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Transformation of Financial Performance in Islamic Banking through Digital Transformation and Smart Services

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Abstract

Digitalization and artificial intelligence (AI) are transforming retail banking, but evidence on how they affect the financial performance of Islamic banks, especially through customer mechanisms, remains limited. This study examines the impact of digitalization, AI, and service quality on customers' perceived financial performance, acting as parallel intermediaries of customer satisfaction and understanding. A cross-sectional survey was conducted among 120 customers of Islamic banks in Medan, Indonesia, selected from a specific sample (active users of digital services interacting with AI capabilities over the past six months). The data was analyzed using SEM-PLS. The measurement model met standard quality criteria (convergence and discriminatory validity; reliability), while the structural model showed good compliance (SRMR = 0.07) and predictive relevance ($Q^2 > 0$). The model explained the significant variance (R^2: satisfaction = 0.431, knowledge = 0.441, perceived financial return = 0.760). Digitalization, artificial intelligence, and service quality have had a positive impact on satisfaction and knowledge, which in turn has improved the perception of customer financial performance; Both mediators showed significant indirect effects. These results show that robust digital channels and AI capabilities, with consistent service quality and effective customer training, increase satisfaction and awareness – key ways in which customers perceive their Islamic bank's best financial results. Practical implications and directions for future research are discussed.

Keywords: digitalization; artificial intelligence; quality of service; customer satisfaction; customer knowledge; financial indicators perceived by the client; Islamic banks.

Introduction

The development of information technology over the past decade has led to significant changes in the global banking sector, including Islamic banking in Indonesia. Digitalization is a strategic necessity that not only improves operational efficiency but also improves the quality of service and expands customer reach. In this context, digital banking is the main tool for enhancing the competitiveness of Shariah banks (Alwi et al., 2023; Kotler et al., 2021). A report by the Financial Services Authority (OJK, 2023) shows that the trend of adopting Islamic banking services in Indonesia continues to grow, especially in urban areas such as the city of Medan.

In addition to digitalization, the introduction of artificial intelligence (AI) is also widely accepted by Islamic banks to improve the customer experience. AI is used in various forms, such as chatbots, product recommendation systems, or real-time risk analysis for customers (Biswas et al., 2020; Draganov et al., 2020) A study by Putra and Rachmawati, 2022, shows that the use of AI in the Indonesian banking sector can speed up the service process, improve the accuracy of information, and offer customers a more personalized service experience. However, technology alone is not enough. The quality of service remains a key factor in increasing customer loyalty and satisfaction in Islamic banks. The concept of service quality in the context of Islamic banking includes not only physical measurements and reliability, but also aspects of Sharia compliance (Melewar et al., 2021; Parasuraman et al., 1988). (Mut Takin et al., 2022) noted in their study that customer confidence in Islamic banks strongly depends on the perception of the quality of services provided, including their adequacy with Islamic values.

Customer satisfaction is one of the key intermediate variables related to digitalization, artificial intelligence, service quality, and banking performance. The customer satisfaction theory developed by Oliver (1997) states that satisfaction is the result of the cognitive and affective evaluation that customers take in favor of their experience. A study by Fariha and Setiawan (2020) shows that in the context of Islamic banks in Indonesia, customer satisfaction has a positive impact on improving a bank's financial performance.

In addition to customer satisfaction, customer knowledge also plays an important role in strengthening the link between service quality and banking efficiency. Customers who have a good understanding of the products, processes, benefits, and risks of Islamic banking tend to be more loyal and transact more (H. Ahmed, 2023; Gozali, 2021). A study by Adinugraha, Shulhoni et al. (2023) also confirms that good Islamic financial education among clients can improve the positive perception of Islamic banks. While many studies have examined the impact of digitalization, artificial intelligence, and quality of service on banking, most continue to focus on traditional banks or analyze only the direct impact between variables, without considering the intermediary role of customer satisfaction and knowledge (Adinugraha, Shulhoni et al., 2023; Rashid et al., 2020). In addition, research on Islamic banks outside of Yawana Island, such as in the city of Medan, remains limited.

Based on this context, this study aims to analyze the impact of digitalization, artificial intelligence, and service quality on the financial efficiency of Islamic banks, with the role of

transferring customer satisfaction and customer knowledge, based on a study of customers of Shariah commercial banks in the city of Medan.

This study advances Islamic retail literature in four ways. First, it **conceptually separates** *digitalization* (channel preparation/functionality) from **AI capabilities** (data-driven, conversational, personalized, and risk analysis capabilities) and implements them through **non-overlapping reflective** indicators, eliminating the recurring measurement error in previous work. **tested a parallel mechanism of dual intermediation** – through **customer satisfaction and knowledge**, rather than through the usual approach alone – to clearly *show how* investments in digital and artificial intelligence will lead to results. Third, it looks at **the quality of Islamic banking,** including the **importance of** Sharia, along with the main aspects of SERVQUAL. Fourth, it links these precursors to **perceived customer financial performance**, providing a reasonably reasonable but understudied outcome that reflects an integrated assessment of customer banking. Using SEM–PLS, the model demonstrates significant explainable variation, offering both **conceptual clarity and governance functions** (channels, AI capability development, and customer training).

LITERATURE REVIEW, FOLLOWED BY A HYPOTHESIS

Digitization of Shariah Banking Services

Digitization of Islamic banking is the process of digitalization in various areas of Islamic banking and services, from transactions to product information and customer relationship management. Digitalization allows banks to provide easy access to banking services anytime, anywhere, with more efficient transaction costs (Alwi et al., 2023). In the era of Industrial Revolution 4.0, digital banking is one of the keys to improving the quality of services, expanding market penetration, and strengthening the competitiveness of Islamic financial institutions amid high consumer demand for technology services (Putra & Rachmawati, 2022). The introduction of digital banking in Islamic banks includes various features such as mobile banking, internet banking, and other electronic transaction services that support Islamic financial inclusion.

Recent studies show that digitalization affects not only operational aspects but also has strategic implications for customer satisfaction and financial performance of banks (A. Alshehri, 2024). Customers who experience the convenience and speed of digital services tend to have higher levels of satisfaction, which ultimately has a positive impact on bank loyalty and profitability (H. Ahmed, 2023). According to Rashid et al. (2020), the success of implementing digital banking in the context of Islamic banking will largely depend on the level of technological adoption by customers and the quality of digital services provided by banks.

Artificial Intelligence (AI) in Shariah Banking

Artificial intelligence (AI) in Islamic banking refers to the use of intelligent systems capable of automatically processing data to deliver services to customers quickly, accurately, and in a personalized way (Biswas et al., 2020). This technology is used in a variety of forms, including chatbots, predator advisors, fraud detection systems, and personalized product

recommendations. According to (Draganov et al., 2020), AI can speed up the response of services and reduce the number of customer complaints.

A study by Putra and Rachmawati (2022) shows that the use of AI in Islamic banks can increase customer satisfaction by providing quick solutions to customer complaints and questions. In addition, AI technologies can increase customer awareness through digital educational features available in Sharia bank apps (H. M. Ahmed, 2023).

Quality of Sharia services

The quality of Shariah services is an important aspect of building long-term relationships between banks and customers. In the context of Islamic banking, the quality of service includes not only physical aspects and reliability, but also compliance with Sharia principles (Melewar et al., 2021). The main indicators of service quality include tangible goods, reliability, responsiveness, and Sharia compliance (Muttakin et al., 2022). A study by Farihi and Setiawan (2020) showed that the quality of services significantly affects the customer satisfaction of Islamic banks in Indonesia. In addition, the quality of service can increase the customer's knowledge of Islamic bank products and processes (H. Ahmed, 2023). Thanks to good interaction with the service, customers are more aware of the benefits and risks of the products they use.

Customer satisfaction

Customer satisfaction describes the extent to which customers receive positive feedback from Shariah banks (Oliver 1997). Factors such as quality of service, ease of digital access, and artificial intelligence technologies are the main factors that affect customer satisfaction (Putra & Rachmawati, 2022). High satisfaction contributes to customer loyalty and increases the potential contribution to the financial efficiency of the bank. (H. M. Ahmed, 2023; A. F. Alshehri, 2024b) notes that satisfied customers tend to make transactions more often, establish relationships with banks, and recommend services to other parties. In this context, customer satisfaction has a strategic impact on improving the financial performance of Islamic banks.

Customer Knowledge

A customer's knowledge of Islamic banking products and services is an important factor influencing their financial decisions. This knowledge includes an understanding of product characteristics, benefits, risks, and available service processes (Ghozali, 2021). Studies by Adinugraha, Shulhoni et al. (2023) show that customer knowledge can strengthen the link between service quality and banking efficiency. In addition, H. Ahmed (2023) found that customer knowledge can increase their engagement in active banking use of Islamic banking services. The more knowledge of the client, the greater his potential contribution to the financial efficiency of the bank.

Financial performance of Shariah banks

The financial performance of Islamic banks reflects the bank's success in managing resources, improving profitability, and maintaining financial stability in accordance with Sharia

principles (A. F. Alshehri, 2024a). Measures of financial performance in this context include perceptions of profitability, financial stability, asset growth, and customer-centric financial perceptions (Sutjipto & Hadi, 2024). Within the framework of this study, measurements are carried out on the basis of customers' perception of the bank's financial performance. According to Farihah and Setiawan (2020), increasing customer satisfaction and awareness of Islamic banking products has a positive impact on the bank's financial performance. Research (Adinugraha, Alamsyah et al., 2023) also confirms that digitalization and AI adoption can indirectly improve the financial performance of Islamic banks by improving the quality of customer relationships.

Frame concept

To explain the relationship between the variables of this study, a conceptual framework is presented below describing the impact of digitalization, artificial intelligence, and quality of service on the financial performance of Islamic banks that ensure customer satisfaction and knowledge.

Based on the previously described literature review and conceptual framework, this study puts forward several hypotheses related to the impact of digitalization and artificial intelligence on financial performance, with the intermediary role of customer satisfaction. The formulation of this hypothesis is based on the theories and empirical results of several previous studies.

A) Digitalization has a positive impact on customer satisfaction
B) Artificial intelligence has a positive impact on customer satisfaction
C) The quality of service has a positive effect on customer satisfaction
D) Digitalization has a positive impact on customer knowledge
E) Artificial intelligence has a positive impact on customer knowledge
F) Quality of service has a positive impact on customer knowledge
G) Customer satisfaction has a positive impact on financial performance
H) Customer Understanding Has a Positive Impact on Financial Performance
I) Customer satisfaction is a key factor in the link between digitalization and financial performance
J) Customer satisfaction is a key factor in the relationship between artificial intelligence and financial performance
K) Customer satisfaction is a key factor in the relationship between service quality and financial performance
L) Customer knowledge is essential to convey the link between digitalization and financial performance
M) Customer knowledge is critical to convey the connection between artificial intelligence and financial performance. Customer knowledge reflects the relationship between service quality and financial performance.

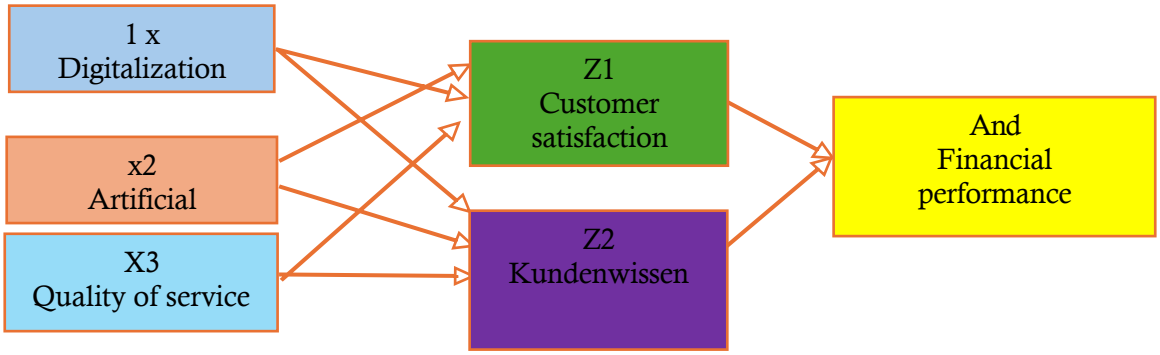


Figure 1. Conceptual Framework

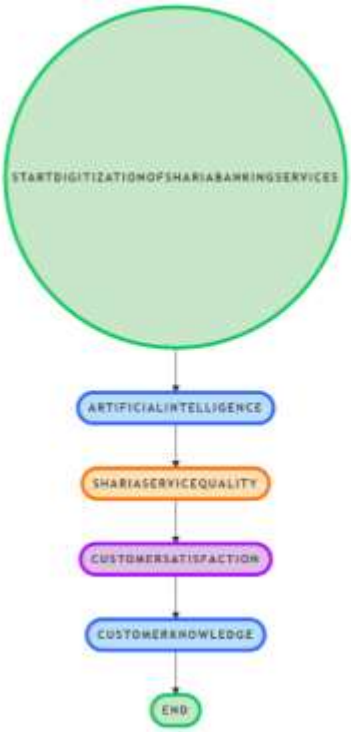
METHODS

This study uses a quantitative approach with a causal system to test the impact of the digitalization of Islamic banking services, artificial intelligence (AI), and service quality on the financial performance of Islamic banks, using customer satisfaction and knowledge as intermediate variables. This study involves customers of Sharia commercial banks in the city of Medan who have been actively using digital and AI banking services in the past six months. The selection of three banks, namely Bank Syariah Indonesia (BSI), Bank Muamalat Indonesia and Bank Mega Syariah, is based on the high level of adoption of digital and artificial intelligence services in the city of Medan, as well as the large number of Islamic banking customers, according to data (Otoritas Jasa Keuangan, 2023) and Shariah banking statistics (OJK, 2023).

Sampling was conducted using directed sampling methods, with a total of 120 respondents participating. This number meets the minimum requirements of a structural least-squares partial (SEM-PLS) modeling analysis based on the "rule of 10 multiples" (Hair et al., 2019). Data were collected using an online questionnaire with a five-point Likert scale (1 = very different from 5 = strongly agree), a total of 72 indicators, organized by study variables. The sample size (N = 120) in this study is sufficient and reliable for SEM–PLS analysis. First, the prior power analysis for multiple regressions with a maximum of five predictors, $\alpha = 0.05$, and a mean effect ($f^2 = 0.15$), shows a minimum sample of about N ≈ 92; therefore, N = 120 exceeds the recommended threshold. Second, the strength of the model is reflected in the high endogenous values of R^2 – Z1 = 0.431 and Z2 = 0.441 (corresponding to Cohen's $f^2 \approx$ 0.76–0.79, large effects) and Y = 0.760 ($f^2 \approx 3.17$, very large) – which implies a > degree of 0.99 for basic trajectory tests (note: this post-factual assessment does not supplement or replace a priori analysis). Third, in terms of PLS-SEM practice, N = 120 meets the requirements of bootstrap stability (e.g., 5,000 resamples) and confidently exceeds the lower bound of the "10x rule" (10 × the number of arrows pointing to the most complex endogenous construct), minimizing the risk of unstable estimates and bias associated with collinearity. Together, a priori reasoning, explanatory power of the model (R^2), and adherence to PLS best practices confirm that the sample size is good and powerful enough to identify effects of theoretical and practical significance.

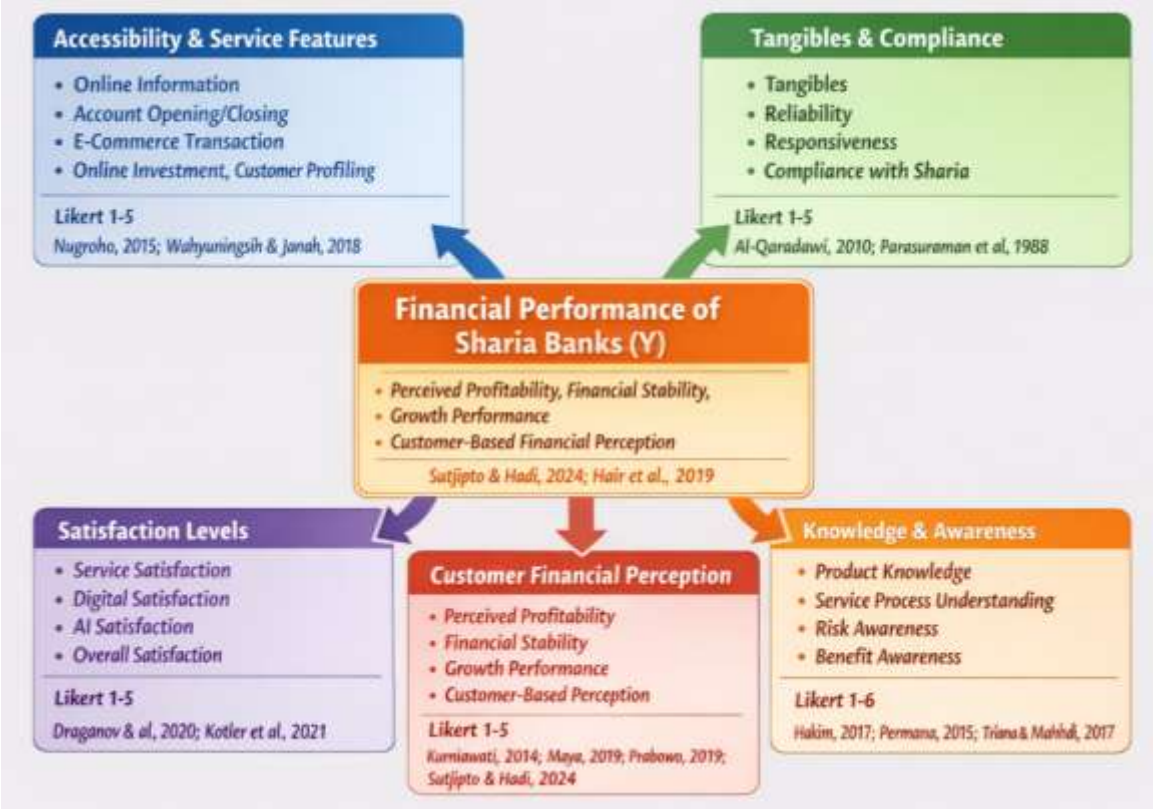
To facilitate measurement and data analysis, each variable in this study is described in an operational definition consisting of independent, mediated, and dependent variables. Operational definitions of these variables are based on relevant theories and previous research. Full details of the operational definition of each variable are provided in Table 1 below:

Table 1. Real-time definition of exploratory variables



Banking services improve access, security, and customer service through internet banking and mobile banking. The use of artificial intelligence in banking services is aimed at improving the convenience, accuracy, and personalization of customer interactions. The customer's perception of the quality of Islamic banking services includes physical aspects, reliability, efficiency, and compliance with Sharia principles.

The level of customer satisfaction with the quality of service, digital convenience, and AI services in Islamic banks. Customers' understanding of Islamic banking products, service processes, risks, and rewards remains relatively low to moderate, depending on financial literacy, product knowledge, quality of service, and religiosity.



Source: Secondary Data Processed, 2025

In addition, data were analyzed using the SEM-PLS method using SmartPL software, with testing steps involving evaluation of the external model (convergent validity, reliability, and discriminatory validity) and internal model (R^2 test, path coefficient, path significance, effect size (f^2), and predictive relevance (Q^2)).**RESULTS**

Evaluation of the external model (***measurement model***): **validity and reliability check**
Convergent validity is part of the measurement model in SEM-PLS known as the external model, whereas in SEM, based on covariance, it is called confirmatory factor analysis (CFA). The test for the convergence of validity was carried out according to two main criteria: the value of the load factor greater than 0.7 and a significant p-value (<0.05). However, for new questionnaires, the load often does not reach 0.7, so values between 0.40 and 0.70 can still be accounted for by analyzing their effect on mean dispersion recovery (AVE) and composite reliability. Indicators with loads below 0.40 should be removed, and indicators with loads of 0.40-0.70 should be removed only if removing them improves AVE (at least 0.50) and connection reliability (at least 0.7). In addition, the decision to retain low load indicators should take into account their contribution to the reliability of the design content. The external voltage values for each indicator are shown in Table 2.

Table 2. External Load-Based Validity Testing

	Artificial Intelligence (x2)	Client Knowledge (Z2)	Client Satisfaction (Z1)	Digitizing (X1)	Finance Degree (Y)	Service Quality (x3)
X1.1				0,1810		
X1.2				0,1891		
X1.3				0,7002		
X1.4				0,2928		
X2.1	0,821					
X2.2	0,816					
X2.3	0,827					
X2.4	0,830					
X2.5	0,821					
X3.1						**0,822**
X3.2						**0,837**
X3.3						**0,817**
X3.4						**0,821**
Y1					0,817	
Y2					0,821	
Y3					0,825	
Y4					0,816	
Z1.1			0,829			
Z1.2			0,999			
Z1.3			0,818			
Z1.4			0,827			
Z2.1		0,841				
Z2.2		0,814				
Z2.3		0,833				
Z2.4		**0,849**				

Source: primary data, processed, 2025

Table 2 shows that the results of the convergent validity test based on the external load value show that all indicators of each design have a load value greater than 0.7. This shows that all indicators contribute significantly to the measurement of the corresponding latent variables. The highest load value is reached by the Z2.4 (Know Your Customer) indicator at 0.949, and the minimum load value is Z1.2 (Customer Satisfaction) of 0.899, but it is still higher than the minimum threshold of 0.7. Therefore, all *indicators of the AI Islamic Banking* Service Quality Model are declared to meet the criteria of convergent validity so that they can continue in the next stage of the analysis.

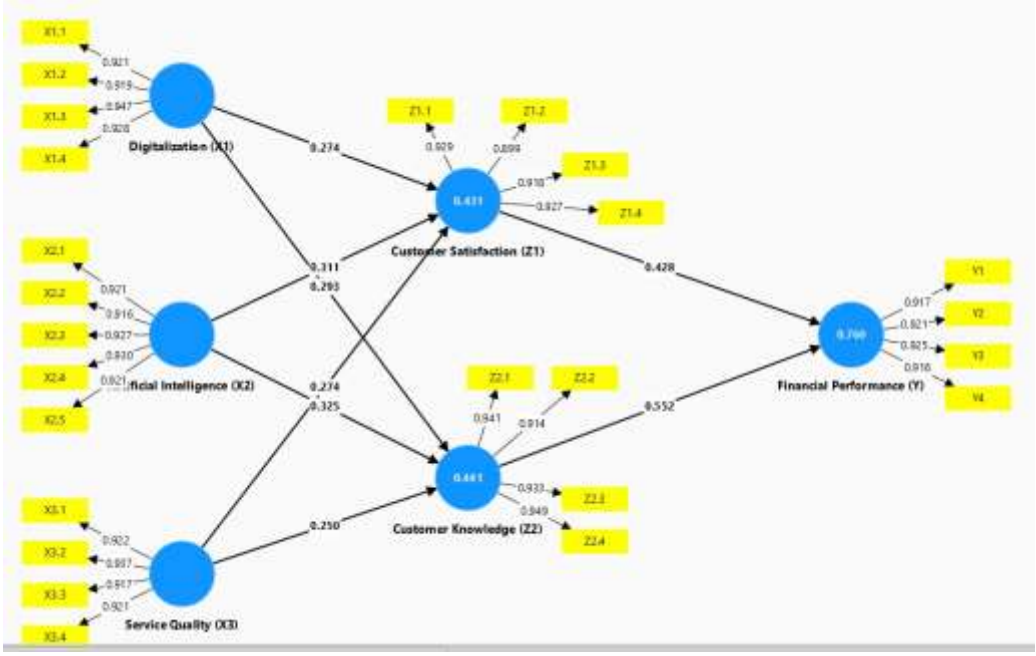


Figure 2. External stress-based confidence tests

According to the external load validity test in Figure 2, all external load values are known as 0.7 >, which means that they met the validity requirements based on the *external load value*. In addition, validity tests were performed based on *the average value extracted by dispersion* (AVE).

Table 3. Validity Tests Based on Extracted Mean Variance (AVE)

	Average Extracted Dispersion (AVE)	Square root of AVE
Artificial Intelligence (x2)	0,952	**0.823**
Know Your Customer (Z2)	0,973	**0.834**
Customer Satisfaction (Z1)	0,944	**0.819**
Digitizing (X1)	0,963	**0.829**
Financial Performance (J)	0,945	**0.819**
Quality of Service (X3)	**0,955**	**0.825**

Source: primary data, processed, 2025

Table 3. The results of the Mean Extracted Dispersion (AVE) test showed that all designs in this study had an AVE value greater than 0.5, ranging from 0.844 to 0.873. This shows that each construct can explain more than 50% of the variance of its indicators and therefore meets the convergent validity criteria. The highest AVE score was on the Customer Knowledge variable (Z2) at 0.873, and the lowest score was on customer satisfaction (Z1) at 0.844, but well above the minimum score of 0.5. Thus, all structures in the model can be recognized as valid convergents.

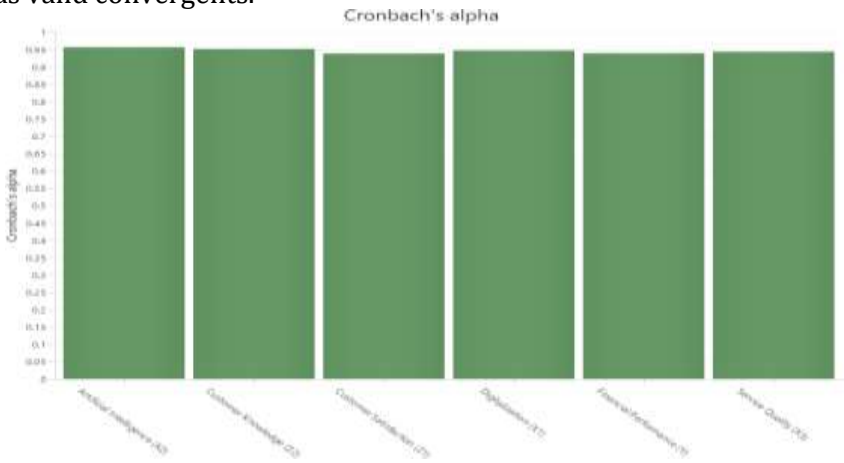


Figure 3. Cronbach reliability based on Alpha (CA)

Figure 3. Indicates that the recommended CA value is greater than 0.7. All CA values are known > 0.7, which means that they met the reliability requirements based on the Cronbach alpha version. Subsequently, a discriminative validity test was carried out using the Fornell-Larker approach. Table 4. The results of the discriminating validity test are presented.

Table 4. Discriminant Confidence Tests: Fornell and Larker

(X2)	(Z2)	(Z1)		(Y)	(X3)
Artificial Exploration (0,923)					
(X2)					
Client Knowledge 0,524	(0,834)				
(Z2)					
Client Satisfaction 0,512	0,676	(0,818)			
(Z1)					
Digitalization 0,370	0,611	0,597	(0,829)		
Finance Features 0,641	0,899	0,846	0,843	(0,519)	
(Y)					
Service 0,364	0,583	0,596	0,495	0,452	(0,824)

Source: primary data, processed, 2025

Table 4. The results of a discriminatory validity test using the Fornell-Larker test showed that the square root value of AVE (shown in the diagonal square brackets of the table) exceeded the correlation between other constructs for each construct. For example, the root value of AVE for artificial intelligence (X2) is 0.923, which is higher than the correlation with other constructs, such as customer knowledge (0.524) and customer satisfaction (0.512). The same goes for all other variables. Thus, all constructs in this exploratory model are declared to meet the criteria of discriminatory validity, which means that each construct may differ from the other constructs in the model.

Table 5. HTMT Discriminant Validity Test

	Artificial Intelligence (x2)	Know Your Customer (Z2)	Customer Satisfaction (Z1)	Digitizing (X1)	Financial Performance (J)
Know Your Customer (Z2)	0,646				
Customer Satisfaction (Z1)	0,640	0,710			
Digitizing (X1)	0,489	0,638	0,626		
Financial Performance (J)	0,776	0,944	0,893	0,780	
Quality of Service (X3)	**0,482**	**0,609**	**0,625**	**0,518**	**0,793**

Source: primary data, processed, 2025

The results of the heterorate-monorecognition (HTMT) discriminant validity test, as shown in Table 5, show that all HTMT cross-engineering values are below the maximum threshold of 0.90 according to the criteria proposed by Henseler et al. (2015). The HTMT score between Artificial Intelligence (X2) and Customer Insight (Z2) is 0.546, and between Customer Satisfaction (Z1) and Financial Performance (Y) is 0.793, which is below the critical score of 0.90. Thus, it can be concluded that each model design is clearly different from the others and meets the requirements of discriminatory validity according to the HTMT test. These results confirm the previous results of the Fornell-Larker test, which show that the research model is good at distinguishing latent variables.

Impact Significance Test (Bootstrapping) (Hypothesis Test) (Internal Model)

After evaluating the measurement model, the next step is to verify the relationship between the latent variables in the internal model by analyzing the trajectory coefficients using the bootstrap method. This test aims to determine the importance of direct influence between variables in an exploratory model. The main parameters* that are taken into account are the original sample value (O), the T-statistic, and the p-value. The relationship is considered significant if the t-value > 1.96 and the p-value < 0.05. The results of the significance test for

the impact of the variables in this model are summarized in Table 6 below:

Table 6. Test Path Factor and Significance Effect

(O)		(M)	(STDEV)	V|)	
Digitalization (X1) > customer 4	0,27	0,370	0,185	4,227	0,001
Artificial Intelligence (X2) > 1	0,31	0,211	0,386	4,615	0,000
Customer Quality of Service (X3) > 4	0,27	0,465	0,390	4,054	0,002
Digitalization (X1) > customer 3	0,29	0,399	0,289	4,280	0,001
Artificial Intelligence (X2) > 5	0,32	0,427	0,395	4,418	0,001
Customer Quality of Service (X3) > 0	0,25	0,539	0,400	3,483	0,013
Customer Satisfaction (Z1)-> 8	0,42	0,422	0,117	3,671	0,000
Know Your Customer (Z2)-> 2	0,55	0,558	0,113	4,873	0,000

Source: primary data, processed, 2025

Table 6 shows that all the pathways of influence between latent variables in the model show statistically significant results, since the total value of the T statistic is greater than 1.96 and the value of p is less than 0.05. For example, digitalization (X1) has a significant impact on customer satisfaction (Z1) at T = 3.227 and p = 0.001, as does artificial intelligence (X2) on customer satisfaction (Z1) (T = 3.615; p = 0.000) and quality of service (X3) on customer satisfaction (Z1) (T = 3.054; p = 0.002).

In addition, a significant impact of customer satisfaction (Z1) and customer knowledge (Z2) on financial performance (Y) was shown, with statistical T-scores of 3,688 and 5,588, respectively. These results show that all the proposed research hypotheses are acceptable and provide empirical confirmation of the relationships between the variables in the model.

In addition to examining the direct impact between variables, this study also analyzed the intermediary role of customer satisfaction (Z1) and customer knowledge (Z2) in the relationship between exogenous variables (digitalization (X1), artificial intelligence (X2), and quality of service (X3)) and financial performance (Y). This mediation test was conducted using bootstrapping techniques to obtain a meaningful assessment of the indirect effect. The significance criteria used were identical to those of the previous hypothesis: a T-statistic of >

1.96 and a p-value of < 0.05. The results of the mediation test are shown in Table 7 below:

Table 7. Mediation testing

	Original text in Sample (O)	Example Medium (M)	Standard Deviation (STDEV)	T-Stats (|O/STDEV|)	P Values
Digitalization (X1) - > Customer Satisfaction (Z1) - > Finance	0,217	0,219	0,154	3,181	**0,040**
Degree (Y)					
Artificial Intelligence (X2) – Client > Satisfaction (Z1) - > Finance	0,233	0,232	0,156	3,389	**0,027**
Degree (Y)					
Customer Quality of Service (X3) > Satisfaction (Z1) - > Finance	0,217	0,216	0,159	2,995	**0,057**
Degree (Y)					
Digitalization (X1) > customer Knowledge (Z2)-> Finance	0,262	0,269	0,166	3,433	**0,035**
Degree (Y)					

Source: primary data, processed, 2025

According to the results presented in Table 7, it can be seen that all mediated test pathways showed statistically significant results. For example, digitalization (X1) has a significant impact on financial performance (Y) through customer satisfaction (Z1), with a value of T = 2.181 and p = 0.030. Similarly, the impact of artificial intelligence (X2) and quality of service (X3) on financial performance (Y) is largely reflected in customer satisfaction (Z1).

In addition, Know Your Customer (Z2) has also proven to be an important intermediary in the relationship between digitalization (X1), artificial intelligence (X2), service quality (X3), and financial performance (Y). All mediation channels have a T-value of more than 1.96 and a p-value of less than 0.05, so it can be concluded that customer satisfaction and knowledge play an important role in communicating the impact of exogenous variables on the financial performance of Islamic banks.

According to the R-squared coefficient test, this model is known for its fairly high ability to explain endogenous variables. The R-squared value (R^2) is shown in Table 8 below:

Table 8. R squared

Variable endogenous	R-Square
Customer Satisfaction (Z1)	0,531
Know Your Customer (Z2)	0,541
Financial Performance (J)	0,860

Source: primary data, processed, 2025

Table 8. The R^2 rating shows that 43.1% of the differences in customer satisfaction are explained by digitalization, artificial intelligence, and customer experience. At the same time, 44.1% of the differences in customer knowledge were explained by these three variables. The variation of 76% in the financial performance of Islamic banks (Y) is explained by customer satisfaction and knowledge, which demonstrates the power of a good model.

In addition, the results of the Q-squared (Q^2) test show that the entire endogenous construct has a positive Q^2 value, which means the predictive value of the model. The full value can be seen in Table 9 below:

Table 9. Q-Square

Variable endogenous	Q-Square
Customer Satisfaction (Z1)	0,453
Know Your Customer (Z2)	0,472
Financial Performance (J)	0,731

Source: primary data, processed, 2025

Table 9. The Q^2 results, all above zero, show that this model predicts endogenous study variables.

In addition, the Bonez of Fit (GoF) test was used using the Standardized Mean Root Residue (SRMR) indicator to assess the overall level of model fit. The SRMR score obtained was 0.07, which is below the upper limit of 0.10, which means that the model has a good match percentage. These values are shown in Table 9 below:

Tish 10. Model Fit (SRMR)

Model Fit Index	Value
Damn it	0,07

Source: primary data, processed, 2025

Table 10. The results of the Goodness of Fit Model test using the Standardized Root Mean Squared Error (SRMR) indicator received a score of 0.07. This value is below the

recommended upper bound of 0.10, as indicated by Hair et al. (2019). These results show that the structural model of this study fits well between the research data and the theoretical model developed. Therefore, the model used is considered valid for testing the relationships between latent variables.

DISCUSSION

The impact of digitalization on customer satisfaction

The results of this study show that digitalization in the context of Islamic banking has a positive and significant impact on customer satisfaction. These results show that the higher the level of digitalization of Islamic banking services, the higher the satisfa-ction of customers. Ease of access, speed of service, transaction security, and completeness of digital service functions are the main factors that increase customer satisfaction. Digital banking allows customers to transact anytime, anywhere, reinforcing a positive perception of the quality of Islamic banking services.

These results are in line with previous research by Zouari and Abdelhadi (2021), which showed that measuring digitalization significantly contributes to improving customer satisfaction in Tunisian Islamic banks. Another study by Nasution et al., 2023 (2023) found that the quality of mobile banking has a significant impact on customer satisfaction among the millennial generation. In addition, studies (Fadila et al., 2024) confirm that the integration of digital services in Islamic banks has a direct impact on improving customer satisfaction. Imran's (2024) study also highlights that digital banking is an important factor in meeting the expectations of young customers in Bangladesh. In addition, research (Desky & Maulina, 2022) supports these findings, showing that the digital transformation of Islamic banking is critical to improving the customer experience and satisfaction.

The Impact of Artificial Intelligence on Customer Satisfaction

The results of this study show that artificial intelligence (AI) in Islamic banking has a positive and meaningful impact on customer satisfaction. The use of AI technologies such as chatbots, voice assistants, and product recommendation systems has improved the quality of customer interactions with banks. The use of artificial intelligence allows banks to offer faster and more personalized services available around the clock, improving customer convenience and satisfaction. Things like AI's ability to respond to customer complaints in real time, make product recommendations when needed, and speed up the transaction process are the main factors that increase customer satisfaction. These results are in line with previous research by Khan & Rabbani (2021), which showed that the implementation of AI-powered chatbots in Islamic banking improves the quality of interaction and customer satisfaction. (Alotaibi, 2024) also demonstrates, in the context of the Saudi banking system, that the implementation of AI is of great importance in improving customer satisfaction, despite the difficulties in implementation. A study by Khan & Rabbani (2020) confirms these findings, showing that artificial intelligence-powered chatbots (CaIFEs) have the potential to improve the customer experience in the Islamic finance sector. In addition, research by Alaoui et al. (2022) using an AI approach together with Kano's analysis in Morocco shows that AI capabilities in Islamic banking are an important factor in improving customer satisfaction. Recent research by Sunil

& Shiny (2024) also confirms that AI features such as visual appeal and problem-solving have a significant impact on customer satisfaction in digital banking.

Impact of service quality on customer satisfaction

The results of this study show that the quality of service has a positive and significant impact on customer satisfaction in Islamic banks. Service quality indicators such as responsiveness, reliability, responsiveness, and Sharia compliance significantly increase customer satisfaction. Being fast, accurate, friendly, and Sharia-compliant is an important aspect of creating a positive customer experience.

These results are in line with a study (Mariyanti et al., 2021) that states that the quality of service, especially in terms of inventory and responsiveness, is a key factor in improving customer satisfaction in Jakarta's Islamic banks. In addition, Zouari and Abdelhedi (2020) found that customer experience plays a significant role in improving customer satisfaction in Islamic banking in Tunisia. (Khan and Rabbani, 2021), the quality of service is the dominant factor in the customer satisfaction of Islamic banks in Pakistan. (Fadila et al., 2024) also emphasized that the quality of Shariah-based digital services plays a role in customer satisfaction.

The Impact of Digitalization and Artificial Intelligence on Customer Knowledge

The results of the analysis show that both digitalization and AI have a positive and meaningful impact on customer understanding. Easy access to information through mobile banking apps and AI-powered chatbots helps customers better understand Islamic banking products, service processes, risks, and benefits. This innovation also increases financial literacy and customer understanding.

These results are supported by studies (Judijanto et al., 2024) that have shown that the digitalization of Islamic banking services increases customers' understanding of banking products. Studies (Desky and Maulina, 2022) also show that the digital transformation of Islamic banks contributes to increased competition among customers. (Alotaibi, 2024) explained that AI in Saudi banks also highlights the importance of using AI to improve customers' understanding of banking products. (Khaddam and Alhanatle, 2024) in a study of fintech banking in Jordan concluded that AI increases customer confidence and knowledge of Islamic banking services. Finally, Khan and Rabbani (2020) have shown that AI-powered chatbots help customers understand Islamic banking products and policies in real-time.

Impact of customer satisfaction and understanding on financial performance

The test results show that customer satisfaction and knowledge have a significant positive impact on the financial performance of Islamic banks. A high level of customer satisfaction and knowledge of banking products and services contributes to increased loyalty, frequency of transactions, and an increase in the number of banking products, which ultimately has a positive effect on financial performance.

These results are in line with those (Mulazid & Fatmawati, 2023) that show that customer

satisfaction significantly affects the loyalty and profitability of digital Islamic banks in Indonesia. (Saputra, 2024) also found that the Know Your Customer program strengthens the link between the use of banking products and the improvement of the financial performance of Islamic banks. (Rachmawati & Putra, 2022) found that customer satisfaction directly contributes to improved financial performance. (Al-Dmoore et al., 2022) Jordan also explained that the "know your customer" principle significantly affects the financial performance of banks as the intensity of transactions increases. In addition, Judijanto et al. (2024) also show that customer knowledge can increase interest in use, resulting in increased revenue for banks.

The Mediating Role of Customer Satisfaction and Insight

Mediation data show that customer satisfaction and knowledge as an intermediary play a significant role in the context of digitalization, artificial intelligence, service quality and financial performance. This means that the improvement of the bank's financial performance will not occur directly through the development of digital services and the quality of services, but by increasing customer satisfaction and knowledge.

These findings are supported by (Febriyanti et al., 2023), who found that customer satisfaction can be a significant intermediary in the link between the digitalization of services and customer financial solutions in Islamic banks. (Abdillah et al., 2024) also demonstrates the role of customer satisfaction mediation in the context of digital banking experiences and financial performance. In addition, research (Khaddam and Alhanatle, 2024) shows that knowledge-based collaboration is an important factor in the relationship between technology and the financial performance of banks in Jordan. Research by Rachmawati and Putra (2022) also shows that customer satisfaction and knowledge serve as channels for improving financial performance in Indonesian Islamic banking. Finally, Mulazid and Fatmawati (2023) also highlighted the role of satisfaction mediation in the context of the quality of digital services and financial performance of Islamic banks in Indonesia. At the international level, the links between digitalization, AI capabilities, quality of service, and parallel intermediaries of satisfaction and knowledge **are likely to differ across countries** due to differences in digital infrastructure, regulatory regimes (privacy, open banking, regulatory sandboxes), Sharia governance structures, and cultural preferences in automation and personalization. Contexts such as **Southeast Asia, South Asia, the Persian Gulf/MENA, and Sub-Saharan Africa** cover different pathways of technological adoption and the importance of Sharia compliance, which may mitigate pathways in this model. To strengthen global relevance, future research should conduct **cross-country invariance testing (MICOM)** and **cross-country multigroup analysis** using **multilevel modelling** with national facilitators (e.g., national digital readiness, intensity of fintech competition, and strong data protection). At the measurement level**, cross-cultural adaptation** (translation-reverse translation, differential functional testing) is needed to **support digitalization** and **non-overlapping** and metrically equivalent AI constructs. In practice, banks must **combine robust digital channels** with **transparent and accountable AI**that complies with local Sharia and data protection regulations; Regulators can promote **the adoption of interoperable e-KYC,** collaborative sandboxes, and AI audit standards so that **benefits can be transferred across** jurisdictions

without undermining public trust.

CONCLUSION

This study demonstrates that the digitalization of Islamic banking, the use of artificial intelligence (AI), and the quality of services have a positive and meaningful impact on increasing customer satisfaction and awareness. These two intermediate factors significantly contribute to the improvement of the financial performance of Islamic banks. The test results also show that both customer satisfaction and knowledge play an important role as intermediaries in the context of digitalization, artificial intelligence, service quality, and financial performance.

In practice, these results imply that the efforts of Islamic banks to improve financial performance should not only focus on the development of digital technologies and artificial intelligence but also pay attention to the quality of services and strengthening customer knowledge. Customer satisfaction and knowledge are important bridges that link technological innovation to improved banking efficiency. Therefore, Islamic banks in Indonesia, especially in the city of Medan, are encouraged to continue investing in the development of user-friendly digital and AI services, maintaining the quality of service, and improving Islamic financial education for customers.

Limitations and future research

This study has several limitations. First, its cross-sectional limits causal inference; simultaneous self-reporting of all variables also increases the risk of widespread bias of the method, which has not been analytically fully eliminated and is not as objective as bank KPIs, so the results should be interpreted as perceptual. Third, targeting active digital/AI users in one city (Medan) limits external validity and can introduce self-selection. Fourth, measurement solutions can continue to blur the lines between **digitalization** and **AI;** although we suggest purer operationalization, future studies should rigorously test it (HTMT with CI, MICOM/bank-bank invariance), including standard controls (age, sex, sex, seniority, intensity of use) and **endogeneity** (e.g., Gaussian copula or IV/2SLS-PLS). Predictive evidence should be supported with **PLSpredict** (RMSE/MAE vs. Linear Benchmark) and a time division or marker variable to further reduce method bias.

Future research should use **longitudinal/panel** or quasi-experimental/A/B field projects, link survey responses to **target KPIs** (ROA, ROE, BOPO, NIM) and behavioral application protocols and extend coverage to multi-city or multi-country Islamic banking contexts. Serial **or moderate mediation** is appropriate(e.g., digital/financial literacy, religiosity, or Sharia compliance). Conceptually, AI should be modeled **as a second-order formative** construct (conversational AI, personalization/assessment, fraud risk analysis), and qualitative triangulations (interviews/diaries) should be considered to reveal the details of the mechanisms.

References

1. Abdillah, W., Ainiyah, S., & Nurohman, M.S. (2024). Digital Banking Expertise, Customer Satisfaction, and Financial Performance in Islamic Banking: A Makashid Sharia Perspective. Journal of Economic Analysis of Development 12(1), 113–124. https://doi.org/10.18860/ed.v12i1.25431
2. Adinugraha, H. H., Alamsia, F., & Fariyatul, H. (2023). Performance and sustainability reporting in Islamic banking in Indonesia. Journal of Shariah Economics and Banking, 11(1), 45–
3. Adinugraha, H. H., Shulhoni, M., & Ahmad, D. (2023). Islamic Social Finance in Indonesia: Opportunities, Challenges and Their Role in Strengthening Society. Islamic Social Review Finance and entrepreneurship, 2(1 SE), 45-62. https://doi.org/10.20885/RISFE.vol2.iss1.art4
4. Ahmed, F., Ali, Z., Khan, M. S., & Mullazai, M. (2023). A syntactic analysis of compound noun phrase of Balochi within the perspective of X-bar theory. International Research Journal of Management and Social Sciences, 4(3), 289-304.
5. Ahmed, H. (2023). Shariah Governance and Islamic Financial Institutions: A Compliance-Based Approach. Routledge.
6. Ahmed, H. M. (2023). What does Sharia compliance mean in the Islamic banking industry? Halal times. https://www.halaltimes.com/what-does-shariah-compliance-mean-in-islamic-banking-industry/?form=MG0AV3
7. Aladwani, J. (2024). Changes in customer preferences: satisfaction with Islamic Internet banking. Humanities and Social Sciences, Communication (Nature).
8. Alaoui, N. E., Axassé, B., & Elouzzani, H. (2022). Application of the AI-based Kano model to improve the quality of services in the Islamic banking sector: a study in Morocco. Journal of Islamic Business and Management, 12(1), 33–50. https://doi.org/10.26501/jibm/2022.1201-003
9. Al-Dmour, H., Masa'deh, R., & Al-Dmour, R. (2022). Impact of know-your-customer management on financial performance: receipts from Islamic banks in Jordan. Journal of Islamic Accounting and Business Studies, 13(1), 78–97. https://doi.org/10.1108/JIABR-06-2021-0159
10. Alnaser, F. M., et al. (2023). Does Artificial Intelligence (AI) Improve User Experience in Digital Banking? Helion, e18930. https://doi.org/10.1016/j.heliyon.2023.e18930
11. Alotaibi, M. (2024). Impact of AI implementation on customer satisfaction in Islamic banking in Saudi Arabia. International Journal of Business and Management, 19(5), 172–
12. Al-Qaradawi, Y. (2010). Fiqh al-Muamalat al-Maliyya al-Mu'ashira.Maktaba wahba.
13. Alshehri, A. (2024). Intellectual capital and sustainable financial performance of Islamic banks: Evidence from the Gulf countries. Journal of Islamic Accounting and Business Studies, 15(2), 165–189.
14. Alshehri, A. F. (2024a). Corporate Governance and Financial Performance of Islamic Banks: New International Perspectives. Journal of Banking Regulation. https://doi.org/10.1057/s41261-024-00261-y
15. Alshehri, A. F. (2024b). How compliant is Sharia Islamic banking?
16. Alvey, S. F. S. et al. (2023). Implementing Digital Banking in Islamic Finance: A Structural Equation Modeling About. Sustainable development, 15(4), 1754.
17. Ansari, Y., & Bansal, R. (2024). Robo-consulting, financial services and new innovations in Saudi Arabia. Open Innovation Journal: Technology, Market and Complexity, 10(4), 100397.
18. Bharti, S S. et al. (2023). Customer adoption of AI-powered digital banking.
19. Biswas, S., Roy, M., & Kar, S. (2020). Artificial intelligence and banking innovation: evidence for an emerging economy. Journal of Financial Services Marketing, 25(4), 176–186. https://doi.org/10.1057/s41264-020-00078-8
20. Desky, H., & Maulina, E. (2022). Impact of digital transformation on customer satisfaction and knowledge in the Islamic banking sector. International Journal of Interdisciplinary Research and

Analysis, 5(12), 3195–3203. https://doi.org/10.47191/ijmra/v5-i12-42Draganov, D., et al. (2020). Artificial Intelligence in Banking Services: Opportunities and Challenges. Journal of Financial Services Marketing, 25(4), 187–195. https://doi.org/10.1057/s41264-020-00077-9

21. Erwin, M. E., & Nugroho, V. (2015). Analysis of the quality of Bukopin Bank's Internet banking services using the fuzzy E-SERVQUAL method, the IPA method, and the proposed improvements using the QFD method. Online Journal of Industrial Engineering. https://consensus.app/papers/analisis-quality-service-internet-banking-bank-erwin-nugroho/bfc7707b32ec5af3ac553820990326/?
22. Fadila, S., Adnan, N., & Husna, L. (2024). Digital Islamic banking and customer satisfaction: An empirical analysis. Social Sciences KnE, 9(16), 189–200. https://doi.org/10.18502/kss.v9i16.16278
23. Fariha, A., & Setiawan, D. (2020). Intellectual capital and bank performance: Evidence from Islamic banks in Indonesia. Journal of Accounting Dynamics, 12(2), 149–160. https://doi.org/10.15294/jda.v12i2.26283
24. Febriyanti, L., Rahardjo, B., & Fitria, S. (2023). The role of the facilitator of customer satisfaction and brand trust in the impact of digitalization on Islamic bank financial decisions. Asian Journal of Economics, Business and Accounting, 23(20), 142–152. https://doi.org/10.9734/ajeba/2023/v23i201093
25. Financial Services Authority. (2023). Report on the Development of Shariah Finance in Indonesia. ÖJK Annual Publication Report, 2023. Otoritas Jasa Finance. https://ojk.go.id/id/berita-dan- Activity/Latest Information/Pages/Report-Development-Finance-Shariah-Indonesia- 2023.aspx
26. Gazi, M. A. I. et al. (2024). Assessing customer satisfaction with the quality of online banking services (Bangladesh). Cogent Business & Management. https://doi.org/10.1080/23311975.2024.2423057
27. Giau, E. B., et al. (2024). International Review of Financial Analysis, 96, 103700. https://doi.org/10.1016/j.irfa.2024.103700
28. Gozali, I. (2021). Modeling Structural Equations: An Alternative Method to the Partial Least Squared (PLS) Method, Editorial Agency of the University of Diponegoro.
29. Hakim, A. L. (2017). The impact of advertising efficiency, service quality and financial education on the client's decision to choose Mudharabah deposit products at BNI Syariah KC Malang. Yurnal Finance Dan Banking Sharia. https://consensus.app/papers/pengaruh-efektivitas-promosi-kualitas-pelayanan-dan-Рихтер/2f66A226B0C059D8A5B639Ae9EA36AB0/?
30. Hare, J. F. & Alamer, A. (2022). Partially least squares (SEM (predictive evaluation/PLSpredict).
31. Hare, J. F., Hult, G. T. M., Ringl, K. M., & Sarstedt, M. (2019). Introduction to Structural Equations of Partial Least Squares (PLS-SEM). Sage Publications.
32. Henseler, J., Ringl, K. M., & Sarstedt, M. (2015). A new criterion for estimating discriminant validity in variance-based modeling of structural equations. Journal of the Academy of Marketing Sciences, 43(1), 115–135. https://doi.org/10.1007/s11747-014-0403-8
33. https://doi.org/10.1016/j.joitmc.2024.100397
34. https://doi.org/10.1080/23311975.2024.2250150
35. https://doi.org/10.3390/su15041754
36. Imran, S. M. (2024). Factors influencing the adoption of Islamic digital banking among millennials: data from Bangladesh. Business and Economic Studies Review, 2(1), 159–
37. Journal of Financial Services Marketing, 28(4). https://doi.org/10.1057/s41264-023-00241-9
38. Journal of Islamic Marketing. https://doi.org/10.1108/JIMA-08-2023-0243
39. Khaddam, T. A., & Alhanatle, M. S. (2024). Fintech Banking and Customer Retention: The Role of Mediation in Knowledge Sharing in Jordanian Islamic Banks. Investment Management and

Financial Innovation, 21(4), 150–160. https://doi.org/10.21511/im.20(4).2024.19
40. Khan, I., & Rabbani, M. R. (2020). A Chatbot for Islamic Financial Education: A Proposed Conceptual Framework. Proceedings of the 2020 International Conference on Artificial Intelligence and Informatics, pp. 113–120. https://doi.org/10.1145/3440084.3441213
41. Khan, I., & Rabbani, M. R. (2021). Artificial Intelligence and Islamic Banking: The Impact of Chatbots on Customer Satisfaction. International Journal of Information Retrieval Research, 11(3), 35–47. https://doi.org/10.4018/IJIRR.2021070105
42. Khan, M. S., Ali, Z., Burlea-Sciopiu, A., Ilyas, M., Shaikh, M. A., & Malik, M. K. (2024). Integrative Approaches To Complex Optimization: Stochastic Simulation, Multi-Criteria Fuzzy Decision Making, Super Economics, And The Interface Of Mathematical Economics And Nanotechnology. Kurdish Studies, 12(3), 311-325.
43. Khan, M. S., Rahpoto, M. S., & Mangnejo, G. M. (2020). The effect of the financial crisis on corporal well-being: Apparent impact matters: Assessment of contagion to developing economies. Research Journal of Social Sciences and Economics Review, 1(3), 232-238.
44. Khan, M. S., Rahpoto, M. S., & Talpur, U. (2021). The effect of the financial crisis on corporal well-being: Apparent impact matters. In Internet of Everything and Big Data (pp. 25-34). CRC Press.
45. Khoso, A. A. K., Pathan, M. S. K., & Ahmed, M. (2022). Exploring the impacts and aftershocks of COVID-19 on Islamic banking and conventional banking in Pakistan. International Research Journal of Management and Social Sciences, 3(1), 179-192.
46. Khoso, A. A., & Pathan, M. S. K. (2021). The role of Islamic banking industry in the perspective of global financial sector and its impact in Pakistan's economic growth. International Research Journal of Education and Innovation, 2(2), 81-91.
47. Khoso, A. A., & Pathan, M. S. K. (2023). The mediating role of job satisfaction in the relationship between organizational culture and employee commitment in Islamic banking. International Research Journal of Management and Social Sciences, 4(2), 13-30.
48. Khoso, A. A., Ahmed, M., & Pathan, M. S. K. (2022). Customer satisfaction standards according to the Islamic and conventional banking systems in Pakistan. International Research Journal of Education and Innovation, 3(2), 185-194.
49. Khowaja, I. A., Talpur, U., Soomro, S. H., & Khan, M. S. (2021). The non-banking financial institutions from the perspective of the economic growth of Pakistan. Applied Economics Letters, 28(8), 701-706.
50. Kotler,., Kartajaya, H., & Setiawan, I. (2021). Marketing 5.0: Technology for Humanity. John Wiley and Sons.
51. Kumar, V. et al. (2024). AI-Powered Marketing: What, Where, and How? Information and management.
52. Kurniawati, E. (2014). Analysis of the impact of profitability of the profit distribution system and the quality of services on client interest in investments (case study of the Muammalat Malang Bank branch). https://consensus.app/papers/analisis-pengaruh-profitabilitas-sistem-
53. Liengaard, BD et al. (2024). Measurement invariance tests in PLS-SEM. Journal of Business Studies, 177.
54. Mariyanti, T., Nurhayati, R., & Gozali, M. (2021). Customer Experience and Satisfaction in Islamic Banking: Data from Jakarta. Al-Tiharoh: Scientific Journal of Islamic Economics and Economics, 5(2), 171–182. https://doi.org/10.33050/ATM.V5I2.1571
55. Maya, V. (2019). Impact of economic growth and inefficient financing on profitability under moderate inflation in Islamic banking in Indonesia in 2013–2018. https://consensus.app/papers/pengaruh-pertumbuahan-ekonomi-dan-non-performing-maya/1f954927ad2e5fcf86c16490660fbe42/?
56. Melevar, T. S., Forudy,., Gupta, S., Kitchen, J., & Forudy, M. M. (2021). Corporate governance and

organizational effectiveness: the role of intellectual capital. Journal of Business Studies, 124, 732–742. https://doi.org/10.1016/j.jbusres.2020.10.024

57. Memon, A., & Khan, M. S. (2019). Industry academia linkages of Jamshoro universities: The case of University of Sindh, Mehran University of Engineering and Technology & Liaquat University of Medical and Health Sciences. Mediterranean Journal of Basic and Applied Sciences (MJBAS), 3(3), 13-52.
58. Muhammad, S. K. P. (2023). The influence of organizational culture on employee commitment and turnover intentions: A study of the importance of positive culture for retaining employees. Global Research Journal of Management and Social Sciences (GRJMSS), 1(1), 85-94.
59. Mulazid, A. S. & Fatmawati, I. (2023). Digital Service Quality and Customer Satisfaction: Impact on Loyalty and Financial Performance of Islamic Digital Banking. Maliki Journal of Islamic Economics, 3(1), 35–47. https://doi.org/10.18860/miec.v3i1.21240
60. Mullazai, M., Ali, Z., Khan, M. S., & Ahmed, F. (2023). Agent and theme theta roles in Balochi: A morphosemantic analysis. International Research Journal of Management and Social Sciences, 4(3), 332-347.
61. Musa, R. (2024). Compliance with Islamic Sharia → satisfaction (mediated by quality of service).
62. Muttaqin, M. B., Khan, A., & Subramaniam, N. (2022). Intellectual Capital and Corporate Governance Disclosures in Islamic Banks: The Moderating Role of Board Independence. Journal of Islamic Accounting and Business Studies, 13(2), 258–279. https://doi.org/10.1108/JIABR.05.2020-0143
63. Nasution, M. F., Harahip, R. M., & Lubis, A. M. (2023). The Impact of Mobile Banking Service Quality on Customer Satisfaction: A Study of Millennial Islamic Banks. Journal of Fiqh and Business (JFIB), 5(1), 45–58. https://doi.org/10.22515/jfib.v5i1.4813
64. Noor, N., et al. (2025). Quality of Halal Service: A Systematic Vision and Agenda. Journal of Islamic Accounting and Business Studies.
65. OIK, O. J. K. (2023). Islamic Banking Statistics in December 2023. https://www.ojk.go.id
66. Oliver, R. L. (1997). Satisfaction: a behavioral view of the consumer. McGraw Hill.
67. Parasuraman, A., Zeitamle, W. A., & Berry, L. L. (1988). SERVQUAL: Multi-element scales designed to measure the perception of the quality of services by consumers. Retail Journal, 64(1), 12–40.
68. Pathan, M. S. K. (2022). The impact of emotional intelligence on leadership effectiveness. International Research Journal of Management and Social Sciences, 3(3), 1-7.
69. Pathan, M. S. K. (2022). The influence of organizational culture on employee commitment and turnover intentions. International Research Journal of Management and Social Sciences, 3(4), 34-43.
70. Pathan, M. S. K. (2023). Assessing the mediating role of job satisfaction in the relationship between organizational culture and employee commitment. International Research Journal of Education and Innovation, 4(1), 1-11.
71. Pathan, M. S. K., & Khoso, A. A. (2023). Misfortune tragedy findings in Pakistan: A public learning perspective on the virtue of economic recovery mindset. International Research Journal of Management and Social Sciences, 4(2), 1-12.
72. Pathan, M. S. K., Khoso, A. A., & Ahmed, M. (2022). Digital model anecdotes through artificial intelligence in socioeconomic and Islamic investments. International Research Journal of Education and Innovation, 3(2), 195-209.
73. Pathan, M. S., Ahmed, M., & Khoso, A. A. (2022). Islamic banking under the vision of green finance: The case of development, ecosystem, and prospects. International Research Journal of Management and Social Sciences, 3(1), 193-210.
74. Permana, AG (2015). The impact of customer knowledge and brand image influenced the decision to use an iB Wadiah checking account with Bank Syariah Mandiri. Journal of Islamic Economics

and Economics. https://consensus.app/papers/pengaruh-pengetahuan-nasabah-dan-citra-brand-against-permana/ec80944e0b225f3eb3497913c18b3c1b

75. Prabowo, V. (2019). The impact of asset quality, liquidity, capital and profitability on the profitability of Islamic banks. https://consensus.app/papers/pengaruh-kualitas-assets-liquidity-permodalan-dan-prabowo/d8903901ea7f5906ad14b8afa6e2e094/
76. Putra, R. A., & Rachmavati, H. (2022). The impact of digital banking and AI on customer satisfaction in Indonesia. Journal of Islamic Marketing, 13(3), 601–615. https://doi.org/10.1108/JIMA-06-2020-0178
77. Rachmawati, R., & Putra, W. P. B. (2022). Impact of Islamic Digital Banking Quality on Customer Satisfaction and Financial Performance. Business and Entrepreneurship Review, 22(1), 56–72. https://doi.org/10.25105/ber.v22i1.13171
78. Rahat, S., & Pathan, M. S. K. (2021). Sustainable climate approach and in the context of environmental economy: A classical analysis matters. Neutron, 21(1), 40-45.
79. Rashid, M., Hassan, M. K., & Ahmad, A. (2020). A study of Christian adoption of Islamic banking in Medan, Indonesia. Journal of Islamic Marketing, 11(3), 601–620. https://doi.org/10.1108/JIMA-06-2018-0104
80. Richter, N. F., et al. (2024). A combination of PLS-SEM and selected ML. Journal of Business Studies.
81. Rizuan, N.N., et al. (2024). AI in the financial sector: the boundary between innovation and regulation. Information (MDPI).
82. Saputra, E. H. (2024). The Impact of Customer Knowledge on Trust and Loyalty: Islamic Banking Data. Iktishaduna: Journal of Ilmia Economy of China, 13(2), 80–91. https://doi.org/10.46367/iqtishaduna.v13i2.2118
83. Sarstedt, M. et al. (2022). Advances in the use of PLS-SEM in marketing. Psychology and Marketing,
84. Share results and gifts/ad9e8fe16e895d56aefbb154cc1114b5
85. Sunil, R., & Saini, D. R. (2024). Artificial Intelligence in Digital Banking: Impact on Customer Satisfaction. International Business and Economic Review, 17(2), 105–114. https://doi.org/10.21632/irjbs.17.2.105-114
86. Sutjipto, S., & Hadi, T. (2024). Intellectual capital, efficiency and financial efficiency:
87. Triana, E., & Mahdi, S. (2017). Impact of understanding (familiarity) with Islamic banking on savings decisions of BNI Syariah customers. Scientific Journal of Islamic Economics. https://consensus.app/papers/pengaruh-pemahaman-produk-famliarity-perbankan-syariah-triana-mahdi/541708c7d5d65fe78edc3c32e1caaf8f/
88. Vuković, D. B., et al. (2025). Integrating AI into Financial Services: A Scientific Review.
89. Wahöningsih, N., & Jana, N. (2018). Factors influencing customer satisfaction in internet banking at Bank Muamalat. Al-Amwal: Journal of Sharia Economics and Banking. https://consensus.app/papers/faktorfaktor-yang-mempengaruhi-customer-satisfaction-wahyuningsih-janah/0017c3212c185fedad47ee670fd7c0d7
90. Yudijanto, T., Santoso, T., & Hariono, T. (2024). Digitalization and customer insights: evidence of Islamic banking in Indonesia. Social Sciences and World Humanities, 2(9), 112–121. https://doi.org/10.58812/wsshs.v2i09.1284
91. Zouari, G., & Abdelhedi, I.S. (2021). Digital transformation and customer satisfaction in Islamic banks: Evidence from Tunisia. Journal of the Future of Business, 7(1), 1–12. https://doi.org/10.1186/s43093-021-00077-y
92. Zuari, G., & Abdelhedi, I.S. (2020). Impact of service quality on customer satisfaction in Islamic banking. Preprint by Square Research. https://doi.org/10.21203/rs.3.rs-24909/v1