THE IMPACT OF ATM SERVICE QUALITY ON CUSTOMER SATISFACTION: A SEM-BASED EMPIRICAL STUDY OF COMMERCIAL BANKS IN THAI NGUYEN PROVINCE

PhD. Hoang Ha* - PhD. Nguyen Thanh Vu* - PhD. Nguyen Hong Lien**

Abstract: ***This study analyzes the impact of ATM service quality on customer satisfaction at commercial banks in Thai Nguyen province, Vietnam. Based on the ES-QUAL model and Expectancy - Disconfirmation Theory, the research examines five dimensions: tangibles, convenience, security, responsiveness and reliability. Data were collected from 300 ATM users across six commercial banks and analyzed using Structural Equation Modeling (SEM). The results indicate that all factors positively influence customer satisfaction, with convenience and security being the most influential. The study contributes to the theoretical foundation of electronic service quality and provides managerial implications for improving ATM accessibility, security and interface design.***

• Keywords: *ATM service quality, customer satisfaction, ES-QUAL, Thai Nguyen.*

Date of receipt: 19th Sep., 2025
Date of receipt revision: 20th Oct, 2025
Date of delivery revision: 12th Oct., 2025
Date of approval: 25th Nov., 2025

DOI: https://doi.org/10.71374/jfar.v25.i6.14

1. Introduction

In the digital transformation era, commercial banks are investing more in self-service technologies to enhance access, reduce costs and improve efficiency. Among these, Automated Teller Machines (ATMs) still play an important role, especially in developing economies where digital banking systems are not yet fully developed. In Vietnam, although e-banking and mobile applications have grown rapidly, ATMs remain essential for providing 24/7 financial services, particularly in rural and mountainous areas (Nguyen, Ho & Ngo, 2024).

Customer satisfaction with ATM services is a key priority for commercial banks because factors such as reliability, ease of use, cash availability and security directly affect satisfaction and loyalty (Elifineh, Goulap & Girma, 2023; Hoque, Uddin & Begum, 2024). However, ATM services in many provinces still face challenges, including low usage rates, frequent technical problems, cash shortages and security concerns. These issues negatively impact user experience and reduce trust in banks.

Thai Nguyen province is an economic and educational hub in Northern Vietnam with more than 20 commercial banks currently operating. Although the ATM network has expanded, service quality still does not fully meet customer expectations, especially in rural and remote areas. Research on ATM service quality in provincial settings remains limited. Therefore, this study focuses on six major banks including BIDV, Vietcombank, VietinBank, Agribank, MB Bank and Techcombank to assess the impact of ATM service quality on customer satisfaction. Using Structural Equation Modeling (SEM), the study identifies the key service quality factors that influence customer satisfaction and provides practical recommendations to improve accessibility, security and user experience, thereby enhancing customer satisfaction and loyalty.

2. Literature review

2.1. Theoretical foundations

This study was carried out mainly based on the ES-QUAL (E-Service Quality) model developed by Parasuraman, Zeithaml and Malhotra (2005), which built on the original SERVQUAL framework (Parasuraman et al., 1988). SERVQUAL was created to measure service quality in face-to-face settings, focusing on five areas: reliability, assurance, tangibles, empathy and responsiveness. In contrast, ES-QUAL was designed to assess service quality in electronic settings, like online banking or ATMs. It highlighted four key factors that matter most in digital services: efficiency, fulfillment, system availability and privacy/ security.

In parallel, customer satisfaction was based on the Expectancy-Disconfirmation Theory (EDT) by Oliver (1997), which said that people felt satisfied when the service they got met or went beyond what they expected. In self-service situations like using ATMs, how customers saw the quality of the service had a big impact on what they expected and how satisfied they

** Thai Nguyen University of Economics & Business Administration; Corresponding author, email: nguyenthanhvu@tueba.edu.vn*
*** Thai Nguyen University, Vietnam*

felt (Davis et al., 1989). These two theories are still the most common ways to study ATM service quality and customer satisfaction in both developed and developing countries.

2.2. ATM service quality and customer satisfaction

Recent researches from 2020 to 2024 have continued to support and develop the application of the ES-QUAL framework in assessing ATM service quality. For example, a study by Elifneh et al. (2023) in Ethiopia used structural equation modeling (SEM) to analyze data from customers of the Commercial Bank of Ethiopia. The findings showed that reliability, ease of use and privacy/security had a significant positive impact on customer satisfaction.

Similarly, a study by Yoeung, Hill and Ung (2023) in Cambodia found that rural ATM users cared most about getting what was promised, fast transactions and a reliable system. Their results showed that the ES-QUAL factors should be adjusted to fit local conditions, like how good the infrastructure is and how familiar people are with digital banking.

In Bangladesh, Hoque et al. (2024) looked at private banks and found that people were more satisfied and loyal when ATMs were easy to use, worked 24/7, had a clear interface and didn't make mistakes during transactions. The study also pointed out that things like age, gender and education can affect how customers see and feel about ATM service quality.

In Vietnam, Nguyen, Ho and Ngo (2024) conducted a study to assess how new digital banking features affect customer satisfaction, including ATMs. Although they didn't focus only on ATMs, they found that adding things like biometric logins or QR code withdrawals made customers, especially young ones feel the service was more valuable and satisfying.

2.3. Emerging dimensions and refinements

Even though the original ES-QUAL model is still strong, recent studies have made some useful dimensions related to ATM service quality:

- Convenience: This wasn't part of the original model, but many researchers (like Yoeung et al., 2023; Hoque et al., 2024) state that it's very important for using ATMs.

- Clear interface and language choices: These have become important, especially in areas with different languages or in remote and rural areas, as part of how easy the ATM is used.

- Cash availability and machine downtime: These real-life problems are often included under fulfillment or reliability (Elifneh et al., 2023).

These updates show that while basic models like ES-QUAL gives a good starting point, it's necessary to make some adjustments based on local conditions.

3. Research model and hypotheses development

This study is conducted based on two well-known ideas: the ES-QUAL model (Parasuraman et al., 2005), which helps measure service quality in electronic systems and the Expectancy-Disconfirmation Theory (Oliver, 1997), which explains how satisfaction depends on whether services meet people's expectations.

A model is used to look at how five parts of ATM service quality affect how satisfied customers feel. These five parts are:

- Tangibles: how the ATM looks and how modern and clean it is.

- Convenience: how easy it is to find and use the ATM.

- Security: how safe people feel when using the ATM.

- Responsiveness: how quickly and effectively the bank helps when problems happen.

- Reliability: whether the ATM works well and gives the right information.

The main thing we are trying to explain is customer satisfaction - how happy people are with the ATM service based on their experience.

Hypotheses

Based on the conceptual model, the following hypotheses are proposed:

H1: Tangibles have a positive effect on customer satisfaction.

H2: Convenience has a positive effect on customer satisfaction.

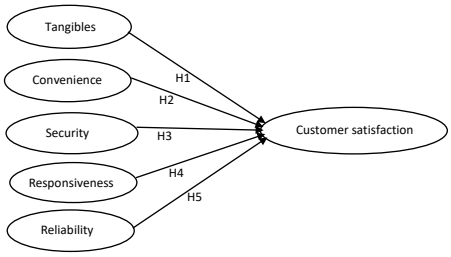
H3: Security has a positive effect on customer satisfaction.

H4: Responsiveness has a positive effect on customer satisfaction.

H5: Reliability has a positive effect on customer satisfaction.

Conceptual Framework

Figure 1. Conceptual Framework of ATM Service Quality and Customer Satisfaction



4. Research methodology

4.1. Research design

This study employed a cross-sectional survey method to collect data from ATM users of six

commercial banks in Thai Nguyen province. A structured questionnaire was developed based on established theories and validated scales from previous studies. Data were analyzed using SPSS 26.0 for descriptive statistics, reliability testing (Cronbach's Alpha) and exploratory factor analysis (EFA) and AMOS 24.0 for confirmatory factor analysis (CFA) and structural equation modeling (SEM).

The SEM method was used to test relationships between latent variables, enabling simultaneous assessment of complex links between ATM service quality dimensions and customer satisfaction. Compared with traditional regression, SEM allows measurement of latent constructs through observed indicators and testing of hypotheses with high reliability. Model fit was evaluated using indices such as Chi-square/df, CFI, TLI, RMSEA and PClose to ensure validity and robustness of the findings.

4.2. Sample and data collection

The survey targeted individual customers who had used ATM services of six major commercial banks in Thai Nguyen province, including BIDV, Vietcombank, VietinBank, Agribank, MB Bank and Techcombank. These banks have extensive networks across both urban and rural areas, allowing for diverse customer experiences.

Convenience sampling with screening criteria was applied, requiring participants to have used ATM services from at least one of these banks within the past three months to ensure recent and relevant experiences. Data were collected through both direct and online surveys from June to August 2025. Out of 350 responses, 300 valid questionnaires were retained for analysis, with 50 from each bank.

This sample size meets the requirements for SEM analysis, as suggested by Hair et al. (2019), which recommends a minimum of 200 samples when the model has more than 20 observed variables. To enhance representativeness, the study also balanced respondents by area (urban and rural), age and occupation to reflect the diversity of ATM users in Thai Nguyen.

4.3. Measurement instrument

Table 1. Constructs, Number of Items and Sources of Measurement

Factor	Coded	Number of items	Example of item	Sources
Tangibles	TAN	4	ATM has modern look; easy to use interfact	Nham & Phan (2015)
Convenience	CON	4	ATM is convenient in location and time of use.	Narteh (2013)
Security	SEC	4	Transactions are well protected.	Aslam et al. (2019); Al-Hawari (2011)
Responsiveness	RES	4	ATM problems are handled promptly.	Narteh (2013); Nham & Phan (2015)
Reliability	REL	4	ATM is working smoothly.	Narteh (2013); Nham & Phan (2015)
Customer Satisfaction	CS	3	I am satisfied with the ATM service.	Fornell et al. (1996); Aslam et al. (2019)

Source: Compiled by the authors based on prior studies

This study uses six constructs, including five components of ATM service quality (Tangibles, Convenience, Security, Responsiveness, Reliability) and one dependent variable, Customer Satisfaction. The scales are inherited and adjusted from previous studies (Narteh, 2013; Nham & Phan, 2015; Aslam et al., 2019; Al-Hawari, 2011; Fornell et al., 1996) to suit the Vietnamese context. The observed variables are measured using a 5-level Likert scale (1 = Completely disagree, 5 = Completely agree).

4.4. Data Analysis Methods

The dataset included 300 valid responses from six commercial banks. Data were first checked for missing values, outliers and normality using SPSS. Scale reliability and validity were tested through Cronbach's Alpha, EFA and CFA. The SEM model was then analyzed using AMOS. Reliability was accepted when Cronbach's Alpha and CR ≥ 0.70, convergent validity when AVE ≥ 0.50 and discriminant validity when HTMT < 0.85 or according to the Fornell-Larcker criterion. Model fit was evaluated with indices $\chi^2/df \leq 3$, CFI ≥ 0.90, TLI ≥ 0.90, RMSEA ≤ 0.08 and SRMR ≤ 0.08. Hypotheses were tested through path coefficients (β) and p-values, while the R^2 value of customer satisfaction (CS) indicated the model's explanatory power.

5. Results

5.1. Descriptive Statistics of Respondents

Table 2. Respondents' Demographic Profile (N = 300)

Variable	Frequency	Percent (%)
Gender		
Male	161	53.7
Female	139	46.3
Age		
Up to 30 years	143	47.7
From 31 to 45 years	105	35.0
41 years and above	52	17.3
Marital Status		
Single	93	31.0
Married	207	69.0
Monthly Income		
Less than 10 million VND	78	26.0
From 10 to 20 million VND	179	59.7
More than 20 million VND	43	14.3
Job Position		
State servant	54	18.0
Company employee	135	45.0
Student	44	14.7
Other	67	22.3
Education Attainment		
Below university level	190	63.3
Bachelor degree	91	30.3
Master's degree and above	19	6.3
Length of ATM Service Use		
Less than 5 years	37	12.3
From 5 to 10 years	123	41.0
More than 10 years	140	46.7

Source: Compiled by the authors

The survey included 300 ATM users from six major commercial banks in Thai Nguyen province. Male respondents accounted for 53.7% and females 46.3%, showing a balanced gender distribution. Most

users were under 30 years old (47.7%), followed by those aged 31-45 (35.0%) and 46 or older (17.3%). The majority were married (69%) and had a monthly income of 10-20 million VND (59.7%). Company employees made up 45% of the sample, followed by students (14.7%) and civil servants (8%). Most participants had less than a university degree (63.3%), while 30.3% held a bachelor's degree. Nearly half of the respondents (46.7%) had used ATM services for 10 years or more, highlighting the long-term and important role of ATMs in Thai Nguyen's banking system.

5.2. Descriptive analysis of constructs

Table 3. Descriptive Statistics for ATM Service Quality Constructs and Customer Satisfaction

Construct	Mean (M)	Std. Deviation (SD)
Convenience (CON)	2.89	0.61
Security (SEC)	3.56	0.81
Tangibles (TAN)	3.42	0.70
Reliability (REL)	3.36	0.78
Responsiveness (RES)	3.66	0.73
Customer Satisfaction (CS)	3.54	0.57

Source: Compiled by the authors

Descriptive statistics were calculated to examine the central tendencies and variability of the observed variables. The analysis focused on the mean and standard deviation of the five ATM service quality dimensions and customer satisfaction. The mean scores ranged from 2.89 to 3.66, indicating an overall average to good perception. Responsiveness scored the highest with a mean of 3.66 and SD of 0.73, showing users rated response speed well, though variability suggests differences across locations. Security and customer satisfaction had means of 3.56 and 3.54, respectively, with security showing the highest variability (SD=0.81), indicating some users still perceive risks such as skimming or inadequate security measures. Tangibles and reliability were moderate at 3.42 and 3.36, with reliability showing greater variability due to issues like machine availability, transaction errors or network disruptions. Convenience had the lowest mean of 2.89 and SD of 0.61, reflecting customer agreement on existing inconveniences such as machine density, location, queues, operating hours and fees. Customer satisfaction showed the lowest variability (SD=0.57), suggesting a relatively stable satisfaction level and potential for improvement if convenience is increased and security and reliability issues are addressed.

5.3. Reliability analysis

Table 4. Cronbach's alpha for measurement constructs

Factors	No. of Items	Cronbach's Alpha (α)
Tangibles	4	0.842
Convenience	4	0.846
Security	4	0.872
Responsiveness	4	0.847
Reliability	4	0.858
Customer Satisfaction	3	0.973

Source: Compiled by the authors

The internal consistency reliability of all measurement constructs was assessed using Cronbach's Alpha. As shown in Table 4, all six factors exceeded the commonly accepted threshold of 0.70 (Nunnally & Bernstein, 1994), indicating good to excellent internal reliability.

All corrected item-total correlations were above 0.61 and none of the items significantly increased Cronbach's Alpha when deleted. The particularly high alpha value for the Customer Satisfaction scale reflects the internal coherence of this construct.

These results confirm that all factors in the research model demonstrate satisfactory internal reliability and are suitable for further validity testing and structural modeling.

5.4. Exploratory factor analysis (EFA)

Table 5. Results of exploratory factor analysis (EFA)

Indicator	Value
Kaiser-Meyer-Olkin - KMO	.878
Measure of Sampling	4423.40 (df = 253, p < 0.001
Number of Components (Eigenvalue > 1)	6
Cumulative Variance Explained	73.77

Source: Compiled by the authors

To examine the underlying structure of the measurement items, an Exploratory Factor Analysis (EFA) was conducted using Principal Component Analysis with Varimax rotation. The results support the adequacy of the dataset for factor analysis.

The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.878, exceeding the recommended threshold of 0.60, indicating sufficient correlations among items. Bartlett's Test of Sphericity was also significant ($\chi^2 = 4423.40$, $df = 253$, $p < 0.001$), confirming the suitability of the data for factor analysis.

EFA results revealed six components with eigenvalues greater than 1, accounting for 73.77% of the total variance. The rotated component matrix showed clean loadings above 0.70 for most items, with no significant cross-loadings, indicating clear factor distinctions.

The extracted factors align well with the conceptual framework, representing the following constructs: Factor 1: Security (SEC); Factor 2: Reliability (REL); Factor 3: Convenience (CON); Factor 4: Responsiveness (RES); Factor 5: Tangibles (TAN); and Factor 6: Customer Satisfaction (CS).

These results confirm that the observed variables loaded appropriately on their intended constructs, thereby supporting the dimensionality of the measurement instrument for subsequent confirmatory factor analysis (CFA) and structural modeling.

5.5. Confirmatory factor analysis (CFA)

The CFA analysis results show that the measurement model has a very good fit with the survey data.

Specifically, the goodness-of-fit indices are all within the recommended threshold according to Hu & Bentler (1999):

Chi-square/df = 1.573 (< 3.0) indicating an acceptable model fit.

CFI = 0.971, TLI = 0.966, IFI = 0.972 all exceed the threshold of 0.90, indicating that the model has a very high level of fit.

NFI = 0.926 is also greater than 0.90, confirming that the model meets the standard compared to the data.

RMSEA = 0.044 (< 0.08) indicates a low error of approximation, implying that the model fits the population well.

PCLOSE = 0.875 (> 0.05) proves that the hypothesis RMSEA ≤ 0.05 is accepted, meaning that the model has an excellent fit.

Thus, all fit assessment indices meet or exceed international academic standards, confirming that the CFA model has a very good fit with the actual data. This creates a solid foundation for continuing to test the reliability, convergent validity and discriminant validity of the scale and deploying the SEM model in the next step.

Table 6. Summary of CFA Results

Construct	Cronbach's α	CR	AVE	Conclusion
TAN_1234	.842	.842	.571	Reliable, valid
RES_1234	.846	.847	.582	Reliable, valid
SEC_1234	.872	.874	.634	Reliable, valid
REL_1234	.847	.859	.605	Reliable, valid
CON_1234	.858	.851	.590	Reliable, valid
CS_123	.973	.973	.924	Reliable, valid

Source: Compiled by the authors

Table 6 shows the reliability and convergent validity of the scales. All scales had Cronbach's α between 0.842 and 0.973, exceeding the 0.70 threshold, indicating good internal consistency. Composite Reliability (CR) values also ranged from 0.842 to 0.973, confirming stable and reliable measurement. Average Variance Extracted (AVE) values ranged from 0.571 to 0.924, above the 0.50 threshold, demonstrating that the observed variables effectively represent their latent constructs. The Customer Satisfaction scale had an AVE of 0.924, indicating particularly high measurement quality. Overall, all scales meet international standards for reliability and convergent validity, providing a solid basis for discriminant validity testing and SEM analysis.

Table 7. HTMT Ratios among Constructss

Construct	HTMT					
	TAN_1234	RES_1234	SEC_1234	REL_1234	CON_1234	CS_123
TAN_1234	–	.275	.181	.089	.109	.338
RES_1234		–	.283	.217	.132	.373
SEC_1234			–	.325	.223	.459
REL_1234				–	.269	.404
CON_1234					–	.388
CS_123						–

Source: Compiled by the authors

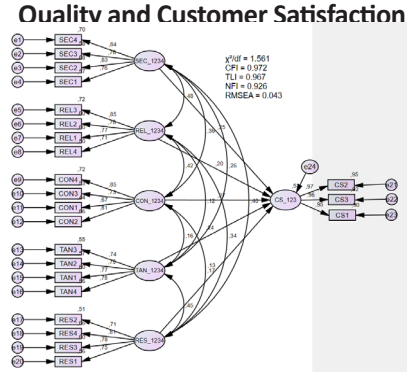
Note: All HTMT values < 0.85 (Henseler et al., 2015), confirming discriminant validity.

The discriminant validity results using the HTMT index are shown in Table 6. All HTMT values ranged from 0.089 to 0.459, well below the 0.85 threshold recommended by Henseler et al. (2015), indicating that the latent variables are clearly distinguishable. This confirms that the scales for Tangibles, Responsiveness, Security, Reliability, Convenience and Customer Satisfaction each measure distinct aspects of ATM service quality. For instance, Security and Customer Satisfaction had the highest HTMT value of 0.459, but it is still below 0.85, ensuring discriminant validity. Overall, the results confirm that all scales meet discriminant validity requirements, making them suitable for SEM analysis.

5.6. Structural model and hypotheses testing

The structural model was estimated using Structural Equation Modeling (SEM) in AMOS to test the hypothesized relationships between the five dimensions of ATM service quality and customer satisfaction.

Figure 2. Structural Equation Model for ATM Service Quality and Customer Satisfaction



After confirming the measurement value by CFA, the study conducted structural model testing (SEM) to evaluate the relationship between five components of ATM service quality (Tangibles, Reliability, Responsiveness, Security, Convenience) and customer satisfaction. The analysis was performed using AMOS 24.0 software.

The model fit evaluation indexes showed very good results and were all within the acceptable threshold as recommended by Hu & Bentler (1999). Specifically, Chi-square/df = 1.561 (< 3.0), CFI = 0.972, TLI = 0.967, RMSEA = 0.043 (< 0.08). This proves that the proposed research model fits the actual data and has high explanatory value.

The study found that Convenience has the strongest impact on customer satisfaction (β = 0.266, p < 0.001), highlighting the importance of ATM location, operating hours and ease of use. Security and Tangibles also significantly affect satisfaction (β = 0.249 and 0.236, p < 0.001), confirming that transaction safety and physical

conditions influence user experience. Reliability and Responsiveness have positive but smaller effects (β = 0.199 and 0.130), with Responsiveness being the least influential, suggesting Vietnamese customers prioritize convenience and security over response speed. The model explains 53% of the variance in customer satisfaction ($R^2 = 0.53$). Overall, the findings indicate that banks should focus on convenience, security and facility quality, while improving responsiveness to maintain customer trust and loyalty.

Table 8. Standardized regression weights, standard errors, critical ratios and hypothesis testing

Hypo-thesis	Path	Estimate (β)	S.E.	C.R.	p-value	Result
H1	Tangibles → Customer Satisfaction	0.236	0.053	4.209	***	Supported
H2	Convenience → Customer Satisfaction	0.266	0.041	4.936	***	Supported
H3	Security → Customer Satisfaction	0.249	0.042	4.246	***	Supported
H4	Responsiveness → Customer Satisfaction	0.130	0.056	2.192	0.028	Supported
H5	Reliability → Customer Satisfaction	0.199	0.043	3.373	***	Supported

Source: Compiled by the authors

*Note: *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$. The model explains 53% of the variance in Customer Satisfaction ($R^2 = 0.53$).*

6. Discussion

The SEM results show that Convenience has the strongest impact on customer satisfaction (β = 0.266; $p < 0.001$), confirming that ATM location, accessibility and ease of use are key factors, consistent with both international (Nigatu et al., 2023) and Vietnamese studies (Giao, 2019). Security also significantly affects satisfaction (β = 0.249; $p < 0.001$), highlighting the importance of safe transactions and customer trust, as supported by Aslam et al. (2019) and Nham and Phan (2015). Tangibles (β = 0.236; $p < 0.001$) and Reliability (β = 0.199; $p < 0.001$) positively influence satisfaction, reflecting the role of machine quality, modernity and service consistency. Responsiveness has a smaller but significant effect (β = 0.130; p = 0.028), showing that immediate support is less critical than convenience and security for Vietnamese ATM users. The model explains 53% of the variance in customer satisfaction ($R^2 = 0.53$), indicating strong explanatory power. Overall, convenience and security are the main pillars of satisfaction, tangibles and reliability provide support and responsiveness has a supplementary role, aligning Vietnamese results with international findings.

7. Conclusion and Implications

This study examined the impact of ATM service quality on customer satisfaction at commercial banks in Thai Nguyen province, Vietnam. Using the ES-QUAL framework and SEM, results show that all five dimensions, including Tangibles, Convenience, Security, Responsiveness and Reliability, positively affect satisfaction. Convenience and Security have the strongest impact, while Responsiveness has the weakest. The study highlights the continued importance of ATMs, especially in areas where internet and mobile banking are not fully adopted and provides empirical evidence beyond major cities like Hanoi and Ho Chi Minh City.

Theoretical Implications

The study confirms the multidimensional nature of service quality in self-service banking, supporting ES-QUAL and Expectancy-Disconfirmation Theory in semi-urban and rural contexts. It shows that different service aspects influence satisfaction to varying degrees and emphasizes the value of localized research in provinces with mixed economies.

Managerial Implications

Increasing convenience requires expanding ATM coverage in rural areas, industrial parks and new residential zones and adding transaction functions such as interbank transfers and bill payments. Ensuring security involves investing in OTP, transaction alerts, surveillance and fraud detection to build trust and retain customers. Improving tangibles focuses on enhancing machine quality, interface usability, speed and overall ATM infrastructure. Enhancing reliability means maintaining stable operation, minimizing cash shortages and technical issues, especially during holidays. Boosting responsiveness can be achieved by integrating support channels at ATMs, such as chatbots, hotlines or QR-based online support, to quickly resolve problems.

References:

Al-Hawari, M. A. (2011). Do online services contribute to establishing brand equity within the retail banking context? International Journal of Internet Marketing and Advertising, 6(2), 168-190.

Aslam, W., Tariq, A., & Arif, I. (2019). The effect of ATM service quality on customer satisfaction and customer loyalty: An empirical analysis. Global Business Review, 20(5), 1155-1178. https://doi.org/10.1177/0972150919846965

Chandra, S. (2023). Exploring the mediating effects of customer satisfaction in the relationship between ATM service quality and customer loyalty. Frontiers in Business Economics and Management, 7(1), 160-166. https://www.ejbmr.org/index.php/ejbmr/article/view/2153

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. Management Science, 35(8), 982-1003. https://doi.org/10.1287/mnsc.35.8.982.

Elifneh, Y. W., Goulap, J., & Girma, Y. (2023). Effects of automated teller machine service quality on client satisfaction in the Commercial Bank of Ethiopia. Heliyon, 9(8), e202562.

Fornell, C., Johnson, M. D. anderson, E. W., Cha, J., & Bryant, B. E. (1996). The American Customer Satisfaction Index: Nature, purpose and findings. Journal of Marketing, 60(4), 7-18. https://doi.org/10.1177/002224299606000403.

Giao, H. N. K. (2019). Customer satisfaction towards ATM services: A case of Vietcombank Vinh Long, Vietnam. Journal of Asian Finance, Economics and Business, 6(1), 141-148. https://doi.org/10.13106/jafeb.2019.vol6.no1.141

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. Structural Equation Modeling, 6(1), 1-55. https://doi.org/10.1080/10705519909540118.

Iberahim, H., Taufik, N. K. M., Adzmir, A. S. M., & Saharuddin, H. (2016). Customer satisfaction on reliability and responsiveness of self-service technology for retail banking services. Procedia Economics and Finance, 37, 13-20. https://doi.org/10.1016/S2212-5671(16)30086-7

Narteh, B. (2013). Service quality and customer satisfaction in Ghanaian retail banks: The moderating role of price. International Journal of Bank Marketing, 31(4), 253-275.

Nham, P., & Phan, C. (2015). Impact of service quality on customer satisfaction of automated teller machine service: Case study of a private commercial joint stock bank in Vietnam. Business: Theory and Practice, 16(3), 280-289. https://doi.org/10.3846/btp.2015.510

Nigatu, A. G., Ayele, A. G., Lamesgen, M. M., Tadesse, T. A., & Gashaw, A. B. (2023). Effects of automated teller machine service quality on customer satisfaction: Evidence from commercial banks of Ethiopia. Heliyon, 9(8), e19132. https://doi.org/10.1016/j.heliyon.2023.e19132

Parasuraman, A., Zeithaml, V. A., & Malhotra, A. (2005). E-S-QUAL: A multiple-item scale for assessing electronic service quality. Journal of Service Research, 7(3), 213-233. https://doi.org/10.1177/1094670504271156

Phan, T. T., & Nham, P. H. (2017). ATM service quality and customer satisfaction in urban Vietnam: A SERVQUAL perspective. Asian Journal of Marketing, 11(1), 15-28.

Yoeung, S., Hill, S., & Ung, P. (2023). ATM service quality and customer satisfaction: Empirical evidence from commercial banks in Cambodia's Siem Reap Province. European Journal of Business and Management Research, 8(5), 234-239. https://doi.org/10.24018/ejbmr.2023.8.5.2153.