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DELONE & MCLEAN MODEL AND EXPECTATION CONFIRMATION MODEL IN IMPROVING THE ROLE OF DIGITAL PRODUCT INNOVATION IN THE BANKING INDUSTRY: EVIDENCE FROM SHARIA BANKING ACEH PROVINCE

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ABSTRACT

The three-day disruption of BSI Mobile due to a cyber-attack raised serious data security concerns, especially in Aceh, which relies heavily on Indonesia's largest Islamic banking system due to Qanun No. 11 on Islamic Financial Institutions. This study examines the effects of system quality, information quality, service quality, security, and price value on user satisfaction with mobile banking in Aceh, and its influence on continued usage intention. SEM-PLS analysis of 582 BSI customers and a review of 30 articles shows that service quality, security, and price value significantly enhance satisfaction, driving continued usage, while system and information quality do not.

Keywords :
Mobile Banking, Service Quality, Data Security, User Satisfaction, Financial Innovation

JEL Classification : G21, L86, O33, D18

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I. INTRODUCTION

In recent years, digitalisation has driven innovation in the banking industry, both globally and in Indonesia, as banks strive to improve operational efficiency, meet customer expectations, and expand their services (Omarini, 2017; Vives, 2019). This transformation not only allows banks to offer more personalised and accessible services (Alt et al., 2018) but also presents challenges related to system stability and data security (Gozman et al., 2018).

The recent case, in 2023, of Bank Syariah Indonesia (BSI) faced a significant systemic disruption, rendering its mobile app, ATMs, and branch services inaccessible for over three days. This outage was triggered by IT system upgrades and exacerbated by a ransomware attack that resulted in the theft of 1.5 terabytes of data, including the personal information of 15 million customers (CNN Indonesia, 2023; Detik.com, 2023; Kompas.com, 2023). The incident paralysed Islamic banking transactions across Indonesia, causing severe disruptions to economic activities, particularly in Aceh, a region that relies exclusively on Islamic banking. Consequently, businesses suffered financial losses, and widespread customer dissatisfaction ensued (CNN Indonesia, 2023).

Furthermore, the disruption severely damaged public trust in BSI, especially in Aceh, where the bank is the primary financial service provider (Tambunan et al., 2023). Aceh's unique status, allowing the implementation of Islamic law in banking through Qanun No. 11 of 2018, (regional regulations based on Islamic principles), intensifies the region's reliance on BSI. As the largest Islamic bank and the sole state-owned Islamic bank in Indonesia, BSI has seen significant growth, reaching 17.78 million customers by the end of 2023 (Bank Syariah Indonesia, 2023; DLHK Prov Aceh, 2020).

This research examines factors affecting the successful implementation of digital products in banking, focusing on Bank Syariah Indonesia in Aceh. Using the DeLone & McLean Model, it evaluates system, information, and service quality on user satisfaction, including security and

price value. The Expectation Confirmation Model will assess expectation management and user satisfaction. The goal is to provide insights and practical guidance on digital technology adoption in banking.

By focusing on information system quality and user expectation management, this research contributes to existing literature and proposes solutions to challenges in adopting digital technology. Findings will benefit academics and practitioners in understanding performance characteristics of digital banking applications. Results will help banks and developers identify critical areas from the user's perspective. This study provides insights into strategies for enhancing satisfaction and loyalty through optimisation of service quality and information systems in digital banking.

II. LITERATURE REVIEW

A. Mobile Banking: Digital Product Innovation in the Banking Industry

According to (Lee & Chung, 2009), mobile banking involves performing banking transactions through mobile devices such as cellphones, PDAs (Personal Digital Assistants), smartphones, and other similar handheld devices, excluding laptops. As an innovative technology, mobile banking offers significant benefits to both customers and service providers (Lee & Chung, 2009; Zhou et al., 2010). It facilitates online transactions from virtually anywhere and at any time, allowing customers to easily and quickly access banking services through wireless technology on their mobile devices (Gu et al., 2009; Luarn & Lin, 2005).

The aim of digital innovation is to improve customer experience, increase operational efficiency, and provide more secure and reliable financial services (Pousttchi & Dehnert, 2018). Tajvidi et al. (2021) note that rapid adoption of digital banking products is driven by consumer demand for convenience and the need for banks to remain competitive in a technology-influenced market. Recent studies highlight ongoing trends in

digital adoption with a focus on user experience and efficiency (Chaouali & El Hedhli, 2019).

B. DeLone & McLean Model (D&M)

The DeLone & McLean Information Systems Success Model provides a comprehensive framework for evaluating the success of information systems (Delone & Mclean, 1992; DeLone & McLean, 2003). This study adopts variables from the quality dimensions of the D&M Model to describe the pragmatic experiences perceived by users.

- **System Quality on Mobile Banking User Satisfaction**

It reflects the desired technical characteristics of an information system (DeLone & McLean, 2003). Some studies show a positive relationship with user satisfaction (Bouhlel et al., 2023; Gupta & Bhatt, 2021; Minh & Nam, 2022; Tam & Oliveira, 2017; Tun, 2021), while other studies show inconsistent or insignificant results (Damabi et al., 2018; Rahi & Ghani, 2019; Sharma & Sharma, 2019).

- **Information Quality on Mobile Banking User Satisfaction**

It represents the quality of the output from an information system (DeLone & McLean, 2003). Studies find a positive relationship with user satisfaction (Baabdullah et al., 2019; Minh & Nam, 2022; Sharma & Sharma, 2019; Tam & Oliveira, 2017; Zhou, 2013), although other studies show inconsistent results (Bouhlel et al., 2023; Damabi et al., 2018; Ofori et al., 2017).

- **Service Quality on Mobile Banking User Satisfaction**

It supports the use of the information system (Bardijan & Binastuti, 2022). Some studies show a positive influence on user satisfaction (Bouhlel et al., 2023; Minh & Nam, 2022; Sharma & Sharma, 2019; Uddin & Nasrin, 2023), while other research finds no significant influence (Saadilah et al., 2021; Thuy & Quang, 2022).

C. Security and Price Value as Additional Factors

To gain a deeper understanding of customer satisfaction, this study incorporates the additional factors of security and price value, as recommended by Montesdioca & Macada (2015).

- **Security on Mobile Banking User Satisfaction**

It ensures protection and privacy of users against hacking and data breaches (Li et al., 2021). Many studies show a positive impact of security on user satisfaction (Fianto et al., 2021; Ghimire & Dhakal, 2023; Jahan & Shahria, 2022; Jayaweera, 2022; Suci & Dahlan, 2023; Thakuri et al., 2023).

- **Price Value on Mobile Banking User Satisfaction**

It refers to users' mental trade-offs between the perceived benefits and costs associated with using a particular technology (Venkatesh et al., 2012). Price value is a determinant of customer satisfaction (Tien et al., 2021). Research shows that transaction costs and benefits contribute positively to customer satisfaction (Baabdullah et al., 2019; Ghimire & Dhakal, 2023; Jahan & Shahria, 2022; Thakuri et al., 2023).

D. Expectation Confirmation Model (ECM)

The Expectation Confirmation Model (ECM) is a modification of the Expectation Confirmation Theory (Bhattacherjee, 2001). The ECM outlines the thought process people experience in deciding whether to continue using information technology (Bhattacherjee, 2001). This model examines the enduring factors that influence individuals' choices to continually engage with technology.

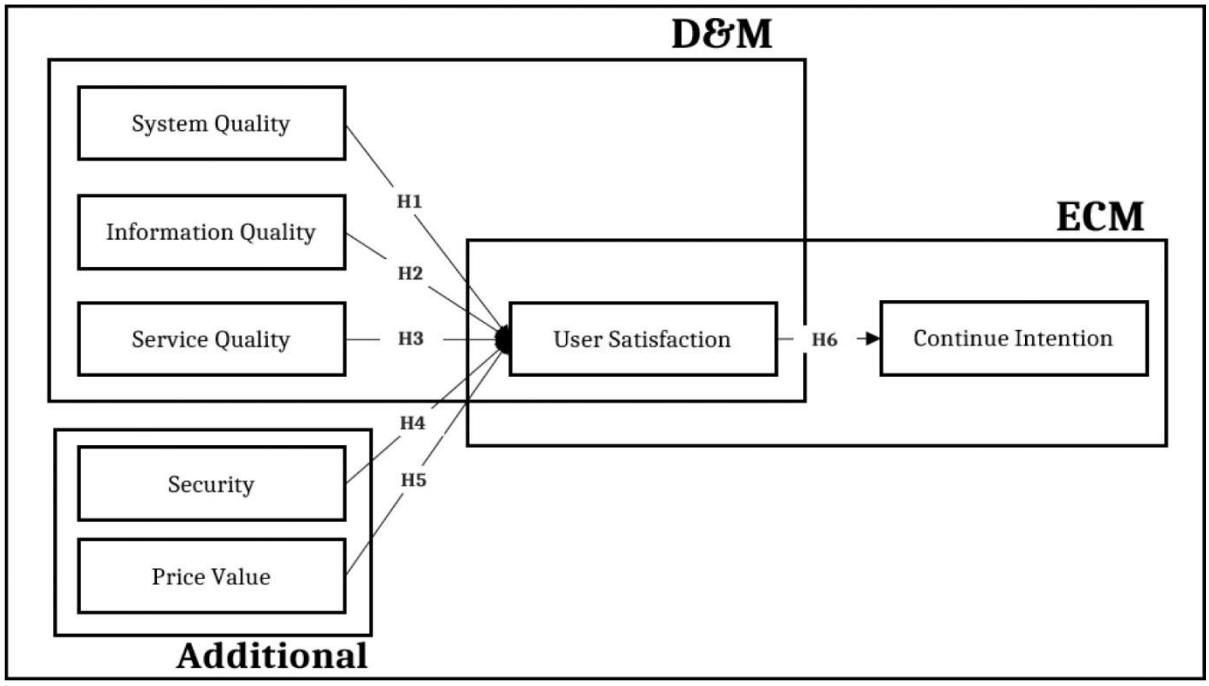
- **User Satisfaction on Intention to Use Mobile Banking**

Satisfaction is an evaluation of initial service experience, captured as positive, indifferent, or negative (Bhattacherjee, 2001). The ECM suggests that satisfaction is the main driver for the ongoing use of a product or

service (Oliver, 1980). The ECM emphasises user satisfaction as key to ensuring continued system use. Many studies show that user satisfaction with mobile banking influences continued usage intention (Bouhlel et al., 2023; Sreelakshmi & Prathap, 2020; Foroughi et al., 2019; Lee et al., 2023; Le et al., 2020; Urrehman et al., 2021).

E. Integration of the D&M Model and ECM in digital Banking

Integrating the D&M with the ECM and additional variables (security and price value) provides a holistic approach to evaluating digital product innovation in banking. Focusing on system quality, information quality, service quality, security, and price value offers a comprehensive view of factors influencing user satisfaction and continued intention to use digital banking products.



Source: Processed Data (2024)

Figure 1. Proposed Model (Hypotheses Formulation)

This study tests the following hypotheses:

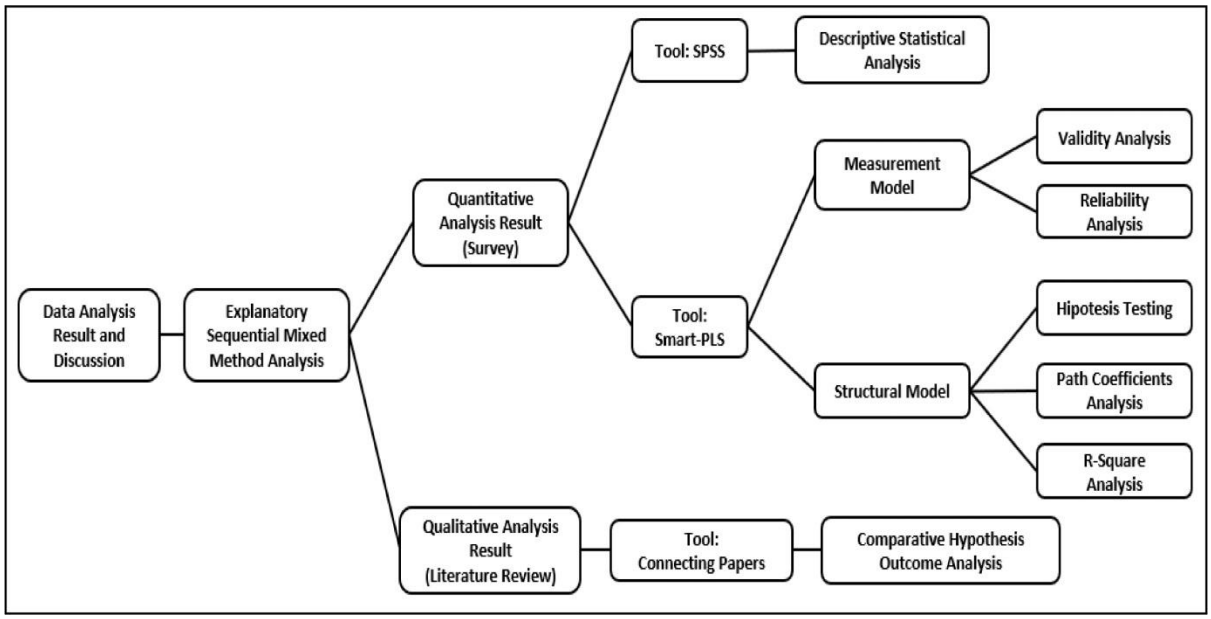
H1: System quality positively influences user satisfaction with BSI Mobile

H2: Information quality positively influences user satisfaction with BSI Mobile

H3: Service quality positively influences user satisfaction with BSI Mobile
H4: Security positively influences user satisfaction with BSI Mobile
H5: Price value positively influences user satisfaction with BSI Mobile
H6: User satisfaction positively influences the intention to continue using BSI Mobile

III. DATA AND METHOD

A. Research Design



Source: Processed Data (2024)

Figure 2. Summary of Data Analysis Methods to Obtain the Quantitative Analysis and Qualitative Analysis Results

This study uses a mixed-method approach to harness the strengths of both quantitative and qualitative methodologies. The quantitative method evaluates the relationships between variables within the theoretical model, while the qualitative method provides context and additional validation to these findings. The integration seeks to provide a more in-depth understanding of the factors that affect the successful implementation of digital products in the banking sector and to enhance the reliability and validity of the results through qualitative validation.

The theoretical framework combines the DeLone & McLean Model (D&M) and the Expectation Confirmation Model (ECM). The D&M model includes system quality, information quality, and service quality. Additionally, this study incorporates security and price value, recommended by previous research, to comprehensively understand the factors affecting user satisfaction. The ECM is utilised to analyse expectation management, user satisfaction, and the intention to continue using the BSI Mobile application.

This comprehensive approach facilitates a holistic and critical analysis of the factors influencing digital product innovation in the banking industry.

B. Quantitative Methodology

This study employs descriptive statistical analysis to evaluate the distribution, central tendency, and dispersion of the data as a preliminary step before proceeding to Structural Equation Modeling - Partial Least Squares (SEM-PLS). The SEM-PLS approach is utilised to assess the validity and reliability of the measurement model and to examine the relationships between variables in the structural model. This methodology ensures robust and reliable findings, providing comprehensive insights into the proposed hypotheses.

Population and Sample

The population for this study comprises Bank Syariah Indonesia (BSI) customers who use the BSI Mobile application in Aceh Province, totalling 542,161 customers (acehprov.go.id, 2023). To determine a representative sample size, the Slovin formula was applied:

$$n = \frac{N}{1 + N(e)^2} \quad (1)$$

where:

n = sample size

N = population size (542,161)

e = margin of error (5%)

The calculated sample size was rounded up to 400 respondents.

During the survey period from March 9 to April 12, 2024, the actual number of respondents reached 590, surpassing the target. After data cleaning, 8 questionnaires were discarded due to non-serious responses, based on criteria used by (Rahi, 2017). The final sample size of 582 respondents enhances the statistical power and representativeness of the results, providing a more comprehensive understanding of the factors influencing the successful implementation of digital banking products in Aceh.

Research Instrument

Data were gathered through a questionnaire formulated according to the dimensions of the DeLone & McLean Model (D&M) and the Expectation Confirmation Model (ECM). The questionnaire includes items measuring the following variables and indicators:

All items were measured using a 5-point Likert scale, where responses ranged from “strongly disagree” to “strongly agree”.

C. Qualitative Methodology

This study employs a qualitative methodology using a literature review approach to validate and support the quantitative findings. Relevant literature was examined using the Connected Papers tool with keywords such as system quality, information quality, service quality, security, and price value in the context of mobile banking user satisfaction and its impact on continuance intention. To ensure the quality of the reviewed papers, the study strictly includes only scholarly articles published in accredited national journals (Sinta 1 and 2), international journals, Scopus-indexed international journals, and international conference proceedings within the past 10 years (2015-2024). This approach guarantees that only high-quality literature is reviewed, ensuring the relevance and credibility of the data used to support and validate the quantitative findings.

Table 1. Variables and Indicators

Variable	Indicator	Question Item
Endogenous Variable		
Continue Intention (CI)	• Long Term Use • Recommendation (Yin & Lin, 2022)	CI1, CI2, CI3 CI4, CI5
Intervening Variable		
User Satisfaction (US)	• Confirmation • Perceived Usefulness (Susanto et al., 2016)	US1, US2 US3, US4
Exogenous Variables		
System Quality (SQ)	• Easy to use • Easily accessible • Access speed (Mahendra et al., 2021)	SQ1, SQ2, SQ3 SQ4, SQ5, SQ6 SQ7, SQ8, SQ9
Information Quality (IQ)	• Accuracy • Timeliness • Completeness • Format (Mahendra et al., 2021)	IQ1, IQ2, IQ3 IQ4, IQ5, IQ6 IQ7, IQ8, IQ9 IQ10, IQ11, IQ12
Service Quality (SV)	• Tangibility • Reliability • Responsiveness • Assurance • Empathy (Mahendra et al., 2021)	SV1, SV2, SV3 SV4, SV5, SV6 SV7, SV8, SV9 SV10, SV11, SV12 SV13, SV14, SV15
Security (SC)	• Islamic m-banking application provides security when making transaction • Confidently is guaranteed when using Islamic m-banking application (Fianto et al., 2021)	SC1, SC2, SC3, SC4 SC5, SC6, SC7, SC8
Price Value (PV)	• Price • Value (Venkatesh et al., 2012)	PV1, PV2, PV3 PV4, PV5

Source: Processed Data (2024)

IV. RESULT AND DISCUSSION

A. Quantitative Analysis

A.1. Data Description

Respondent Demographics

The demographic analysis of respondents reveals diverse patterns across multiple key variables in Aceh's Islamic digital banking sector. While Generation Z (17-25 years) dominates the sample (87.63%), the study captures perspectives from millennials (26-35 years, 7.22%) and Generation X (36-45 years and above, 4.81%). This age distribution, although skewed towards younger users, enables generational analysis of digital banking adoption patterns and aligns with global digital banking trends. However, considering that 39.37% of the population of Aceh is aged 35 and above (BPS Aceh, 2024), future research opportunities exist for expanding coverage of older demographics.

Educational and occupational diversity is evident, with respondents ranging from senior high school graduates (68.62%) to postgraduate degree holders (1.89%). While students form the majority (77.46%), the inclusion of civil servants (6.70%), private sector employees (4.81%), and entrepreneurs (3.78%) provides valuable insights into professional users' adoption patterns. The income distribution spans from below Rp1,000,000 (51.55%) to above Rp7,000,000 (1.72%), offering perspectives across economic segments, though concentrated in lower-income brackets (87.08% below Rp3,000,000). Usage patterns show a healthy mix of frequent users (58.76% using services more than twice weekly) and occasional users (21.65% monthly), with experience levels ranging from newcomers (12.03% with less than 3 months) to experienced users (33.87% over 2 years).

Table 2. Demographic Characteristics of Respondents

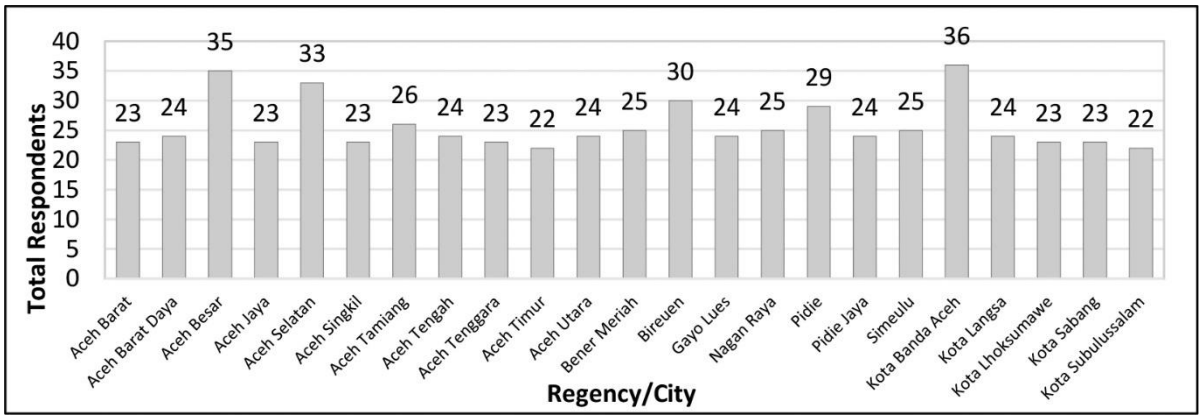
Demographic factors	Category	Frequency	Percentage(%)
Gender	Male	132	22.68
	Female	450	77.32
Age (in years)	Below 17	0	0.00
	17 – 25	512	87.63
	26 – 35	42	7.22
	36 – 45	15	2.58
	Above 45	13	2.23
Tertiary Education	Elementary School	1	0.17
	Junior High School	2	0.34
	Senior High School	399	68.62
	Bachelor's Degree	169	29.05
	Postgraduate Degree	11	1.89
Work	Student	451	77.46
	Civil Servant/Police/Military	39	6.70
	Private Sector Employee	28	4.81
	Entrepreneur/Self-employed	22	3.78
	Unemployed	32	5.49
	Other	10	1.72
Monthly Income/Allowance	Below Rp1,000,000	300	51.55
	Rp1,000,000 – Rp2,999,000	207	35.53
	Rp3,000,000 – Rp4,999,000	41	7.04
	Rp5,000,000 – Rp6,999,000	24	4.12
	Above Rp7,000,000	11	1.72
Intensity of M-Banking Service Usage	Every day	118	20.27
	More than twice a week	224	38.49
	Twice or less than twice a week	114	19.59
	More than twice a month	66	11.34
	Twice or less than twice a month	60	10.31
Experience in M-Banking Service Usage	Less than 3 months	70	12.03
	3 – 6 months	51	8.96
	6 months – 1 year	103	17.70
	1 – 2 years	161	27.64
	More than 2 years	197	33.87

Source: Processed Data (2024)

The gender distribution shows a notable female majority (77.32%), differing from Aceh's general population ratio, 50.2% male, 49.8% female, (BPS Aceh, 2024), yet providing valuable insights into female user behaviour in Aceh's unique cultural context. While the sample demonstrates some concentration in certain demographics (young, student, lower-income), its variation across major variables strengthens the study's validity. The underrepresentation of older professionals and high-income earners, attributable to sampling method constraints, suggests opportunities for future research using stratified sampling techniques to target these groups, particularly professionals above 35 years and those earning above Rp5,000,000 monthly.

This demographic diversity enables robust cross-demographic analysis of digital banking adoption patterns and user expectations, providing valuable insights into how different demographic factors influence the relationship between system quality, information quality, and user satisfaction. These patterns have significant implications for applying the DeLone & McLean Model and Expectation Confirmation Model in Islamic banking contexts, while acknowledging the need for expanded demographic representation in future research.

Geographical Distribution of Respondents



Source: Ms. Excel Data Processing (2024)

Figure 3. Distribution of Respondents Across Districts/Cities in Aceh

From Figure 3, the distribution of respondents across Aceh's districts and cities shows some variation. Banda Aceh has the highest participation

with 36 respondents, while Aceh Tenggara, Aceh Timur, and Subulussalam have the lowest with 22 respondents each. Despite these differences, the overall distribution is relatively uniform, with participant numbers ranging from 22 to 36 across all areas.

A.2. Descriptive Statistic Analysis

Descriptive statistics are employed to depict the attributes of the statistical measures of minimum, maximum, mean, and standard deviation of each measured variable. This analysis helps to understand the distribution of data before proceeding to SEM-PLS analysis.

Table 3. Descriptive Statistics

Item Code	N	Min	Max	Mean	Std. Dvt
SV	582	1	5	4.05	0.798
IQ	582	1	5	4.09	0.779
SV	582	1	5	3.73	0.794
SC	582	1	5	4.08	0.788
PV	582	1	5	3.83	0.841
US	582	1	5	3.98	0.791
CI	582	1	5	4.08	0.831
Valid N (listwise)	582				

Source: SPSS Data Processing (2024)

From the table above, the mean values range from 3.73 to 4.09, indicating relatively high ratings from respondents. The relatively low standard deviations (0.779 to 0.841) show good consistency in respondents' answers. These descriptive statistics ensure that the collected data is valid and consistent before proceeding to SEM-PLS analysis.

A.3. Measurement Model

Convergent Validity and Reliability

All Average Variance Extracted (AVE) values surpass the 0.5 threshold, demonstrating robust convergent validity for each construct. Additionally, Composite Reliability (CR) and Cronbach's Alpha values

exceed the suggested minimum of 0.7, indicating strong internal consistency and reliability (Fornell & Larcker, 1981; Hair et al., 2022).

Table 4. Summary of Convergent Validity and Reliability

	A	CR	AVE
CI	0.950	0.962	0.834
IQ	0.967	0.971	0.736
PV	0.921	0.941	0.761
SC	0.954	0.962	0.760
SV	0.952	0.957	0.617
SQ	0.942	0.951	0.685
US	0.925	0.947	0.816

Source: Smart-PLS Data Processing (2024)

Discriminant Validity

Discriminant validity in this study was evaluated through several approaches, with the primary approach using HTMT analysis, which is considered more conservative in its assessment (Henseler et al., 2015). The results of the HTMT analysis indicate that all HTMT values are below the threshold of 0.9, signifying significant discriminant validity among the constructs (Gold et al., 2001; Teo et al., 2008).

Table 5. HTMT Analysis

	Continue Intention	Information Quality	Price Value	Security	Service Quality	System Quality	User Satisfaction
Continue Intention							
Information Quality	0.798						
Price Value	0.749	0.723					
Security	0.834	0.824	0.777				
Service Quality	0.718	0.796	0.768	0.840			
System Quality	0.746	0.885	0.652	0.729	0.695		
User Satisfaction	0.822	0.770	0.825	0.860	0.875	0.678	

Source: Smart-PLS Data Processing (2024)

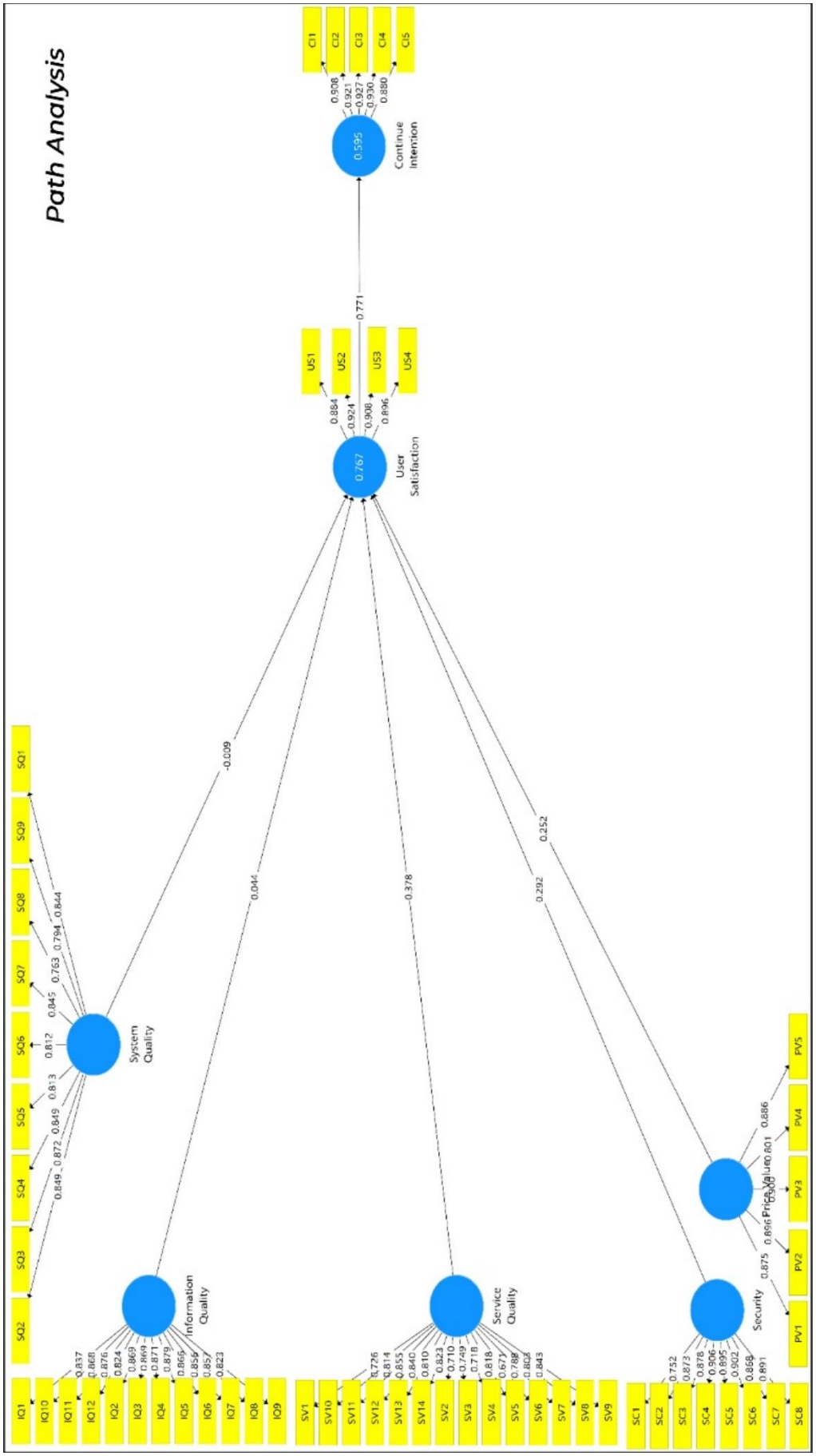


Figure 4. Path Coefficient Analysis

Source: Smart-PLS Data Processing (2024)

These results affirm that each construct within the model has a clear identity and can be distinctly differentiated from one another, thus satisfying the criteria for discriminant validity in this study.

In addition to the HTMT analysis, the data has also undergone the Fornell-Larcker criterion and cross-loadings analysis, both of which exhibit strong discriminant validity. Specifically, the square root of the Average Variance Extracted (AVE) for each construct is greater than its correlations with other constructs. Furthermore, the indicators load more strongly on their intended constructs than on others, confirming that the constructs are distinct from one another.

A.4. Structural Model

Hipotesis Testing

Table 6. Hyphotesis Testing

Path	*Original sample*	*Sample mean*	*Standard deviation*	*T statistics*	*P values*	Result
SQ → US	-0.009	-0.007	0.040	0.214	0.831	Rejected
IQ → US	0.044	0.041	0.074	0.592	0.554	Rejected
SV → US	0.378	0.379	0.063	6.013	0.000	Accepted
SC → US	0.292	0.295	0.073	4.009	0.000	Accepted
PV → US	0.252	0.250	0.050	5.067	0.000	Accepted
US → CI	0.771	0.770	0.026	29.734	0.000	Accepted

Source: Smart-PLS Data Processing (2024)

From the hypothesis testing results table, it can be concluded that system quality (H1: β = -0.009, t = 0.214, p = 0.831) and information quality (H2: β = 0.044, t = 0.592, p = 0.554) do not significantly influence user satisfaction with BSI Mobile. Conversely, service quality (H3: β = 0.378, t = 6.013, p < 0.01), security (H4: β = 0.292, t = 4.009, p < 0.01), and price value (H5: β = 0.252, t = 5.067, p < 0.01) demonstrate positive and significant effects on user satisfaction. Additionally, user satisfaction (H6: β = 0.771, t = 29.734,

p < 0.01) exhibits a strong positive and significant influence on the intention to continue using the application.

R-Squared Analysis

Table 7. R-Square Test

	R-Square	*R-Square adjusted*
CI	0.595	0.594
US	0.767	0.765

Source: Smart-PLS Data Processing (2024)

The R-Square test results reveal strong explanatory power for the user satisfaction model, with an adjusted R-Square of 0.765 (76%), indicating that system quality, information quality, service quality, price value, and security significantly explain the variance in user satisfaction. For the Continue Intention model, the adjusted R-Square is 0.594 (59%), showing a moderate influence of user satisfaction on continue intention. These findings highlight the models' effectiveness, particularly the high predictive capability of the user satisfaction model (Hair et al., 2022).

Discussion

This study reveals that system quality and information quality do not affect user satisfaction with BSI Mobile in the Aceh Province, rejecting the hypotheses proposed in the DeLone & McLean model. These factors may not be the top priority for the Acehnese community, which is predominantly composed of Generation Z (87.97%). This generation, having grown up with advanced technology, considers functional systems a basic standard and is more adaptive to various platforms, making technical quality a lesser priority. Furthermore, their expectations emphasise innovative features and ease of use over stability and security (Qatawneh & Makhlouf, 2023).

Conversely, service quality, security, and price value Demonstrate a strong and favorable effect on user satisfaction. This underscores the importance of responsive service, robust security measures, and fair

pricing in shaping a positive user experience. Users satisfied with service quality, secure data protection, and perceived value for the price paid are more inclined to keep using the application (Bouhlel et al., 2023; Montesdioca & Macada, 2015; Shanmugam & Chandran, 2022; Tien et al., 2021).

In this context, service quality includes timely support availability, attention, and knowledge during issues. High responsiveness and the ability to provide solutions to potential problems are crucial for maintaining user satisfaction (Minh & Nam, 2022; Saadilah et al., 2021). Security is also a key factor, as users are highly concerned about data and financial protection from hacking threats (Oh & Kim, 2021).

These findings align with previous studies in various developing countries, where service quality, security, and price value are considered more critical than system and information quality. For instance, studies in Ghana and Iran show that despite frequent system failures, users remain satisfied as long as they receive significant benefits from the services (Damabi et al., 2018; Ofori et al., 2017). This also applies to Aceh, where good telecommunications infrastructure allows users to access and use mobile banking services despite system quality issues (Sharma & Sharma, 2019).

Furthermore, this study supports the Expectation Confirmation Model (ECM), where user satisfaction directly influences the intention to continue using the service (Bhattacherjee, 2001). Satisfied users tend to have the intention to reuse the application in the future, fostering sustained loyalty (Chang & Zhu, 2012; Urrehman et al., 2021).

B. Qualitative Analysis

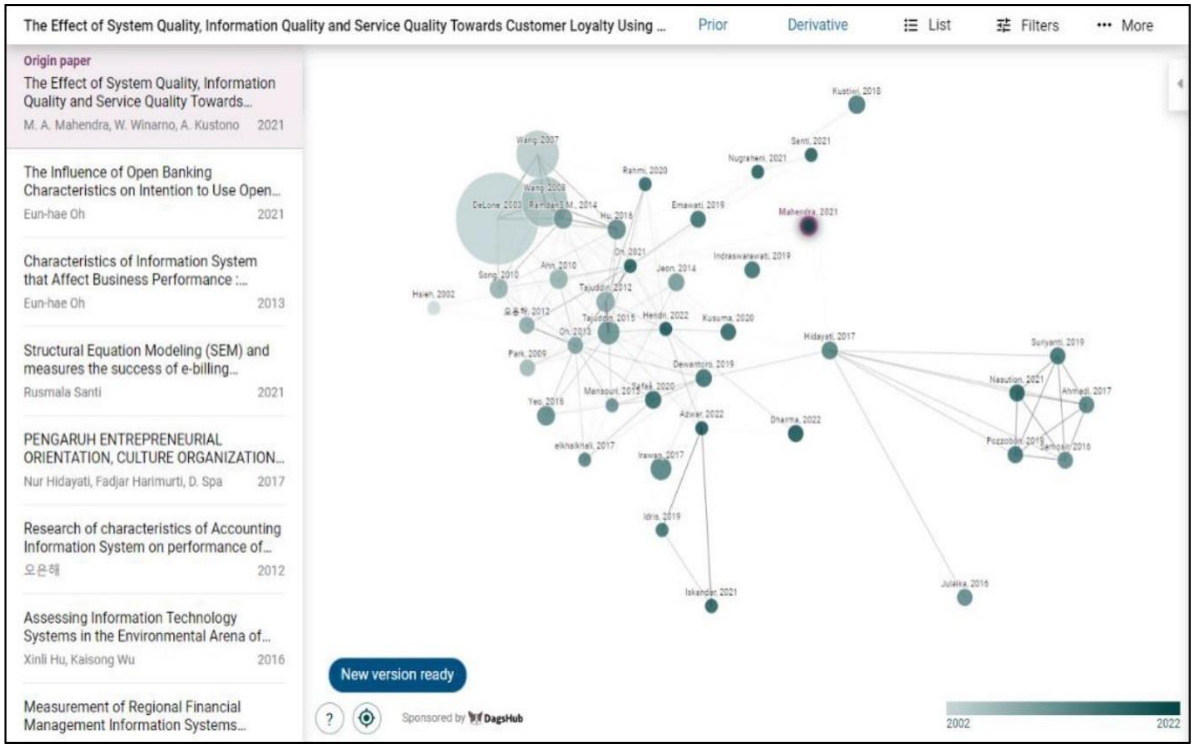
Literature Review Using Connected Papers

This search successfully identified 430 articles, of which 30 were selected as relevant to the hypotheses of this study after further review. The aim of this analysis is to compare and evaluate similar hypotheses in previous research, assess the consistency of findings, and identify gaps in the literature. The results of this review are presented in Table 9.

Table 8. List of Journals Related to Research Hypotheses

Name of Journal	Indexing	Freq
Information Systems Frontiers	Scopus Q1	3
International Journal of Bank Marketing	Scopus Q1	2
International Journal of Technology	Scopus Q1	1
Journal of Enterprise Information Management	Scopus Q1	1
Industrial Management & Data Systems	Scopus Q1	1
Journal of Internet Commerce	Scopus Q1	1
International Journal of Information Management	Scopus Q1	1
Internet Research	Scopus Q1	1
Digital Business	Scopus Q1	1
Economies	Scopus Q2	1
Marketing Intelligence & Planning	Scopus Q2	1
International Journal of E-Services and Mobile Applications	Scopus Q3	1
International Journal of Business and Social Science	Int. Journal	1
Journal of Internet Banking and Commerce	Int. Journal	1
South Asian Journal of Marketing	Int. Journal	1
International Journal of Mobile Communications	Int. Journal	1
Journal of Management, Universitas Tarumanegara	Int. Journal	1
Journal of Sift computing and Decision Support Systems	Int. Journal	1
International Business Research	Int. Journal	1
Interdisciplinary Journal of Innovation in Nepalese Academia	Int. Journal	1
2017 International Conference on Data and Software Engineering (ICoDSE)	Proc. Int.	1
1st International Conference on Islamic Economics and Business (ICONIES 2018)	Proc. Int.	1
2019 23rd International Computer Science and Engineering Conference (ICSEC)	Proc. Int.	1
6th International Conference on Computing Engineering and Design (ICCED)	Proc. Int.	1
AMCIS 2015 Proceedings	Proc. Int.	1
Journal of Islamic Economics and Finance	Sinta 2	1
Journal of Management and Service Marketing	Sinta 2	1
Total		**30**

Source: Processed Data (2024)



Source: Connected Papers Data Processing (2024)

Figure 5. Analysis of Relevant Papers Using Connected Papers

Comparative Analysis of Hypotheses

The following table presents a comparative analysis of hypothesis support across relevant literature to evaluate the consistency of quantitative findings and their alignment with existing empirical evidence.

The analysis of the selected literature reveals varying degrees of support for the research hypotheses. Notably:

- **Service Quality (H3), Security (H4), and Price Value (H5)** are frequently supported in the literature, highlighting their substantial impact on both user satisfaction and the intention to continue using the service.
- **System Quality (H1) and Information Quality (H2)** are less consistently supported, suggesting a need for further exploration of their impacts in different contexts.

Table 9. Literature Findings on Hypotheses Table

Citation	H1	H2	H3	H4	H5	H6	Citation	H1	H2	H3	H4	H5	H6
(Albashrawi & Motiwalla, 2019)	-	-	-	-	-	✓	(Siahaan et al., 2021)	-	-	-	✓	-	-
(Tam et al., 2020)	-	-	-	-	-	✓	(Saibaba, 2024)	✓	✓	✓	-	-	✓
(Avornyo et al., 2019)	-	-	-	-	-	✓	(Farida, 2019)	-	-	✓	-	-	-
(Sitorus et al., 2019)	-	-	-	-	-	✓	(Abdennebi, 2023)	-	-	✓	-	-	×
(Foroughi et al., 2019)	-	-	-	-	-	✓	(Harnadi et al., 2019)	-	-	-	-	-	✓
(Poromatikul et al., 2019)	-	-	-	-	-	✓	(Bouhlel et al., 2023)	✓	×	-	-	-	✓
(Humbani & Wiese, 2019)	-	-	-	-	-	✓	(Sharma & Sharma, 2019)	×	✓	✓	-	-	✓
(Sitorus et al., 2017)	-	-	-	-	-	✓	(Ghobakhloo & Fathi, 2019)	✓	✓	×	-	-	-
(Ahmed, 2017)	✓	✓	-	-	-	✓	(Tam & Oliveira, 2017)	✓	✓	✓	-	-	-
(Gumussoy, 2016)	-	-	-	-	-	✓	(Jahan & Shahria, 202	-	-	-	✓	✓	-
(Susanto et al., 2016)	-	-	-	×	-	✓	(Asfour & Haddad, 2014)	-	-	-	✓	-	-
(Albashrawi & Motiwalla, 2015)	-	-	-	-	-	✓	(Damabi et al., 2018)	×	×	-	-	-	-
(Kar, 2021)	-	-	-	×	✓	-	(Thakuri et al., 2023)	-	-	-	✓	×	-
(Ielasari & Bernarto, 2023)	-	-	-	✓	×	-	(Ofori et al., 2017)	×	×	✓	✓	-	✓
(Fianto et al, 2021)	-	-	-	✓	-	-	(Kuncoro et al., 202(	-	-	-	✓	-	✓

Notes:
"✓" indicates the hypothesis is supported.
"×" indicates the hypothesis is rejected.
"-" indicates no information is available regarding the hypothesis in the source.

Source: Processed Data (2024)

Discussion

H1 (System Quality): System quality is supported by five studies Ahmed (2017); Bouhlel et al. (2023); Ghobakhloo & Fathi (2019); Saibaba (2024); Tam & Oliveira (2017), underscoring its importance. However, rejection from some studies Damabi et al. (2018); Ofori et al. (2017); Sharma & Sharma (2019) indicates discrepancies in measurement or context. Ofori et al. (2017) found that system quality does not directly affect customer satisfaction. This suggests that contextual factors, such as the lack of adequate legal frameworks in developing countries like Ghana, may influence the direct relationship between system quality and customer satisfaction. Similarly, Sharma & Sharma (2019) observed that in Oman,

system quality did not significantly impact user satisfaction due to the already well-established telecommunication infrastructure, which minimised technical issues related to system quality. This is consistent with our quantitative results, which show that system quality does not impact customer satisfaction.

H2 (Information Quality): Information quality is accepted in five studies Ahmed (2017); Ghobakhloo & Fathi (2019); Saibaba (2024); Sharma & Sharma (2019); Tam & Oliveira (2017), highlighting its relevance. Rejections from Bouhlel et al. (2023); Damabi et al. (2018); Ofori et al. (2017) suggest variability in measurement or relevance. Bouhlel et al. (2023) notes that mobile banking apps are mainly used for brief transactions like payments and transfers. Detailed information is less relevant because it is hard to access on the go and users prefer larger screens and more private settings for detailed viewing. This is consistent with our quantitative findings, which indicate that information quality does not impact customer satisfaction.

H3 (Service Quality): Service quality is supported by several studies Abdennebi (2023); Farida (2019); Ofori et al. (2017); Saibaba (2024); Sharma & Sharma (2019; Tam & Oliveira (2017). Sharma & Sharma (2019) highlight that resolving complaints through a call center within a set timeframe significantly boosts user satisfaction and intention to use mobile banking. This qualitative insight robustly supports the quantitative findings, which reveal that service quality has a significant impact on user satisfaction. It underscores that prompt and effective service is crucial for enhancing both satisfaction and the intention to use mobile banking.

H4 (Security): Security is endorsed by many studies, including Asfour & Haddad (2014); Fianto et al. (2021); Jahan & Shahria (2022); Kuncoro et al. (2020); Lelasari & Bernarto (2023); Ofori et al. (2017); Siahaan et al. (2021); Thakuri et al. (2023), affirming its significance. However, rejections from Kar (2021); Susanto et al. (2016) suggest differences in measurement or interpretation. Kar (2021) explains that users who are already accustomed to security codes and PINs no longer view them as significant issues. This

aligns with our quantitative findings, where security still has a significant impact on user satisfaction.

H5 (Price Value): Price value is accepted in only two studies Jahan & Shahria (2022); Kar (2021), with rejections from several others Lelasari & Bernarto (2023); Thakuri et al. (2023), indicating uncertainty or varying relevance. Jahan & Shahria (2022) highlight the significant influence of price value on satisfaction, particularly in Bangladesh, where lower income levels among young customers make transaction costs a major concern in mobile banking. This finding is further supported by Kar (2021), which shows that users with lower incomes are highly sensitive to transaction costs. This supports our quantitative findings that price value significantly affects user satisfaction.

H6 (User Satisfaction): User satisfaction is consistently supported across almost all studies Ahmed (2017); Albashrawi (2015); Motiwalla (2019); Avornyo et al. (2019); Bouhlel et al. (2023); Foroughi et al. (2019); Gumussoy (2016); Harnadi et al. (2019); Humbani & Wiese (2019); Kuncoro et al. (2020); Ofori et al. (2017); Poromatikul et al. (2019); Saibaba (2024); Sharma & Sharma (2019); Sitorus et al. (2017, 2019); Susanto et al. (2016); Tam et al. (2020), indicating a strong consensus on its importance. The only notable exception is Abdennebi (2023) who found that satisfaction does not influence the intention to adopt mobile banking in Tunisia because the service is still new, and users have not yet had enough experience to form satisfaction that impacts adoption intention. This supports our quantitative findings, which show that user satisfaction significantly affects the intention to continue using mobile banking.

V. CONCLUSION

This research establishes a comprehensive model for evaluating digital banking services that, while developed within the BSI Mobile context in Aceh, offers broader implications for Islamic and conventional banking sectors. The findings of this study demonstrate that Service Quality, Security, and Price Value have a significant impact on user satisfaction and continuance intention in the adoption of digital banking.

These quantitative results are further supported by qualitative analysis of relevant literature, which consistently highlights strong evidence for the influence of Service Quality, Security, and Price Value on user satisfaction and service continuity. Conversely, System Quality and Information Quality receive less consistent support, indicating the need for further investigation to better understand their effects in different contexts. The analysis reveals distinct generational patterns in digital banking engagement: Generation Z (17-25 years, 87.63% of respondents) prioritises seamless digital experiences and competitive pricing, millennials (26-35 years, 7.22%) emphasise balanced digital convenience and security features, while older users (above 35 years, 4.81%) value traditional service quality and personalised assistance. These generational variations in adoption patterns and preferences underscore the necessity for age-specific digital banking strategies.

The study acknowledges several methodological limitations. The sample composition, predominantly comprising young students in Aceh, necessitates careful consideration in generalising findings to broader populations. While the inclusion of professional users (15.29%) provides valuable insights, future research should employ stratified sampling methodologies to ensure comprehensive representation across occupational and age demographics. The R-Square values (75% for user satisfaction, 57% for continuance intention) indicate opportunities for incorporating additional variables pertinent to diverse user segments and banking contexts.

Based on these empirical findings, we propose evidence-based policy recommendations with generation-specific implementation frameworks. Regarding service quality standards, we recommend establishing comprehensive customer support protocols calibrated to generational preferences, implementing stringent Service Level Agreements with 30-minute maximum response times during system emergencies, introducing certification systems for compliant applications, and mandating transparent pricing structures. Performance metrics should encompass response time monitoring, cross-generational user satisfaction assessments, and systematic compliance audits.

The implementation strategy follows a structured three-phase approach: (1) enhancement of foundational services with age-specific interfaces, (2) integration of advanced features including AI-driven personalisation, and (3) comprehensive digital banking ecosystem implementation. Success indicators will be measured through monthly user satisfaction surveys, generational adoption rate tracking, and transaction volume analysis. Innovation should be fostered through strategic partnerships between financial institutions and technology providers, focusing on developing solutions that address generational requirements while maintaining system reliability through automated failover mechanisms.

These recommendations carry significant implications for industry transformation. The implementation of age-differentiated service frameworks could fundamentally alter how financial institutions serve diverse generational segments, potentially catalysing increased digital banking adoption across age cohorts. Enhanced security protocols and transparent pricing models may accelerate industry-wide standardisation while maintaining necessary flexibility for different user segments. This research not only contributes to the theoretical understanding of digital banking adoption but also provides an empirically-grounded roadmap for the systematic transformation of banking services, acknowledging both technological capabilities and diverse user needs across generational cohorts.

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