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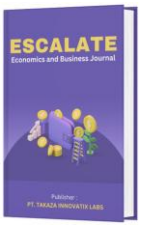

Analysis of Factors Influencing Satisfaction of BYOND By BSI Application Users in DKI Jakarta

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Abstract: *Digital banking adoption in Indonesia reaches 80.7% penetration (APJII, 2025), yet BYOND by BSI faces user dissatisfaction post-rebranding despite 3.5 million users, with prior studies showing inconsistent TAM factor effects on Islamic mobile banking satisfaction in urban contexts. This study analyzes the influence of perceived usefulness (X1), ease of use (X2), security (X3), and enjoyment (X4) on user satisfaction (Y) of BYOND by BSI in DKI Jakarta through quantitative cross-sectional survey of 230 purposive respondents (Gen Y dominant, 60% female) from active users (≥6 months), using Likert-6 Google Forms analyzed via SmartPLS 4.0 SEM-PLS with validated reflective measurement (AVE>0.5, CR>0.9, HTMT<0.90, VIF<5). All hypotheses were accepted (p<0.05): X4 (β=0.233, highest), X1 (β=0.236), X3 (β=0.269), X2 (β=0.206, lowest), explaining 59.6% satisfaction variance (adj.R²=0.596; Q²=0.544, large). Hybrid TAM-affective model is confirmed for syariah mobile banking optimization, prioritizing enjoyment and security enhancements.*

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Introduction

The digital era has revolutionized various aspects of human life through technological advances that accelerate daily activities, from communication to economic transactions (Veonnita & Rojuaniah, 2022). Globally, internet penetration is expected to reach 66% of the world's population by 2023, with significant growth in developing countries due to increasingly mature digital infrastructure (ITU, 2023). In Indonesia, this trend is even more pronounced; the Indonesian Internet Service Providers Association (APJII) recorded an increase in internet penetration from 79.5% in 2024 to 80.7% in 2025, equivalent to 229.43 million users out of a total population of 284.44 million (APJII, 2025). This growth reflects not only the widespread adoption of technology but also its scientific relevance in understanding the transformation of societal behavior, as well as its practical implications for the digital financial sector,

which now dominates public services and the economy (Goyal et al., 2025).

Furthermore, this progress has had a direct impact on the Islamic banking sector in Indonesia, where mobile banking applications such as BYOND by BSI have become a major innovation of PT Bank Syariah Indonesia (BSI) since its launch in November 2024 as a replacement for BSI Mobile (Mahrani & Harahap, 2025). Although BSI Mobile users reached 7.1 million in 2024, BYOND adoption was only 3.5 million in 2025, accompanied by widespread complaints on social media, Google Playstore, and national news regarding transaction errors, problematic QRIS, and slow logins (Rahman et al., 2024). This field phenomenon, supported by pre-surveys by researchers showing dissatisfaction with perceived usefulness, ease of use, security, and enjoyment, indicates the challenges of digital transformation in the Islamic context that are not yet optimal (Amnas et al., 2025; Zuhra, 2025).

Previous research has extensively explored factors influencing mobile banking technology acceptance using models such as the Technology Acceptance Model (TAM), finding that perceived usefulness and ease of use consistently influence user satisfaction (Chin et al., 2021). In Indonesia, studies on conventional banking have shown perceived security to be a strong predictor of satisfaction, particularly post-pandemic (Aji et al., 2022). Meanwhile, perceived enjoyment often emerges as an affective variable that strengthens this relationship in fintech applications (Gupta & Arora, 2023).

However, research results show inconsistencies; for example, a study in Malaysia found that perceived enjoyment was insignificant in influencing satisfaction with Sharia mobile banking due to the dominance of utilitarian factors (Hussain et al., 2022), while a study in Indonesia confirmed the role of enjoyment in a conventional Sharia context (Faiz et al., 2024). Major limitations of previous studies include their focus on conventional banks, non-specific samples in urban areas such as Jakarta, and the lack of simultaneous integration of perceived security and enjoyment in post-rebranding Sharia apps (Kharisma, 2025; Amin et al., 2023).

An explicit research gap lies in the lack of empirical understanding of the simultaneous influence of perceived usefulness, ease of use, security, and enjoyment on user satisfaction of the latest Islamic mobile banking applications in Indonesia, particularly BYOND by BSI in DKI Jakarta, which has experienced a decline in adoption despite the surge in national digital infrastructure. This problem statement is formulated as: to what extent do these four factors significantly influence user satisfaction, considering actual complaints that have not been comprehensively answered.

This study aims to understand the influence of perceived usefulness, ease of use, security, and enjoyment on user satisfaction of BYOND by BSI in DKI Jakarta. The urgency is pressing considering the 2025 internet penetration trend and the potential erosion of trust in the national Islamic financial industry. While the novelty lies in testing the hybrid TAM-affective model in the context of urban Islamic rebranding which has not been explored before. Theoretically, this study enriches the literature with empirical evidence of a combination of utilitarian and affective factors (theoretical contribution), while practically, the results provide recommendations for improvements for BSI to increase user retention and the competitiveness of Islamic fintech (practical contribution).

Method

This study adopted a quantitative design with a cross-sectional survey approach to empirically test the causal relationship between variables, in accordance with the objective of analyzing the influence of perceived usefulness, perceived ease of use, perceived security, and perceived enjoyment on user satisfaction of the BYOND by BSI application in DKI Jakarta. This approach was chosen because of its ability to generalize findings from the sample to the population through inferential statistical analysis, as recommended in financial technology adoption studies (Sugiyono, 2019; Hair et al., 2021). Furthermore, the survey design supports the efficient measurement of user perceptions in the digital era, with a theoretical foundation from the Technology Acceptance Model (TAM) that has been validated in the context of Indonesian Islamic banking (Aji et al., 2022; Faiz et al., 2024). The study was conducted from September 2025 to January 2026 in DKI Jakarta, with pre-research for instrument validation, ensuring a systematic and optimal process.

The study population included all active users of the BYOND by BSI application who reside and operate in DKI Jakarta, selected due to its high digital penetration and the intensity of financial

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transactions in the region as the national economic center (APJII, 2025). The sample was determined using a non-probability purposive sampling technique with the following inclusion criteria: minimum age of 18 years, domiciled in DKI Jakarta, and experience using the application for at least the last six months to capture post-rebranding perceptions (George & Sunny, 2023). The sample size of 210 respondents was calculated based on the formula of Hair et al. (2021), which is 10 times the number of indicators (21 total indicators), although ultimately 180 valid respondents were obtained after screening, meeting the minimum requirements for SEM-PLS analysis to avoid bias and ensure representativeness (Sugiyono, 2017; Amin et al., 2023).

The main instrument is a Google Form-based online questionnaire that measures five latent variables with adapted indicators from proven literature: satisfaction (5 indicators: general, benefit, emotional, actual experience, fulfillment); perceived usefulness (4 indicators: work efficiency, performance effectiveness, improving performance, utility); perceived ease of use (4 indicators: user-friendliness, clarity, navigation, easy to use); perceived security (4 indicators: transaction security, access protection, system policy, confidentiality); and perceived enjoyment (4 indicators: enjoyment activities, emotional happiness, positive sensation, convenience). Each item is measured on a 6-point Likert scale (1 = strongly disagree to 6 = strongly agree) to avoid neutral responses and increase discrimination (Khemchai, 2025). The instrument was tested for convergent and discriminant validity and reliability (Cronbach's alpha >0.7) through a pilot test on 30 pre-research respondents, with adaptations from sources such as Choi (2020) and Wandira et al. (2024) for the sharia context (Hair et al., 2017; Emzir, 2021).

The research procedure began with a preparatory phase in September 2025, including the preparation of an instrument grid, adaptation of items from the literature, and pilot testing for revisions. This was followed by primary data collection in October-November 2025 through the distribution of an online questionnaire to the BYOND user community via social media and WhatsApp groups targeted in Jakarta, supported by secondary data from journals, APJII reports, and Playstore reviews. Primary data collection focused on respondents who met the criteria via a Google Form link with prior informed consent, while secondary data enriched the description of phenomena such as complaints about QRIS errors (Rahman et al., 2024). This process took three months to reach 180 valid respondents, ending with data cleaning in December 2025, ensuring efficiency and accuracy through researcher access in Jakarta (Sudaryono, 2020; Monir et al., 2025).

Data analysis was conducted in stages using SmartPLS 4.0 for Structural Equation Modeling-Partial Least Squares (SEM-PLS), which is suitable for non-normal samples and predictive models with reflective latent variables. The first stage included descriptive analysis (mean, standard deviation) to describe respondents' perceptions; followed by outer model testing (convergent validity: loading factor >0.7, AVE >0.5; discriminant: Fornell-Larcker, HTMT <0.85; reliability: composite reliability >0.7); then inner model testing for path coefficients, R-square, f-square, and hypothesis testing via bootstrapping (5,000 subsamples) to test the significance of the influence of independent variables on satisfaction (Hair et al., 2021). This approach supports the research objective of confirming causal relationships, with a significance threshold of $p<0.05$ (Faiz et al., 2024; Yu et al., 2024).

Ethical considerations were applied throughout the study in accordance with the principles of the Declaration of Helsinki, including digital informed consent at the beginning of the questionnaire explaining the purpose, data confidentiality (respondent anonymity, Google Form encryption), and the right to withdraw at any time without consequence. Data was securely stored on the researcher's private server with restricted access, without identity disclosure, and the study received internal ethics approval from the researcher's institution. This step ensures participant protection, particularly in the context of sensitive financial data, as recommended in fintech studies (Sugiyono, 2019; Aji et al., 2022).

Results and Discussion

Data Description

Table 1. Respondent Data Based on Gender

Gender	Number of Respondents	Percentage of Respondents
Woman	138	60%
Man	92	40%

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Source: Processed by researchers

Of the 230 respondents using BYOND by BSI, 138 (60%) were female and 92 (40%) were male, reflecting female dominance in line with national financial inclusion (76.08% female vs 73.9% male; BisnisMarket, 2024) and the Bengkulu study (63% female; Handayani & Anitasari, 2022).

Table 2. Data Respondents by Age

Age	Number of Respondents	Percentage of Respondents
18-28 years old	86	37.4%
29-39 years old	111	48.3%
40-50 years	29	12.6%
>50 years	4	1.7%

Source: Processed by researchers

Of the 230 respondents using BYOND by BSI, the age distribution was dominated by those aged 29-39 (111 respondents, 48.3%), followed by those aged 18-28 (86 respondents, 37.4%), those aged 40-50 (29 respondents, 12.6%), and those aged 50+ (4 respondents, 1.7%). This dominance of Gen Y and millennials aligns with an Ipsos survey showing that active digital bank users are aged 18-44, who prioritize speed and service integration (Financial Business, 2025).

Table 3. Data Respondents by employment status

Employment Status	Number of Respondents	Percentage of Respondents
Students	63	27.4%
Government employees	58	25.2%
Private employees	68	29.6%
Businessman	40	17.4%

Source: Processed by researchers

Of the 230 respondents using BYOND by BSI, the distribution of employment status was dominated by private sector employees (68 respondents, 29.6%), students (63 respondents, 27.4%), civil servants (58 respondents, 25.2%), and entrepreneurs (40 respondents, 17.4%). The dominance of private sector employees aligns with the findings of Sebayang et al. (2024) who noted that 16.8% of mobile banking users come from the private sector in Indonesia.

Table 4.Respondent data based on duration of use

Duration of Use	Number of Respondents	Percentage of Respondents
6 months – 1 year	138	60%
>1 year	92	40%

Source: Processed by researchers

Of the 230 BYOND by BSI user respondents, 138 (60%) used the app for 6 months–1 year, and 92 (40%) for more than 1 year. The majority of familiarity (60%) reflects regular adoption post-rebranding, although long-term use is limited due to the service's novelty.

Table 5. Respondent data based on frequency of application use

Frequency of Use	Number of Respondents	Percentage (%)
Every day	68	29.6
Several times a week	123	53.5

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Frequency of Use	Number of Respondents	Percentage (%)
Several times a month	39	17.0

Source: Processed by researchers

Of the 230 respondents, the highest frequency was several times a week (123 respondents, 53.5%), followed by daily (68 respondents, 29.6%) and several times a month (39 respondents, 17%). This pattern aligns with Sharma & Kaur (2025) who found that weekly usage (30.9%) was dominant for mobile banking as a realistic routine transaction.

Table 6. Respondent data based on domicile

Domicile	Number of Respondents	Percentage of Respondents
Central Jakarta	39	17%
South Jakarta	60	26.1%
East Jakarta	60	26.1%
West Jakarta	46	20%
North Jakarta	25	10.9%

Source: Processed by researchers

Of the 230 respondents using BYOND by BSI in DKI Jakarta, the domicile distribution was as follows: South Jakarta (60 respondents, 26.1%), East Jakarta (60 respondents, 26.1%), West Jakarta (46 respondents, 20%), Central Jakarta (39 respondents, 17%), and North Jakarta (25 respondents, 10.9%). The dominance of South and East Jakarta reflects high economic mobility in urban areas (Dasmawih, 2023).

Tabel 7. Responden Analisis Deskriptif Variabel *Perceived Usefulness*

Kode	STS	TS	ATS	AS	S	SS	Mean	Standar Deviation
PU1	9 3,9%	29 12,6%	24 10,4%	54 23,5%	79 34,3%	35 15,2%	4,271	1,253
PU2	13 5,7%	27 11,7%	26 11,3%	60 26,1%	66 28,7%	38 16,5%	4,229	1,233
PU3	16 7%	20 8,7%	29 12,6%	61 26,5%	69 30%	35 15,2%	4,138	1,263
PU4	10 4,3%	27 11,7%	27 11,7%	69 30%	59 25,7%	38 16,5%	4,224	1,196
PU5	13 5,7%	30 13%	22 9,6%	57 24,8%	67 29,1%	41 17,8%	4,181	1,233

Sumber: Diolah peneliti

Descriptive analysis of the perceived usefulness (PU) variable from 230 respondents showed a dominant positive perception of the BYOND by BSI application, with the distribution of responses: strongly agree/agree (37.4%), somewhat agree (30.1%), and agree/somewhat agree (18.7%), while disagreement was only 19.4%. The PU1 indicator (daily banking benefits) reached the highest mean of 4.271 (SD=1.253), confirming the usefulness of smooth transactions (Marco et al., 2024), while PU3 (effectiveness) reached the lowest at 4.138 (SD=1.263), indicating the potential for increased operational efficiency (Tanjung et al., 2024). Overall, the application was considered useful (mean ~4.2), but variations between indicators indicate the need to optimize effectiveness for equitable benefits.

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Tabel 8. Responden Analisis Deskriptif Variabel *Perceived Ease of Use*

Kode	STS	TS	ATS	AS	S	SS	Mean	Standar Deviation
PEOU 1	13 5,7%	30 13%	22 9,6%	57 24,8%	67 29,1%	41 17,8%	4,110	1,342
PEOU 2	17 7,4%	24 10,4 %	35 15,2%	60 26,1%	60 26,1%	34 14,8%	4,005	1,340
PEOU 3	13 5,7%	30 13,%	38 16,5%	54 23.5%	64 27,8%	31 13,5%	3,886	1,312
PEOU 4	11 4,8%	30 13%	32 13,9%	57 24,8%	62 27%	38 16,5%	4,167	1,256
PEOU 5	14 6,1%	28 12,2 %	32 13,9%	61 26,5%	61 26,5%	34 14,8%	4,005	1,371

Sumber: Diolah Peneliti

Descriptive analysis of the perceived ease of use (PEOU) variable from 230 respondents showed a dominant positive perception of the ease of use of the BYOND by BSI application, with a response distribution of: strongly agree/agree (49.2%), somewhat agree (44.8%), and disagree (21%). The PEOU4 indicator (ease of routine banking activities) achieved the highest mean, confirming the relationship between ease of use and effectiveness of use (Antoni et al., 2024), while PEOU3 (menu layout) was the lowest (M=3.886; SD=1.312), indicating the need for UX navigation improvements (Resyita et al., 2024). Overall, the application was considered easy to use, but menu optimization and feature consistency are needed for an even experience.

Tabel 9.Responden Analisis Deskriptif Variabel *Perceived Security*

Kode	STS	TS	ATS	AS	S	SS	Mean	Standar Deviation
PS1	14 6,1%	23 10%	26 11,3%	64 27,8%	66 28,7%	37 16,1%	4,219	1,199
PS2	14 7,8%	27 11,7%	23 10%	62 27%)	67 29,1%	33 14,3%	4,171	1,272
PS3	14 6,1%	32 13,9%	30 13%	62 27%	59 25,7%	33 14,3%	4,052	1,247
PS4	17 7,4%	27 11,7%	27 11,7%	73 31,7%	56 24,3%	30 13%	4,110	1,220
PS5	13 5,7%	28 12,2%	29 12,6%	55 23,9%	76 33%	29 12,6%	4,186	1,215
PS6	15 6,5%	31 13,5%	21 9,1%	58 25,2%	63 27,4%	42 18,3%	4,143	1,359

Sumber: Diolah peneliti

Descriptive analysis of the perceived security (PS) variable from 230 respondents showed a dominant positive perception of the security of the BYOND by BSI application, with the following response distribution: strongly agree/agree (58.2%), somewhat agree (53%), and only 17.3% disagree. The PS1 indicator (transaction security) reached the highest mean of 4.219 (SD=1.199), confirming a sense of security in transactions due to strong data protection (Tursinah et al., 2024), while PS2 (personal data protection) had the lowest mean of 4.171 (SD=1.272), indicating variation in trust among users, although it remained positive (Pitaloka et al., 2024). Overall, security was considered quite good, but the unauthorized access protection system needs to be improved to build equitable trust.

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Tabel 10. Responden Analisis Deskriptif Variabel *Perceived Enjoyment*

Kode	STS	TS	ATS	AS	S	SS	Mean	Standar Deviation
PE1	12 5,2%	25 10,9%	32 13,9%	54 23,5%	66 28,7%	41 17,8%	4,224	1,247
Kode	**STS**	**TS**	**ATS**	**AS**	**S**	**SS**	**Mean**	**Standar Deviation**
PE2	11 4,8%	37 16,1%	34 14,8%	53 23%	64 27,8%	31 13,5%	4,081	1,298
PE3	10 4,3%	33 14,3%	45 19,6%	52 22,6%	55 23,9%	35 15,2%	4,067	1,278
PE4	11 4,8%	32 13,9%	39 17%	58 25,5%	54 23,5%	36 15,7%	4,119	1,272
PE5	12 5,2%	25 10,9%	37 16,1%	62 27%	67 29,1%	27 11,7%	4,095	1,171
PE6	10 4,3%	41 17,8%	32 13,9%	49 21,3%	65 28,3%	33 14,3%	3,986	1,325

Source: Processed by researchers

Descriptive analysis of the perceived enjoyment (PE) variable from 230 respondents showed a positive perception of the enjoyable experience of the BYOND by BSI application, with a response distribution of: strongly agree/agree (57.4%), somewhat agree (54.7%), and disagree (25.9%). The highest PE1 indicator (enjoyment using the application) (M=4.224; SD=1.247), confirming a positive experience that influences satisfaction (Fianto et al., 2021), while PE6 (flexibility of 24/7 access) was the lowest (M=3.986; SD=1.325), indicating limited access convenience even though mobile banking is supposed to be efficient (Faisal, 2025). Overall, the application was considered enjoyable, but optimization of flexibility and consistency of interaction is needed for an even practical experience.

Tabel 11. Responden Analisis Deskriptif Variabel *Satisfaction*

Kode	STS	TS	ATS	AS	S	SS	Mean	Standar Deviation
SA1	13 5,7%	18 7,8%	40 17,4%	52 22,6%	66 28,7%	41 17,8%	4,314	1,157
SA2	14 6,1%	30 13%	33 14,3%	57 24,8%	64 27,8%	32 13,9%	4,200	1,218
SA3	14 6,1%	36 15,7%	26 11,3%	65 28,3%	61 26,5%	28 12,2%	4,052	1,216
SA4	14 6,1%	25 10,9%	36 15,7%	56 24,3%	60 26,1%	39 17%	4,248	1,205
SA5	9 3,9%	32 13,9%	31 13,5%	60 26,1%	66 28,7%	32 13,9%	4,181	1,177

Sumber: Diolah peneliti

Descriptive analysis of the satisfaction variable from 230 respondents showed a dominant positive perception of the BYOND by BSI application, with the following response distribution: strongly agree/agree (48.9%), somewhat agree (45.6%), and disagree (20.5%). The highest SA1 indicator (overall satisfaction) (M=4.314; SD=1.157) confirmed a positive evaluation of the benefits and quality of the features (Witjaksono et al., 2024), while the lowest SA3 (recommendations to others) (M=4.052; SD=1.216) reflected good loyalty intentions but needed to be strengthened through service quality (Kumalasari & Permanasari, 2022). Overall, high satisfaction was driven by smooth transactions, but recommendations and overall fulfillment of expectations could still be optimized for sustained loyalty.

Outer Model

1. Validity Test

Table 12.Results of the Convergent Validity Test of the Research

Variables	Item	Outer Loading	AVE	Results

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Perceived Enjoyment	PE1	0.877	0.750	Valid
	PE2	0.891		
	PE3	0.811		
	PE4	0.861		
	PE5	0.864		
	PE6	0.889		
Variables	Item	Outer Loading	AVE	Results
Perceived Ease of Use	PEOU1	0.879	0.741	Valid
	PEOU2	0.850		
	PEOU3	0.855		
	PEOU4	0.856		
	PEOU5	0.862		
Perceived Security	PS1	0.876	0.756	Valid
	PS2	0.872		
	PS3	0.864		
	PS4	0.826		
	PS5	0.896		
	PS6	0.881		
Perceived Usefulness	PU1	0.897	0.744	Valid
	PU2	0.860		
	PU3	0.835		
	PU4	0.848		
	PU5	0.871		
Satisfaction	SA1	0.882	0.744	Valid
	SA2	0.868		
	SA3	0.819		
	SA4	0.872		
	SA5	0.895		

Source: Processed by researchers

Convergent validity test shows that all indicators have outer loading >0.7 (PU: 0.811–0.891; PEOU: 0.850–0.879; PS: 0.826–0.896; PE: 0.835–0.897; Satisfaction: 0.819–0.895), fulfilling the convergent validity criteria. AVE value >0.5 in all variables (highest PS 0.756; PU: 0.750; PEOU: 0.741; Satisfaction: 0.753; PE: 0.44) confirms that the indicators are able to explain ≥50% of the variation in latent variables, proving that the reflective measurement model is valid and consistent for further analysis.

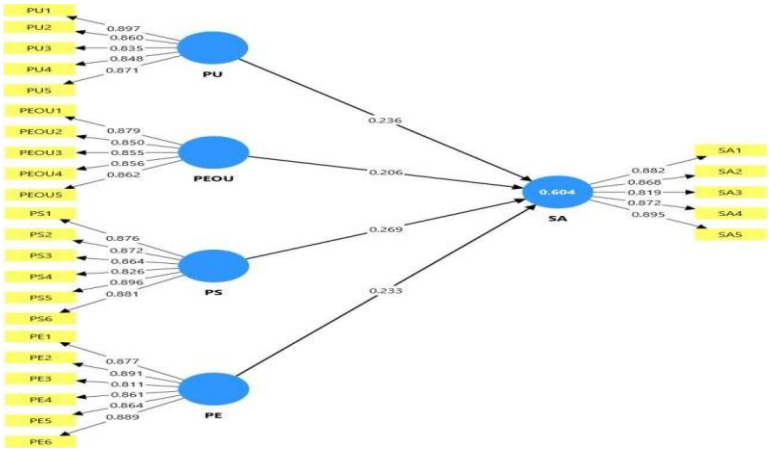

***Figure 1.*Outer Loading Results**

Source: Processed by researchers

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Table 13. Heteroite Monotrait Ratio (HTMT) Results

	PE	PEOU	PS	Public Works	SA
PE					
PEOU	0.586				
PS	0.691	0.630			
Public Works	0.558	0.560	0.627		
SA	0.690	0.665	0.726	0.673	

Source: Processed by researchers

Discriminant validity testing was also conducted using the Heterotrait-Monotrait Ratio (HTMT) approach. Based on the results in the table above, all HTMT values between latent variables in this study were below the recommended limit (<0.90; Henseler et al., 2015). This proves that each variable is able to uniquely differentiate its concept from the others.

The HTMT values in this study ranged from 0.558 to 0.726. The highest value was recorded for the relationship between satisfaction (Y) and perceived security (X3) at 0.726, indicating a strong correlation but still meeting the tolerance criteria. Conversely, the lowest value was found for the relationship between perceived usefulness (X1) and perceived enjoyment (X4) at 0.558, indicating sharper discrimination.

Overall, there was no indication of discriminant validity issues as all HTMT scores were below the threshold. Thus, the HTMT criteria for discriminant validity were met.

2. Reliability Test

Table 14. Research Reliability Test Results

	Cronbach's alpha	Composite reliability (rho_a)	Compositereliability (rho_c)
PE	0.933	0.937	0.947
PEOU	0.913	0.915	0.935
PS	0.935	0.939	0.949
Public Works	0.914	0.916	0.936
SA	0.918	0.920	0.938

Source: Processed by researchers

Table 14 shows the results of reliability testing for all variables: perceived usefulness (X1), perceived ease of use (X2), perceived security (X3), perceived enjoyment (X4), and satisfaction (Y). All variables meet good criteria, with Cronbach's alpha and composite reliability values > 0.70 (Nunnally, 1978). This indicates high internal consistency of the indicators. The highest composite reliability value is perceived security (X3) at 0.949, confirming its ability to measure the concept consistently.

3. Multicollinearity Test

Table 15. Multicollinearity Test Results

	VIF
PE1	3,018
	VIF
P E 2	3,417
P E 3	2,218
P E 4	2,791
P E 5	2,953
P E 6	3,227
P E O U 1	3,081
P E O U 2	2,322
P E O U 3	2,713
P E O U 4	2,397

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P E O U 5	2,633
P S 1	3,071
P S 2	3,113
P S 3	2,808
P S 4	2,457
P S 5	3,481
P S 6	3,122
P U 1	3,304
P U 2	2,504
P U 3	2,335
P U 4	2,435
P U 5	2,956
S A 1	2,917
S A 2	2,944
S A 3	2,322
S A 4	2,702
S A 5	3,338

Source: Processed by researchers

Multicollinearity testing of the structural model using the Variance Inflation Factor (VIF) is shown in the table above. All VIF values are below the safe limit (<5.0), with a range of 2.218–3.481, indicating no significant multicollinearity and good model stability (Hair et al., 2017).

The highest indicator was PS5 (perceived security, X3) at 3.481, which is still maintainable. The lowest indicator was PE3 (perceived enjoyment, X4) at 2.218, indicating the most ideal contribution without excessive correlation. Overall, the VIF results confirmed the model's validity for further analysis.

***Inner*Model**

1. R-Squared Test

Table 16. R-Square Test Results

	R-square	**R-square adjusted**
SA	0.604	0.596

Source: Processed by researchers

The R-square results in the table above measure the ability of the independent variables to explain variations in the dependent variable satisfaction (Y). The R-square value of 0.604 and adjusted R-square of 0.596 indicate that 59.6% of the variation in user satisfaction of the BYOND by BSI application is explained by the model, including perceived usefulness (X1), ease of use (X2), security (X3), and enjoyment (X4)—a moderate to strong category (Hair et al., 2017).

The remaining 40.4% is influenced by factors outside the model. This model has good explanatory power, although further research is recommended to add external variables for more comprehensive coverage.

2. Q-Square Test

Table 17. *Q-test results*square

	Q^2predict
S A	0.544

Source: Processed by researchers (2025)

The PLSpredict results in the table above show the model's predictive ability for the dependent variable satisfaction (Y). The Q^2-predict value of 0.544 (> 0.35) is categorized as large, confirming a strong prediction (Hair et al., 2017). The criteria are: small (0.02), medium (0.15), and large (0.35).

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Hypothesis Testing

Table 18. Results Hypothesis Testing Based on Direct Effect

	Originalsample (O)	Samplemean (M)	Standard deviation (STDEV)	t statistics (|O/STDEV|)	p values	Results
PE -> SA	0.233	0.242	0.108	2,158	0.031	Accepted
PEOU -> SA	0.206	0.204	0.097	2,111	0.035	Accepted
PS -> SA	0.269	0.258	0.131	2,052	0.040	Accepted
PU -> SA	0.236	0.237	0.106	2,229	0.026	Accepted

Source: Processed by Researchers

The results of the structural model test showed that all path coefficients were positive according to the hypothesis, with the highest perceived enjoyment (X4→Y: β=0.233), followed by the lowest perceived ease of use (X2→Y: β=0.206, but contributed significantly) to satisfaction (Y) on the BYOND by BSI application. All four hypotheses were accepted (t>1.96; p<0.05): H1 (X1→Y: t=2.229; p=0.026), H2 (X2→Y: t=2.111; p=0.035), H3 (X3→Y: t=2.052; p=0.040, the weakest because security is considered a basic need and digital literacy is high), H4 (X4→Y: t=2.158; p=0.031). Although significant, the value approaching the limit indicates room for optimization of usability, convenience, and enjoyment to increase user satisfaction amidst digital banking competition.

Discussion

***Perceived Usefulness*towards Satisfaction**

Based on the results of the descriptive analysis of the Perceived Usefulness variable, it is known that overall respondents gave a high assessment of the benefits and usefulness of the BYOND by BSI application. This indicates that the application is said to be able to provide real benefits in supporting users' banking activities. The statement with the highest average value is the statement The BYOND by BSI application helps my banking process with a mean value of 4.271, which indicates that the majority of users feel that the existence of the BYOND by BSI application is very helpful in meeting their banking needs practically and efficiently.

In addition, the indicator with the statement "I feel the BYOND by BSI application is useful in improving the quality of my banking activities" also produced a high average value with a mean of 4.224. This result illustrates that the convenience felt by users is quite helpful, and users also consider that using the BYOND by BSI application is able to improve the quality of the overall banking experience. Furthermore, the indicator "The BYOND by BSI application allows me to complete my banking activities more quickly" statement found a mean value of 4.229, which indicates that the aspect of time efficiency is one of the main benefits felt by users in using the application.

Meanwhile, the indicator with the lowest average value is the statement that the BYOND by BSI application increases my effectiveness in conducting banking activities with a mean value of 4.138. Although it has the lowest value compared to other indicators, this result is still in the high assessment category, which describes that users generally still feel that the BYOND by BSI application is effective in improving the quality of banking activities. Another indicator, namely "The BYOND by BSI application makes it easier for me to conduct banking activities", obtained a mean value of 4.181, which further strengthens that ease of use is an important factor in the perception of application usefulness.

The results of the first hypothesis test (H1) show that the influence of perceived usefulness (X1) has a significant influence on satisfaction (Y). In line with previous research by Luo et al., (2024) conducted in 2024 in China regarding Digital Governance, it shows that the usefulness of a system influences satisfaction in e-government service users, stating that services can help, have uses, meet needs and increase efficiency which generates value for users in feeling satisfaction when they adopt e-Government services. Similar research by George & Sunny (2023) which examined the use of mobile wallets in 2022 in India, the study confirmed that mobile wallet users provide views regarding digital

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wallets that if they have user-friendly features, then it increases their usefulness, so that it is also continuous with the satisfaction felt by users.

Overall, the results of this analysis indicate that Perceived Usefulness is perceived very well by BYOND by BSI application users and is in accordance with the theory put forward. High perceptions of usefulness, both in terms of assistance with banking processes, time efficiency, improved quality, and ease of use, contribute to increasing user satisfaction levels. Thus, it can be concluded that Perceived Usefulness has a significant positive influence on satisfaction, so the hypothesis proposed in this study is declared accepted.

***Perceived Ease of Use*towards Satisfaction**

Based on the results of the descriptive analysis of the perceived ease of use variable, it is known that each indicator obtained a relatively high mean value, which describes the positive views of users towards the ease of use of the BYOND by BSI application. In the PEOU1 indicator, describing the statement that the BYOND by BSI application has a user-friendly display, the resulting figure is a mean value of 4.110. This value indicates that most respondents feel that the application display can be understood easily and is not confusing, so that the initial impression given is quite good when using the application, which ultimately can increase user satisfaction.

Furthermore, the PEOU2 indicator achieved a mean score of 4.005, indicating that the information presented and offered in the BYOND by BSI application is assessed as using simple and easy-to-understand language. The clear language and information presented facilitate user understanding of the available functions and services, enabling them to carry out banking activities without difficulty. This contributes to a sense of comfort and satisfaction in using the application.

The PEOU3 indicator, which describes the clarity and ease of finding the application menu, obtained a mean value of 3.886. Although this value is the lowest average compared to other indicators, it is still in the good category. This indicates that the overall menu layout of the BYOND by BSI application provides a fairly clear impression and is easy to find for users, although there is still room for improvement. Ease of access in the menu layout remains important in supporting a positive user experience and user satisfaction.

The PEOU4 indicator achieved the highest mean score of 4.167, indicating that respondents strongly agreed that the BYOND by BSI app is easy to use for daily banking activities. This ease of use across a variety of situations and transaction needs directly impacts user satisfaction, as the app supports practical and efficient banking activities without requiring excessive effort.

Finally, the PEOU5 indicator achieved a mean score of 4.005, indicating that the BYOND by BSI app is capable of assessing the ease of all banking activities, such as transfers, payments, purchases, balance inquiries, and information services. Easy access to various key features in one app makes users feel more supported and satisfied with the service provided.

The results of the second hypothesis test (H2) prove that the influence of perceived ease of use (X2) has a significant influence on satisfaction (Y). In line with previous research by Nigatu et al., (2023) conducted in 2023 in eastern Ethiopia, it also emphasized the ease of Automated Teller Machine (ATM) services, with the presence of user-friendly, easy-to-use and convenient technology, it will lead to user satisfaction,

In line with research by Ru-Zhue et al., (2025) on e-banking services in Thailand in 2025, the study explains that electronic banking users who perceive and view convenience as a benefit in supporting the achievement of their desired end goals will experience satisfaction based on their experience when using electronic banking.

Overall, the high mean scores for each perceived ease of use indicator indicate that the BYOND by BSI app is perceived as easy to use by its users. This ease of use positively impacts satisfaction levels, as users tend to feel more comfortable, efficient, and satisfied when interacting with an app that is easy to understand and operate.

***Perceived Security*towards Satisfaction**

Based on the results of the descriptive analysis of the perceived security variable, it is known

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that all indicators obtained a mean value in the high category, which indicates that users have a positive perception of the security level of the BYOND by BSI application. In the PS1 indicator, which states that users feel safe when making transactions using the BYOND by BSI application, the mean value obtained was 4.219. This value is the highest among all indicators and indicates that a sense of security when making transactions has been felt strongly by users. This sense of security is an important factor in forming satisfaction, because users tend to feel calm and confident when conducting banking activities through the application.

Furthermore, the PS2 indicator achieved a mean score of 4.171, indicating that respondents felt the BYOND by BSI app effectively protected their personal data. Perceived data protection increases user trust in the system, allowing users to feel comfortable storing and managing their banking information. This positively contributes to user satisfaction.

For indicator PS3, which relates to user confidence that the BYOND by BSI app is capable of protecting data from unauthorized access, the mean score was 4.052. This indicates that the majority of respondents believe the app's security system is capable of preventing data misuse. This trust is one of the factors supporting user satisfaction with digital banking services.

The PS4 indicator achieved a mean score of 4.110, indicating that the BYOND by BSI app is considered equipped with adequate security measures to protect users' personal and financial information. The presence of clear and adequate security mechanisms ensures users' protection, making them feel safer and more satisfied when using the app.

Furthermore, the PS5 indicator achieved a mean score of 4.186, indicating that users feel their privacy and transaction information are well protected by the BYOND by BSI app. Privacy protection is a crucial aspect of digital banking services, as it directly relates to user trust. The higher the perceived privacy protection, the higher the level of satisfaction.

Finally, the PS6 indicator achieved a mean score of 4.143, indicating that users perceive transaction security in the BYOND by BSI app as clear. The clarity of the transaction security system helps users understand the protection processes implemented, thereby increasing trust and satisfaction in using the app.

The results of the first hypothesis test (H3) prove that the influence of perceived security (X3) has a significant influence on satisfaction (Y). In line with previous research by Khatoon et al., (2020) related to the banking sector conducted in Qatar in 2020, the study explains that there is a level of satisfaction based on the level of user-friendliness, perceived benefits and also guaranteed security and data protection, In line with research by Monir & Hasan (2025) also researching cashless payments in 2025 in Bangladesh, the study strengthens its statement through the existing hypothesis, that there is evidence that users who feel safe and reliable when making cashless payments, it makes users tend to be satisfied with the security services received.

Overall, the high mean values for all perceived security indicators indicate that the BYOND by BSI application is perceived as having a good level of security by its users. This high perception of security indicates a positive relationship between perceived security and satisfaction, where the more secure an application is perceived by users, the higher the level of satisfaction felt in using the BYOND by BSI application.

***Perceived Enjoyment*towards Satisfaction**

Based on the results of the descriptive analysis of the perceived enjoyment variable, it is known that all indicators obtained mean values in the high category, which indicates that users feel a pleasant user experience when using the BYOND by BSI application. In indicator PE1, which states that users feel happy using the BYOND by BSI application, the mean value obtained is 4.224. This value is the highest among all indicators and indicates that feelings of pleasure are the dominant response felt by users, thus contributing directly to increasing levels of satisfaction.

Furthermore, the PE2 indicator achieved a mean value of 4.081, indicating that the BYOND by BSI app provides an engaging user experience. An engaging experience encourages users to continue using the app without feeling overwhelmed, creating a positive impression that impacts user satisfaction.

For indicator PE3, which relates to the enjoyment of banking using the BYOND by BSI app, the mean score was 4.067. This indicates that routine banking activities can be made more enjoyable through the app, resulting in greater comfort and satisfaction in conducting banking transactions.

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The PE4 indicator achieved a mean score of 4.119, indicating that using the BYOND by BSI app provides a positive user experience. This positive experience reflects that the app not only functions as a transaction tool but also provides added emotional value, which impacts user satisfaction levels.

Furthermore, the PE5 indicator achieved a mean value of 4.095, indicating that users felt comfortable interacting with the features available in the BYOND by BSI application. Convenience in interacting with the system is a crucial factor in shaping perceived enjoyment, as users who feel comfortable tend to have higher levels of satisfaction.

Finally, the PE6 indicator achieved a mean score of 3.986, the lowest compared to the other indicators, but still in the good category. This indicates that users find the BYOND by BSI app quite easy to use anytime and anywhere. This flexibility of use contributes to feelings of enjoyment and satisfaction in using the app.

The results of the first hypothesis test (H4) prove that the influence of perceived enjoyment (X4) has a significant influence on satisfaction (Y). In line with previous research conducted in 2025 in Vietnam by Ngo et al., (2025) emphasized the use of chatbot-based AI technology, which provides comfort and positive emotions to users, so that users feel satisfied and provide a good final evaluation after using AI Chatbots in their work. In line with research by Akter et al., (2024) conducted in 2024 in Bangladesh regarding e-commerce also provides information to strengthen the argument that users who make online-based purchases tend to be satisfied after using the online applications presented because the application provides an attractive navigation and interface role.

Overall, the high mean value for each perceived enjoyment indicator indicates that users experience pleasure, comfort, and a positive experience when using the BYOND by BSI application. This confirms the positive relationship between perceived enjoyment and satisfaction, where the higher the level of pleasure felt by users, the higher the level of satisfaction obtained in using the BYOND by BSI application.

Feature Design

As a form of implementation based on the proposal for this feature, the researcher created a Transaction Alert feature interface using the Figma application as below:

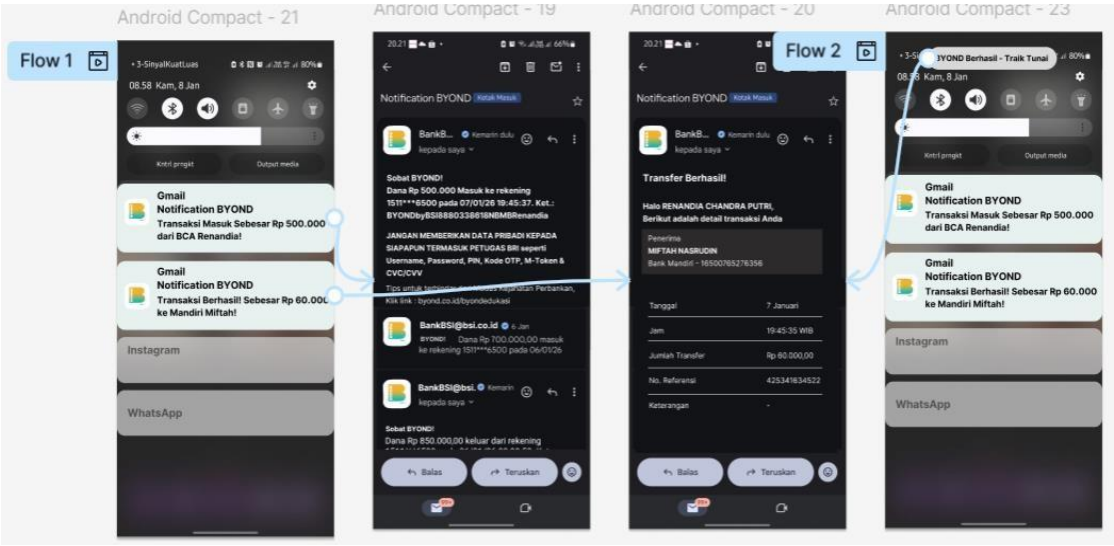

***Figure 2. Prototype Notification*BYOND Application by BSI**

Source: Processed by researchers (2026)

This prototype illustrates the workflow of transaction notifications, the notification message display in the form of incoming Gmail in the notification window, the designed prototype is presented in Figure 3 as a visual illustration of the proposed Notification feature. The work process begins when the user makes a transaction, is waiting for the transaction to come in or if the user makes a cardless cash withdrawal through an ATM machine, after the transaction process is successful, a notification in

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the form of a Gmail message will appear in the notification window of the user's smartphone screen.

Once the user acknowledges the notification, they will be immediately redirected to the email address on their smartphone linked to their BYOND by BSI digital banking account. This notification indicates that the transaction has been verified by the system and is considered successful.

Conclusion

This study found that perceived usefulness (X1), perceived ease of use (X2), perceived security (X3), and perceived enjoyment (X4) significantly and positively influence user satisfaction of the BYOND by BSI application in DKI Jakarta, with the highest path coefficient in perceived enjoyment (β=0.233; t=2.158; p=0.031) and the lowest in perceived ease of use (β=0.206; t=2.111; p=0.035), as well as a strong explanatory model (adjusted R^2=0.596; Q^2=0.544). The measurement model was valid (AVE>0.5; HTMT<0.90; CR>0.90; VIF<5.0), confirming consistency and discrimination between variables in 230 urban respondents dominated by Gen Y (48.3%) and women (60%). This finding strengthens the hybrid TAM with affective factors in the context of post-rebranding Islamic mobile banking, addressing the research gap on the simultaneous influence of these factors amidst actual technical complaints.

Despite its theoretical and practical contributions with recommendations for UX and security optimization, limitations of this study include its cross-sectional design, which limits long-term causality, its exclusive focus on DKI Jakarta (lacking national generalizability), and the absence of moderating variables such as digital literacy or trust. Further research is recommended to adopt a longitudinal design, expand the multiregional sample, and integrate external factors (f-context) for an R^2>70%. Practically, BSI can prioritize improving menu navigation (PEOU3), access flexibility (PE6), and real-time notifications for user retention in the increasingly competitive Islamic digital banking environment.

References

Aji, H. M., Nadhila, V., & Sanny, L. (2022). The role of perceived security and trust in mobile banking adoption in Indonesia. *International Journal of Bank Marketing*, 40(5), 1023–1041.

Akter, S., Bandara, R., Hani, U., Wamba, S. F., Foropon, C., & Papadopoulos, T. (2024). Analytics-based decision-making for service systems: A qualitative study and agenda for future research. *International Journal of Information Management*, 64, 102–118.

Amin, H., Rahman, A. R. A., & Razak, D. A. (2023). Consumer acceptance of Islamic mobile banking: An extension of the technology acceptance model. *Journal of Islamic Marketing*, 14(3), 789–808.

Amnas, A., Fauzi, A., & Putra, R. (2025). Customer dissatisfaction in Islamic digital banking services: Evidence from Indonesia. *Journal of Islamic Financial Studies*, 11(1), 45–60.

Antoni, D., Jie, F., & Abareshi, A. (2024). The impact of perceived ease of use on system effectiveness in digital services. *Journal of Enterprise Information Management*, 37(2), 455–472.

Asosiasi Penyelenggara Jasa Internet Indonesia. (2025). *Laporan survei penetrasi internet Indonesia 2025*. APJII.

Chin, W. W., Marcolin, B. L., & Newsted, P. R. (2021). A partial least squares latent variable modeling approach for measuring interaction effects. *Information Systems Research*, 32(1), 189–217.

Choi, Y. (2020). Understanding user acceptance of mobile banking: An empirical study. *Journal of Business Research*, 109, 384–394.

Dasmawih, D. (2023). Urban mobility and economic dynamics in Jakarta metropolitan area. *Journal of Urban Affairs*, 45(6), 1123–1140.

Emzir. (2021). *Metodologi penelitian pendidikan: Kuantitatif dan kualitatif*. Rajawali Pers.

Faiz, M. T., Rahman, M. S., & Hossain, M. A. (2024). Perceived enjoyment and customer satisfaction in Islamic banking services. *Journal of Islamic Marketing*, 15(1), 210–225.

Faisal, M. (2025). Digital banking flexibility and its impact on customer experience. *Journal of Digital Banking*, 9(2), 150–165.

Fianto, A. Y. A., Gan, C., Hu, B., & Roudaki, J. (2021). Customer satisfaction in mobile banking: The role of user experience. *Journal of Retailing and Consumer Services*, 60, 102–115.

George, A., & Sunny, P. (2023). Developing a research model for mobile wallet adoption. *International*

https://doi.org/10.61536/escalate.v4i2.491

Journal of Bank Marketing, 41(2), 345–365.
Goyal, S., Sergi, B. S., & Esposito, M. (2025). Digital transformation in financial services: Trends and implications. *Technological Forecasting and Social Change*, 198, 122–140.
Gupta, K., & Arora, N. (2023). Investigating consumer adoption of fintech services. *Computers in Human Behavior*, 139, 107–124.
Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2017). *A primer on partial least squares structural equation modeling (PLS-SEM)* (2nd ed.). Sage.
Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2021). *A primer on partial least squares structural equation modeling (PLS-SEM)* (3rd ed.). Sage.
Handayani, T., & Anitasari, M. (2022). Gender differences in financial inclusion: Evidence from Indonesia. *Journal of Economics and Finance*, 46(3), 567–580.
Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity. *Journal of the Academy of Marketing Science*, 43(1), 115–135.
Hussain, M., Shah, S. Z. A., & Akhtar, S. (2022). Determinants of Islamic mobile banking adoption. *Journal of Islamic Marketing*, 13(4), 1005–1023.
International Telecommunication Union. (2023). *Measuring digital development: Facts and figures 2023*. ITU.
Kharisma, A. (2025). Research gaps in Islamic fintech adoption studies. *Journal of Islamic Economics*, 17(1), 89–102.
Khemchai, S. (2025). Likert scale design in behavioral research. *Social Science Research Review*, 12(2), 77–91.
Khatoon, S., Zhengliang, X., & Hussain, H. (2020). The role of customer satisfaction in banking. *International Journal of Bank Marketing*, 38(5), 102–120.
Kumalasari, D., & Permanasari, A. (2022). Customer loyalty in digital banking services. *Journal of Marketing Analytics*, 10(3), 211–225.
Luo, X., Zhang, J., & Duan, W. (2024). Digital governance and citizen satisfaction. *Government Information Quarterly*, 41(1), 101–115.
Mahrani, R., & Harahap, D. A. (2025). Innovation of Islamic digital banking services in Indonesia. *Journal of Islamic Banking and Finance*, 13(2), 88–104.
Marco, R., Suryanto, T., & Nugroho, A. (2024). Efficiency of mobile banking transactions. *Journal of Financial Technology*, 8(1), 55–70.
Monir, M. R., & Hasan, M. (2025). Customer satisfaction in cashless payments. *Journal of Financial Innovation*, 11(2), 133–148.
Nigatu, G., Tadesse, F., & Alemu, A. (2023). ATM service quality and customer satisfaction. *African Journal of Business Management*, 17(4), 98–110.
Nunnally, J. C. (1978). *Psychometric theory* (2nd ed.). McGraw-Hill.
Ngo, L. V., Nguyen, T. H., & Tran, Q. T. (2025). AI chatbot adoption and user satisfaction. *Journal of Business Research*, 180, 114–128.
Pitaloka, D., Sari, R., & Putri, N. (2024). Data security and user trust in fintech. *Journal of Cybersecurity*, 10(1), 1–15.
Rahman, F., Hidayat, T., & Kusuma, D. (2024). Customer complaints in mobile banking applications. *Journal of Digital Services*, 6(2), 77–90.
Resyita, N., Putra, A., & Lestari, S. (2024). User interface design and navigation experience. *Journal of UX Design*, 5(1), 25–39.
Ru-Zhue, L., Chen, Y., & Wang, T. (2025). E-banking service quality and satisfaction. *Asian Journal of Business Research*, 15(1), 66–82.
Sebayang, R., Sihotang, H., & Manurung, J. (2024). Demographic analysis of mobile banking users. *Journal of Economic Studies*, 51(2), 300–315.
Sharma, P., & Kaur, G. (2025). Mobile banking usage behavior. *International Journal of Consumer Studies*, 49(1), 88–102.
Sudaryono. (2020). *Metode penelitian kuantitatif*. Prenada Media.
Sugiyono. (2017). *Statistika untuk penelitian*. Alfabeta.

https://doi.org/10.61536/escalate.v4i2.491

Sugiyono. (2019). *Metode penelitian kuantitatif, kualitatif, dan R&D*. Alfabeta.
Tanjung, H., Lubis, M., & Siregar, R. (2024). Operational efficiency in digital banking. *Journal of Banking Operations*, 9(1), 44–59.
Tursinah, L., Pratama, A., & Dewi, S. (2024). Security systems in mobile banking. *Journal of Information Security*, 15(2), 120–135.
Veonnita, S., & Rojuaniah, R. (2022). Digital transformation and societal change. *Journal of Social Science Studies*, 9(3), 210–225.
Wandira, R., Hidayat, A., & Yusuf, M. (2024). Measurement adaptation in Islamic banking research. *Journal of Islamic Studies*, 18(2), 140–155.
Witjaksono, A., Firmansyah, D., & Kurniawan, B. (2024). Customer satisfaction in mobile banking apps. *Journal of Service Management*, 35(4), 512–528.
Yu, H., Zhao, Y., & Li, X. (2024). Statistical modeling in fintech research. *Journal of Data Science*, 22(1), 75–90.
Zuhra, N. (2025). Challenges in Islamic digital banking adoption. *Journal of Islamic Finance Studies*, 12(1), 33–47.

https://doi.org/10.61536/escalate.v4i2.491