Journal of Frontiers in Multidisciplinary Research

The Impact of Financial Technology (Fintech) on Acceleration of Islamic Financial Services Delivery: A Case Study of Islamic Banks in Nigeria

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Article Info

E-ISSN: 3050-9726
P-ISSN: 3050-9718
Volume: 06
Issue: 02
July – December 2025
Received: 24-08-2025
Accepted: 26-09-2025
Published: 25-10-2025
Page No: 365-384

Abstract
Financial technology (FinTech) is revolutionizing global financial services, offering a potent solution to the persistent challenge of financial exclusion, particularly in Nigeria where a 36% shortfall from national targets remains. For Islamic banks, FinTech presents a strategic avenue to accelerate service delivery and cater to a growing demand for Sharia-compliant products. However, empirical evidence on its specific impact within the Nigerian Islamic finance context is scarce. This study therefore investigates the influence of FinTech on accelerating Islamic financial services delivery. A quantitative research design was employed, utilizing a structured questionnaire administered to 384 staff and customers of Jaiz and Taj Banks. Data were analyzed using Structural Equation Modeling (SEM). The findings reveal that specific FinTech channels namely USSD codes, ATMs, electronic banking, and online customer service chatbots have a statistically significant positive impact on service acceleration. In contrast, mobile wallet applications and point-of-sale (POS) systems showed no significant effect. The study concludes that a targeted approach, focusing on high-impact digital channels like USSD and AI-driven customer service, is crucial for Islamic banks in Nigeria to enhance operational efficiency, expand accessibility, and effectively bridge the financial inclusion gap. These results provide critical insights for bank executives and policymakers to strategically prioritize FinTech investments and regulatory frameworks.

Keywords: Fintech, USSD Codes, ATMs, Electronic Banking, Online Customer Service Chatbots, Service Acceleration, Mobile Wallet Applications, Point-Of-Sale (POS)

Introduction

The global financial services industry is undergoing a massive transformation, driven by the emergence of financial technology (fintech). Fintech, which denotes the application of digital technology to financial services, is critical for achieving optimal productivity and financial inclusiveness (Chen *et al*., 2019) [15]. This is particularly relevant in a country like Nigeria, which, despite its vast resources, has rural populations experiencing slower economic growth and deprivation from formal financial services (Khan, 2022) [34]. Concurrently, there is a growing demand for Sharia-compliant financial products, as Islam is one of the fastest-growing religions globally. The Islamic banking system has been crucial in facilitating financial inclusion, especially among the less privileged segments of Muslim-majority economies (Bardai & Kiyawa, 2020) [8]. However, Islamic banks in Nigeria face intense competition and a significant challenge: a large portion of the adult population, including potential customers, lacks access to or understanding of their services (Muhammad & Yakasai, 2023; Muhammad & Khalil, 2021) [43-44]. In this age of globalization, collaboration is inseparable from technological progress, and financial institutions must be tech-savvy to succeed (Zouari & Abdelhedi, 2021) [64]. Fintech services, including mobile money, payment apps, and blockchain, are seen as viable alternatives to traditional banking and a means to address these accessibility problems (Omarini, 2023) [46]. While the synthesis of Islamic finance and fintech is consensus-driven to drive financial inclusion (Jamil & Seman, 2019) [31], the specific impact of fintech on accelerating the delivery of Islamic financial services in the Nigerian context remains a critical area for investigation.

Financial exclusion remains a pervasive global issue, manifesting acutely in populous nations like Nigeria, where a significant shortfall of 36% persists against the national financial inclusion target (The World Bank, 2018; EFInA, 2020) [59, 20]. While the Central Bank of Nigeria has championed fintech as a solution, evidenced by policies like the 2011 cashless initiative, progress has been hampered by supply-side barriers such as the insufficient presence of physical branches and high operational costs, particularly in rural areas (Ozili, 2018) [47]. Existing research on fintech and financial inclusion in Nigeria has largely overlooked the distinctive sector of Islamic finance. This study addresses this critical gap by examining the impact of financial technology on accelerating the delivery of Islamic financial services. By focusing on Islamic banks in Nigeria, this research seeks to determine how fintech tools are leveraged to overcome traditional barriers, enhance service delivery, and ultimately contribute to closing the financial inclusion gap for a segment of the population guided by Islamic financial principles. The findings aim to provide valuable insights for policymakers and financial institutions in fostering a more inclusive and technologically advanced financial ecosystem. Therefore, this study seeks to explore the impact of financial technology on accelerating Islamic financial services delivery, using Islamic banks in Nigeria as a case study.

Aim and Objectives of the Study

The aim of this study is to evaluate the role of financial technology in enhancing financial inclusion through Islamic banks in Nigeria. The research objective is to: To examine the influence of financial technology (fintech) on acceleration of Islamic financial services delivery.

Hypothesis of the Study

The following alternative hypothesis would guide the study;
Hypothesis Ha_1: There is a significant effect between financial technology and acceleration of Islamic finance services delivery.

Empirical Literature Review

Bulatova *et al*. (2019) [12] assessed the synthesis of fintech and Islamic finance synthesis today by adopting statistical and graphical analysis, tabulation, generalization, and systematization. This provided a structural-dynamic analysis of GDP for four countries, Saudi Arabia, the USA, Indonesia, and the Russian Federation. They found that despite the slowdown in economic growth in 2014–2018 due to falling oil prices, the Islamic financial industry continues to evolve due to its "revolutionary" financial technology. They found that fintech tools stimulate the economic growth of all, not just Islamic, countries around the world.

Saba *et al*. (2019) [51] examined fintech and Islamic finance-challenges and opportunities in Pakistan. This focused on three main aspects - fintech, opportunities for Islamic financial institutions, and the challenges/issues faced by institutions implementing fintech solutions. The study also outlined the current application of fintech globally, and its potency in servicing the poorer segments of society. The study relied on secondary data obtained from the review of literature, and found that regulatory risks, downward pressure on margins, and information security are among the challenges arising from the revolution of fintech.

Hasan *et al*. (2020) [24] engaged in a conceptual review due to the lack of literature in the field. A systematic literature review of Islamic fintech was conducted and 14 documents relevant to the context of the study were selected for the content and thematic analysis. The study found that *Sharia* compliance was one of the major challenges for Islamic fintech. In addition, it concluded that Islamic fintech could pose challenges for Islamic financial institutions (IFIs) in terms of its operational efficiency, customer retention, transparency and accountability. The study also provided insights to the challenges faced by the Islamic finance industry when integrating fintech based solutions, thereby indicating areas for further study.

Rabbani *et al*. (2020) [49] reviewed research conducted into Islamic financial technology and found that Islamic fintech has been classified into three broad categories - Islamic fintech, Islamic financial technology opportunities and challenges, and cryptocurrency/blockchain *Sharia* compliance and law/regulation. Finally, the study identified and highlighted the opportunities and challenges that Islamic financial institutions could experience from conventional fintech organisations across the world. The study collected 133 research studies (50 from the Social Science Research Network (SSRN), 30 from Researchgate, 33 from Google Scholar, and 20 from other sources) into Islamic financial technology to present a systematic review. The study identified that the *Sharia* compliance relating to cryptocurrency/blockchain is the biggest challenge facing Islamic fintech organisations. In addition, Islamic fintech organisations are considered partners rather than competitors by Islamic financial institutions (IFIs), meaning that if IFIs want to increase efficiency, transparency and customer satisfaction they have to adopt fintech and become partners with the these companies.

Iman (2020) [29] summarized the discussion on fintech by providing a critique of the literature, and proposing future research opportunities. Iman compiled, identified, examined, coded, and classified peer-reviewed journals into high-level themes which were reviewed, analyzed, and interpreted. After synthesizing the notion of fintech in the literature, this article proposes several potential areas for further exploration, which are divided into the following themes: definition, attributes, adoption, regulation, and competition. Fintech - or financial technology - is a relatively new subject in the literature but commonly cited as one of the most important innovations in the financial industry. Therefore, it is expected that this article will help researchers and academics interested in studying the phenomenon more broadly.

Supriadi *et al*. (2023) [58] used a qualitative method based on literature to collect and analyze data from various sources on the application of fintech to the Islamic financial industry and its associated regulatory challenges. It found that the Islamic financial industry is experiencing rapid change and growth due to technological advances, especially in the form of fintech. Research analyzed regulatory challenges to the application of financial technology within Indonesia's Islamic financial industry. These challenges include Islamic perspectives of fintech, government regulations and policies which encourage Islamic fintech, and the importance of collaboration between financial institutions and regulatory authorities. This research offers guidance to the government, Islamic financial institutions, Islamic fintech companies, and regulatory authorities in developing a regulatory framework conducive to the growth of Islamic fintech.

Literature Gap

The existing literature establishes that the integration of FinTech is a revolutionary driver for the global Islamic financial industry, stimulating economic growth and enabling institutions to enhance efficiency, transparency, and customer satisfaction (Bulatova *et al*., 2019; Rabbani *et al*., 2020) [12, 49]. However, this integration is fraught with universal challenges, including stringent Sharia compliance requirements especially for technologies like blockchain alongside regulatory risks, security concerns, and operational hurdles (Hasan *et al*., 2020; Saba *et al*., 2019; Supriadi *et al*., 2023) [51, 24, 58]. While these studies provide a crucial conceptual framework and identify key themes, they predominantly offer a high-level, global perspective, leaving a critical gap in context-specific empirical research. Therefore, the proposed study on "The Impact of Financial Technology (FinTech) on Acceleration of Islamic Financial Services Delivery: A Case Study of Islamic Banks in Nigeria" is highly relevant as it directly addresses this gap by moving from general theory to a focused investigation, aiming to understand how these global dynamics, challenges, and opportunities uniquely manifest and can be optimized within the specific operational and regulatory context of Nigeria's Islamic banking sector.

Theoretical Framework

Intervention Fund Theory

This theory posits that governments and development agencies create specific funds to intervene in the financial sector with the primary aim of promoting financial inclusion. These intervention funds are designed to support targeted initiatives such as microcredit programs, rural banking, or other financial inclusion initiatives. The theory underscores the importance of strategic financial interventions to address the specific challenges faced by underserved populations. Governments and development agencies recognize that traditional financial systems may not adequately serve the needs of certain segments of the population, particularly those in rural or economically disadvantaged areas, and Intervention Fund Theory acknowledges the need for dedicated financial resources to bridge the gap and catalyze inclusive financial development.

One key aspect of Intervention Fund Theory involves the establishment of funds earmarked for specific financial inclusion initiatives. These funds are often designed to provide financial institutions, microfinance institutions, and other stakeholders with the necessary capital to implement and scale projects that directly benefit underserved communities (Beck & Cull, 2014) [9]. Microcredit programs, which provide small loans to entrepreneurs and small businesses, are a common target of intervention funds. These programs aim to empower individuals who may lack access to traditional banking services by providing them with the capital to start or expand their businesses (Armendariz de Aghion & Morduch, 2005) [7]. Rural banking initiatives, supported by intervention funds, focus on establishing and strengthening financial services in rural areas. This includes the development of banking infrastructure, training for local financial institutions, and the promotion of financial literacy to enhance the accessibility and usability of financial services in rural communities (World Bank, 2018).

Intervention Fund Theory recognizes that financial inclusion is not solely about providing capital but also involves addressing systemic issues. As such, intervention funds may support regulatory changes, policy adjustments, and capacity-building efforts to create an environment conducive to financial inclusion (CGAP, 2009) [14]. The success of Intervention Fund Theory relies on the effective governance and management of these funds. Governments and development agencies need to ensure transparency, accountability, and strategic allocation of resources to maximize the impact of financial inclusion initiatives (Ledgerwood, 2000) [38]. Moreover, the theory suggests that intervention funds should be flexible and adaptable to evolving challenges and opportunities in the financial inclusion landscape. This requires periodic evaluations, learning from experiences, and adjusting strategies to better meet the needs of the target populations (World Bank, 2013) [62]. As such, Intervention Fund Theory underscores the importance of dedicated financial resources to support targeted initiatives and promote financial inclusion. By establishing funds and strategically intervening in the financial sector, governments and development agencies contribute to creating a more inclusive and accessible financial system.

Methodology

This study adopted a quantitative research design to empirically investigate the impact of financial technology on the acceleration of Islamic financial services delivery in Nigeria. A structured, closed-ended questionnaire was used as the sole research instrument to collect primary data from relevant stakeholders within the Nigerian Islamic banking sector. The instrument was designed based on a comprehensive review of literature on Islamic finance, financial inclusion, and financial technology, which established the key constructs and parameters for measurement.

The questionnaire employed a perceptual scale, requiring participants to respond to specific statements. These responses were numerically coded and transformed into quantitative data for statistical analysis (Kothari, 2004) [35]. The personal administration of surveys was chosen for its efficiency and higher response rates compared to methods like postal or internet dissemination. To analyze the collected data, the study utilized advanced statistical techniques. First, Confirmatory Factor Analysis (CFA) was applied to validate the measurement model and ensure the reliability and validity of the constructs. Subsequently, Structural Equation Modelling (SEM) was employed to test the hypothesized relationships between the independent variables (FinTech dimensions) and the dependent variable (acceleration of service delivery), thereby building on and statistically verifying previous findings in the field.

Throughout the process, the confidentiality of all participants was strictly maintained. In accordance with ethical research practices, codes were used instead of names to anonymize all responses during data processing and presentation (Brian, 2012) [11].

This study collected primary data directly from staff and customers of Jaiz and Taj Banks using a structured questionnaire. The instrument was designed with close-ended, multiple-choice questions on a five-point Likert scale to efficiently gather quantitative data from a large sample. This scale was selected because it provides clear measurement of variables and offers respondents a midpoint for precise answers, a method supported by research for achieving better results and avoiding respondent confusion

associated with more complex scales.

The target population for this study comprises 40,763 staff and customers of Jaiz Bank and Taj Bank in Nigeria. A sample size of 384 respondents was determined using the Krejcie and Morgan (1970) [36] table. This sample was proportionally allocated between the staff and customers of each bank to ensure representation. The study employed a multistage sampling technique, first using purposive sampling to select states where the banks operate. Subsequently, a convenience sampling method was utilized to select individual respondents based on their accessibility at bank branches, a pragmatic approach chosen for efficiently surveying a customer population during their banking activities.

Measurement of Variables and Model Development

This section provides operationalized definitions of the variables to be investigated. Research variables are conceptual and therefore need defining according to the context of the study (Sekaran & Bougie, 2013) [53]. Thus, operationalized definitions highlight the researcher's intended definition and measurement of the variables, which are either adopted or adapted from literature.

Accelerating Islamic Financial Services Delivery

Islamic finance refers to financial activities adhering to the principles of *Sharia* Moreover, the focus of the study, "accelerating Islamic Financial services delivery", refers to the process of expediting the provision of various financial services in accordance with Islamic principles, thus catering to the needs of Muslim consumers and businesses worldwide. This concept emphasises the importance of leveraging technological advancements and innovative practices to streamline the delivery of Islamic financial products, including Islamic banking, *Takaful* (Islamic insurance), *Sukuk* (Islamic bonds), and other *Sharia*-compliant investment instruments. According to Billah and Hassan (2017) [10], the acceleration of Islamic financial service delivery is essential to cater to increasing demand for *Sharia*-compliant financial products and services. They argue that the integration of technology and development of specialised fintech solutions can play a crucial role in enhancing the accessibility, efficiency, and competitiveness of Islamic finance in the modern digital era.

Role of Financial Technology

In the banking sector refers fintech to the application of technology to improve and automate financial services (Smith, 2018) [57]. It involves the use of innovative software and algorithms to support and enable banking and financial services, ranging from mobile banking to cryptocurrency (Johnson, 2020) [32]. It aims to enhance the efficiency, accessibility, and convenience of various financial processes, such as payments, lending, investments, and asset management (Gupta *et al*., 2019) [22]. Furthermore, fintech encompasses a broad spectrum of technological advancements, including digital banking, mobile payments, blockchain technology, artificial intelligence, and data analytics, all of which contribute to the transformation and modernisation of traditional banking practices (Adams & White, 2017) [2]. By leveraging fintech, banks can provide customers with more user-friendly and streamlined services, enabling faster transactions, improved security, and a more personalised banking experience (Thompson, 2021) [60]. Comprising various components, fintech has revolutionised the financial landscape by offering convenience, accessibility, and innovation to users. These components include:

1. **USSD Codes:** USSD codes facilitate mobile banking by enabling users to access banking services through their mobile phones. Users can perform transactions such as fund transfers, balance inquiries, and bill payments by simply dialing a designated code on their phones.
2. **Cash Platforms (ATMs):** Automated Teller Machines (ATMs) allow users to withdraw cash, check balances, and conduct various financial transactions conveniently, 24 hours a day, seven days a week.
3. **E-Banking:** E-banking, also known as internet banking, provides customers with online access to their bank accounts, enabling them to manage transactions, pay bills, transfer funds, and access other banking services through a secure internet connection.
4. **Online Customer Service Chatbots:** Artificial Inteligence (AI) driven chatbots offer real-time assistance to customers, addressing inquiries, providing information about services, and resolving issues. They enhance customer support by providing instant and personalised responses, contributing to an improved customer experience.
5. **Mobile Wallet/App:** Mobile wallets and applications enable users to store payment information securely and conduct financial transactions using their smartphones. They allow for seamless payments, money transfers, and online purchases, providing users with a convenient and secure way to manage their finances on the go.
6. **POS (Point of Sale) Systems:** POS systems facilitate electronic fund transfers at the point of sale, allowing customers to make secure and efficient transactions using their credit or debit cards. These systems are widely used in retail and service businesses, streamlining payment processes and enhancing customer satisfaction.

The integration of these fintech components has transformed the way individuals and businesses engage with financial services, offering speed, convenience, and security in an increasingly digital world. As technology continues to evolve, these components are expected to further shape the future of financial transactions, fostering a seamless, user-friendly banking experience.

Based on objective two of the study, the following model was adapted and developed from the studies of Hussein & Kadir (2022) [28], Mavlutova *et al*. (2022) [40], Tinta *et al*. (2022) [61], and Senyo *et al*. (2023) [55].

The functional relationship of the model is given as:

$$\Upsilon_i = (X_{i1}, X_{i2}, X_{i3}, X_{i4}, X_{i5}, X_{i6}) \quad (1)$$

The multi-variate form of the regression model is given as:

$$Y_i = \varpi_o + \varpi_i X_{i1} + \varpi_i X_{i2} + \varpi_i X_{i3} + \varpi_i X_{i4} + \varpi_i X_{i5} + \varpi_i X_{i6} + \varepsilon_i \quad (2)$$

$$AIFSD_i = \varpi_o + \varpi_1 USSD_i + \varpi_2 ATM_i + \varpi_3 EB_i + \varpi_3 OCS_i + \varpi_3 MWA_i \varepsilon_i + \varpi_3 POS_i \quad (3)$$

$AIFSD_i$= Acceleration of Islamic financial services delivery at a given point in time.

$USSD_i$ = Unstructured supplementary service data code at a

given point in time.
ATM_i= Automated teller machine at a given point in time.
EB_i= E-banking at a given point in time.
OCS_i = Online customer service chatbots at a given point in time.
MWA_i= Mobile wallet/App at a given point in time.
POS_i= Point on Sale at a given point in time.
ϖ_o= Intercepts/autonomous variable.

$\varpi_1, \varpi_2, \varpi_3$ $\varpi_4 \varpi_5$ and ϖ_6= are parameter estimates or coefficients of independent constructs; it depicts the degree of acceleration of Islamic financial service delivery by applying the independent constructs, USSD, ATM, EB, OCS, MWA and POS.
ε_i = the error term or the amount that accounts for other possible factors which could influence Y_i that are not captured in the model.

A priori expectation $\varpi_1, \varpi_2, \varpi_3, \varpi_4, \varpi_5$ and $\varpi_6 > 0$.

Data presentation and Analysis
Descriptive Analysis
The descriptive analysis section begins with the demographic profile of the study's respondents. The descriptive statistics for the construct of the study are also presented in this section.

Demographic Description of the Respondents
The survey questionnaire requires respondents to answer six demographic questions on their gender, age group, ethnicity, marital status, employment status and educational background. In total, 328 respondents responded out of 384 questionnaires issued. This represented an 85.4% responsive rate which legitimizes the representation in the study (Moser & Kalton, 1972) [42]. This section summarises the general frequency distribution of respondents on different demographic items, as shown in Table 1.

Table 1: Profile of respondents

	Frequency	Percent	Valid percent	Cumulative percent
Gender				
Male	256	78.0	78.0	78.0
Female	72	22.0	22.0	100.0
Total	328	100.0	100.0	
Age				
Less than 20	61	18.6	18.6	18.6
20-45	125	38.1	38.1	56.7
46-60	104	31.7	31.7	88.4
60 and above	38	11.6	11.6	100.0
Total	328	100.0	100.0	
Ethnicity				
Igbo	26	7.9	7.9	7.9
Hausa Fulani	251	76.5	76.5	84.5
Yuroba	28	8.5	8.5	93.0
Others	23	7.0	7.0	100.0
Total	328	100.0	100.0	
Marital Status				
Single	98	29.9	29.9	29.9
Married	163	49.7	49.7	79.6
Divorced	67	20.4	20.4	100.0
Total	328	100.0	100.0	
Employment Status				
Employed	46	14.0	14.0	14.0
Self Employed	188	57.3	57.3	71.3
Unemployed	94	28.7	28.7	100.0
Total	328	100.0	100.0	
Educational Background				
Tertiary Institution	26	7.9	7.9	7.9
Secondary	128	39.0	39.0	47.0
Primary	85	25.9	25.9	72.9
Others (Specify)	70	21.3	21.3	94.2
None	19	5.8	5.8	100.0
Total	328	100.0	100.0	

Source: Computed from field survey data (2024)

Table 1 presents the gender distribution of the 328 survey respondents. Of these, 256 were male, representing 78% of the sample, while 72 were female or 22%. This indicates a significantly higher participation rate among males than females, and therefore a predominantly male respondent base, which is significant for understanding both the demographic makeup and context of the results. The table also presents the age distribution of the respondents categorised into four age groups: those less than 20 years old comprise 18.6% (61 individuals), those aged 20-45 make up the largest group at 38.1% (125 individuals), respondents aged 46-60 constitute 31.7% (104 individuals), and those 60 and older account for 11.6% (38 individuals). This distribution indicates that most respondents are within the 20-45 age range, followed by the 46-60 age group.

The representation of younger individuals (less than 20) and older individuals (60 and older) are relatively low. Understanding this age distribution is essential for contextualizing the survey results and tailoring any interventions or recommendations on the age-related characteristics of the respondent population.

Table 1 also details the ethnic distribution of the respondents, and shows that the Hausa Fulani ethnic group constitutes the majority at 76.5% (251 individuals). The Yoruba make up 8.5% (28 individuals), and the Igbo represent 7.9% (26 individuals). Respondents classified under 'Others' account for 7.0% (23 individuals). This distribution highlights strong representation from the Hausa Fulani group, with significantly smaller proportions of Igbo, Yoruba, and other ethnicities. It is important to acknowledge this ethnic composition when interpreting the survey results and ensure that any conclusions or recommendations consider the cultural and social dynamics of the respondent population. Additionally, the table lists the marital status of the respondents, of whom 49.7% (163 individuals) are married, representing the largest group. Singles account for 29.9% (98 individuals), while 20.4% (67 individuals) are divorced. This distribution shows that nearly half of the respondents are married, with a significant portion single and a smaller yet notable percentage divorced. It is crucial to note the marital status distribution in the analysis of the survey results, as this can influence respondents' perspectives and experiences.

Furthermore, Table 1 presents the employment status and the majority, 57.3% (188 individuals) are self-employed. Those who are unemployed constitute 28.7% (94 individuals), while 14.0% (46 individuals) are employed. This distribution indicates the prevalence of self-employment among the respondents, with a considerable portion classed as unemployed and a smaller portion in formal employment. Employment status distribution is crucial for contextualizing the survey results, as it can significantly impact respondents' economic conditions, lifestyle, and perspectives. The table also outlines the educational background of respondents. The largest group, 39.0% (128 individuals), had secondary education, while those with primary education accounted for 25.9% (85 individuals). Respondents with other unspecified types of education comprised 21.3% (70 individuals), while 7.9% (26 individuals) had tertiary education. Additionally, 5.8% (19 individuals) had no formal education. This distribution shows the predominance of individuals with secondary education, followed by primary education, and a notable portion with various other educational backgrounds. Understanding the distribution of respondents' educational backgrounds is essential for interpreting the survey results, as education level can influence knowledge, skills, and attitudes.

Table 2: Descriptive Statistics for the Study Variables

Descriptive Statistics					
	N	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
Acceleration	328	1	5	3.8087	0.80149
USSD Code	328	1	5	3.9078	0.77745
ATM	328	2	5	4.2195	0.6652
Electronic Banking	328	1	5	4.0313	0.784
Online customer service	328	1	5	3.6959	0.82135
Mobile wallet/App	328	1	5	3.7416	0.8451
POS	328	1	5	4.0434	0.76864
Valid N (listwise)	328				

Source: Computed from field survey data (2024)

Table 2 presents the descriptive statistics for the seven variables related to financial services, based on the responses from 328 participants, and each variable is rated on a scale from 1 to 5. The variable "acceleration" has a mean of 3.8087 with a standard deviation of 0.80149, indicating moderate to high satisfaction with moderate variability. The "USSD Code" has a mean of 3.9078 and a standard deviation of 0.77745, showing moderate to high satisfaction and slightly less variability. The "ATM" service has the highest mean satisfaction at 4.2195 and a relatively low standard deviation of 0.6652, suggesting high and consistent satisfaction levels. "Electronic Banking" has a mean of 4.0313 and a standard deviation of 0.784, indicating high satisfaction with moderate variability. "Online Customer Service" has a mean of 3.6959 and the highest standard deviation of 0.82135 among the variables, reflecting moderate satisfaction but greater variability in responses. The "Mobile Wallet/App" service has a mean of 3.7416 with a standard deviation of 0.8451, indicating moderate satisfaction with slightly higher variability. Finally, "POS" services have a mean of 4.0434 and a standard deviation of 0.76864, showing high satisfaction with moderate variability. These statistics provide a snapshot of customer satisfaction across various financial services, highlighting areas of high and moderate satisfaction along with the consistency of responses.

Results of the Exploratory Factor Analysis

This section discussions the results of the Exploratory Factor Analysis (EFA) which assessed the suitability of the instruments used in the study.

Table 3: KMO and Bartlett's Test

Acceleration		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.717
Bartlett's Test of Sphericity	Approx. Chi-Square	386.324
	Df	6
	Sig	0.000
Unstructured supplementary service data code (USSD Code)		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.778
Bartlett's Test of Sphericity	Approx. Chi-Square	656.238
	Df	6
	Sig	0.000
Automated Teller Machine (ATM)		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.844
Bartlett's Test of Sphericity	Approx. Chi-Square	822.509
	Df	6
	Sig	0.000
Electronic Banking		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.823
Bartlett's Test of Sphericity	Approx. Chi-Square	676.480
	Df	6
	Sig	0.000
Online customer service		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.830
Bartlett's Test of Sphericity	Approx. Chi-Square	633.659
	Df	0
	Sig	0.000
Mobile wallet/App		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.781
Bartlett's Test of Sphericity	Approx. Chi-Square	678.321
	Df	6
	Sig	0.000
Point on Sale (POS)		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.767
Bartlett's Test of Sphericity	Approx. Chi-Square	548.550
	Df	6
	Sig	0.000

Source: Computed from field survey data (2024)

Table 3 provides the results of the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity for the seven variables related to satisfaction with financial services. The KMO measure assesses the suitability of data for factor analysis, with values typically ranging from 0 to 1; higher values indicate better adequacy for factor analysis. For Acceleration, the KMO value is 0.717, suggesting moderate adequacy for the factor analysis. Bartlett's Test of Sphericity, which assesses whether the variables are intercorrelated in the population, yielded a significant result (Chi-Square = 386.324, df = 6, $p < 0.001$), indicating that correlations between items are sufficiently large for factor analysis. Similarly, the USSD Code variable has a KMO value of 0.778, indicating good adequacy, and Bartlett's Test is significant (Chi-Square = 656.238, df = 6, $p < 0.001$), supporting its suitability for the factor analysis. The variables ATM, Electronic Banking, Mobile Wallet/App, and POS also show high KMO values ranging from 0.767 to 0.844, indicating good to very good adequacy for the factor analysis. Bartlett's Test results for these variables are all significant (Chi-Square values ranging from 548.550 to 822.509, df = 6, $p < 0.001$), confirming their intercorrelation and suitability for the factor analysis. Interestingly, Online Customer Service has a KMO value of 0.830, indicating very good adequacy, and Bartlett's Test is highly significant (Chi-Square = 633.659, df = 0, $p < 0.001$), suggesting strong correlations among the items despite no degrees of freedom in the test.

Overall, these results indicate that the data for each variable are appropriate for conducting the factor analysis, as indicated by the KMO measures and significant Bartlett's Tests of Sphericity. This statistical analysis provides confidence in the suitability of the data for exploring underlying factors or dimensions that may influence satisfaction with financial services. KMO values close to 1.0 and the significance values close to 0.0 for Bartlett's Test indicate that the data are adequate for the confirmatory factor Analysis (Hair *et al*., 2006; Zainudin, 2014) [23, 63].

Reliability Test

The results indicate that the Cronbach's Alpha reliability coefficients for all constructs are above 0.6. Generally, Sekaran (2006) stated that reliabilities of less than 0.6 are considered poor, at 0.7 they are deemed acceptable, those above 0.8 are good, while the closer the reliability coefficient to 1.0, the more reliable the data. Table 6.4 indicates that the internal consistency reliability of the variables used in this study is considered good and excellent.

Table 4: Results from the Reliability Statistics for the Study Variables

Construct	Number of items in the Construct	Cronbach's Alpha
Acceleration	4	0.764
USSD Code	4	0.865
ATM	4	0.903
Electronic Banking	4	0.869
Online customer service	4	0.870
Mobile wallet/App	4	0.868
POS	4	0.803

Source: Computed from field survey data (2024)

Table 4 presents the reliability statistics for various constructs measured in the study, which were evaluated using Cronbach's Alpha (a common measure of internal consistency). Each construct consists of four items, and their corresponding Cronbach's Alpha values are reported to assess the reliability of the scales used. For the Acceleration construct, which includes four items, the Cronbach's Alpha value is 0.764. This indicates an acceptable level of reliability, suggesting that the items within this construct are moderately consistent in measuring the underlying concept. The USSD Code construct also comprises four items and has a Cronbach's Alpha value of 0.865, signifying high reliability. This high value indicates that the items are consistent in capturing the essence of the USSD Code construct. The ATM construct shows excellent reliability with a Cronbach's Alpha of 0.903 for its four items, indicating very strong internal consistency among the items. Similarly, the electronic banking construct, also with four items, has a Cronbach's Alpha value of 0.869, demonstrating high reliability and consistency in measuring the intended concept. In addition, the online customer service construct, with four items, shows a Cronbach's Alpha value of 0.870, indicating a high level of internal consistency, suggesting that the items reliably measure the online customer service construct. Furthermore, the mobile wallet/app construct consists of four items and has a Cronbach's Alpha of 0.868, which signifies high reliability and suggests that the items consistently represent the mobile wallet/app construct. Finally, the POS construct, with four items, has a Cronbach's Alpha value of 0.803, which indicates good reliability, suggesting that the items are reasonably consistent in measuring the point-of-sale construct. In summary, all constructs in the study demonstrate good to excellent reliability, with Cronbach's Alpha values ranging from 0.764 to 0.903, indicating that the items within each construct are consistently measuring the intended concepts.

Confirmatory Factor Analysis: Uni-dimentionality, Reliability and Validity of the Measurement Model

The main objective of this study is to utilise Structural Equation Modelling (SEM) to examine the effect of the determinant factors associated with the acceleration of Islamic financial services delivery. Exploratory data analysis and reliability tests were conducted - as explained in section 5.3 - to ensure the data fulfilled the requirements for the SEM analysis. The measures of overall fit were examined considering four indices. Secondly, parameter estimates were examined to ensure that they were in the right direction and of reasonable size. Thirdly, latent factor correlations were inspected, and fourthly, factor determinacies were examined. Lastly, standardized residuals were examined to determine whether there were any aspects of the model that did not appropriately fit the data well (Dilalla, 2000; Emmoglu, 2011) [17, 19].

The tested measurement model is presented in Figure 1 which shows the seven constructs used in the study. The measurement model is also known as Confirmatory Factor Analysis (CFA), and investigates the "structure" underlying a set of measures collected from respondents. This is a special form of structural equation modelling that shows connections and factor loading of each of the constructs. The structure refers to the ways in which responses to individual measures interrelate to define one or more underlying construct, or factor. In the present study, the measurement model is employed to: (a) determine the appropriate number of constructs or factors underlying the responses to a set of measures; (b) interpret the meaning of each factor in order to label each construct in theory-relevant terms; and (c) quantify how strongly each measure characterizes each factor, thereby pinpointing the specific subsets of each questions that define the constructs. Confirmatory Factor Analyses (CFA) was computed using AMOS to test the measurement models, and factor loading was assessed for each of the item in Figure 1.

Measurement Model

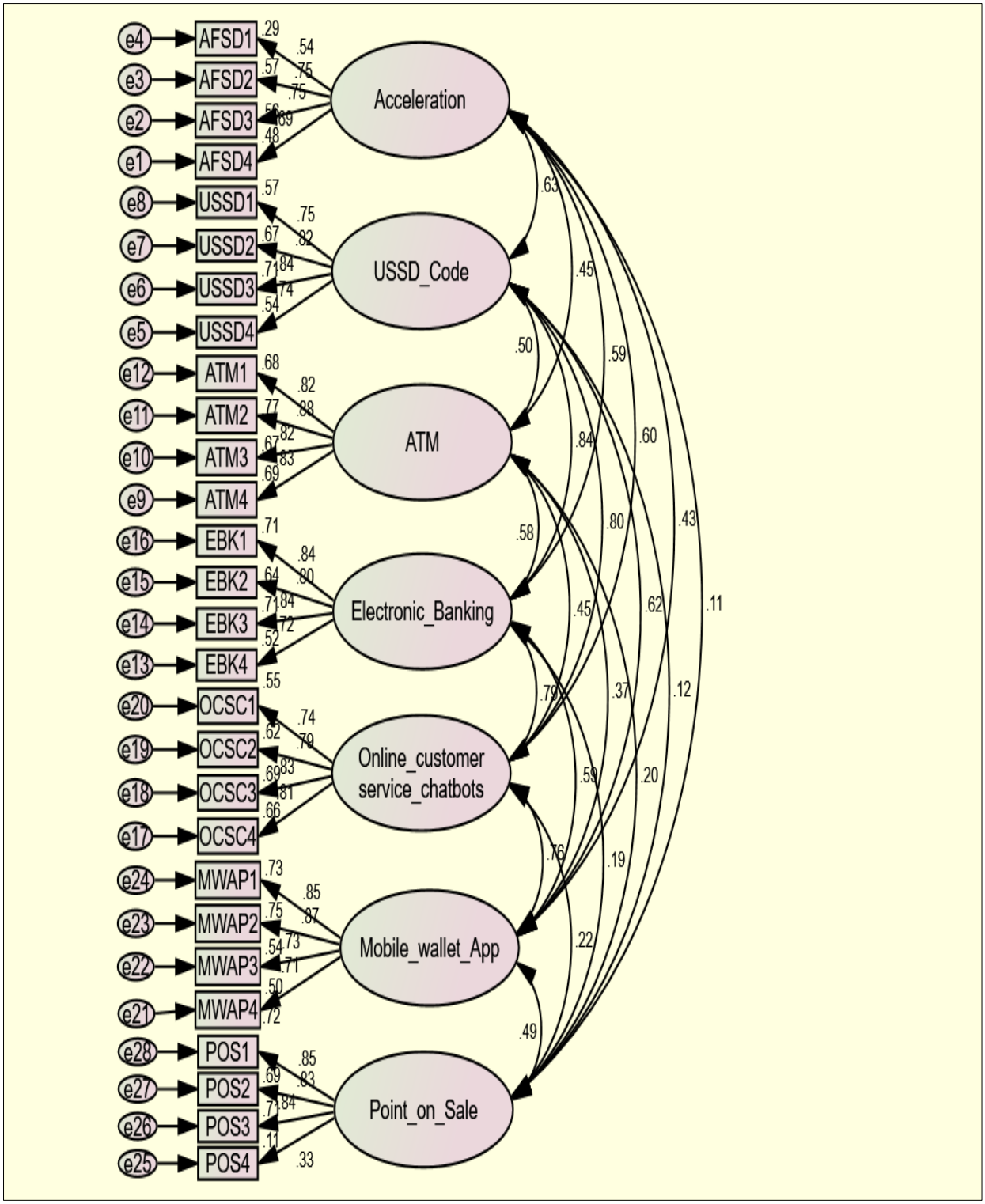

Fig 1: Confirmatory Factor Analyses (Measurement Method)

Table 5: Items Description and Items Deletion

Item Label	Factor Loading	R^2
AFSD4	0.693	0.48
AFSD3	0.751	0.564
AFSD2	0.752	0.566
AFSD1	0.541	0.293
USSD4	0.735	0.54
USSD3	0.844	0.712
USSD2	0.817	0.667
USSD1	0.754	0.569
ATM4	0.83	0.689
ATM3	0.819	0.671
ATM2	0.88	0.775
ATM1	0.822	0.676
EBK4	0.722	0.522
EBK3	0.84	0.706
EBK2	0.801	0.641
EBK1	0.84	0.706
OCSC4	0.815	0.664
OCSC3	0.83	0.69
OCSC2	0.787	0.62
OCSC1	0.742	0.55
MWAP4	0.708	0.501
MWAP3	0.733	0.537
MWAP2	0.868	0.753
MWAP1	0.852	0.726
POS4	0.329	0.108
POS3	0.84	0.706
POS2	0.832	0.692
POS1	0.851	0.724

Source: Computed from field survey data (2024)

The CFA results in Table 5 shows the seven constructs: Acceleration, USSD Code, ATM, electronic banking, online customer service, mobile wallet/app and POS. These are depicted in Figure 1 showing the factor loading for each item together with its R^2. All factor loadings are above the recommended value of 0.60, except AFSD1 which has a value of 0.541 and POS4 which has a value of 0.329; these both need to be deleted before proceeding to the next analysis.

Table 6: Fitness indexes for the Measurement Model

Name of Category	Name of Index	Index Value	Comments
Absolute Fit	RMSEA	0.072	The Required Level is Achieved
	GFI	0.839	The Required Level is not Achieved
Incremental Fit	CFI	0.906	The Required Level is Achieved
Parsimonious Fit	Chisq/df	2.678	The Required Level is Achieved

Source: Computed from field survey data (2024)

The CFA result confirmed that the model was not accepted for further analysis (Table 6). The values indicated that one of the fitness indexes for the constructs did not achieve the required level (i.e., GFI) and hence, the proposed model did not adequately fit the data. In general, the result of the assessment of the measurement model did not show solid evidence of uni-dimensionality, convergent validity, and discriminant validity. Therefore, to achieve the fitness indexes of the measurement model, modifications needed to be carried out in the model whereby any factor loading with less than 0.60 was deleted. Generally, in evaluating a model fit, a variety of goodness indices were used. Kenny and McCoach (2003) [33] contended that there was no consistent standard way of evaluating a model, while other scholars (e.g. Holmes-Smith, Coote and Cunningham,2004; Hulland, Chow and Lam, 1996) [25-26] have maintained that a single report is unlikely to have all fix measures but a subset or sample of fit indices from the major ones are generally reported to illustrate the degree of overall fitness of a model. Any item that did not achieve the required level and had a low factor loading was deleted, as shown in Figure 2 (Byrne, 2010) [13]. The low items usually remained redundant and were of no significance to the model. The new confirms a satisfactory level with relevant R values.

New Measurement Model

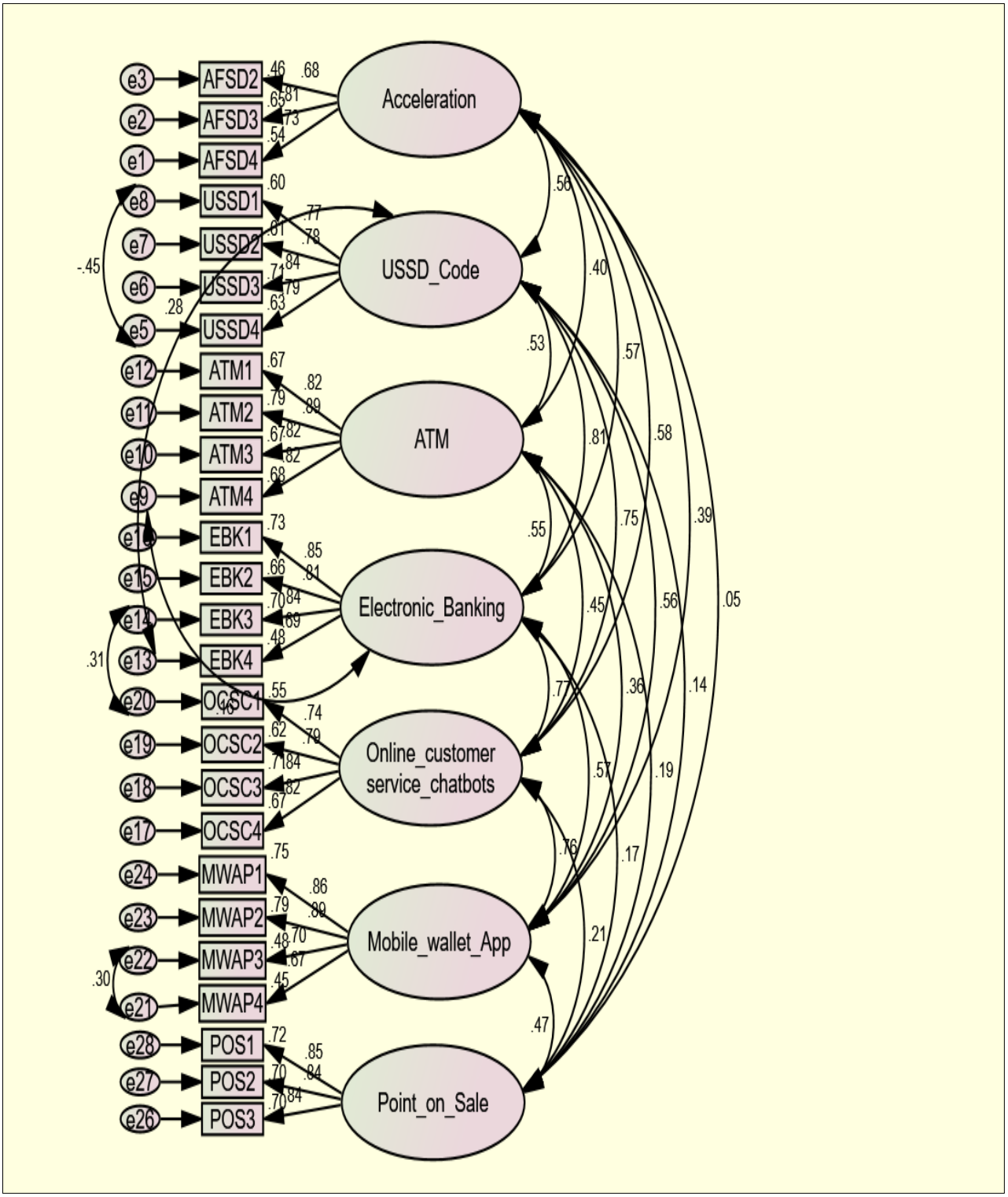

Fig 2: New Factor Loading after Two Items with Low Factor Loadings were Deleted (New Measurement Model)

Figure 2 shows the new measurement model with all constructs satisfying the factor loading requirements. All underlying constructs met the requirement and new fit indices were obtained.

Table 7: Item Descriptions after Deletion

Item Label	Factor Loading	R^2
AFSD4	0.734	0.539
AFSD3	0.802	0.643
AFSD2	0.688	0.473
USSD4	0.735	0.541
USSD3	0.843	0.71
USSD2	0.817	0.667
USSD1	0.755	0.57
ATM4	0.83	0.689
ATM3	0.819	0.671
ATM2	0.881	0.776
ATM1	0.822	0.676
EBK4	0.723	0.522
EBK3	0.84	0.705
EBK2	0.801	0.642
EBK1	0.84	0.705
OCSC4	0.815	0.664
OCSC3	0.831	0.69
OCSC2	0.786	0.618
OCSC1	0.742	0.551
MWAP4	0.709	0.502
MWAP3	0.733	0.537
MWAP2	0.867	0.752
MWAP1	0.851	0.724
POS3	0.835	0.697
POS2	0.836	0.698
POS1	0.853	0.727

Source: Computed from field survey data (2024)
Note: All items met the recommended value. The model has sufficient measurement properties for each single factor model based on its factor loadings.

Table 8: New Fitness Indexes for Measurement Model

Name of Category	Name of Index	Index Value	Comments
Absolute Fit	RMSEA	0.060	The Required Level is Achieved
	GFI	0.900	The Required Level is Achieved
Incremental Fit	CFI	0.943	The Required Level is Achieved
Parsimonious Fit	Chisq/df	2.187	The Required Level is Achieved

Source: Computed from field Survey Data (2024)
Note: The fitness index improved after the modification of the measurement model.

According to Figure 2 and Table 8, the CFA results showed that the RMSEA = 0.060, GFI = 0.900. CFI = 0.943, and Chisq/df = 2.187. The fitness indexes, as shown in Table 10, indicated that the measurement model signified a satisfactory fit of the data and the results for all fit indexes yielded an adequate fit. In general, the assessment of the measurement model showed solid evidence of uni-dimensionality, construct validity, reliability and discriminant validity. Certainly, the model was fit and hence could proceed with further analysis. The measurement model was evaluated, the researcher formulated hypotheses, and specified information about the four aspects of the model: (a) the number of underlying factors (i.e., how many different constructs the instrument taps); (b) the specific measures that serve as observed indicators for each of these constructs; (c) if the model is multidimensional, the nature of the relationships among the factors (i.e., if and how the multiple construct relate to one another); and (d) whether the variance in each measure related to the underlying constructs was correlated or uncorrelated across the multiple measure (i.e., whether the unique errors in the measures covary or are independent).

Table 9: Measurement Model esults for Each Construct (After Modification)

Construct	Item Label	Factor Loading	C.R. (Above0.60)	AVE (Above0.50)
Acceleration	AFSD4	0.734	0.786	0.552
	AFSD3	0.802		
	AFSD2	0.688		
USSD Code	USSD4	0.735	0.868	0.622
	USSD3	0.843		
	USSD2	0.817		
	USSD1	0.755		
ATM	ATM4	0.83	0.904	0.703
	ATM3	0.819		
	ATM2	0.881		
	ATM1	0.822		

Electronic Banking	EBK4	0.723	0.878	0.644
	EBK3	0.84		
	EBK2	0.801		
	EBK1	0.84		
Online Customer Service	OCSC4	0.815	0.872	0.631
	OCSC3	0.831		
	OCSC2	0.786		
	OCSC1	0.742		
Mobile Wallet/App	MWAP4	0.709	0.871	0.629
	MWAP3	0.733		
	MWAP2	0.867		
	MWAP1	0.851		
POS	POS3	0.835	0.879	0.708
	POS2	0.836		
	POS1	0.853		

Source: Computed from field survey data (2024)

From Table 9 the model showed sufficient measurement properties for each factor model based on its Cronbach's Alpha, Composite Reliability, and Average Variance Extracted. Therefore, according to the above results, the model was an adequate for further analysis.

Assessment of Normality for the Data

After the fitness indexes were achieved, there was a need to examine the normality assessment for the data before proceeding to modelling. Table 10 presents the normality assessment for every item involved in the measurement model.

Table 101: Assessment of Normality Distribution for Items in the Construct

Variable	Min	Max	Skew	C.R.	Kurtosis	C.R.
POS1	1	5	-0.878	-6.491	0.249	0.922
POS2	1	5	-0.701	-5.185	-0.251	-0.928
POS3	1	5	-1.059	-7.832	0.928	3.431
MWAP1	1	5	-0.525	-3.88	0.155	0.574
MWAP2	1	5	-0.665	-4.917	0.325	1.2
MWAP3	1	5	-0.787	-5.818	0.325	1.201
MWAP4	1	5	-0.668	-4.938	0.255	0.944
OCSC1	1	5	-0.605	-4.473	0.174	0.642
OCSC2	1	5	-0.51	-3.773	0.16	0.592
OCSC3	1	5	-0.476	-3.521	0.169	0.623
OCSC4	1	5	-0.852	-6.296	0.877	3.243
EBK1	1	5	-0.987	-7.299	1.501	5.548
EBK2	1	5	-0.988	-7.305	1.004	3.713
EBK3	1	5	-1.062	-7.854	1.19	4.399
EBK4	1	5	-0.92	-6.799	0.748	2.766
ATM1	2	5	-0.887	-6.559	0.565	2.09
ATM2	1	5	-0.747	-5.527	0.314	1.16
ATM3	1	5	-0.765	-5.656	0.476	1.76
ATM4	2	5	-0.523	-3.868	-0.29	-1.073
USSD1	1	5	-1.034	-7.644	1.509	5.578
USSD2	1	5	-0.962	-7.115	1.183	4.374
USSD3	1	5	-0.592	-4.377	0.23	0.849
USSD4	1	5	-0.41	-3.034	-0.121	-0.446
AFSD2	1	5	-0.879	-6.496	0.644	2.381
AFSD3	1	5	-0.974	-7.203	1.304	4.821
AFSD4	1	5	-1.26	-9.312	1.462	5.406
Multivariate					345.733	82.048

Source: Computed from field survey data (2024)

In Table 10 the results indicate that both Skewness and Kurtosis meet the recommended values, namely -2 to +2 (Skewness) and -2 to +2 (Kurtosis). This result showed that the data used in this study were normally distributed and the normality was achieved. With this, the data was suitable to proceed with further analysis, specifically the Structural Equation Modelling (SEM)/Structural Model (Figure 9).

Structural Model

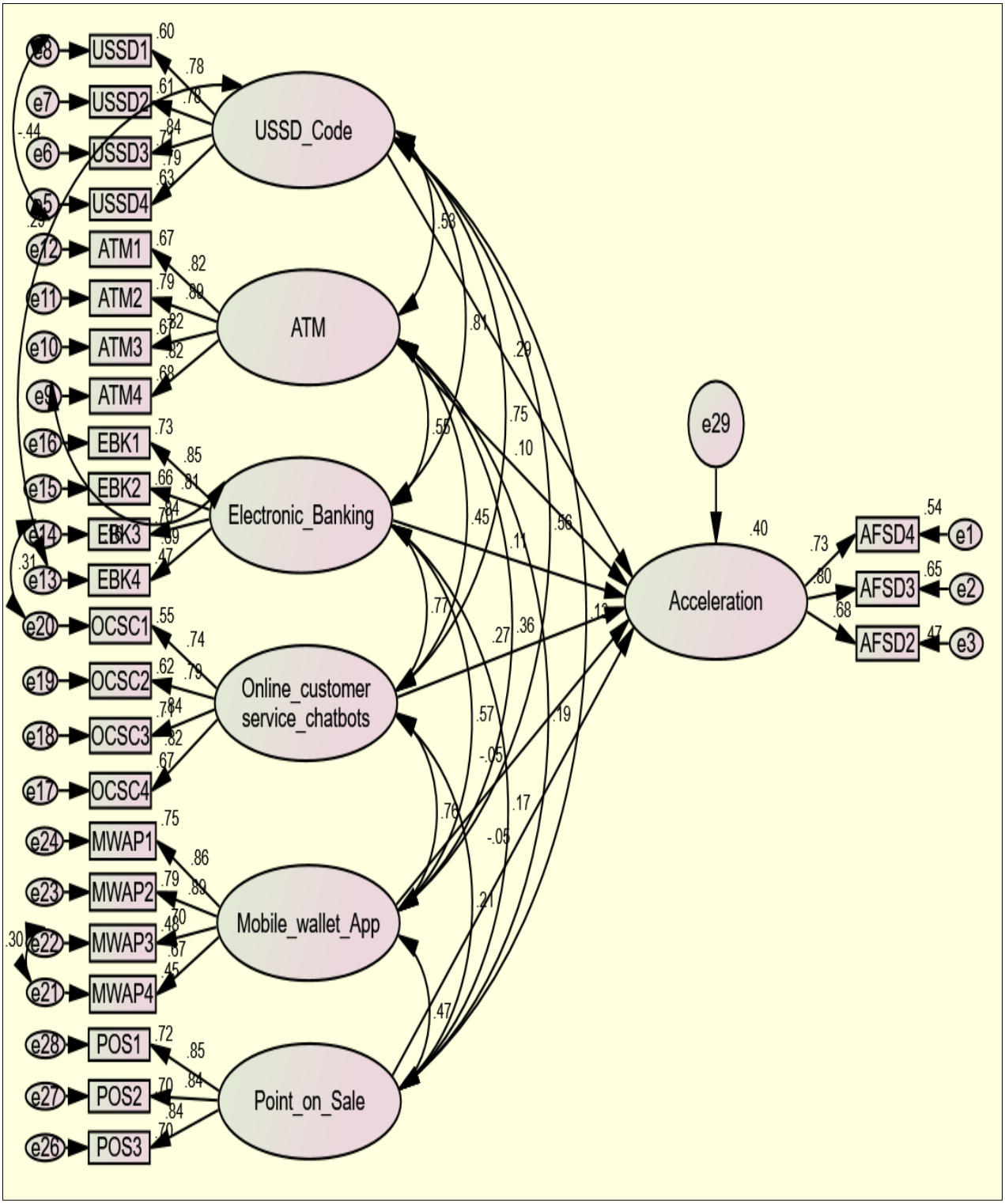

Fig 3: Standardized Estimate for Every Path in the Structural Model

Table 11: Standardized Path Coefficients for the Model

Dependent Construct	Path	Independent Constructs	Estimate
USSD Code	--->	Acceleration	0.29
ATM	--->	Acceleration	0.12
Electronic Banking	--->	Acceleration	0.12
Online Customer Service Chatbot	--->	Acceleration	0.26
Mobile Wallet App	--->	Acceleration	-0.06
Point oo Sale	--->	Acceleration	-0.05

Source: Computed from field survey data (2024)

Table 11 illustrates the path estimates between various independent constructs and the dependent construct, acceleration, in the study. Each path estimate represents the strength and direction of the relationship between the independent constructs and acceleration. The path estimates from USSD Code to Acceleration is 0.29, indicating a positive and moderately strong relationship. This suggests that improvements in the USSD Code service are associated with a significant increase in acceleration. The ATM construct has a path estimate of 0.12 towards acceleration, indicating a positive but weaker relationship. This implies that while ATM services contribute to acceleration, their impact is relatively modest. Similarly, 'electronic banking' shows a path estimate of 0.12 to acceleration, suggesting a modest positive influence. Enhancements in electronic banking services have a small but positive effect on acceleration. The 'online customer service chatbot' construct has a path estimate of 0.26 to acceleration, indicating a positive and moderately strong relationship. This implies that better online customer service, particularly through chatbots, is associated with a notable increase in acceleration.

Conversely, the 'mobile wallet app' construct has a path estimate of -0.06 to acceleration, indicating a slight negative relationship. This suggests that improvements in mobile wallet apps might slightly decrease acceleration, though the impact is minor. Similarly, the 'point of sale (POS)' construct shows a path estimate of -0.05 to acceleration, indicating a slight negative relationship. This suggests that enhancements in POS services might marginally decrease acceleration. In summary, USSD Codes and online customer service chatbots have the most significant positive relationships with acceleration, while ATM and electronic banking have modest positive impacts. In contrast, mobile wallet app and point of sale services show slight negative relationships with acceleration.

Table 12: Correlation Estimate for Each Pair of Exogenous Constructs

Constructs	Path	Constructs	Estimate correlation
USSD Code	<-->	ATM	0.53
USSD Code	<-->	Electronic Banking	0.809
USSD Code	<-->	Online Customer Service Chatbots	0.749
USSD Code	<-->	Mobile Wallet App	0.56
USSD Code	<-->	Point Of Sale	0.135
ATM	<-->	Electronic Banking	0.549
ATM	<-->	Online Customer Service Chatbots	0.449
ATM	<-->	Mobile Wallet App	0.358
ATM	<-->	Point Of Sale	0.187
Electronic Banking	<-->	Online Customer Service Chatbots	0.767
Electronic Banking	<-->	Mobile Wallet App	0.574
Electronic Banking	<-->	Point Of Sale	0.168
Online customer service chatbots	<-->	Mobile Wallet App	0.758
Online customer service chatbots	<-->	Point Of Sale	0.214
Mobile wallet App	<-->	Point Of Sale	0.467

Source: Computed from field survey data (2024)

Table 12 summarizes the correlation estimates between pairs of exogenous constructs in the study. The correlations range from weak to strong positive relationships. USSD Code has strong positive correlations with electronic banking (0.809) and online customer service chatbots (0.749), indicating significant associations. It also has moderate correlations with ATM (0.53) and mobile wallet app (0.56), and a weak correlation with point of sale (0.135). ATM shows moderate correlations with electronic banking (0.549) and online customer service chatbots (0.449), a modest correlation with mobile wallet app (0.358), and a weak correlation with point of sale (0.187). Electronic banking has a strong positive correlation with online customer service chatbots (0.767), and moderate correlations with mobile wallet app (0.574) and point of sale (0.168). Online customer service chatbots shows a strong positive correlation with mobile wallet app (0.758) and a weak correlation with point of sale (0.214). Finally, mobile wallet app and point of sale have a moderate positive correlation of 0.467. The results in Table 6.11 shows an acceptable correlation between all the constructs below 0.85.

Table 13: Squared Multiple Correlation (R^2)

Variable	Estimate (R^2)
Acceleration	0.40

Source: Computed from field survey data (2024)

The result of the squared multiple correlations shown in Table 13 indicate that the predictors of the acceleration of Islamic financial services delivery explain around 40 percent of its variance. In other words, the error variance in the acceleration of Islamic financial services delivery is approximately 60 percent (Figure 4).

Regression Weights for the Model

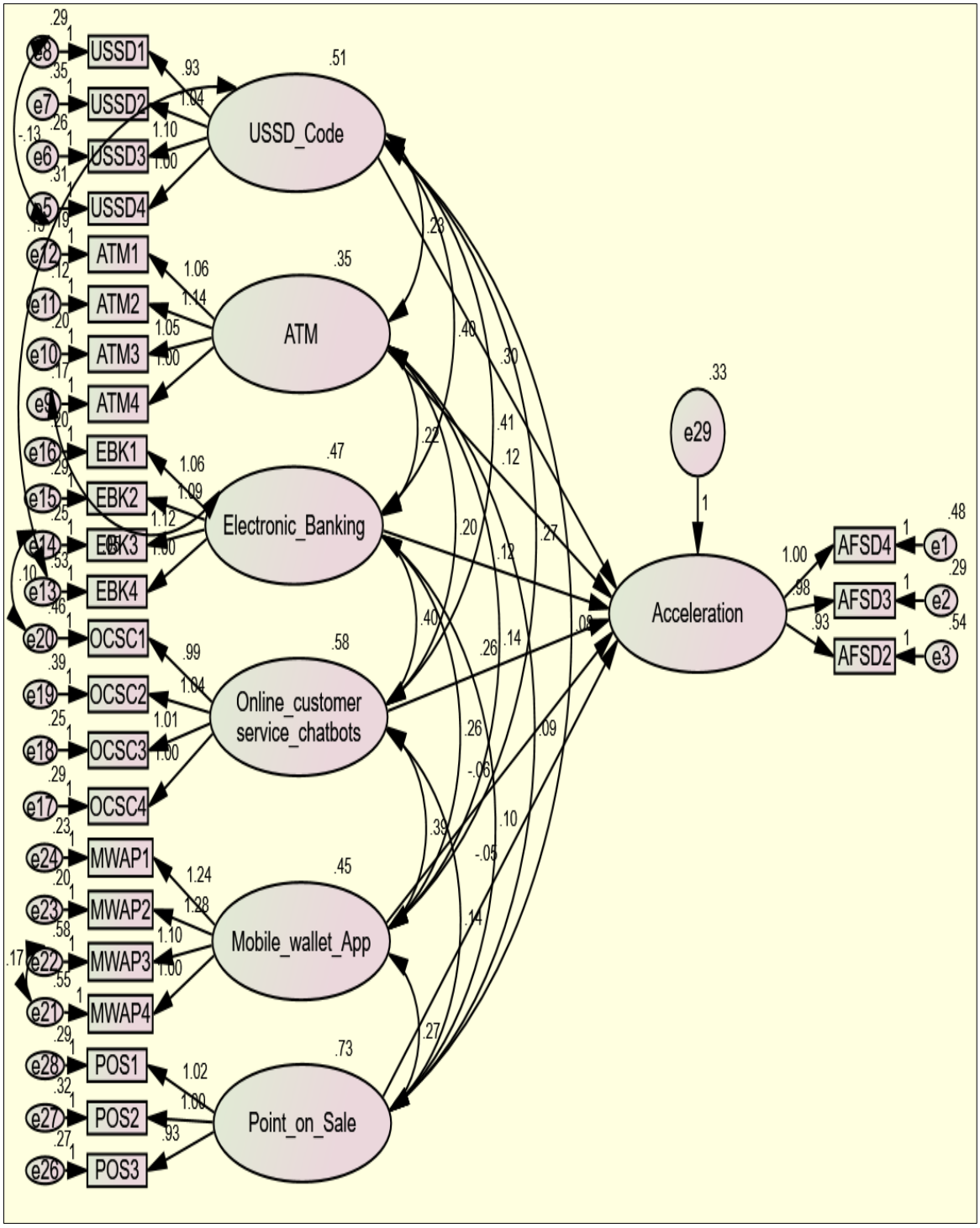

Fig 4: Regression Weights for the Model.

The regression weight indicates the estimate of the beta coefficient that measures the effects of every exogenous construct on the endogenous construct.

Table 14: Regression Weights for Every Path Estimate and its Significance

Hypothesized Path			Estimate	P-value	Result
USSD Code	--->	Acceleration	0.299	0.016	Significant
ATM	--->	Acceleration	0.122	0.014	Significant
Electronic Banking	--->	Acceleration	0.119	0.038	Significant
Online Customer Service Chatbot	--->	Acceleration	0.262	0.022	Significant
Mobile Wallet App	--->	Acceleration	-0.059	0.647	Not Significant
Point Of Sale	--->	Acceleration	-0.046	0.446	Not Significant

Source: Computed from field survey data (2024)

Table 14 presents the path (arrow) and its coefficient, which indicates the effects of every exogenous construct on the respective endogenous construct. To achieve the objective of this study, six hypotheses were developed which are analysed in the following sections.

Testing of the Hypothesis

Table 6.13 presents the hypothesized paths between various constructs and the dependent construct acceleration, along with their path estimates, p-values, and significance results

USSD Code and Acceleration of Islamic Financial Services Delivery

The path from the USSD Code to acceleration has an estimate of 0.299 and a p-value of 0.016, indicating a significant positive relationship. This suggests that improvements in USSD Code services influence an increase in acceleration. Therefore, the null hypothesis was rejected and hence USSD code significantly influence the acceleration of Islamic financial services delivery in Islamic banks in Nigeria. This finding is consistent with previous results by Senyo & Osabutey (2020) [54]; Lubis *et al*., (2019) [39]; Hussein (2020) [27]; Jamaruddin & Markom (2020) [30]; Akhter *et al*. (2019) [4]; and Hussein (2020) [27].

ATM Services and Acceleration of Islamic Financial Services Delivery

Next, the relationship between ATM services and acceleration shows a path estimate of 0.122 with a p-value of 0.014. Despite the relatively high p-value, this relationship is marked as significant, implying that enhancements in ATM services positively impact acceleration, although the effect is less pronounced compared to the impact of USSD Code services. Therefore, the null hypothesis was also rejected, hence ATM services significantly influence the acceleration of Islamic financial services delivery in Islamic banks in Nigeria. This finding is also consistent with previous results by Senyo & Osabutey (2020) [54]; Lubis *et al*., (2019) [39]; Hussein (2020) [27]; Jamaruddin & Markom (2020) [30]; Akhter *et al*. (2019) [4]; and Hussein (2020) [27].

Electronic Banking and the Acceleration of Islamic Financial Services Delivery

Electronic banking to acceleration has a path estimate of 0.119 and a p-value of 0.038. Although the high p-value typically suggests non-significance, the relationship is considered significant, indicating that improvements in electronic banking services have a positive effect on acceleration. Therefore, the null hypothesis was also rejected and electronic banking significantly influences the acceleration of Islamic financial services delivery in Islamic banks in Nigeria. This finding is again consistent with previous results by Senyo & Osabutey (2020) [54]; Lubis *et al*., (2019) [39]; Hussein (2020) [27]; Jamaruddin & Markom (2020) [30]; Akhter *et al*. (2019) [4]; and Hussein (2020) [27].

Online Customer Service Chatbot and the Acceleration of Islamic Financial Services Delivery

For the online customer service chatbot, the path estimate is 0.262 with a p-value of 0.022, showing a moderately strong positive relationship. This marginally significant relationship suggests that better online customer service via chatbots is associated with increased acceleration, enhancing overall service efficiency. Therefore, the null hypothesis was also rejected and the online customer service chatbot was found to significantly influence the acceleration of Islamic financial services delivery in Islamic banks in Nigeria. This finding is consistent with previous results by Senyo & Osabutey (2020) [54]; Lubis *et al*., (2019) [39]; Hussein (2020) [27]; Jamaruddin & Markom (2020) [30]; Akhter *et al*. (2019) [4]; and Hussein (2020) [27].

Mobile Wallet App and the Acceleration of Islamic Financial Services Delivery

Conversely, the relationship between mobile wallet app and the acceleration of Islamic financial services delivery is slightly negative, with a path estimate of -0.059 and a p-value of 0.647, indicating that this relationship is not statistically significant. This suggests that changes in mobile wallet apps do not meaningfully impact the acceleration of Islamic financial services delivery. Therefore, the null hypothesis failed to be rejected indicating that the mobile wallet app does not significantly influence the acceleration of Islamic financial services delivery in Islamic banks in Nigeria. This finding is contrary with previous results by Senyo & Osabutey (2020) [54]; Lubis *et al*., (2019) [39]; Hussein (2020) [27]; Jamaruddin and Markom (2020) [30]; Akhter *et al*. (2019) [4]; and Hussein (2020) [27].

Point of Sale and the Acceleration of Islamic Financial Services Delivery

Similarly, the path from point of sale (POS) to acceleration of Islamic financial services delivery shows a slight negative relationship with a path estimate of -0.046 and a non-significant p-value of 0.446. This implies that improvements in POS services do not significantly affect the. acceleration of Islamic financial services delivery. Therefore, a null hypothesis failed to be rejected, which contrasts with results from Senyo & Osabutey (2020) [54]; Lubis *et al*., (2019) [39]; Hussein (2020) [27]; Jamaruddin & Markom (2020) [30]; Akhter *et al*. (2019) [4]; and Hussein (2020) [27].

In summary, the constructs USSD Code, ATM, electronic banking, and online customer service chatbot exhibit significant positive relationships with acceleration of Islamic financial services delivery, indicating that enhancements in these areas lead to increased efficiency and speed. On the other hand, mobile wallet app and point of sale do not have significant impacts on the acceleration of Islamic financial services delivery, suggesting that changes in these services do not meaningfully influence the overall acceleration of Islamic financial service delivery processes.

The subsequent standardised regression model was generated:

$$AFSD_i = f\ (USSD_i, ATM_i, EBK_i, OCSC_i, MWAP_i, POS_i) \quad (1)$$

$$AFSD_i = 0.299USSD+0.122ATM+0.119EBK+0.262OCSC-0.059MWAP-0.046POS \quad (2)$$

Where $R^2 = 0.40$

Summary of the Findings

The findings from the hypothesis testing provide valuable insights into the factors influencing the acceleration of Islamic financial services delivery in Islamic banks of Nigeria. The analysis identified that four key constructs -

USSD Code, ATM services, electronic banking, and online customer service chatbot - have a statistically significant positive relationship with acceleration. Conversely, mobile wallet app and point of sale (POS) services were found to have no significant impact on acceleration.

1. Significant Constructs Influencing Acceleration:

USSD Code: The significant path estimates of 0.299 (p = 0.016) indicates that USSD Code services positively contribute to the acceleration of Islamic financial services delivery. Enhancing USSD-based banking services can therefore improve service efficiency and accessibility.

ATM services: With a path estimate of 0.122 (p = 0.014), ATM services also play a crucial role in accelerating Islamic financial service delivery. Improvements in ATM infrastructure and accessibility may lead to enhanced service speed and efficiency.

Electronic banking: The positive relationship (path estimate = 0.119, p = 0.038) suggests that electronic banking significantly contributes to acceleration. Expanding and optimising e-banking services can further enhance the efficiency of financial service delivery.

Online customer service chatbot: This construct demonstrated a moderately strong impact with a path estimate of 0.262 (p = 0.022), highlighting the role of AI-powered customer service solutions in enhancing financial service acceleration.

2. Non-Significant Constructs:

Mobile wallet app: The negative path estimate (-0.059) and non-significant p-value (0.647) suggest that mobile wallet applications do not meaningfully influence the acceleration of Islamic financial service delivery. This finding implies that current mobile wallet solutions may not be effectively optimized for financial service acceleration within the Islamic banking sector.

Point of sale (POS) services: Similarly, POS services had a non-significant negative path estimate (-0.046, p = 0.446), indicating that POS transactions do not contribute significantly to accelerating Islamic financial services delivery.

Implications of the Findings

The results suggest that Islamic banks in Nigeria should prioritize the enhancement of USSD code services, ATM services, electronic banking, and online customer service chatbots to improve the efficiency and speed of their financial service delivery. The non-significant results for mobile wallet apps and POS services indicate a need for further investigation into how these digital financial tools can be better integrated or improved to support service acceleration. Additionally, further research may be needed to explore user adoption barriers and technological challenges affecting the effectiveness of these services. In summary, this study provides empirical evidence supporting the role of digital banking solutions in accelerating Islamic financial services delivery in Nigeria. Banks and policymakers should focus on strengthening the most impactful digital solutions to enhance customer experience and financial accessibility in compliance with Islamic financial principles.

Recommendation

Based on the findings of this study, the following recommendations are proposed to enhance the acceleration of Islamic financial services delivery through FinTech:

1. Enhance the Regulatory Framework for Fintech in Islamic Banking The Central Bank of Nigeria (CBN), in collaboration with the Financial Services Regulation Coordinating Committee, should develop a clear and supportive regulatory framework that accelerates FinTech innovation while ensuring strict compliance with Islamic banking principles. This framework should provide streamlined guidelines for Shariah-compliant digital products, reducing time-to-market for new services. The implementation of regulatory sandboxes specifically for Islamic FinTech would allow for the rapid testing and deployment of innovative solutions.
2. Improve Infrastructure for Digital Financial Services To accelerate service delivery, significant public and private investment is required to improve digital infrastructure, particularly in remote and rural areas. This includes expanding high-speed internet connectivity, enhancing mobile network coverage, and ensuring reliable electricity. Public-private partnerships between the government, Islamic banks, and telecommunication companies are critical to building the robust infrastructure needed for seamless digital financial services.
3. Develop and Scale Shariah-Compliant FinTech Products Islamic banks should prioritize the development and rapid scaling of core Shariah-compliant FinTech products that directly accelerate service delivery. This includes optimizing and expanding the reach of USSD banking platforms, deploying more ATMs in strategic locations, enhancing the functionality of electronic banking portals, and integrating advanced, AI-driven online customer service chatbots to improve efficiency and reduce response times.
4. Facilitate Strategic Collaboration Between Islamic Banks and Fintech Firms Policymakers and bank executives should actively foster strategic partnerships between Islamic banks and FinTech firms. The focus should be on co-creating solutions that directly enhance the speed, efficiency, and accessibility of service delivery, moving beyond basic partnerships to deep technological integration.
5. Support Research and Development (R&D) in Fintech for Service Acceleration Islamic banks should allocate resources to R&D focused on technologies that directly accelerate service delivery, such as blockchain for instant settlement, AI for automated Shariah compliance checks, and API integrations for seamless service ecosystems. Staying at the forefront of technological innovation is key to maintaining a competitive advantage in service speed.

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How to Cite This Article

Bashir ZM. The impact of financial technology (Fintech) on acceleration of Islamic financial services delivery: a case study of Islamic banks in Nigeria. Journal of Frontiers in Multidisciplinary Research. 2025;6(2):365-384.