

EFFECT OF FINTECH SERVICES ON FINANCIAL INCLUSION OF START-UPS IN FCT-ABUJA

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<https://doi.org/10.70118/ajbam-02-2025-133>

ABSTRACT

This study examined the effect of financial technology (Fintech) services on the financial inclusion of start-ups in the Federal Capital Territory (FCT), Abuja. A quantitative research methodology was employed using an ex-post facto research design. The study population comprised all start-ups in FCT, Abuja that have been operational within the last one year. Time series data were utilized, and these secondary data were sourced from the Central Bank of Nigeria Statistical Bulletin. A census sampling approach was adopted. To test for stationarity among the variables, the Augmented Dickey-Fuller (ADF) unit root test was conducted. Hypotheses were tested using multiple regression analysis with the aid of E-Views statistical software version 23. Findings revealed that Point of Sale (POS) terminals have a significant effect on the financial inclusion of start-ups in FCT, Abuja. The second finding indicated that Automated Teller Machines (ATMs) also have a positive and significant effect on financial inclusion among start-ups. The third hypothesis showed that Online Mobile Banking (OLMB) has a significant effect on the financial inclusion of start-ups in the FCT. The study concludes that Fintech solutions, specifically POS terminals, ATMs, and online mobile banking, have a positive and statistically significant effect on the financial inclusion of start-ups in FCT, Abuja. The study recommends that to improve financial inclusion, Digital Financial Services (DFS) agents should be empowered to provide additional value-added services beyond acting as basic cash points. These services should include account opening and the resolution of customer complaints. DFS agents should be equipped to report failed POS transactions to financial institutions on behalf of customers, eliminating the need for customers to visit bank branches.

Keywords: *Fintech, Financial Inclusion, Start-ups, Point of Sale (POS), Automated Teller Machine (ATM), Online Mobile Banking (OLMB)*

INTRODUCTION

The increasing popularity of transaction and payment services through technology has revealed the tremendous potential to expand financial inclusion through financial technology. These financial revolutions have already improved the lives of millions by reducing the need to carry cash or spend time

traveling over long distances to reach the nearest point of service. However, despite Nigeria as a country projecting itself as the largest in Africa with 31 commercial banks, 6 merchant banks, 887 microfinance banks and 47 mobile money operators, which is an indication that the level of competition in the sector is high, available statistics shows that about 36% of adult Nigerians are financially

excluded from formal financial products and services according to Enhancing Financial Innovation and Access Report,(2022). This figure mirrors those adult populations for financial exclusion and financial exclusion is closely tied to poverty and economic vulnerability. Thus, connecting every individual to financial products and services has underpinned financial inclusion effort across the globe over the last 10 years. Furthermore, the financial system has witnessed a lot of changes in recent years. The integration of financial technology (Fintech) has led to improved usability and delivery. Financial technology is driving disruption in the banking world, which is finance today (Ohiani, 2021). Fintech has gone through so many changes and a lot of evolution in the past couple of years; the recent hype or boom of Fintech can be attributed to the fact that technology has advanced significantly across the globe. Iwedi, Kocha and Wike (2022) posit that financial technology is a major catalyst in changing the paradigm of the banking services in Nigeria.

Despite the growing importance of financial inclusion in driving economic growth and development, many startups in the Federal Capital Territory (FCT), Abuja continue to face challenges in accessing financial services. The emergence of Fintech technology has presented an opportunity to address these challenges, but its impact on financial inclusion among startups in FCT, Abuja remain unclear

However, with the adoption of innovative modern technology and various technology enabled systems is believed to reduce these challenges and also enhance service provision of banks (Gbanador, 2021). The introduction of electronic banking (e-banking) triggered the deployment of several electronic payment (e-payment) channels, including automated teller machines (ATM), mobile banking (MB), internet banking (IB), point of sales (POS), NIBSS instant payment (NIP), and others. 21st century banks operate in a highly competitive environment that is also highly dynamic and unpredictable. Shifting economic factors, advances in technology and increased awareness and amplified demands of consumers have made the operating environment extremely disruptive hence the

advent of Fintech. the use of these electronic payment system has contributed greatly in aiding the growth of Fintech technology among startup in FCT.

Furthermore, limited access to financial services, makes Startups in FCT, Abuja face difficulties in accessing financial services such as access to credit, savings, and making digital payment. Others are high cost of financial services from traditional financial institutions often charge high fees for their services making it difficult for startups to access financial services, lack of financial literacy, as many startups in FCT, Abuja lack financial literacy to navigate the complex financial landscape, inadequate infrastructure such as reliable internet and electricity, hinders the adoption of Fintech technology for financial inclusion among startups is worrisome. This study seek to examine effect of Fintech on financial inclusion of startups in FCT Abuja. The main objective of the study is to investigate the effect of Fintech services on financial inclusion of startups in FCT, Abuja. Specific objectives are:

- i. To determine the effect of Point of sales (POS) services on financial inclusion of startups in FCT, Abuja.
- ii. To ascertain the effect of Automation Teller Machine (ATM) services on financial inclusion of startups in FCT, Abuja.
- iii. Evaluate the effect of Online mobile banking services on the financial inclusion of startup in FCT Abuja

LITERATURE REVIEW

Concept of Fintech

Fintech is a fusion of the terms 'Financial' and 'Technology' and describes the use of technology to deliver financial solutions (Buckley et al., 2017). It refers to the use of modern innovation to deliver financial and banking services (Ozili, 2018). The Alliance for Financial Inclusion (2016), defines Fintech as the use of technology and disruptive business models to provide financial services. Similarly, in the views of Gimpel, Rau and Roglinger (2018,) Fintech denotes "the use of digital technologies such as the Internet, mobile computing, and data

analytics to enable, innovate, or disrupt financial services". Their definition agrees with that of Popescu (2019) who describes Fintech as "new technologies that seeks to improve and automate the delivery and use of financial services". According to the Financial Stability Board (FSB, 2017), Fintech refers to technology-driven innovations that have significant effects on financial services. In summary, Fintech is defined as the innovative and intense use of technology to drive the development and delivery of financial products and services either by newly emerging technology-based financial companies (Fintech start-ups) or established regulated financial institutions (incumbents). This may lead to the creation of new financial products or services, business models, and delivery channels, or the modification of existing ones in ways that better meet the need of consumers.

Automated Teller Machine (ATM)

Automated Teller Machine (ATM): According to Rose (1999), an automated teller machine (ATM) is a computer terminal that combines a cash vault and recordkeeping system. It allows users to access the bank's bookkeeping system 24 hours a day by punching a special code number into the computer terminal or by using a card bearing a personal identification number (PIN). An ATM card is a piece of plastic with a magnetic strip that contains all of the customer's personal information, including name, account number, card limit, and bank of concern. When a cardholder inserts an authorized credit or debit card from a bank that they are currently a customer of, this electronic device serves as a cash dispenser and provides other banking services as needed. Additionally, it helps clients of financial institutions or intermediaries carry out necessary financial transactions, like cash withdrawals, fund transfers, or account information retrievals, whenever they want and without having to deal with bank employees directly. This is accomplished by the account holder inserting an electronic card into the machine and then entering a Personal Information Number (PIN), which grants the account holder the necessary access (Deekor, 2021).

Point of sale (POS)

This is an electronic terminal or device that is typically used in retail settings, such as gas stations, supermarkets, restaurants, etc., to process card payments via a PIN. It records each transaction made, prints the required receipt, and moves money from customers' accounts to the vendor's account, often referred to as the merchant. It obtains the necessary data from a customer's debit or credit cards, verifies that there are enough funds in the accounts, debits the account and transfers the funds to the merchant if the account is funded, logs each transaction that is completed, prints the required receipt, or declines the transaction due to insufficient funds. The point-of-sale system has gained widespread usage, particularly in places lacking ATMs and banks. Through the process of exchanging cash for amounts debited from customer cards premium, they fill the gap left by cash payments. For those with debit or credit cards, mobile bank agents offer readily available cash. But there is a lot of risk involved, particularly given the rise in kidnapping and fraud. There is a risk that if a card is used on a terminal after being stolen or obtained under duress, the merchant will be held accountable because the transaction will be linked to that particular terminal. Along with stamp duty, CBN recently added a N50 fee to each POS transaction. Due to these, POS usage decreased and many terminals became inactive (Deekor, 2021).

Mobile banking

The use of a combination of a personal digital assistant and mobile telecommunication devices to perform credit transactions, payments, account transactions and check account balances and other banking transactions is what is termed mobile banking. Muriuki (2009) established that the use of mobile banking applications is mainly concerned with three important aspects of mobile financial information services, mobile brokerage and mobile accounting. Furthermore, Muriuki (2009) also contends that there is a significant growth in both the development and use of mobile banking applications with more than 2 in every people having access to mobile banking (Muriuki, 2009). Mobile banking has resulted in a

significant improvement in convenience in banking and this has also extended to include beneficial effects on banks. Its development has also necessitated the development and use of other services such as virtual bank accounts and consumers can access their accounts through text messages. Nowadays, consumers are no capable of trading stock online, get access to other financial information online and transfer funds online whilst at home or travelling and such developments are increasingly becoming beneficial (Meute, 2010). With the increased globalisation levels, it becomes apparent and beneficial for both consumers and banks to make use of mobile banking as it results in a reduction in costs, saves time and offers a lot of convenience and flexibility. Mobile banking is thus a form of innovation that allows banks will notably be in a strong position to deliver a wide range of services through the use of mobile banking applications. Muriuki (2009) established that there is a positive relationship that exists between the use of mobile banking applications and bank performance.

Financial Inclusion

Financial inclusion is a process by which all households, individuals, and businesses regardless of income level have access to affordable, flexible, eco-friendly, and appropriate financial services that meet their daily financial and economic needs to improve their lives. The maxim of financial inclusion fundamentally inferred connecting the unbanked and underbanked individuals, businesses, and households to far-reaching economic benefits and financial services (Sarma, 2015; Siddik et al., 2019; Udo et al., 2023). Financial development and financial inclusion are broadly two inseparable concepts (financial inclusion is a basic determining element of financial development), it is imperative to establish that a country may be financially developed with several individuals, businesses, and households and data excluded from the mainstream financial system (Lenka, 2021). Both promote economic growth with divergent magnitudes (Chauvet et al., 2018). Financial inclusion refers to “the delivery of formal financial products and services to all segments of a population irrespective of their economic situation, such that even those with

the lowest incomes can have access to them” (The Asian Development Bank, 2017). As a multidimensional concept, financial inclusion is generally measured along three (3) main dimensions (Sarma, 2008; Alliance for Financial Inclusion (AFI), 2013):

Access: This refer to the ease/convenience of accessing and using formal financial products/services. It reflects the depth of outreach of financial services in an economy (Okoyeuzu et al., 2019; World Bank and PBC, 2018).

Usage: this refers to the regularity and duration of use of financial products and services by consumers over time, as well as the combination or range of services (e.g. payments, savings, credit, insurance) used by consumers to meet their financial needs (Aina & Oluyombo, 2014).

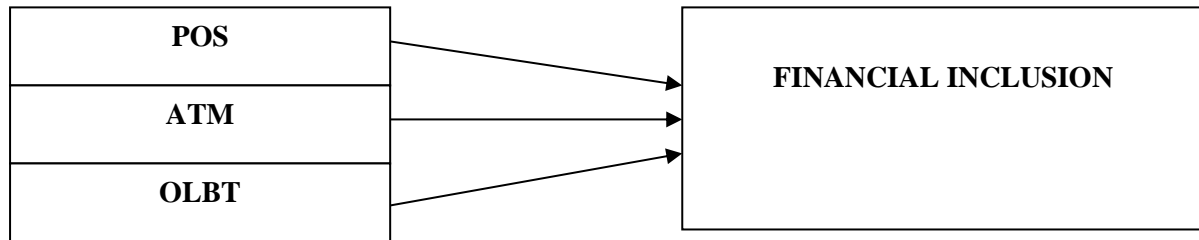
Theoretical Framework

The study is anchored on the Technology Acceptance Model (TAM). The technology acceptance model (TAM) propounded by Fred D. Davis in the year 1989 adopted two perceptions (perceived usefulness and perceived ease of use) that influence the users. These theories have been advanced by Davis and other scholars. The TAM is an information system theory that models how users come to accept and use a technology. It tries to demystify the reason why people will choose to use a particular technology. The actual use of a technology is the point where we want everyone to use a technology. The behavioral intention is influenced by our attitude towards the technology. Its measurability is based on the perceived usefulness and perceived ease of use. He said, “When users are presented with a new technology, two factors will influence their decision about accepting or rejecting the technology: Perceived Usefulness – Will the technology be useful to the user in getting a job done? Perceived Ease of Use – Will it be easy to use without necessarily going through manual guide?” That means it has to be simple; people have to look comfortable using it. An external factor such as social influence is an important factor to determine the attitude of the users of a technology.

Conceptual Framework

Fintech (Independent Variable)

(Dependent Variable)



Researcher Conceptual Framework of Fintech and Financial Inclusion

Empirical Review

Iwedi et. al., (2023) examined the effect of financial technology on financial inclusion in Nigeria. This study used quarterly secondary data, and all the data were extracted from the Central Bank of Nigeria (CBN) Statistical Bulletin (2021) from 2009-2019. In this study, financial technology was proxied using point of sale, automated teller machine, web banking technology and mobile banking technology, while financial inclusion in Nigeria was proxied using the deposit ratio. Time series data were analysed using the vector auto regression (VAR) estimation technique. The results show that web banking technology has a positive and significant effect on financial inclusion in Nigeria, whereas point of sale, automated teller machine and mobile banking technology have a positive but not significant effect on financial inclusion in Nigeria. This suggests that an increase in the usage of financial technology (ATM, POS, WEB and mobile technology) will cause more Nigerians to be financially included. Based on the findings, the study recommends that policymakers should encourage the development of affordable and accessible 3G and 4G mobile networks to provide rural and remote customers with better access to mobile banking and other financial technologies. Finally, banks should seek to improve the financial literacy of their customer base by offering regular educational programmes on topics such as money management and financial planning.

Aaron and Esther (2024) examine the effect of Fintech on financial inclusion in Nigeria, with emphasis on the access and usage dimensions of financial inclusion. The study utilised interpolated quarterly time series data obtained from the World Bank Development Indicators (WDI) database, the Central Bank of Nigeria (CBN), and the Nigeria Bureau of Statistics (NBS) for the period of 2012 to 2019. The Auto Regressive Distributed Lag (ARDL) framework was used to estimate the short-run and long-run relationship between the dependent and explanatory variables of the study. The findings indicate that the Availability of Automated teller Machines (ATM) and Digital Financial Services (DFS) agents have significant positive effects on the access dimension of financial inclusion in Nigeria, while mobile phone ownership have a negative and significant impact on the access dimension of financial inclusion. On the other hand, ATM and internet banking usage have positive impacts on the usage dimension of financial inclusion in Nigeria, while mobile money has a negative impact on the usage of formal financial services in Nigeria. The study recommends that concerted efforts should be directed at promoting the provision and adoption of Fintech-enabled services, as they can act as key drivers of financial inclusion in Nigeria.

Ephraim et.al., (2023). Studies exploring the nexus between Fintech and financial inclusion in Nigeria employed the indirect measures of Fintech. Previous studies in this area also adopted a bundle indicator of financial inclusion, ignoring the individual indicators' effect. This study contributes to the extant

literature by expanding the generic Fintech frontier to capture the direct measures (automated teller machine, web pay, mobile banking, and point of sale) and also test the model on Nigeria by unbundling financial inclusion indicators individual index to examine the degree of contribution. The autoregressive distributed lag (ARDL) bounds test cointegration approach was used to estimate the respective equations and find evidence of a long-run nexus between Fintech, financial inclusion, and economic growth. The direct measures of Fintech positively and significantly impact financial inclusion and economic growth. The negative nexus between automated teller machines, financial inclusion, and economic growth can be attributed to the closure of most automated teller machine galleries in bank branches and outside the branches due to, high maintenance costs and insecurity around galleries. This is evident in the long waiting time to use the automated teller machine, and the growing number of bank customers further suggests that the current 22,500 automated teller machines are insufficient to enhance inclusive growth in Nigeria. Individual financial inclusion indicators positively impact economic growth while the usage dimension of financial inclusion improves economic growth but not significantly. Also, bank branches had a positive and significant impact on economic growth, and credit to private had a non-significant effect.

METHODOLOGY

The study used quantitative methodology using ex-post facto design. The population of the study consists of all the Startups in FCT, Abuja that have been in operations in the last one year. The study adopted time series data, and these secondary data were extracted from Central Bank of Nigeria Statistical Bulletin (2023) for a period ten years, ranging from

2015–2024. time series data on volume of transaction on automatic teller machine (ATM), volume of transaction on point of sale (POS), and volume of transaction on Online mobile banking technology (OMBT) in Nigeria form the independent variables, while financial access and financial usage was the proxy for financial inclusion as the dependent variable, and was measured using. The ratio of total deposit, savings, credit and transactions was used as a proxy for financial inclusion measurement in Nigeria. Due to the nature of the population, a census sampling approach was adopted which makes use of the entire population. This is because is a time Series data that is considered suitable for correlation examinations, other than the more accurate randomized experiments (Lewis-Beck et al., 2003). The formulated hypotheses were tested using multiple regression through the use of E-view statistical software version 23. Model Specification. For the purpose of this study, the independent variable Fintech proxies with Online banking technology (OLBT), point of sale (POS), and automatic teller machine (ATM). The functional relationship between financial technology and financial inclusion in FCT, Abuja is modeled as follows:

$$\text{Financial Inclusion} = f(\text{Financial Technology}) \text{ DEP} = f(\text{OLBT, ATM, POS,})$$

Because this is functional or linear equation, in mathematical form, when transformed into an econometric equation, we have: $\text{DEP} = \alpha + \beta_1 \text{OLBT} + \beta_2 \text{ATM} + \beta_3 \text{POS} + \mu$

where: DEP = Dependent variable (financial inclusion) POS = Volume of transaction on point of sale in Nigeria ATM = Volume of transaction on automated teller machine in Nigeria OLBT = Volume of transaction on Online banking technology in FCT, Abuja α = Constant or Intercept $\beta_1 - \beta_4$ = Coefficient or Parameters μ = the error term

RESULTS AND DISCUSSION

Table 4.1 Model 1: Descriptive Statistics

	DPR	POS	ATM	OLBT
Mean	18.36182	24.224243	11.809	48.954040
Median	15.62000	3824543.	93849411	6746535.
Maximum	19.65000	1.3008	3.5608	5.8808
Minimum	14.41000	118620.0	3321245.	1.10400.0
Std. Dev.	0.735431	.34751073	.80987822	1.2508
Skewness	-0.161648	1.738788	0.636488	3.347517
Kurtosis	1.742483	4.679184	2.848862	13.14925
Jarque-Bera	3.927598	28.37294	2.982929	274.7248
Probability	0.140324	0.000001	0.225043	0.000000
Sum	772.7200	9.7708	5.1409	2.1109
Sum Sq. Dev.	29.29745	5.4916	2.8217	6.697
Observations	40	40	40	40

From Table 4.1, the descriptive statistics revealed that the mean deposit rate was 18.36%, the kurtosis was 1.74, and the standard deviation was 0.735; this implies a reasonable variation level within this data group. A normal distribution of sample data is represented when the kurtosis is less than two standard deviations from the mean of the distribution, and the standard deviation is greater than four standard errors from the mean of the distribution. This result means that the variance of the data is not significantly different from zero, and the data is close to normally distributed. The value for kurtosis is also less than the mean; therefore, the variability between individual data points is much higher than the mean value of the data. In this case, the kurtosis value suggests that the data are positively skewed towards high values. In other words, the data in Table 4.1 tends to be concentrated around the upper end of the scale, indicating a greater degree of variability compared to the data set's mean value).

The mean value of POS was 24.224,243, kurtosis was 4.67, and the standard deviation was 34.751,073, implying a high level of variability within the data group. This result indicates a lack of homogeneity in the data set, which means that the values are not uniformly distributed across the range of possible values. The standard deviation of the data is higher

than the mean values of the data, which signifies a higher amount of variation in the data than the mean value of the data. The kurtosis value indicates that the data's variability is more than the values expected under normal circumstances. The mean value of ATM was 1.1809, kurtosis was 2.84, and the standard deviation was 80987822, implying that the data is usually distributed. Descriptive statistics provide valuable information about the data and allow for further analysis. The mean value gives an overall summary of the data and can be used to compare various values across data sets. The standard deviation describes the variation in values and indicates how spread out the values are from one another. The kurtosis measures the peakedness and asymmetry of the data and indicates the degree of skewness in the data set. Kurtosis can also indicate the presence of an outlier and whether its removal would significantly change the overall shape of the distribution. The mean value of OLBT was 48954040, kurtosis was 13.149, and the standard deviation was 1.2508, implying moderate variability in the data group. This means that there are some differences in the data. However, an underlying pattern unites the data, so the values are not evenly distributed across the range of possible values. The standard deviation is higher than the mean values, but the differences are not significant enough to suggest that the data is highly

heterogeneous. The kurtosis value indicates that the data's variability is around twice the

value that would typically be expected under normal circumstances.

Table 4.2 Stationarity Test Result

Unit Root Test on the Variables

Variables	D(DPR)	D(POS)	D(ATM)	D(OLBT)
ADF Statistics	-6.340732	-7.678054	-7.031796	-9.380524
1%	-3.596616	-3.621023	-3.605593	-3.600987
5%	-2.933158	-2.943427	-2.936942	-2.935001
Probability	0.0000	0.0000	0.0000	0.0000

Source: Author's Computation using E-view 9.00

The study conducted stationarity test for financial technology and financial inclusion variables using the Augmented Dickey Fuller (ADF) test. Table 4.2 showed that D(POS) , D(ATM) and D(OLBT) were not stationary at first level and second difference but stationary at first difference due to the fact that the values of its ADF test statistics at first differences were greater than their corresponding critical

values at 5% level of significance. Thus, was stationary at first difference. Also, the variables were integrated of order one $I(1)$ and $I(0)$ in which signify that regression analysis such as t-test and f-test were appropriately and adequately needed in this study.

Test of Hypotheses

H₀₁: Point of sales (POS) does not have significant effect on financial inclusion of startups in FCT, Abuja.

Table 4.1: Ordinary Least Square Method of Regression

E-view Statistical Software Package, 23.00 Editions.

Dependent Variable: Financial inclusion(Access)					
Method: Least Squares					
Date: 23/02/25 Time: 11:59					
Sample: 40					
Included observations: 40					
<hr/> <hr/>					
Variable	Coefficient	Std. Error	t-Statistic	Prob.	
<hr/> <hr/>					
C	0.620469	0.612218	0.754321	0.6126	
POS	0.223532	3.216512	1.002030	0.024	
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R-squared	0.693284	Mean dependent var		0.121437	
Adjusted R-squared	0.674280	S.D. dependent var		0.122332	
S.E. of regression	0.173983	Akaike info criterion		-1.043686	
Sum squared resid	0.031495	Schwarz criterion		-1.221220	
Log likelihood	7.321058	Hannan-Quinn criter.		-1.554356	
F-statistic	0.783708	Durbin-Watson stat		1.543869	
Prob(F-statistic)	0.000564				

Source: Data output using e-view statistical package,

1% level of significance, 5% level of significance and 10% level of significance

The regression output indicates the coefficient for POS (0.22), of financial technology are positive and significant in achieving financial inclusion (Access, usage and quality to financial services) among startups in Federal Capital Territory, Abuja. Point on sale (POS) has the t-statistic value of (1.012030,) which is less than the standard error value of 3.26512 and p-value of 0.024 which indicate that POS is significant in achieving financial inclusion. The coefficient of determination R² indicates how much the independent variable contributes to the dependent variable. It reveals that financial technology (POS, influence financial inclusion (access, and usage) by 69.33%. The remaining 30.67% can be explained by other related factors not noted

in the regression model. This shows the existence of a linear relationship between financial technology(POS) and financial inclusion among startup in FCT Abuja. The F-statistic value of 0.783708 is significant at p-statistic value of 0.000 and the Durbin Watson value of 1.54 indicates that there is present of auto correlation. Therefore the alternative hypothesis is accepted that Point of sales have positive significant effect on Financial inclusion among startup in FCT Abuja.

The implication of this finding indicate that financial technology can improve financial inclusion of startup by providing access to financial services such as digital payment, savings, and credit to Startup in FCT Abuja.

Test of Hypothesis 2

H₀₂ Automation Teller Machine (ATM) does not have significant effect on financial inclusion of startups in FCT, Abuja

Table 4.51: Ordinary Least Square Method of Regression.

E-view Statistical Software Package, 23.00 Editions.

Dependent Variable: Financial Usage
Method: Least Squares
Date: 23/02/25 Time: 12:58
Sample: 40
Included observations: 40

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.463288	0.132115	0.454936	0.5211
ATM	0.252178	5.060444	2.223023	0.0110
R-squared	0.755432	Mean dependent var	2.743380	
Adjusted R-squared	0.732218	S.D. dependent var	1.532259	
S.E. of regression	0.475041	Akaike info criterion	1.343302	
Sum squared resid	31.52656	Schwarz criterion	1.421120	
Log likelihood	-102.0338	Hannan-Quinn criter.	1.321161	
F-statistic	121.1270	Durbin-Watson stat	0.124153	
Prob(F-statistic)	0.000000			

Source: Data output using e-view statistical package, 2023

1% level of significance, 5% level of significance and 10% level of significance

The regression result indicates the coefficient for ATM (0.252178) of Financial technology are positive and significant in achieving financial inclusion (usage and access) among startups in Federal Capital Territory, Abuja..Automation Teller Machine (ATM) has the t-statistic value of (2.223023) which is less than the standard error value of 5.060444 and greater than the p-value of 0.000 indicates that Fintech in terms of ATM is significantly positive to financial inclusion(usage and access) among startup in FCT Abuja. The coefficient of determination R² indicates how much the independent variable contributes to the dependent variable. It reveals that

financial technology (ATM,) influence financial inclusion by 75.54%. The remaining 24.46% can be explained by other related factors not noted in the regression model. This shows the existence of a linear relationship between financial technology and financial inclusion among startup in FCT Abuja. The F-statistic value of 27.66 is significant at p-statistic value of 0.000 and the Durbin Watson value of 0.124153 indicates that there is present of auto correlation. Therefore, the alternative hypothesis is accepted that Automation Teller Machine (ATM) have positive significant effect on financial inclusion among startup in FCT Abuja.

H₀₃: Online mobile banking does not have significant effect on financial inclusion of startups in FCT, Abuja.

Table 4.1: Ordinary Least Square Method of Regression

E-view Statistical Software Package, 23.00 Editions.

Dependent Variable: Financial inclusion

Method: Least Squares

Date: 23/02/25 Time: 12:10

Sample: 40

Included observations: 40

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.720661	0.643328	0.794311	0.6579
OLMB	0.132364	1.704252	1.052031	0.004
R-squared	0.893133	Mean dependent var	0.121437	
Adjusted R-squared	0.76282	S.D. dependent var	0.122332	
S.E. of regression	0.153921	Akaike info criterion	-1.043686	
Sum squared resid	0.011493	Schwarz criterion	-1.221220	
Log likelihood	6.032105	Hannan-Quinn criter.	-1.554356	
F-statistic	1.72310	Durbin-Watson stat	1.7163824	
Prob(F-statistic)	0.000161			

Source: Data output using e-view statistical package,

1% level of significance, 5% level of significance and 10% level of significance

The regression output indicates the coefficient for (OLMB) is 0.132364, of financial technology are positive and significant in achieving financial inclusion (Access, usage and quality to financial services) among startups in Federal Capital Territory, Abuja. Online mobile banking (OLMB) has the t-statistic value of (1.052031,) which is less than the standard error value of 1.704252 and p-value of 0.004 which indicate that Online mobile banking (OLMB) is significant in achieving financial inclusion. The coefficient of determination R^2 indicates how much the independent variable contributes to the dependent variable. It reveals that financial technology (OLMB), influence financial inclusion (access, and usage) by 89.28%. The remaining 10.72% can be explained by other factors not noted in the regression model. This shows the existence of a linear relationship between financial technology (OLMB) and financial inclusion among startup in FCT Abuja. The F-statistic value of 1.72310 is

significant at p-statistic value of 0.000 and the Durbin Watson value of 1.72 indicates that there is present of auto correlation. Therefore the alternative hypothesis is accepted that Online mobile banking (OLMB) have positive significant effect on Financial inclusion among startup in FCT Abuja.

The implication of this findings indicate that financial technology can improve financial inclusion of startup by providing access to financial services such as digital payment, savings, and credit to Startup in FCT Abuja. The findings also implied that financial technology can significantly increase access to funding for Startup businesses in FCT Abuja such as crowd funding, peer-to-peer lending, and venture capital. The findings implications further revealed that Fintech can automate financial processes, reducing cost and increasing efficiency for startups giving the right service for effective mobile banking, proper regulatory framework to protect

customers from POS operators and making ATM terminals available to areas that do not have financial institution presence to facilitate Fintech.

Discussion of Findings

The study determined the effect of Fintech on financial inclusion of Startups in FCT, Abuja. Hypotheses one indicated that Point of sales have positive significant effect on financial inclusion. The findings implies that startups that adopt Fintech can have easy access to fundings sources such as crowd funding, peer-to peer lending and venture capital services. The coefficient of determination r^2 (0.69) indicates that 69% of variation in financial inclusion of startups in Federal Capital Territory Abuja can be explained by Fintech (POS). The remaining 31% can be explained to other related factors not noted in the regression model. The f-statistic value of 0.78 is significant at p-value of 0.00. This implies that there is Positive and significant effect of Fintech (POS) on financial Inclusion of startups in FCT, Abuja. Hypotheses two revealed a positive significant effect of Fintech (ATM) on financial inclusion. This implies that the volume of transactions using ATM have increased financial inclusion among startup. This is evidence statistically giving the coefficient of determination (r^2) of 0.75 indicates that 75% of variation in financial inclusion among startups in Federal Capital Territory Abuja can be explained by Fintech (ATM). The remaining 25% can be explained by other related factors not noted in the regression model. The f-statistic value of 27.66 is significant at p-value of 0.00. This implies that there is evidence of existence of linear relationship between Fintech and Financial inclusion of startups in Federal Capital Territory Abuja. Hypotheses three revealed that Online mobile banking (OLMB) have positive significant effect on financial inclusion of startup in FCT Abuja. This is evidence statistically giving the coefficient of determination (r^2) indicates that of 89.28% of variation in financial inclusion among startups in Federal Capital Territory Abuja can be explained by Online mobile banking (OLMB). The remaining 10.72% can be explained by other factors not noted in the regression model. These findings are in conformity with the findings of Ephraim etal

(2023) who studied exploring the nexus between Fintech and financial inclusion in Nigeria, Aaron & Esther (2024) who examines the effect of Fintech on financial inclusion in Nigeria. Iwedi etal (2023) who examined the effect of financial technology on financial inclusion in Nigeria.

CONCLUSIONS AND RECOMMENDATIONS

The study determined the effect of Fintech on financial inclusion of Startups in FCT, Abuja. The study specifically determined the effect of Point of sales, Automatic Teller Machine, and online Mobile banking on financial inclusion of startup in Abuja. The study concludes that Point of sales, Automatic Teller Machine (ATM) and online mobile banking have positive significant effect on financial inclusion of startup in FCT Abuja.

Recommendations

- i. To better drive financial inclusion, efforts should be made at ensuring that Digital Financial Services (DFS) agents are not just mere cash points as is the current practice in Nigeria, but should be able to offer key additional value-added services such as account opening, and resolution of customer complaints. For instance, DFS agents should be able to report failed POS transactions to financial institutions on behalf of their customers instead of them having to travel to the bank.
- ii. The Central Bank of Nigeria should encourage deposits money banks to installed more ATM Terminals particularly in areas without banks and rural communities in FCT to increase financial inclusion for startup in FCT Abuja
- iii Policy makers should facilitate the development of affordable and accessible 3G and 4G mobile networks in order to provide rural and remote customers with better access to mobile banking and other financial technologies to increase financial inclusion

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