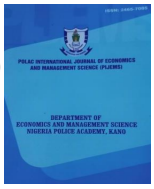
POLAC INTERNATIONAL JOURNAL OF ECONOMIC AND MGT SCIENCE (PIJEMS)
DEPARTMENT OF ECONOMICS AND MANAGEMENT SCIENCE
NIGERIA POLICE ACADEMY, WUDIL-KANO



FINANCIAL INCLUSION AND DOMESTIC TRADE IN NIGERIA

Moses Ogbu Department of Economics, Federal University Lafia, Nasarawa State, Nigeria

Angbas Alfred Ovye Department of Economics, Federal University Lafia, Nasarawa State, Nigeria

IlemonaAdofu Department of Economics, Federal University Lafia, Nasarawa State, Nigeria

Obadiah Jonathan Gimba Department of Economics, Federal University Lafia, Nasarawa State, Nigeria

Abstract

The study examines the effect of financial inclusion on domestic trade in Nigeria using, generalized method of moment (GMM). The results reveal that the impact of the usage and accessibility dimension of financial inclusion is statistically not significant in Nigeria as such not having the desired impact on domestic trade. Nevertheless, the penetration dimension of financial inclusion is significant at 1% level as such have a significant impact on trade. The study recommends amongst other the need for CBN to reduce lending rate to one digit rate and the need for the ministry of information and technology to put in place infrastructures that will enhance digital financial services aimed at accelerating financial inclusion in Nigeria.

Keywords: Financial inclusion, Trade, GMM.

JEL CLASSIFICATION: P45, G0, F1

1. Introduction

The ease of assessing useful financial services by individuals and businesses is indispensable to the growth of any economy especially in terms of trade. Financial inclusion means access by individuals and businesses to useful and cost-effective financial products and services that meet needs like transactions, payments, savings, credits and insurance (Migap, Okwanya,&Ojeka, 2015). World Bank (2021) established that financial inclusion is an essential ingredient of every meaningful development. Domestic trade to a great extent should be responsive to the rate of financial inclusion in an economy. Domestic trade being the exchange of goods and services within the economy is generally seen as accelerator of economic growth because it creates job, encourages market competition, thereby deepening the market, and is an income generator for both traders and government (Nwosa, Saibu &Fakunle, 2012). The rate of financial inclusion in Africa is generally perceived to be low, for this reason, Demirgue et al (2014) asserted that most small and medium enterprise in Africa region use less of bank services as such are un likely to use formal financial services compared to other developing region.

World Bank report (2021) affirmed that mobile money is enabling financial inclusion in sub-Saharan Africa especially for women and youth – both in terms of account ownership and of account usage through the medium of mobile payment, saving and borrowing.

Recent development in mobile banking, electronic banking as well as retail banking in Nigeria and the financial inclusion policy of Central Bank of Nigeria (CBN) in 2012, have change the narration of financial inclusion in Nigeria significantly. The set target of CBN is attaining 60% financial inclusion by 2025.

Though financial inclusion has grown in recent time in Nigeria, one cannot say for certain how this development has affected domestic trade. Obviously,

there exist researches works that give an overview of financial inclusion in sub-Saharan Africa but not much have been done to ascertain the effect of financial inclusion on domestic trade in Nigeria.

The demography of financial inclusion has evolved in Nigeria overtime, but there are few available research works to keep pace with the evolvement. The study is an effort to bridge the gap by finding the effect of financial inclusion on domestic trade. The question as to whether financial inclusion impacts trade and whether causal relationships exist between the two will be answered in this paper. The study is useful to policy makers in Nigeria because it presents an empirical assessment of the impact of government effort to drive financial inclusivity in Nigeria. It also presents the Nigeria dimension of the effect of financial inclusion on macroeconomic indices which is useful for proper perspective to researchers. This study is therefore subdivided into different sections. Section one gives the background of the study as it focuses on the introduction, statement of the problem and research objectives as well as research questions. Section two reviews literatures and theories, section three addresses the methodology and presents the model specification. Section four presents result and discussions. Section five summarizes the work and then makes conclusions as well as recommendations.

2. Literature Review

2.1 Theoretical Framework

The study relied on the theoretical framework that links financial inclusion to economic growth. The theory established that financial inclusion enhances economic growth. Available and affordable financial services encourage investment which promotes output growth. The growth model of Domar(1946) and Solow(1956) was adopted. Dorma's exogenous growth model emphasizes labour and productivity while Solow's endogenous growth model highlights technological progress. Current developments in the financial sector like ATM, mobile money, POS, and the deployment of humanoids in banks underscore technological progress consequently Dormar and Solow's model is apt for this study. The problem however is that the nexus between financial inclusion and economic growth are more or less general rather than specific. Measuring the effect of financial inclusion on specific macroeconomic variables like trade has broader implications for society than focusing on the macro economy.

2.2 Empirical Review

In order to establish a relationship between financial inclusion and economic growth different methods of estimation were employed in the literature. Gretta (2017) used VAR; Friando, Riyanto, and Masakazu (2020) used PVAR; Ifediora et al (2022) used GMM to link financial inclusion to economic growth.

Andrianaivo and Kpodar (2012) assessed the impact of mobile phone rollout on economic growth in a sample of African countries from 1988-2007, using the Generalized Method of Moment (GMM). The result of their analysis confirms that mobile phone development contributes positively to economic growth in African countries. This positive effect they attribute to mobile phone penetration stemming from increased financial inclusion. The study established an indirect relationship between financial inclusion and economic growth. This study is however particular about a direct link between financial inclusion and domestic trade in Nigeria.

Willil (2015) used World Bank Global Financial Index to compare the level of financial inclusion in China relative to Brics countries. It was discovered that the level of financial inclusion in China is relatively higher than other Brics countries in terms of bank account ownership. The use of former credit in China was however lower than the Brics countries. It's therefore pertinent to consider all dimension of financial inclusion as it relates to economic growth for a better understanding of the impact of financial inclusion on the economic growth of an economy.

Gretta (2017) used VAR regression to quantify the relationship between financial inclusion in terms of financial activities, financial literacy, and growth and its impact on economic growth in the MENA region. The study found that financial inclusion is important for

economic growth in this part of the world. This provides a useful insight into the link between financial inclusion and some aspects of economic growth in Sub-Sahara Africa with emphasis on Nigeria. There is a need to vary the approach to ascertain the extent to which financial inclusion affects domestic trade in Nigeria.

Though Mador (2018) contested that evidence that financial inclusion spur development, alleviate poverty and confer economic advantage is not sufficient enough to justify the attention and resources directed towards it, however, his work did not provide any empirical evidence to the contrary.

Sanderson, Mutandwa and Roux (2018) evaluated the determinants of financial inclusion in Zinbabwe using descriptive analysis. The study identified age, education, financial literacy, income, and internet connectivity as factors that affect financial inclusion positively. Whereas documentation requirements and lack of access of customers to banks affect financial inclusion negatively. A proper understanding of these factors and determinants of financial inclusion provides viable tools in the hands of policymakers in terms of increasing the level of financial inclusion in an economy. It's imperative to understand the factors that negatively affect financial inclusivity so as to tackle them since financial inclusion is defined in terms of access to useful and affordable financial products and services that meet the needs of people in a responsible and sustainable way (Ozili, 2020).

Barka and Sulong (2018) on the other hand did an in-depth study of the role of financial inclusion on economic growth using theoretical and empirical literature review analysis. The study classifies the effect of financial inclusion on economic growth into two namely positive and negative effects. The positive perspective of financial inclusion considered accessibility of financial services in terms of access to finance, increase in the number of bank branches, and the contribution of banking sector to economic growth. On the contrary, the negative perspective of financial inclusion includes weak financial systems and non-availability of financial systems. A multi-dimensional variable approach to ascertaining the relationship between financial inclusion and economic growth as well as the effect of one on the other becomes very necessary.

Van, Vo, Nguyen, and Hang (2019) used the panel econometric technique to estimate the impact of financial inclusion on economic growth and found that financial inclusion impacts economic growth positively. The relationship, they assert was stronger for countries with high levels of financial exclusion. The policy implication is that an increase in the level of financial inclusion in sub-Sahara Africa especially Nigeria will spur economic growth. Nevertheless, the extent to which financial inclusion affects specific macro indicators of economic growth like trade in Nigeria remains uncertain. Friando, Riyanto and Masakazu (2020) analyzed the contribution of financial inclusion to economic growth, poverty alleviation, and income inequality in eastern Indonesian using Toda-Yamamota VAR bivariate causality model and the dynamic panel vector Autoregression (PVAR) approach. The result of the study indicates that the relationship between financial inclusion and economic growth, poverty, and income distribution in eastern Indonesia was high. The study also confirmed that social economic growth impacts the level of financial inclusion positively but impacts poverty negatively. The study equally established that financial inclusion affects inequality positively; as such a case of widespread income inequality in eastern-Indonesia was established by the study. The uncertainty in the direction of the relationship between financial inclusion and economic growth parameter calls for a closer look at the direction of causality between financial inclusion and trade and the extent to which one affects the other.

Khere, Ng, Ogawa and Sahay (2021) used a sectional instrument variable procedure to find that exogenous component of digital financial inclusion has a positive association with growth in per capita Gross Domestic Product (GDP). This suggests that digital financial inclusion can promote rapid economic growth. They specifically identify access to infrastructure, financial

and digital literacy, and quality of institutions as enhancers of digital financial inclusion. Identifying the key enhancers of financial inclusion gives policymakers clues as to the specific variables to focus on in policies relating to accelerating financial inclusion nevertheless estimating the extent to which trade responds to financial inclusion will provide a better instrument for manipulating the economy to move in the desired direction.

Ezzahid and Elouaourti (2021) set out to link financial inclusion, financial friction and economic growth with evidence from Africa. They first built an African financial inclusion index then used panel data regression techniques on a database of 33 African countries from 2004-2019. The findings indicate that financial inclusion catalyzes investment and economic growth. The African Financial Inclusion Index (Afindex) shows that most African countries have low level of financial inclusion which provides evidence of the negative impact of low level of financial inclusion on economic growth. The study provides useful insight into the role of financial inclusion on investment and economic growth but fails to estimate the extent to which growth in financial inclusion spur growth in trade.

In an attempt to establish a link between financial inclusion, mobile telephony, and economic growth in the Indian state, Paradhan and Sahoo (2021) used a causality test to confirm that a combination of short-run and long-run relationships exist between the variables. The study establishes one-directional causality from financial inclusion and economic growth to telephony. The study concludes that financial inclusion encourages economic growth which further enhances the usage of mobile telephony. A more robust study bordering on not only establishing the direction of causality but also estimating the effect of financial inclusion on economic growth indicators and vice-versa will be necessary to provide a clearer picture of the interactions between financial inclusion and economic growth. This study will not only find the causality between financial inclusion and trade but will also estimate the extent to which financial inclusion affects trade.

Ifediora et al (2022) examined the impact of financial inclusion on economic growth with evidence from Sub-Saharan Africa. The study adopts the generalized method of moment (GMM) using a composite index of financial inclusion as well as individual financial inclusion indicators. The findings revealed that different dimensions of financial inclusion like the availability dimension of financial inclusion, penetration dimension of financial inclusion as well as composite financial inclusion, significantly and positively impact economic growth while the usage dimension of financial inclusion improves economic growth but not significantly. Bank branches and ATMs on the other hand have a positive significant impact on economic growth. The study also reveals that deposit accounts and outstanding loans promote economic growth but not significantly, while outstanding deposits adversely affect economic growth. More so the study has it that mobile money agents slow down economic growth while mobile money accounts and mobile money transactions catalyze economic growth but not significantly. The study provides useful insight into aspects of financial inclusion that foster financial inclusion or otherwise, nevertheless, a comprehensive analysis that clearly demonstrates the cumulative effect of financial inclusion on economic growth or domestic trade will provide a snapshot of the impact of financial inclusion on the economy.

3. Methodology

The primary objective of this study is to ascertain the effect of financial inclusion on trade in Nigeria. The study used data sourced from World Development Indicators (WDI), Central Bank of Nigeria (CBN), National Bureau of Statistics (NBS) and FAAS. The data covers the period between (2010 -2022) because the strategy to drive financial inclusion was launched in 2012 by CBN. Trade at current price less services was use for domestic trade (TRADE). The accessibility dimension of financial inclusion (ACCESS) was proxied by (the number of ATM per 100,000 adults, number of commercial bank branches per 100,000 adults and number of microfinance bank per 100,000 adults). Usage dimension of financial inclusion (USAGE) was proxied by (outstanding loans as percentage of GDP from

commercial bank, outstanding loans as percentage of GDP from micro finance bank and volume of mobile money operators as a percentage of population). Penetration dimension of financial inclusion (PENETRATN) was proxied by (Mobile Money Transaction as percentage of GDP and bank account ownership as percentage of population. Inflation, exchange rate, bank service was used as control variables. Principal component analysis (PCA) was used to unify some of the parameters to arrive at a composite index for measuring the different dimensions of financial inclusion.

This study assumes that total financial inclusion affects trade in Nigeria. The study employed the use of the generalized method of moment to achieve its objectives.

3.1 Model Specification

The model follows the one step generalized method of moment specification.

$$TR = \delta ACCESS + \alpha USAGE + \beta PENETRATN + ft + ut \quad (1)$$

Where TRADE = Total domestic trade excluding service

ACCESS = Accessibility dimension of financial inclusion

USAGE = Usage dimension of financial inclusion

PENETRATN = Penetration dimension of financial inclusion

Ft = Time variant factor

Ut = Error term

Inflation, exchange rate and bank service represent the control variables.

GMM is adopted because it's suitable for micro time series data. Gmm is also acclaimed to account for serial correlation. It's also used to obtain parameter estimates that are consistent under weak distributional assumptions especially when auxiliary assumptions fail.

Table 1: Variable Description

Variable Name	Dimension	Description	Source
Bank branches	Availability	Number of commercial bank branches per 100,000 adults	FAS
ATMs	Availability	Number of Automated Teller Machines (ATMs) per 100,000 adults	FAS
MFB/1PK	Availability	Number of micro finance bank per 100,000 adults	FAS
Acct- Own	Penetration	Number of deposit accounts with commercial banks per 1,000 adults	WDI
MMT/GDP	Penetration	Number of mobile money transaction as percentage of GDP	FAS
OLCB/GDP	Usage	Outstanding deposits with commercial banks (% of GDP)	FAS
OMF/GDP	Usage	Outstanding loans from commercial banks (% of GDP)	FAS
MMO	Usage	Mobile money Operators	FAS
INFL	Control	Annual percentage change in the average consumer price index	WDI
Trade (TR)		Domestic trade excluding service	NBS
Bank service	Control	total value of bank services	NBS
EXE	Control	Exchange rate of naira to dollar	WDI

Source: (NBS,FAS, WDI, 2022)

Principal Component Analysis Estimation

Financial inclusion

$$FI = W_1Y^u_t + W_2YY^p_t + W_3Y^\alpha_t + e_t \quad (2)$$

Where ($Y,^uY^p$ & Y^a) represent the different dimension of financial inclusion

Y^u= β_1 outstanding loans as percentage of GDP from commercial bank +β_2 outstanding loans as percentage of GDP from micro finance bank +β_3 volume of mobile money transaction as a percentage of GDP + u_i

Y^p = α_1 Mobile Money Transaction as percentage of GDP + α_2 Number of deposit accounts with commercial banks per 1,000 adults + v_i

Y^a = φ_1 the number of ATM per 100,000 adults + φ_2 number of commercial bank branches per 100,000 adults + φ_3 number of microfinance bank per 100,000 adults + e_t

Where β,α,Φ are unknown parameters and u_i,v_i, e_i are the error terms

$$Y^u = \frac{\sum_{,}^{p} k=1\lambda,^u p^u kt}{\sum_{,=1}^{p} \lambda j^u} \quad (3)$$

$$Ya = \frac{\sum_{,}^{p} k=1\lambda,^\alpha p^\alpha kt}{\sum_{,=1}^{p} \lambda j^\alpha} \quad (4)$$

$$Yp = \frac{\sum_{,}^{p} k=1\lambda,^p p^p kt}{\sum_{,=1}^{p} \lambda j^p} \quad (5)$$

Where pk = $x\lambda_j\lambda_i$ ie the variance of the k-th principal component weight and x = indicator matrix. Weight given to each component decreases so that the larger proportion of the variation in each dimension are explained by the first principal component. The p-th principal component is a linear combination of the indicators that account for the smallest variance.

4. Result and Discussions

The study result is presented below. Table two indicates the descriptive statistics.

Table 2: Descriptive Statistics

	TRADE__B	USAGE	PENETRATN	ACCESS
Mean	20145.83	7.69E-08	6.83E-17	-7.69E-08
Max	52226.09	2.511951	2.647141	1.568467
Min	8992.650	-2.289016	-2.130336	-3.346059
Skew	2.036844	-0.095993	0.383896	-1.045073
Kurt		1.831793	2.800105	2.675034
JB	18.40510	0.759181	0.340959	2.423586
Prob	0.000101	0.684141	0.843260	0.297663
Obs 13		13	13	13

Source: (Eview, 2013)

Table 2 presents the descriptive statistics of the data. The skewness which measures the asymmetry of the distribution of the series around the mean was nearly asymmetrical since the values fall between -0.5 and 0.5 for two variables except trade and access. The variables were however found to be flat (platykurtic) relative to the normal distribution since their values fall short of the threshold value of 3 except for trade which is peaked (leptokurtic). This suggests that the variables tend to produce fewer and extreme outliers than normal distribution. The positive values however indicate that the distributions were peaked and possess thick tails. Besides trade, none of the probabilities of the Jarque-Bera statistics were significant at 10% for the other variables as such the variables were not normally distributed. Consequently, there is a need to carry out unit root test for stationarity.

Table 3 present the result of unit root test which indicates that all the variable of interest are stationary at I(0), and I(1) suggesting the presence of autocorrelation. This accounts for the reason for deploying GMM as the choice of model estimation. GMM is acclaimed to account for serial correlation in estimation.

Table 3: Unit Root Test

Variable	ADF		Phillip-Perron		ORDER OF INTEGRATION
	Level	1st Diff	Level	1st Diff	
Trade	-4.666**	-		-	I(0)
	(0.018)				
Usage	-3.460***	-	-1.888*	-	I(0)
	(0.003)		(0.058)		
Access	-2.107**	-	-2.367**	-	I(0)
	(0.039)		(0.023)		
Penetration	-0.596	-1.578*	-1.022	-4.062***	I(I)
	(0.438)	(0.104)	0.258	(0.001)	

Source: (Eviews, 2013)

Table 4 presents the result of GMM estimation. The result indicates that the accessibility dimension and usability dimension of financial inclusion are not significant at 1%, 5% and 10% level of significant. This suggests that these dimensions of financial inclusion are so low that its impact on trade is not felt. Notwithstanding, the penetration dimension of financial inclusion according to estimates is significant at 1% level of significant, connoting direct relationship between the penetration dimension of financial inclusion and trade. Indicating that a percentage change in penetration dimension of financial inclusion is associated with significant increase in trade.

Table 4: Regression (GMM) Result

Variable	Coefficient	Prob.
USAGE	-419.49	0.9490
PENETRATN	13301.53	0.0002
ACCESS	-5154.47	0.4805
C	31.935	0.0004
R-square	0.3805	
Adjusted R-square	0.1740	
Durbin-watsonstatatistics	0.706	
Instrument Rank	4	

Source: (Eview, 2013)

The study set out to establish the performance of domestic trade in Nigeria given the adoption of the Financial Inclusion Strategy 2012. Financial penetration which is proxied by bank account ownership as percentage of population and mobile money transactions as percentage of GDP is found to have significant impact on domestic trade in Nigeria. This agrees with findings of (Padhan & Schoo, 2021; Ifediora et al 2022). This study however differs on the impact of other dimensions of financial inclusions such as usage and availability. The study showed an abysmal availability of financial services which indicates a high level of financial exclusion. This finding agrees with the work of Ezzahid and Elouaourti (2021). It also indicates poor usage of financial service in terms of loan from financial service providers. The study establishes a negative relationship between usage and access dimension of financial inclusion and domestic trade in Nigeria. This suggests something is wrong with the current loan structure of financial institutions in Nigeria. An increase in the level of usage of financial services in terms of loan and borrowing is expected to improve trade but Nigeria's scenario is to the contrary; a decline in trade. Financial institution loans are killing businesses in Nigeria. The implication is that, loans from financial institutions at the prevailing interest rate regime are detrimental to

domestic trade rather than enhancing it. The finding is novel as no research work linking financial inclusion to trade in Nigeria has been reported to the best of the author's knowledge.

Financial inclusion is strategic for poverty reduction and social inclusion, but has been inefficiently utilized in Nigeria which is glaringly displayed by the increasing poverty and ailing businesses in the country. The low figures of micro-finance banks which are meant to provide financial services to the unreached are also evidence of inefficient financial inclusion. If Nigeria is pursuing financial inclusion as a poverty reduction strategy as well as a social inclusion strategy it is necessary to encourage the use of financial services especially the micro-finance banks as they are closer to the rural population and require less cumbersome requirements to setup.

5. Conclusion and Recommendations

The study has so far considered the impact of financial inclusion on domestic trade in Nigeria and established that penetration dimension of financial inclusion represented by bank account ownership and mobile money transaction have positive impact on domestic trade in Nigeria, The other dimensions of financial inclusion namely usability and accessibility represented by number of banks per 100000 adults, numbers of ATM per 100000 adults, bank loans etc has no significant impact on trade. There is therefore need to intensify effort towards enhancing financial inclusivity so that the impact of all dimensions of financial inclusion can become visible.

The policy recommendation is that CBN should adjust lending rate to one digit so as to make fund available to businesses at low interest rate. Ministry of information and communication should provide infrastructures that enhance digital financial services such as mobile broadband infrastructure (especially in remote areas) aimed at accelerating financial inclusion in Nigeria. This will encourage rural participation, given the increasing usage of mobile money platform. CBN should continue to provide enabling environment for mobile money platform and micro finance bank to thrive in order for them to provide seamless and cost-effective financial services to the grassroots.

References

Adedokun, M. W., &Ağa, M. (2021). Financial inclusion: A pathway to economic growth in Sub- Saharan economies. *International Journal of Finance and Economics*, 1–17. https://doi.org/10.1002/ijfe.2559

Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *The review of economic studies*, *58*(2), 277-297.

Chatterjee, A. (2020). Financial inclusion, information and communication technology diffusion, and economic growth: A panel data analysis. *Information Technology for Development*,

Chen, W., Yuan, X., & Gang, J. (2021). Financial inclusion in China: An overview. *Frontiers of Business Researcin China*, *15*(4), 1–21.

Demirgüç-Kunt, A., Klapper, L., Singer, D., & Van Oudheusden, P. (2015).*The Global findex database 2014: Measuring financial inclusion around the world*. Policy Research

Ezzahid, E., &Elouaourti, Z. (2022). Financial inclusion, financial frictions, and economic growth: Evidence from Africa. *Journal of African Business*, *23*(3), 731- 756.

Fungáčová, Z., & Weill, L. (2015).Understanding financial inclusion in China. *China Economic Review*, *34*, 196-206.

Ibrahim, M., &Alagidede, P. (2018).Effect of financial development on economic growth in sub-Saharan Africa.*Journal of Policy Modeling*, *40*(6), 1104–1125.

Ifediora, C., Offor, K. O., Eze, E. F., Takon, S. M., Ageme, A. E., Ibe, G. I., & Onwumere, J. U. (2022). Financial inclusion and its impact on economic growth: Empirical evidence

from sub-Saharan Africa. *Cogent Economics &Finance*, *10*(1), 2060551.

Inoue, T., & Hamori, S. (2019). Financial inclusion and economic growth: Is banking breadth important for economic growth? In *Financial inclusion, remittance inflows, and poverty reduction in developing countries: Evidence from empirical analyses* (pp. 1–16). World Scientific

Malinda, M. M., & Maya, D. S. (2018). Exploring the linkages between financial inclusion and economic growth in emerging countries.*Journal of Global Business and Social Entrepreneurship*, *4*(12), 63–75.

Nguyen, T. T. H. (2020). Measuring financial inclusion: A composite FI index for the developing countries.*Journal of Economics and Development*, *23*(1), 77–99.

Nwosa, P. I., Saibu, M. O., &Fakunle, O. O. (2012).The effect of trade liberalization on trade tax revenue in Nigeria. *African Economic and Business Review*, *10*(2), 28-43.

Omar, M. A., & Inaba, K. (2020). Does financial inclusion reduce poverty and income inequality in developing countries? A panel data analysis. *Journal of economic structures*, *9*(1), 37.

Ozili, P. K. (2020). Theories of financial inclusion. In *Uncertainty and challenges in contemporary economic behaviour* (pp. 89-115). Emerald Publishing Limited.

Ozili, P. K. (2021, October). Financial inclusion research around the world: A review. In *Forum for social economics* (Vol. 50, No. 4, pp. 457-479).Routledge.

Pazarbasioglu, C., Mora, A. G., Uttamchandani, M., Natarajan, H., Feyen, E., &Saal, M. (2020). *Digital Financial Services*. World Bank Group.

Pradhan, R. P., &Sahoo, P. P. (2021). Are there links between financial inclusion, mobile telephony, and economic growth? Evidence from Indian states. *Applied Economics Letters*, *28*(4), 310-314.

Ramkumar, G. (2017). A study on benefits of financial inclusion and cashless economy for India. *EPRA International Journal of Business and Economic Review*, *5*(8), 182–186.

Sanderson, A., Mutandwa, L., & Le Roux, P. (2018).A review of determinants of financial inclusion. *International Journal of Economics and Financial Issues*, *8*(3), 1.

Seetanah, B., Sannassee, R. V., Fauzel, S., Soobaruth, Y., Giudici, G., & Nguyen, A. P. H. (2019). Impact of economic and financial development on environmental degradation: evidence from small island developing states (SIDS). *Emerging Markets Finance and Trade*, *55*(2), 308-322.

Sethi, D., &Sethy, S. K. (2019). Financial inclusion matters for economic growth in India. *International Journal of Social Economics*, *46*(1), 132–151.

Sharma, D. (2016). Nexus between financial inclusion and economic growth: Evidence from the emerging Indian economy. *Journal of Financial Economic Policy*, *8*(1), 13–36.

Siddik, M. N. A., Ahsan, T., &Kabirag, S. (2019). Does financial permeation promote economic growth? Some econometric evidence from Asian countries.*Sage Open*, *9*(3), 1–13.

Srouji, J. (2020). Digital payments, the cashless economy, and financial inclusion in the United Arab Emirates: Why is everyone still transacting in cash? *Journal of Risk and Financial Management*, *13*(11), 1–10.

Wang, W., Ning, Z., Shu, Y., Riti, M. K. J., &Riti, J. S. (2023).ICT interaction with trade, FDI and financial inclusion on inclusive growth in top African nations ranked by ICT development. *Telecommunications Policy*, *47*(4), 102490.

Wooldridge, J. M. (2001). Applications of generalized method of moments estimation. *Journal of Economic perspectives*, *15*(4), 87-100.