth, policymakers and regulators such as the State Bank of Pakistan (SBP) should continue to foster an enabling environment for digital banking innovation. Clear regulatory frameworks, incentives for technological investment, and standardization of data security protocols can accelerate the adoption of secure and user-centered mobile banking. Encouraging cross-institutional collaboration between fintech firms, telecom operators, and banks can further enhance accessibility and service innovation. Finally, at a strategic level, banks should adopt a data-driven approach to service quality enhancement. The integration of analytics, AI, and customer relationship management systems can help institutions personalize offerings, predict behavioral trends, and tailor engagement strategies to individual user preferences. This not only strengthens satisfaction and loyalty but also positions banks to compete effectively in an increasingly digital and customer-centric marketplace. In conclusion, improving mobile banking service quality requires a holistic approach that combines technological excellence, customer-centric design, and continuous innovation. By prioritizing responsiveness, security, and convenience while embedding feedback-driven strategies, banks can enhance user satisfaction, cultivate loyalty, and contribute to Pakistan's broader goals of digital financial inclusion and economic growth

Limitations and Future Research Directions

Despite its contributions, this study has several limitations that provide opportunities for future research. The analysis was confined to mobile banking users in Pakistan, which may limit the generalizability of results to other cultural or economic contexts. Future studies could replicate the model across different countries or financial systems to compare regional variations in customer behavior. The study primarily focused on five dimensions of service quality; however, other factors such as perceived value, trust, and technological innovation could further enrich understanding of customer loyalty in digital banking. Longitudinal research could also help explore how customer satisfaction and loyalty evolve over time as technology and user expectations change. Finally, the study used a non-probability purposive sampling technique, which, while suitable for exploratory research, may introduce selection bias. Future research employing random or stratified sampling would enhance external validity. Including qualitative

insights through interviews or focus groups could also deepen the understanding of customer perceptions toward mobile banking experiences.

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