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Digital service quality and mobile banking continuity as drivers of loyalty and bank reputation

Irbawanti Pungky Rahardjo*[1] and Emile Satia Darma[2]

Abstract

Research aims: This study aims to test and obtain empirical evidence of the effect of online service quality measurement scales in the banking sector environment in increasing Continuity of Mobile Banking Service Usage, and can increase customer loyalty and bank reputation.

Design/Methodology/Approach: This research is a quantitative study using primary data distributed to Bank Negara Indonesia (BNI) customers as many as 387 respondents were obtained. The data obtained was analyzed using the Partial Least Squares Structural Equation Modeling (PLS-SEM) model.

Research findings: The results obtained that Application architecture and user friendliness cannot increase Continuity of Mobile Banking Service Usage. The measurement scale for online service quality in the banking sector that can increase Continuity of Mobile Banking Service Usage is Application efficiency, Reliability, Responsiveness, Security, and Familiarity. And Continuity of Mobile Banking Service Usage can increase customues loyalty and bank reputation.

Theoretical contribution/Originality: This research confirms the Theory of Planned Behavior, this research tests the measurement scale of online service quality in the banking sector environment in order to maintain the existence of banks.

Practitioner/Policy implication: The results of this study contribute to the banking sector in improving online service quality, especially in a dynamic environment.

Keywords: Bank Reputation; Continuity of Mobile Banking Service Usage; Customer Loyalty; DBSQual; Quality of digital banking services

AFFILIATION:
[1]Master of Accounting, Directorate of Postgraduate Program, Universitas Muhammadiyah Yogyakarta, Yogyakarta, Indonesia

[2]Department of Accounting, Faculty of Economics and Business, Universitas Muhammadiyah Yogyakarta, Yogyakarta, Indonesia

***CORRESPONDENCE:**
i.pungky.psc22@mail.umy.ac.id

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Introduction

Financial services have experienced rapid development over the past few decades, due to technological developments arising from advances in telecommunications, information technology, and financial practices (Elsaid, 2023; Varma et al., 2022). This has led to rapid technological innovation that has transformed some financial products, services, production processes, and organizational structures (Scott et al., 2018). This innovation is called "*fintech*" or fianancial technology. The term fintech comes from a combination of two words, namely financial services and digital technology.

The origins of fintech date back to the eighteenth century (Thakor, 2020). Banks and financial institutions have a long history of adopting new technologies. The financial crisis in 2008 and the increasingly stringent regulations in the banking sector introduced by various financial market authorities opened the door for the emergence of new types of financial service providers (Gomber et al., 2017). Since then, fintech startups have thrived in the financial market by providing financial services to customers in innovative and up-to-date ways (Breidbach et al., 2020). Examples of these include the emergence of cryptocurrencies, digital wallets, crowdfunding, and peer-to-peer (P2P) lending. A key feature of fintech startups is that they use advanced technology to perform tasks that previously could only be done by banks (Chen et al., 2019).

In the banking sector, technological developments like this are a challenge that must be faced because banks have stricter regulations than startups in adopting fintech (Roy, 2021). In addition, banks can be threatened by technological advances. Technological advancements also threaten banks as fintech companies can reduce banks' market share, thus encouraging banks to make riskier investments (Rupeika-Apoga & Wendt, 2021). As a result, banks must adapt to the changing environment. However, achieving innovation can expose firms to new risks or jeopardize the quality of existing practices.

In Indonesia, the threat of technological advances for banks is evidenced by technological advances in online loans or online loans. Online loans are applied for online through a mobile application without having to meet face to face (Subagiyo et al., 2022). This method provides convenience and speed in the credit application process. The ease and speed provided are an attraction for the community. Meanwhile, applying for credit at the bank requires a long and complicated process. With online loans, this can now be done quickly, efficiently, online, and without the need to do it face-to-face. Thus, people are easily tempted by the convenience of borrowing money online. Generally, loans are facilitated by online-based financial institutions or P2P lending, which is an Information Technology-based Money Lending and Borrowing Service. Existing P2P lenders must follow the provisions of the Financial Services Authority (BFI, 2022).

Delivered by the financial services authority As of October 9, 2023, the total number of peer-to-peer lending or fintech lending providers licensed at the financial services authority is 101 companies. The financial services authority urges the public to use the services of fintech lending providers that the financial services authority has licensed, and this will continue to increase every time (Bestari, 2023). Meanwhile, the number of illegal pinjol is recorded to be more than the number of legal pinjol registered with the financial services authority. According to data from CNBC Indonesia, the Illegal Financial Activity Eradication Task Force blocked 173 illegal online lending platforms on both applications and websites (Bestari, 2023).

With the increasing phenomenon of pinjol in Indonesia, banks need to improve service quality, especially online services (Mir et al., 2022). One of the frequently used online services is mobile banking (m-banking) or internet banking. M-banking revolutionized the banking industry as a whole because most banking transactions can be easily done regardless of time and place, through the palm without having to visit any bank branch

offices (Oliveira et al., 2014; Salimon et al., 2017), which allows consumers to get the desired value-added banking services at a lower cost or even at no cost at all, in addition to saving time, costs, and energy (Salimon et al., 2017).

Research conducted by Mir et al. (2022), developed and empirically tested an online service quality measurement scale in the banking sector environment. In his research, an online banking service quality measurement instrument has been empirically tested in the Indian banking sector known as the "digital banking service quality" scale (DBSQual), which consists of seven dimensions: (1) web architecture, (2) user-friendliness, (3) website efficiency, (4) reliability, (5) responsiveness, (6) security, and (7) familiarity. According to Mir et al. (2022), in developing countries such as India, it is important to study banking institutions based in developing countries, and this can be adopted in Indonesia, which is also still developing.

This study will empirically test the seven measurements suggested by Mir et al. (2022) to determine the continuity of banking services for Bank Negara Indonesia (BNI) customers. BNI was chosen because it is the bank with the best Core Capital Bank Group IV, namely the First Overall Satisfaction, Loyalty, and Engagement Index in the national banking industry. BNI is considered the most successful bank in carrying out digital transformation through network development and digital services and is able to meet the needs of its customers (Simanjuntak, 2023). In addition, BNI Mobile Banking user growth in February 2023 reached 14.03 million users. This number jumped 25% (Year on Year / YoY) when compared to the same period the previous year, which was 11.22 million users (BNI, 2023). From these objectives, this research uses the theory of planned behavior developed by Ajzen (1991). According to this theory, people's behavior is driven by intentions and shaped by attitudes, subjective norms, and perceived behavioral control. In relation to this research, the quality of digital services provided by BNI is considered to influence attitudes and perceived behavioral control.

This research makes a theoretical contribution by extending the application of the Theory of Planned Behavior in the context of digital banking services in developing countries, specifically through testing the DBSQual scale, which includes seven dimensions of digital service quality. Practically, this study provides insights to BNI management on the aspects of digital services that influence customers' continued use of mobile banking, which can be used to improve customer loyalty and bank reputation amidst competition with fintech and online lending services. In addition, the results of this study can also serve as a reference for regulators such as the Financial Services Authority in formulating policies that encourage digital innovation in the banking sector without ignoring aspects of security, convenience, and customer satisfaction as a foundation for strengthening the national financial system.

Literature Review and Hypotheses Development

Theory of Planned Behavior

The theory of Planned Behavior is a refined theory of the Theory of Reasoned Action with the addition of Perceived Behavioral Control variables (Ajzen, 1991). The theory of Reasoned Action explains that a person's intention will influence his behavior to determine whether the behavior is carried out or not, and this intention is influenced by a person's attitude or subjective norm. This theory explains that humans act in accordance with intentions that are influenced by behavior, subjective norms, and behavioral control (Rahma & Sofyani, 2024). Ajzen (1991) states that three dimensions of the relationship determine intention and behavior: attitude towards the behavior, subjective norm, and perceived behavioral control.

Attitude toward behavior is determined by beliefs about the consequences of a behavior, called behavior beliefs. Attitude towards behavior includes the extent to which a person has a favorable or unfavorable assessment of his behavior. The context of attitude towards behavior in this study is that BNI customers to continue using mobile banking services have a positive belief that continuing to use BNI services will provide benefits. On the other hand, if BNI customers perceive BNI services to provide losses, they will have low interest.

A subjective norm is an individual's perception of an expectation from others regarding whether or not a certain behavior is performed. Like attitudes toward behavior, subjective norms will be influenced by beliefs. Subjective norms can also be called normative expectations from others or motivation to meet these expectations. The context of subjective norms in this study is that BNI customers will continue to use BNI services if encouragement from their environment or social pressure is obtained and used as a consideration in deciding whether to carry out an activity.

Perceived behavioral control is an individual's perception of the ease or difficulty of realizing a particular behavior. The context of perceived behavioral control in this study is that BNI customers will continue to use BNI services because of the quality of digital services, which have the dimensions of application architecture, application efficiency, and data security.

The effect of application architecture on the continuity of use of mobile banking services

Application architecture is part of the quality of Internet banking services (Mir et al., 2022). This research will focus more on the architecture of BNI mobile banking. It is because, currently, technological advances are increasingly rapidly influenced by the Industrial Revolution 4.0. All transactions can be done only by hand without having to go directly to the bank (Muljani & Ellitan, 2019). Application architecture refers to the design of an application or where the components that make up a system are placed and how they communicate (Wahono, 2008). Operationally, application architecture is an application design that is easy to use, organized, and smooth when used, and it provides

satisfaction for users (Mir et al., 2022). It creates a perception of being easy to use, as described in the theory of planned behavior. If BNI provides a design from mobile banking that is easy to use, organized, and can provide smoothness and satisfaction, customers will continue to use BNI services. This is in accordance with the results of previous research conducted by Mir et al. (2022) and Chen and Aklikokou (2020). Research from Aprilia (2020) and Agustina (2017) shows that application features and attractive design will be able to influence a person's interest in using an application. From the explanation above, the hypothesis proposed is:

H_1: *Application architecture has a positive effect on the continual use of BNI banking services.*

The effect of application efficiency on the continuity of use of mobile banking services

Application efficiency relates to how mobile banking applications provide transaction completion facilities to run smoothly, provide convenience, and provide accessibility to certain features (Mir et al., 2022). The application efficiency variable is related to the TPB used, namely regarding customer attitudes and behavioral control. With the digital services provided by BNI, it is considered that it will facilitate business activities. So, it is certain that customers will continue to use BNI mobile banking services if the mobile banking service application is efficient. Previous research states that application efficiency has a positive effect on the intention to use a particular application (Rahma & Sofyani, 2024; Singh et al., 2021; Sofyani & Darma, 2024). Based on the previous discussion, this study proposes the hypothesis that:

H_2: *Mobile banking application efficiency has a positive effect on the continual use of BNI banking services.*

The effect of user-friendliness on the continuity of use of mobile banking services

User-friendliness is the user's perception of the application/website when completing transactions quickly, easily using, and smoothly navigational (Mir et al., 2022). Internet banking users expect to complete their online banking transactions quickly. They consider smooth navigation on the bank's website and ease of use as priorities. Due to digitization, online banking users get a number of alternative site options. Therefore, the key factors of digital banking depend on its smooth functioning and user-friendliness. It is argued that the technological aspects of designing mobile banking services should be understandable and easy to use for the target customers so that they can quickly adapt and accept the service (Koksal, 2016). In mobile banking, some features may cause some complexity, namely complicated navigation processes, small mobile screen sizes, and some inconveniences in the transaction portfolio (Akhter et al., 2020). If the functional operation of mobile banking is found to be uncomplicated and easy to use, it will have an impact on customer usage. According to Akhter et al. (2020), this variable of user-friendliness plays an important role in increasing customer interest in continuing to use

mobile banking services. Furthermore, according to research by Azizah (2020) and Agustina (2017), applications that are easy to use for customers will increase their intention to use them. Therefore, based on an extensive literature review, the following hypothesis is proposed:

***H_3**: User friendliness of mobile banking applications has a positive effect on the Continuity of Use of BNI Banking Services.*

The effect of reliability on the continuity of use of mobile banking services

In this study, reliability is the bank's ability to fulfill promises quickly, accurately, and satisfactorily (Mir et al., 2022). Reliability is the ability to fulfill promises quickly, accurately, and satisfactorily. It shows that banks provide services that meet customer expectations (Marlina & Bimo, 2018). Banks ensure the delivery of promised services; reliability can improve the bank's reputation among customers, such as timely application updates and transactions free of errors and errors (Mir et al., 2022; Sofyani & Darma, 2024). Reliability refers to the company's initial commitment to keeping accurate records and providing quality online banking services (Rahma & Sofyani, 2024). Customers will be more satisfied if banks can provide effective services, prioritize security, keep data safe, and warn customers about rampant online fraud (Mir et al., 2022). Previous research conducted by Rahma and Sofyani (2024) was conducted on Islamic bank customers in Indonesia, the result of which was that reliability can affect customer interest in continuing to use mobile banking services from Islamic banks. The higher the reliability of online applications, the more reliable the quality of user electronic services (Steven & Ramli, 2023). Thus, the proposed hypothesis is:

***H_4:** The reliability of the mobile banking application has a positive effect on the continual use of BNI banking services.*

The effect of responsiveness on the continuity of use of mobile banking services

Responsiveness is a service provided by the bank to help customers and provide responsive service to overcome customer problems when using the services offered (Marlina & Bimo, 2018). Responsive service from banks reflects a commitment to providing fast and quality service (Idrees & Xinping, 2017; Rahma & Sofyani, 2024). The relationship with this research is that if the service from BNI provides highly responsive services, it is expected that customers will continue to use BNI mobile banking services to make transactions. As done by previous research, high responsiveness from employees will increase customers' intention to continue using their products (Mir et al., 2022; Rahma & Sofyani, 2024; Sofyani & Darma, 2024).

Responsiveness provided to customers has a close relationship with customer satisfaction to establish a strong relationship with the bank. In the long run, such a bond allows the bank to understand the customer's expectations and needs fully. Customer satisfaction

can create customer loyalty to banks that provide satisfactory quality. From this explanation, the hypothesis proposed is:

***H_5**: The responsiveness of mobile banking applications has a positive effect on the continual use of BNI banking services.*

The effect of security on the continuity of use of mobile banking services

Atzeni et al. (2018) mentioned that security is a process that defines security requirements, creates rules to ensure these requirements, and develops methods to implement these policies. In addition to being a design and software development concern, security is also seen as an important component of Internet and mobile banking (Arcand et al., 2017). From the perspective of mobile banking, customers' attitudes regarding security largely depend on how confident banks can keep them feeling that their personal information is safe (Changchit et al., 2017). Security concerns have deterred consumers from using mobile banking (Bhatt & Bhatt, 2016). Lack of confidence in a certain level of security can make consumers worry that their money can be withdrawn without notice from bank accounts. There are risks in mobile banking services; clients need to be assured that their money and confidential information are safe. According to Mir et al. (2022), mobile banking adoption can be delayed when users have security concerns. Therefore, the hypothesis developed must be:

***H_6**: Security has a positive effect on the Continuity of Use of BNI Banking Services.*

The effect of Familiarity on the continuity of use of mobile banking services

Familiarity is known to influence various aspects of information processing and decision-making (Rahma & Sofyani, 2024). In the context of mobile banking, banks offer various financial products and services based on customer preferences. Some e-banking service providers also provide online agents, and e-banking service users can interact with online agents to get recommendations in Familiarity. Hence, familiarity can increase users' effectiveness and productivity when using various e-banking services. By using e-banking services, users can receive personalized emails or SMS that will direct them to relevant financial services based on their needs. Online agents can help customers or users complete their e-banking tasks efficiently, thereby reducing the expected difficulties associated with using e-banking services. Consumers can also configure their homepage to add new credit cards or services to their homepage so that they can easily check their accounts and perform other banking-related tasks more easily. Therefore, we propose:

H_7: Familiarity has a positive effect on the Continuity of Use of BNI Banking Services.

The Influence of Continuity of Use of BNI Banking Services on Customer Loyalty

The banking industry has long recognized the importance of customer loyalty in maintaining competitive advantage (Nurbasari & Harani, 2018; Park & Kim, 2019). One of the main factors proven to drive customer loyalty is the customer service provided (Setiansye & Guritno, 2023). Good service tends to continue using certain banking services and also tends to recommend them to others.

In recent years, the rise of mobile banking has presented both opportunities and challenges for banks in maintaining customer loyalty. Research shows that continued use of mobile banking services can be a significant contributor to customer loyalty (Park & Kim, 2019). Customers who have a positive experience with mobile banking tend to continue using the service and remain loyal to the bank (Susanto et al., 2016). A study on the determinants of intention to continue using banking services via smartphones found that customer satisfaction is a key factor in determining whether customers will continue using these services. Meeting customer needs and requirements is essential in driving this satisfaction and encouraging continued use (Mohd Thas Thaker et al., 2019). Therefore, we propose:

***H_8**: Continuity of Use of BNI Banking Services has a positive effect on Customer Loyalty.*

The Influence of Continuity of Use of BNI Banking Services on Bank Reputation

In today's digital era, banking services are becoming increasingly important for customers. The development of technology and digitalization has changed the way people manage their finances, with more and more people adopting digital banking services. The digital transformation carried out by banks in Indonesia, including BNI, has had a positive impact on the bank's reputation (Kurniawan & Rinofah, 2016). Thus, the increasing number of customers who continue using banking services will encourage banks to improve their reputation.

The continual use of banking services will have a positive effect on the bank's reputation, as supported by previous studies by Yuan et al. (2016) and Eko Retno et al. (2023). The more customers use banking services, such as BNI mobile banking, in this context, the more it encourages banks to improve the services provided. Therefore, the proposed hypothesis:

***H_9**: Continuity of Use of BNI Banking Services has a positive effect on Bank Reputation.

Based on the ideas, a research model was developed and is depicted in Figure 1:

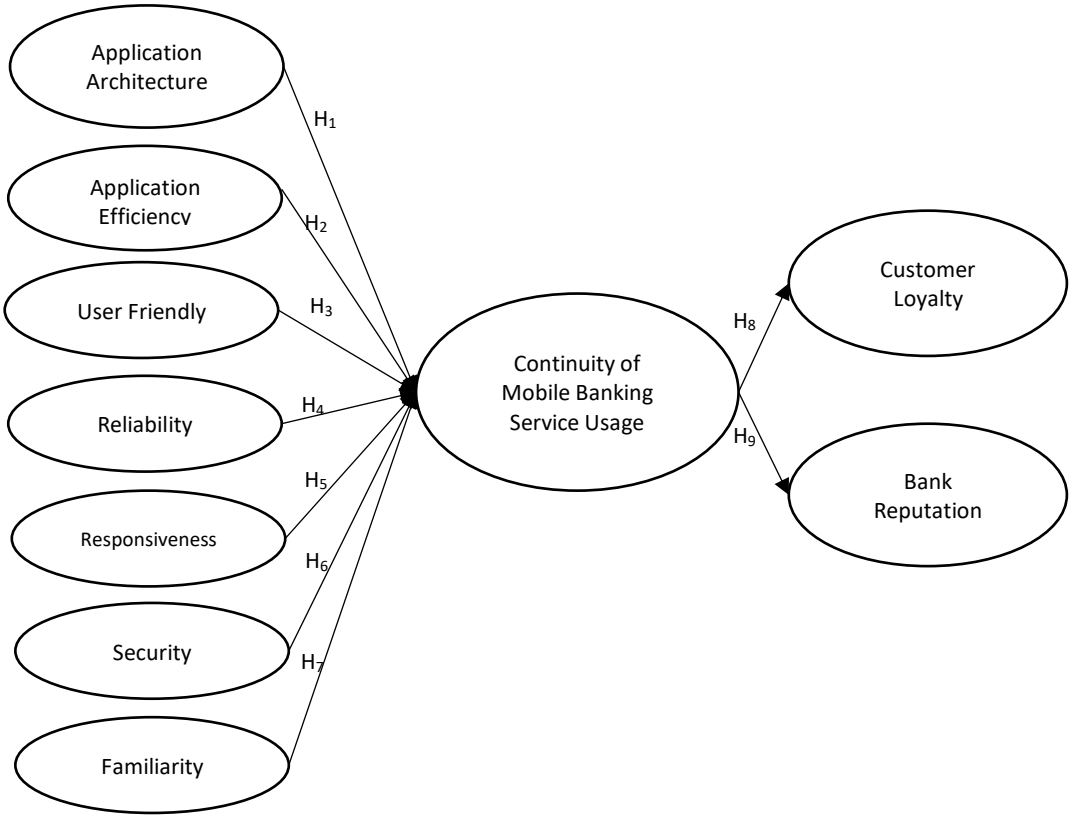

Figure 1 Research Model

Research Method

This study is a quantitative research employing a survey questionnaire method. The population consists of all customers of Bank Negara Indonesia (BNI) Tbk. Respondents were selected using non-probability sampling, specifically purposive sampling, based on specific criteria—namely, active BNI customers who use the mobile banking application for various transactions. This criterion is designed to ensure that respondents can accurately respond to all questionnaire items related to mobile banking applications.

A total of 387 respondents were obtained. Following the recommendations of Memon et al. (2020), studies utilizing non-probability sampling methods should conduct a power analysis to determine the minimum required sample size. Based on the power analysis with a confidence level of 0.80 and seven predictors for the dependent variable, the minimum required sample size is 103. Thus, the sample of 387 respondents exceeds the minimum sample size criteria.

Table 1 presents the demographic characteristics of the respondents. The majority of respondents are female (53.5%) and are aged 21-30 years (41.1%). The most common

level of education among respondents is a Bachelor's Degree (64.6%), and the predominant occupation is as an employee of BNI (34.4%). Most respondents have been using BNI mobile banking for 1-5 years (55.3%).

Table 1 Demographics Respondents

Information	Description	Number	%
Gender	Female	207	53.5
	Male	180	46.5
	Total	387	100.0
Ages	<20 years	6	1.6
	21-30 years	159	41.1
	31-40 years	140	36.2
	41-50 years	60	15.5
	>50 years	22	5.7
	Total	387	100.0
Education	Elementary school	2	0.5
	Junior high school	1	0.3
	Senior high school	74	19.1
	Associate's Degree	39	10.1
	Bachelor's Degree	250	64.6
	Mater degree	20	5.2
	Doctoral Degree	1	0.3
	Total	387	100.0
Jobs	Farmer	1	0.3
	Entrepreneur	25	6.5
	Private employee	94	24.3
	Civil servants	22	5.7
	BNI employee	133	34.4
	Students	15	3.9
	State-owned enterprise employee	38	9.8
	Regional-owned enterprise employee	9	2.3
	Indonesian National Police	3	0.8
	Others	47	12.1
	Total	387	100.0
First time using the BNI Mobile Banking Application	<1 years ago	17	4.4
	1-5 years ago	214	55.3
	6-10 years ago	132	34.1
	>10 years ago	24	6.2
	Total	387	100.0

The measurement of variables in this study was adopted from previous studies and modified to fit the research context without altering their meanings. The measurements for Customer Loyalty were based on the study by Ghorbanzadeh (2024) and Hussein et al. (2023), while the measurement for bank reputation followed the research conducted by Abdullah et al. (2011). The exogenous variable, namely the continuity of mobile banking service usage, is based on the study by Sofyani and Darma (2024). Meanwhile, the antecedent variables used, such as application architecture, Application Efficiency, User

Friendly, Reliability, Responsiveness, Security, and Familiarity, are based on the study by Mir et al. (2022).

Each variable's dimensions (indicators) were clearly defined to ensure that the instrument met the study's objectives effectively. A 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree), was chosen to measure all variables, as this scale is commonly used in Indonesian survey research. This choice was informed by the work of Revilla et al. (2014), who highlighted the scale's advantages for statistical analysis and ease of interpretation. Additional input from survey experts, including Lewis et al. (2005), was also incorporated, especially in the questionnaire development process.

Before testing the hypotheses, a demographic analysis and descriptive statistics of the respondents were conducted. To evaluate potential bias, Common Method Variance (CMV) was assessed, adhering to MacKenzie and Podsakoff's (2012) guideline that data with less than 50% total variance is considered unbiased. The CMV analysis yielded a result of 44.98%, indicating no significant bias. Hypothesis testing was subsequently performed using Partial Least Squares Structural Equation Modelling (PLS-SEM), a variance-based approach. PLS enables simultaneous assessment of both model validity and reliability as well as structural evaluation for hypothesis testing (Hair et al., 2019). This method is particularly appropriate for the current study due to the non-parametric nature of the Likert scale and the potential for multicollinearity among the variables (Hair et al., 2019).

PLS is advantageous as it requires fewer assumptions about the data and performs well with small sample sizes, especially when hypotheses are based on weaker theoretical frameworks (Sofyani & Darma, 2024). Moreover, PLS is favored over covariance-based SEM (CB-SEM) when the emphasis is on predicting the effects of exogenous variables on endogenous ones rather than on model fit (Hair et al., 2019). Experts have noted that PLS more effectively captures the strength and direction of hypothesized relationships, particularly in complex models where the data may not meet the criteria for multivariate normality. Therefore, PLS is considered more suitable than CB-SEM for this analysis. To ensure the robustness of the findings, additional analyses, including tests for CMV and PLS prediction, were conducted to enhance the reliability and validity of the results.

Result and Discussion

Descriptive Analysis of Respondent

Table 2 presents the results of the descriptive analysis, reflecting respondents' perceptions of all the variables in this study. Based on the obtained results, respondents' perceptions of the variables fall into the category of high perception levels, as indicated by a mean value exceeding 4.

Table 2 Respondent Characteristic

	Min	Max	Mean	Std. Deviation
Application Architecture	1.0	5.0	4.758	0.531
Application Efficiency	1.0	5.0	4.786	0.496
User Friendly	1.0	5.0	4.505	0.700
Reliability	1.0	5.0	4.744	0.535
Responsiveness	1.0	5.0	4.680	0.601
Security	1.0	5.0	4.775	0.526
Familiarity	1.0	5.0	4.724	0.638
Continuity of Mobile Banking Service Usage	1.0	5.0	4.736	0.578
Customer Loyalty	1.0	5.0	4.754	0.573
Bank Reputation	1.0	5.0	4.765	0.520
Valid N (listwise)	387			

The Evaluation of the Measurement Model

Before proceeding with hypothesis testing, it was essential to confirm that the measurements used were both valid and reliable (Hair et al., 2019). The results of the convergent validity assessment are illustrated in Figure 3. According to Hair et al. (2019), convergent validity can be evaluated through outer loading results, which should exceed 0.5. Additionally, Hair et al. (2019) recommend examining the Average Variance Extracted (AVE) to assess convergent validity, as presented in Table 3. Table 3 also provides the results of the reliability testing. Reliability is evaluated using Cronbach's alpha and composite reliability, with both metrics needing to exceed 0.6. Based on these statistical criteria, it is clear that the requirements for both convergent validity and reliability have been satisfied (Hair et al., 2019).

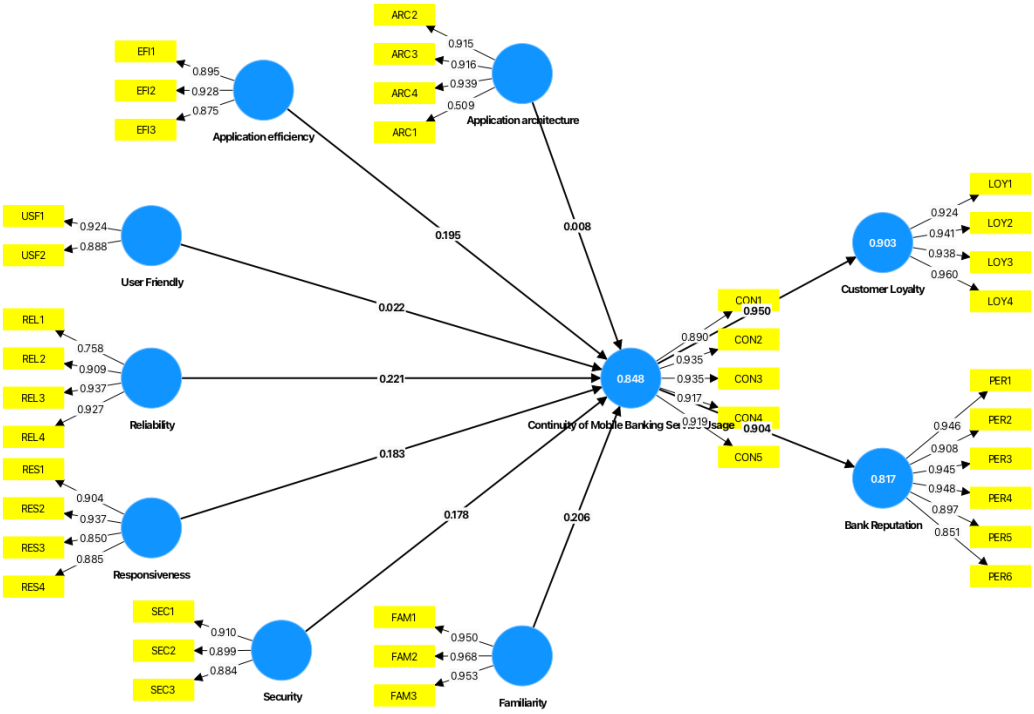

Figure 3 Result of Outer loading (Convergent Validity)

Table 3 Convergent validity and reliability test results

	Cronbach's alpha	Composite reliability	Average variance extracted (AVE)
Application Architecture	0.843	0.901	0.704
Application efficiency	0.882	0.927	0.809
User Friendly	0.784	0.902	0.821
Reliability	0.906	0.935	0.785
Responsiveness	0.917	0.941	0.801
Security	0.880	0.926	0.806
Familiarity	0.954	0.970	0.916
Continuity of Mobile Banking Service Usage	0.954	0.965	0.845
Customer Loyalty	0.957	0.968	0.885
Bank Reputation	0.962	0.969	0.840

Table 4 Discriminant Validity (Fornell Lacker Criteria)

	1	2	3	4	5	6	7	8	9	10
Application Architecture	0.839									
Application efficiency	0.809	0.899								
Bank Reputation	0.759	0.860	0.917							
Continuity of Mobile Banking Service Usage	0.751	0.850	0.904	0.919						
Customer Loyalty	0.742	0.832	0.914	0.905	0.941					
Familiarity	0.671	0.710	0.750	0.788	0.757	0.957				
Reliability	0.786	0.837	0.879	0.868	0.857	0.755	0.886			
Responsiveness	0.680	0.801	0.860	0.846	0.817	0.717	0.859	0.895		
Security	0.752	0.864	0.858	0.846	0.833	0.694	0.831	0.823	0.898	
User Friendly	0.690	0.773	0.762	0.770	0.739	0.736	0.777	0.765	0.722	0.906

In addition to assessing convergent validity, a test for discriminant validity was conducted in accordance with the guidelines provided by Hair et al. (2019) to evaluate how effectively items differentiate between constructs or represent distinct concepts. Two commonly used methods for testing discriminant validity are the Fornell-Larcker criterion and the Heterotrait-Monotrait (HTMT) ratio. According to the Fornell-Larcker criterion, the square root of the AVE for each construct must be greater than its correlations with other latent constructs (Fornell & Larcker, 1981). The results of the discriminant validity assessment indicate that all criteria comply with the established guidelines (see Table 4).

Inner Model Test Result

Next, the prediction outcomes based on the coefficients of determination (R^2), that the R^2 values Continuity of Mobile Banking Service Usage is 84.5%, Customer Loyalty is 90.3%, and Bank Reputation is 81.7%. It indicates that the exogenous variables have strong predictive capabilities concerning the endogenous variables. Based on the results obtained, the variable of Application architecture and User Friendly does not have a direct effect on the Continuity of Mobile Banking Service Usage (Figure 4). It is further corroborated by the weak effect size (f^2) of Application architecture and User Friendly, which is 0.000, and 0.005, while a higher effect size is noted for Continuity of Mobile

Banking Service Usage on customer loyalty and bank reputation, measuring at 9.308 and 4.466. The f^2 value is specifically employed to evaluate the strength of the relationship between exogenous and endogenous variables in regression analysis. A weak effect size implies that the exogenous variable has a relatively small impact on the endogenous variable in the context of this study (Hair et al., 2019). Additionally, the research model is considered appropriate, as the standardized root mean square residual (SRMR) value is below 0.10 (Henseler et al., 2015).

Table 5 Hypotheses Testing and Structural Result

Hypotheses	Endogenous Variable			*f-square*
	Continuity of Mobile Banking Service Usage	Customer Loyalty	Bank Reputation	
Application Architecture	0.008 $^{n.s}$ **(H1)**			0.000
Application efficiency	0.195*(H2)			0.042
User Friendly	0.022$^{n.s}$ **(H3)**			0.005
Reliability	0.221*(H4)			0.052
Responsiveness	0.183*(H5)			0.045
Security	0.178*(H6)			0.041
Familiarity	0.205*(H7)			0.101
Continuity of Mobile Banking Service Usage		0.950*(H8)	0.904*(H9)	9.308/4.466
Adjusted R^2	0.845	0.903	0.817	
SRMR	0.051			
Note: $^{n.s}$ Insignificant; * significant at alpha 5%				

Additionally, the Q^2 value is utilized to assess the predictive accuracy of the PLS path model (Hair et al., 2019). According to statistical guidelines, the Q^2 value should be greater than zero for specific endogenous constructs, indicating the model's predictive relevance for those constructs. A model is considered more precise when the Q^2 value approaches 1 (Chin et al., 2003). The predictive outcomes were further evaluated by comparing the PLS-SEM results, specifically the RMSE and MAE, against those of a linear regression model (LM). The model exhibits strong predictive capability if the RMSE and MAE from PLS-SEM are lower than those from the linear regression model. Based on the results shown in Table 6, it can be concluded that the Q^2 value meets the required criteria. Additionally, some indicators in the PLS-SEM analysis show higher prediction errors compared to the naïve LM benchmark, suggesting a moderate level of predictive strength (Hair et al., 2019).

Table 6 Prediction Test

	Q^2predict	PLS-SEM_RMSE	PLS-SEM_MAE	LM_RMSE	LM_MAE
PER1	0.749	0.294	0.153*	0.317	0.147
PER2	0.675	0.347	0.164*	0.362	0.163
PER3	0.722	0.299	0.150	0.336	0.154
PER4	0.729	0.287	0.141	0.317	0.144
PER5	0.634	0.370	0.181	0.410	0.182
PER6	0.644	0.287	0.140	0.294	0.140
CON1	0.654	0.376	0.165	0.453	0.189
CON2	0.713	0.306	0.149	0.346	0.166
CON3	0.727	0.315	0.154	0.346	0.164
CON4	0.642	0.408	0.192	0.448	0.206
CON5	0.712	0.351	0.169	0.397	0.191
LOY1	0.597	0.415	0.184	0.449	0.212
LOY2	0.723	0.312	0.160*	0.322	0.147
LOY3	0.708	0.310	0.148	0.341	0.164
LOY4	0.733	0.320	0.152	0.356	0.168

*PLS>LM

The influence of application architecture on the continuity of use of mobile banking services

Based on the results of the hypothesis, application architecture does not affect the continuity of use of mobile banking services. Application architecture is defined as the design of an application or where the components that form a system are placed and how they communicate. The results of this hypothesis test are in line with the results of research by Rahma and Sofyani (2024) and Sofyani and Darma (2024) that BNI customers focus more on other things, such as the speed of transaction processing served by the mobile banking application rather than the design and appearance of the mobile banking application. It is because the BNI mobile banking architecture has a similar appearance to other bank applications. According to Fianto et al. (2021), all mobile banking services provided by all types of banks have met the basic needs of transactions carried out by customers, such as transfers, online payments, e-money services, and bill payments. However, the aspects of process speed and the cheapness of services are issues that are currently being faced by the community.

The influence of application efficiency on the continuity of use of mobile banking services

The results of the hypothesis test revealed that the efficiency of the BNI mobile banking application has a positive and significant effect on the continuity of service use. Efficiency—in terms of transaction processing speed, ease of interface navigation, and stability of access to various features—forms positive attitudes and perceptions of customer behavioral control according to the Theory of Planned Behavior (Ajzen, 1991). When customers feel that every transaction can be completed quickly without technical constraints, they are not only functionally satisfied but also encouraged to continue using the application as the main channel for financial management. This finding is in line with the studies of Rahma & Sofyani (2024), Singh & Sinha (2020), and Sofyani & Darma (2024),

all of which show that the efficiency of digital systems increases users' intentions and desires to access services repeatedly. In the context of BNI, a mobile banking application that is able to present smooth transactions—from fund transfers to bill payments—reduces barriers to use and strengthens customers' belief that they have full control over their financial activities. As a result, this efficiency not only drives long-term loyalty but also puts BNI in a competitive position amidst fintech and other digital banking competition.

The influence of user-friendliness on the continuity of use of mobile banking services

The results of the hypothesis test show that BNI's digital service quality has a positive and significant effect on customer loyalty. This finding indicates that good service quality, such as speed, security, ease of use, and completeness of features in mobile banking, plays an important role in building long-term relationships with customers. Customers who are satisfied with their digital experience are more likely to show loyalty through repeat use and recommendations to others. High digital service quality strengthens customers' perceptions of the bank, making it more attractive than competitors.

This finding is in line with research by Zeithaml et al. (2002), which shows that high service quality increases customer satisfaction, which in turn affects customer loyalty. In addition, research by Sofyani and Darma (2024) revealed that service quality in the context of digital banking is closely related to customer perceptions of the bank's credibility and reliability. In the context of BNI, continuous improvement in the quality of mobile banking services will strengthen customer satisfaction, which is the basis for forming customer loyalty. Therefore, for BNI, the strategy of improving digital service quality must be a priority to maintain and expand the loyal customer base.

The effect of reliability on the continuity of use of mobile banking services

In this study, reliability is the bank's ability to fulfill promises quickly, accurately, and satisfactorily (Mir et al., 2022). Based on the hypothesis test, reliability has a positive effect on the continuity of use of mobile banking services. This result is in line with previous research by Rahma and Sofyani (2024), which was conducted on Islamic bank customers in Indonesia. The results showed that reliability can influence customer interest in continuing to use mobile banking services from Islamic banks. The higher the reliability of online applications, the more reliable the quality of user electronic services (Steven & Ramli, 2023). Thus, it can be concluded that banks must provide services that can meet customer expectations, which will later affect the continuity of use of mobile banking services (Marlina & Bimo, 2018).

The effect of responsiveness on the continuity of use of mobile banking services

The results of the study show that responsiveness has a positive effect on the continuity of use of BNI mobile banking services. It means that the higher the level of responsiveness of the services provided by BNI—for example, through the speed in handling complaints, the availability of assistance services, and the readiness of officers to answer questions—

the greater the likelihood that customers will continue to use the service on an ongoing basis. This finding is consistent with previous studies (Mir et al., 2022; Rahma & Sofyani, 2024; Sofyani & Darma, 2024), which emphasize that responsiveness is a key element in forming positive perceptions of digital services. Customers who feel heard and served quickly tend to feel more comfortable and trust the platform used, thereby reducing their intention to switch to another service provider. In the context of BNI, these results reflect that the bank has been able to provide a responsive assistance system, both through live chat features and call centers, and actively managed social media. It also strengthens customer loyalty and creates an image of reliable digital services. Therefore, maintaining and increasing the level of responsiveness is an important strategy to maintain user engagement in the long term.

The influence of security on the continuity of mobile banking service use

Security is defined as the customer's attitude towards security, which is highly dependent on how confident the bank can keep them so that they feel that their personal information is safe (Changchit et al., 2017). Security is also seen as an important component of Internet and mobile banking (Arcand et al., 2017). Mobile banking security has become an important concern because it involves the transmission and storage of sensitive financial information (Al-Delayel, 2022; Cope et al., 2013; Sifat & Sabbir, 2015).

Based on the results of the hypothesis test, security has a positive effect on the continuity of mobile banking service use. This finding is in line with previous findings, which state that security is a factor that can increase the continuity of mobile banking service use for customers (Bhatt & Bhatt, 2016; Lacmanovic et al., 2012). Research has shown that a lack of trust in the security of mobile banking is a major factor limiting widespread adoption. Customers who perceive mobile banking as unsafe or unsure about its security are less likely to adopt it, even if they have a high-risk tolerance (Cope et al., 2013). One study found that perceived privacy risk was the most critical factor acting as a barrier to mobile banking adoption (Saxena et al., 2020). It suggests that banks and policymakers need to prioritize addressing privacy and security issues to encourage greater adoption of mobile banking.

The Effect of Familiarity on Continuity of Mobile Banking Service Use

Familiarity is the ability of mobile banking to provide services regarding how much and how easily an application can be customized to meet consumer needs according to their preferences (Mir et al., 2022). Familiarity is known to influence various aspects of information processing and decision-making (Rahma & Sofyani, 2024). In the context of mobile banking, banks offer various financial products and services based on customer preferences. Based on the results of the hypothesis test, familiarity has a positive effect on the continuity of mobile banking service use. These results are in line with research by Ramli et al. (2023), Mir et al. (2022), and Abu-Taieh et al. (2022). As users become more familiar with the BNI mobile banking application, they tend to perceive the risks associated with using the service as lower. This increased level of comfort may stem from understanding security features, gaining trust in the technology, and experiencing

positive outcomes from previous transactions so that customers continue to want to use BNI mobile banking services (Mir et al., 2022).

The Influence of Continuity of Use of BNI Banking Services on Customer Loyalty

The results of the hypothesis test show that the continuity of use of BNI banking services, especially mobile banking services, has a positive and significant effect on customer loyalty. This finding indicates that the more often customers consistently use BNI digital services, the more likely they are to remain loyal and not switch to another bank. Customer loyalty is influenced not only by the emotional aspect of the brand but also by the real experience felt while using the service. In this context, continuity of use reflects the level of comfort, satisfaction, and trust of customers in the BNI mobile banking system.

These results are in line with the findings of Nurbasari and Harani (2018) and Setiansye & Guritno (2023), which state that continuity in the use of banking services is one of the main determinants in forming customer loyalty. In addition, Park & Kim (2019) emphasize that a positive experience in using mobile banking services can build an emotional bond between customers and banks, which then strengthens loyalty. Susanto et al. (2016) also added that customers who feel safe, comfortable, and efficient when using mobile banking will tend to repurchase behavior and show loyalty. Therefore, BNI needs to continue to improve the features, security, and ease of mobile banking services to maintain sustainable use and strengthen customer loyalty in the long term.

The Influence of Continuity of Use of BNI Banking Services on Bank Reputation

The results of the hypothesis test show that the continuity of use of BNI banking services, especially mobile banking, has a positive and significant effect on the bank's reputation. This finding shows that the more often or consistently customers use BNI's mobile banking services, the more the public's perception of the quality and credibility of BNI as a financial institution increases. It can be explained by the fact that the continued use of services indicates customer trust, comfort, and satisfaction with the digital service system provided. A bank's reputation is built not only through brand image and promotion but also from the real experiences of customers when interacting with the banking system, especially through digital platforms such as mobile banking.

These results strengthen the findings of previous studies such as Yuan et al. (2016), which state that a consistent digital service experience can improve a company's image in the eyes of consumers; Kassim and Ramayah (2015), who identified that the quality of digital services that are continuously used will strengthen the trust and reputation of the institution; and Eko Retno et al. (2023), which emphasizes the importance of customer involvement in digital platforms as a driver of financial institution reputation. In the context of BNI, with the continued increase in active mobile banking users and efforts to improve digital services, continuity of use reflects customer loyalty. It is a positive signal to the market and other stakeholders regarding the bank's reliability and professionalism. Therefore, maintaining and improving the quality of mobile banking services is not only

important to retain customers but also strategic in building and strengthening the bank's reputation sustainably.

Theoretical and Practical Implications

This study has significant theoretical and practical implications. Theoretically, this study broadens the understanding of how factors such as application efficiency, security, reliability, and familiarity affect the continuity of mobile banking service usage. These findings strengthen and develop the theory of user behavior in the context of technology, especially digital banking services, and contribute to the development of new models in further research on technology adoption and use. In addition, this study confirms that the continuity of mobile banking service usage affects customer loyalty and bank reputation, which provides new insights into the relationship between long-term usage and bank image. From a practical perspective, the results of this study can be used by banks to improve mobile banking services by focusing on efficiency, reliability, and security, which will increase the continuity of use and customer loyalty. Banks also need to prioritize strengthening security systems to build customer trust and reduce privacy concerns. Although user-friendliness and application design are not the main factors, banks are still advised to improve service responsiveness and simplify the interface to be more user-friendly, especially for users aged 21-40 who are more familiar with technology. Finally, banks must continue to increase user familiarity with their applications to reduce risk perception and increase convenience, which will ultimately support the continued use of mobile banking services.

Conclusion

Based on the research results, it can be concluded that of the seven dimensions of digital banking service quality (DBSQual)—namely application architecture, application efficiency, ease of use, reliability, responsiveness, security, and familiarity—only five dimensions have been empirically proven to increase the continuity of use of BNI mobile banking services. Application efficiency, reliability, responsiveness, security, and familiarity encourage customers to continue using BNI Mobile Banking because of smooth transactions, guaranteed data security, easy access to features, and a sense of trust and familiarity with the interface. In contrast, application architecture and ease of use do not have a significant effect—most likely because the majority of respondents are already familiar with digital platforms and prioritize functional aspects such as transaction speed and security. Furthermore, this continuity of use fosters customer loyalty—marked by the intention to continue using, recommendations to others, and resistance to moving to other services—and strengthens BNI's reputation in the eyes of the public and stakeholders because a high level of digital adoption reflects the bank's credibility and innovation. These findings enrich the literature on digital banking services by validating the DBSQual scale in the Indonesian context while providing practical implications for BNI management to prioritize improving efficiency, reliability, responsiveness, security, and familiarity in the mobile banking development roadmap. For further research, it is recommended to examine more diverse demographic segments, test long-term effects,

and include contextual variables such as trust and perceived value so that the understanding of the determinants of loyalty and reputation is more comprehensive.

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About the Authors

Irbawanti Pungky Rahardjo (**IPR.**) – is a students from Master of Accounting, Directorate of Postgraduate Program, Universitas Muhammadiyah Yogyakarta. Email: i.pungky.psc22@mail.umy.ac.id

Emile Satia Darma (**ESD.**) – is a lecturer from the Department of Accounting, Faculty of Economics and Business, Universitas Muhammadiyah Yogyakarta. Email: emile@umy.ac.id

Author Contributions

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Conflicts of Interest

The authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, or in the decision to publish the results.