

## **EFFECT OF FINANCIAL INCLUSION STRATEGIES ON PROFITABILITY OF DEPOSIT MONEY BANKS IN NIGERIA**

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### **Abstract**

*This study examined the effect of financial inclusion strategies on deposit money bank's profitability. The study period covered from 2012 to 2023 while data collected was analysed using autoregressive distributed lag (ARDL). The independent variables of the study (the financial strategies) were estimated as- agricultural loans, credits to small scale business, and rural banking; while, the dependent variable- Bank profitability, is measured as Return on Equity (ROE). The findings from the long run cointegrated equation indicated a significant effect of a combination of all financial inclusion strategies understudied in the short run, however, only credits to small scale enterprises exerted a significant and positive relationship with profitability of deposit money banks in Nigeria. Agricultural loan and rural banking did not have such significant effect. The study therefore recommended a greater focus on enabling credits to small scale enterprises by eliminating barriers and bottlenecks in approval and disbursement of such loans.*

**Keywords:** Financial Inclusion Strategies, DMB, Agricultural Loans, Rural Banking, Credits to Small Scale Enterprises

### **1. Introduction**

Profitability is undoubtedly one of the major factors determining the extent deposit money banks (DMBs) contribute significantly as financial intermediaries to the expansion and development of national and global economy. The import of the effectiveness of their intermediary function has motivated an overt attention on the functioning of banks resulting to consistent empirical research on interactions existing between DBMs profitability and its overall operating environment including regulatory structures. In pursuant of sustainable development, these regulatory structures have prioritised and included enablers of financial inclusion.

Financial inclusion refers to the access to and use of a range of financial products and services by all of a society's adult members at a price that is affordable even to deprived and lower income groups (Demirguc-Kunt, et al. 2017). It is also defined as the availability of finance and financial services for all in fair, transparent and equitable manner at an affordable cost. Financial inclusion seeks to provide underprivileged groups access to reasonably priced financial services, such as banking, loans, equities, and insurance products. Summarily, financial inclusion refers to the situation whereby basic banking services are delivered at an affordable cost to all section of the society by striving to eliminate barriers that exclude people from participating in the financial sector. Therefore, financial inclusion strategies denote efforts to make financial products and services accessible and affordable to all individuals and businesses, regardless of their personal net worth or company size. This will ensure effective, reliable and sustainable access and usage of appropriate and affordable financial services.

Financial inclusion has assumed increasing recognition across the globe among policy makers, researchers and development oriented agencies. Its significance, according to Emmanuel and Jimoh (2022), is derived from its acclaimed potential as an effective tool for alleviation of poverty, employment creation and economic development. Supporting the linkage between

financial inclusion and poverty, the endogenous growth theory for macroeconomic outcomes posited that financial inclusion was a significant driver of poverty reduction as it unleashes the economic potential of the population through human capital investments and innovations. Consistent with the benefits of financial inclusion, Sarma and Pais (2011) also advocated that enhanced financial services reduce poverty and income inequalities. While Demiguc-kunt et al. (cited in Nsiah & Tweneboah, 2023), considered financial inclusion as an important instrument that can boost financial development, stimulate economic growth, deal with the problem of inequality and most importantly alleviate poverty.

The understanding of financial inclusion as a tool to be deployed to assuage the intrusive rate of poverty had captured the attention of researchers, policy-makers, and development-oriented agencies with commensurate empirical attempts to expose the determinants of financial inclusion. Most of these studies identified access to banking services, low interest rates, credits to small scale enterprises and rural loans and advances as important determinants of financial inclusion (Alain, 2019; Bozkurt, et al., 2018; Nsiah & Tweneboah, 2023; Oumarou & Celestin, 2021; Sahoo, et al., 2017; Soumare, et al., 2016; Stephen, 2023; Uddin, et al., 2017). Bearing these determinants in mind, the Nigerian government through the Central Bank of Nigeria has tried to achieve financial inclusion as an integral part for promoting sustainable and inclusive growth by formulating strategies that are expected to encourage country wide access to financial services at affordable cost particularly to the less privilege and vulnerable group (Olatunji, 2015).

Even though the focus on inclusivity is paramount to development, the evaluation of the extent its pursuit affects other indicators of development is equally crucial. Highlighting the import of this evaluation, Yakubu and Musah (2022) emphasised that strategies to stimulate financial inclusion should move in tandem with policies to boost profitability. Although this identified lacuna elicited relevant empirical responses, as observed by Vo and Nguyen (2021) and Al-Eitan, et al. (2022), there still remain a dearth in the availability of sufficient empirical research on the interaction between financial inclusion and bank performance especially in the emerging markets. Therefore, this study examined the effect of selected financial inclusion strategies on the profitability of deposit money banks in Nigeria.

The remaining part of the paper is organised as follows: Section 2 describes the empirical literature. Section 3 discusses the data and methodology while section 4 provides empirical results and discussion. Finally, Section 5 concludes with some policy implications.

## **2. Literature Review**

### **Profitability**

Profitability, in accounting terms, refers to the ability of a business or project to generate earnings and financial gains relative to its expenses and costs. It is a fundamental measure of financial performance that indicates the effectiveness and efficiency of an entity generating profits (Ugwueze & Nweazaku, 2021). It represents the estimated monetary value of a firm, taking into account its tangible and intangible assets, liabilities, financial performance, market position, and growth prospects (Nwakoby, et al., 2018). Typical measures of profitability include Return on asset, Return on Equity, Operational profit, Net Interest Margin and Return on capital employed.

### **Financial inclusion**

Financial inclusion is the provision of equally available and affordable access to financial services for everyone, regardless of their level of income (Damane & Ho, 2024). To Shaifali (2018), financial inclusion is a phenomenon whereby effort is made to ensure that all households and businesses are able to effectively access and use appropriate financial services

they need to improve their lives regardless of levels of income. More elaborately, Ozili (2018) explicated that financial inclusion was the provision of, and access to, financial services to all members of population particularly the poor and the other excluded members of the population while Ajide (2017) defined it as the process of broadening the accessibility of financial services for households and firms. From the above definitions, it can be deduced that financial inclusion guarantees access to financial services of diversified complexities at affordable and competitive prices. Concisely, the goal of financial inclusion is provision of accessible, affordable, and available formal banking services. These measures are often used in combination to provide a comprehensive assessment of financial inclusion in a particular region or country. Policymakers, financial institutions, and development organizations use these measures to identify gaps in financial inclusion and design strategies to promote greater access to financial services for all segments of the population. In fulfilling its role to formulate and implement policies that enable deposit money banks to deliver services in an effective, efficient and sustainable manner with a focus on financial inclusion, the Central Bank of Nigeria have aggressively promoted Rural banking, Agricultural loans and Credits to Small scale enterprises.

### **Empirical Review**

With a focus on Sub-Saharan Africa and covering the period covered from 1990 to 2017, Jajah et al. (2020) delved into examining the interaction between banks profitability and financial inclusion. The result found from the analysis using system generalized method of moments (GMM) showed a significant and positive relationship between financial inclusion index and bank profitability in Sub-Saharan Africa. Shihadeh (2020) also found a significant relationship between bank performance and financial inclusion. The study had examined the Middle East and North Africa region.

Adopting regression analysis and primary data collected from management and operational level employees of the 5 listed Deposit Money Banks, Oyetoyan (2021) revealed that financial inclusion elements have positive effect on the financial performance of banks measured as return on equity. Oyetoyan had assessed the effect of financial literacy programs, usage of agents and representatives, bank branch spread, increased proliferation of ATMs and Mobile banking services. However, only the use of agents and representatives had significant effect on performance.

In a country specific research on 15 Palestinian banks, Shihadeh (2021) investigated the influence of financial inclusion indicators on bank performance using Generalised least square and GMM estimations. Consistent with the author's previous work, Shihadeh (2020) found that ATMs and banking penetration tools enhanced bank ROE, operational profits and total revenues. Considering country characteristics, Vo and Nguyen (2021) also examined the effect of financial inclusion on 1507 Asian banks' performance using an estimated financial inclusion index. The index was computed from indicators that capture the spread and extent of use of financial products and services in Asia for the period from 2008 to 2017. The dynamic GMM analysis revealed a consistent positive and significant effect of financial inclusion across various measures of performance.

Also employing GMM, Khatib et al. (2022) work covering 11 Palestinian bank, revealed inconsistency in the impact of financial inclusion across various measures of financial inclusion. Measures of assessibility, quality of the products and service delivery exerted a positive influence on banks' profitability. Contrarily, point-of-sale terminals, financial service utilization reflected in bank account numbers and credit to small and medium-sized enterprises

do not affect bank profitability. The impact of financial inclusion on bank profitability in Sub-Saharan Africa from 2000 to 2017 was examined by Yakubu and Musah, A. (2022). When GMM was used to overcome the endogeneity problem, it was discovered that the financial inclusion index produced by principal component analysis had a detrimental impact on Sub-Saharan African banks' profitability.

Studying the performance of Jordan banks (2009 to 2019), Al-Eitan et al. (2022) deployed fixed effects panel regression model and found the absence of a significant effect of number of ATMs and branches. However, profitability was adversely affected by size of deposits and number of loan accounts. Focusing on emerging economies, Wang et al. (2022) also investigated the relationship between bank profitability and financial inclusion in Egypt, Indonesia, Mexico, Nigeria, Bangladesh, and Pakistan. Contrary to the findings by Eitan et al., the FMOLS applied to annual data from 2000 to 2019 showed a positive correlation between bank profitability and financial inclusion.

Incorporating banking and macroeconomic variables, Obeid (2023) examined the effect of ATMs distribution and branch spread rate on the return on assets of eleven Arab countries during the period 2012-2019. The study revealed an insignificant association. In a related study, between 2017 and 2021, Nguyen et al. (2023) looked at how financial inclusion affected the profitability of commercial banks in 60 nations with varying degree of banking systems development (established and underdeveloped banking systems). The study used pooled OLS, FEM, REM, and GLS to demonstrate that financial inclusion metrics and commercial banks' profitability are positively correlated.

Yunus et al. (2023) found a positive and significant influence of ATMs and banking location on the ROE of DMBs in Nigeria using data from 2013 to 2018. Other measures of financial inclusion included number of branches, number of bank accounts and location of sales terminals. The study had deployed OLS tool of analysis. Still on Nigeria, Appah and Tebepah (2023) examined the relationship between financial inclusion and financial performance of 10 deposit money banks from 2011 to 2021. Focusing on the influence of Bank branches spread, agent banking, online banking on return on assets, the correlation analysis and multivariate analysis indicated the existence of a significant positive influence.

Sha'ban et al. (2023) investigated the impact of credit deepening, deposits to GDP, number of deposits, number of borrowers on banks' performance estimated by the CAMEL rating system. The study covered multiple countries and exposed the intervening influence of institutional, regulatory and income levels. The findings varied across income levels as in high-income nations, credit deepening had adverse effect on bank performance while deposits to GDP, number of deposits, and number of borrowers had favourable effect in low-income economies.

Zango and Umeoji (2024) explored the effectiveness of financial inclusion strategies in improving the performance of Nigeria's banking industry from 2009 to 2019. The OLS regression analysis revealed that Point of Sale (PoS) terminals and ATMs had significant effect on bank's performance. Conversely, Mobile money transfer did not exert similar significant impact. In a related study, Serge (2024) found that access, availability and usage of banking services had significant positive effect on ROA of financial institutions in Cameroon. The author utilised self-administered questionnaire to 210 respondents from 75 financial institutions and analysed data gathered using ordered logit regression model and Pearson correlation matrix.

### **Systems Theory of Financial Inclusion**

The systems theory of financial inclusion is a conceptual framework that views financial inclusion as a complex and dynamic system with multiple interconnected components. To Ozili (2020), the systems theory of financial inclusion states that financial inclusion outcomes are achieved through the existing sub-systems (economic, social or financial systems) which financial inclusion relies on. This theory, according to the author, takes a holistic approach to understanding the factors, actors, and dynamics that shape the process of expanding access to financial services for underserved and marginalized populations. The systems theory of financial inclusion provides a comprehensive framework for analyzing and promoting financial inclusion by considering the multifaceted nature of the financial ecosystem. It also underscores the importance of collaboration among governments, financial institutions, civil society, and technology providers to create an inclusive and sustainable financial system.

Though, according to Ozili (2020), the efficiency and effectiveness of the sub-systems will determine the success or failure of a financial inclusion agenda, the theory suggests a bi-directional causal relationship describing the sub-systems as proximate beneficiaries of financial inclusion. Financial inclusion will improve the sub-systems it relies on, hence, it is expected that financial inclusion will be positively correlated with banks performance. Explicating the merits of the theory, Ozili mentioned that the theory provided a macro perspective on financial inclusion by comprehensively considering the interactions between financial inclusion outcomes and the enabling sub-systems.

Fundamentally, the theory is based on the assumptions of that include the existence of financial inclusion as a complex system in which various components; including individuals, institutions, policies, and technologies, interact to determine the level of access to and usage of financial services. The theory also assumes that different elements of the financial inclusion ecosystem are interconnected and interdependent. Changes or actions in one part of the system can have ripple effects throughout the entire financial inclusion landscape. These ecosystems include economic conditions, cultural norms, regulatory environments, and technological advancements. All these are integral parts of the financial inclusion system and influence its dynamics. Even though the theory necessitates specialized modeling approaches, it is a useful tool for comprehending and resolving a wide range of real-world problems due to its capacity to encapsulate the core of complexity and interconnectivity.

The main thrust of the system theory of financial inclusion is the existence of a direct relationship between financial inclusion outcomes and the systems it relies on (Ozili, 2020).

### **3. Method**

This study examined the effect of financial inclusion strategies on DMBs profitability in Nigeria utilising the ex-post facto research design. Annual times series data covering the period 2012 to 2023 were sourced from the CBN statistical bulletin 2023 and NDIC Annual reports for 2012 to 2023. The Autoregressive distributed lag (ARDL) analytical tool was employed after which other post diagnostics tests were applied. The aptness of ARDL stems from its appropriateness irrespective of level of cointegration of study variables. The technique is also efficiently robust even with small sample size.

*Table 1. Description of Variables*

Type	Variable	Measurement	Source
Dependent	Bank Profitability	Return on Equity - ROE	NDIC Reports
Independent	Financial Inclusion Strategies	Agricultural Loans (in ₦'Billion)	CBN Statistical Bulletin 2023
Independent	Financial Inclusion Strategies	Credits to Small Scale Enterprises (in ₦'Billion)	CBN Statistical Bulletin 2023

Independent	Financial Inclusion	Rural Banking = Rural Loans + Rural Deposits (in ₦' Billion)	CBN Statistical Bulletin 2023
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### Model Specification

The model adopted for this study captured the objective of this study. The functional form of the model is therefore specified as follows:

$$\Delta ROE_t = \partial_0 + \sum_{i=0}^n \alpha_1 \Delta ROE_{t-1} + \sum_{i=0}^n \alpha_2 \Delta SSE_{t-1} + \sum_{i=0}^n \alpha_3 \Delta RB_{t-1} + \sum_{i=0}^n \alpha_4 \Delta AGRIC_{t-1} + \beta_1 ROE_t + \beta_2 SSE_t + \beta_3 RB_t + \beta_4 AGRIC_t + \beta_5 EC_t + \varepsilon_t$$

Where:

ROE = Return on Equity

SSE = Credits to Small Scale Enterprises

RB = Rural banking

AGRIC = Agricultural loan

$\varepsilon$  = Error Term

$t$  = represents the time periods of the data

EC is error correction term used to capture the deviation of variables from long-run equilibrium, While  $\alpha_0, \alpha_1, \dots, \alpha_4$  and  $\beta_1, \dots, \beta_5$  are parameters to be estimated.

### 4. Data Presentation and Analysis

Table 2. Descriptive Statistics of Study Variables

Variable	Mean	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis
ROE	21.76500	49.13000	4.700000	10.33270	1.266167	5.685639
AGRIC	883.3608	2255.360	316.3600	633.0884	1.114851	2.893314
RB	573.8825	1453.640	22.60000	395.7709	0.628998	3.247266
SSE	79.46250	465.3700	10.75000	127.5300	2.553165	8.360772

Source: E-views output on descriptive statistics

The Table 2 reveals the statistical attributes of the study variables. The descriptive statistics shows that the mean of ROE is positive, indicating a prevalence of profitability in the DMBs in Nigeria over the study period. The average ROE is 21.765 with a standard deviation of 10.3327, indicating an absence of substantial variation in ROE over the period studied. The standard deviations of all the independent variables are quite high reflecting a substantial variation in the levels of the average yearly values of the variables understudied.

### Correlation Analysis

Table 3. Correlation Matrix

	ROE	AGRIC	RB	SSE
ROE	1			
AGRIC	0.6598	1		
RB	0.5705	0.5857	1	
SSE	0.8818	0.8128	0.7093	1

Source: E-views output from correlation analysis

Table 3 indicates the existence of correlation between all explanatory variables and the dependent variable. It is however pertinent to note that SSE has a high value of 0.8818 suggesting the potential presence of multicollinearity within the model. To further investigate, the variance inflator factors are estimated and presented in Table 4.

Table 4. Variance Inflation Factors

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
ROE(-1)	0.114298	13.80240	1.110006
AGRIC	2.69E-05	9.976226	2.960983
RB	5.61E-05	8.648551	2.120681
SSE	0.000946	6.537849	4.475539
C	67.50871	20.17306	NA

Source: Eviews output

The values of centered VIF are all less than 10 and hence the study concludes the absence of multicollinearity within the model.

Table 5. ARDL Regression Analysis Results- Selected Model: ARDL(1, 0, 0, 0)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
ROE(-1)	0.145531	0.338080	0.430464	0.6819
AGRIC	-0.001857	0.005183	-0.358317	0.7324
RB	-0.000204	0.007490	-0.027265	0.9791
SSE	0.079273	0.030752	2.577795	0.0419
C	14.01153	8.216368	1.705320	0.1390
R-squared	0.811900	Mean dependent var		21.72545
Adjusted R-squared	0.686501	S.D. dependent var		10.83607
S.E. of regression	6.067228	Akaike info criterion		6.746636
Sum squared resid	220.8676	Schwarz criterion		6.927497
Log likelihood	-32.10650	Hannan-Quinn criter.		6.632628
F-statistic	6.474496	Durbin-Watson stat		2.199479
Prob(F-statistic)	0.022865			

Source: E-views output from ARDL analysis

From the ARDL results presented on Table 5, it can be deduced that variations in the values of agricultural loans and rural banking do not cause significant effect on the profitability of DMBs in Nigeria as the p-value of their estimated coefficients are greater than 0.05. However with regards to Small scale enterprises the positive effect is significant as its p-value (0.0419) is less than 0.05. Finally, it is observed that previous levels of the dependent variable have significant effect on the current level of DMBs profitability in Nigeria.

The R-square statistics of 0.811900 shows that the independent variables have high explanatory power (81%) with regards to the variations within the dependent variable. The p-value of the F-statistics is significant indicating the goodness of fit of estimated model while the value of the Durbin-Watson stat of 2.199479 supported the results of the Variance inflation factor analysis of the absence of multicollinearity.

Table 6. ARDL Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CointEq(-1)*	-0.854469	0.130800	-6.532641	0.0006

Source: Extract from Output of ARDL Error Correction Regression

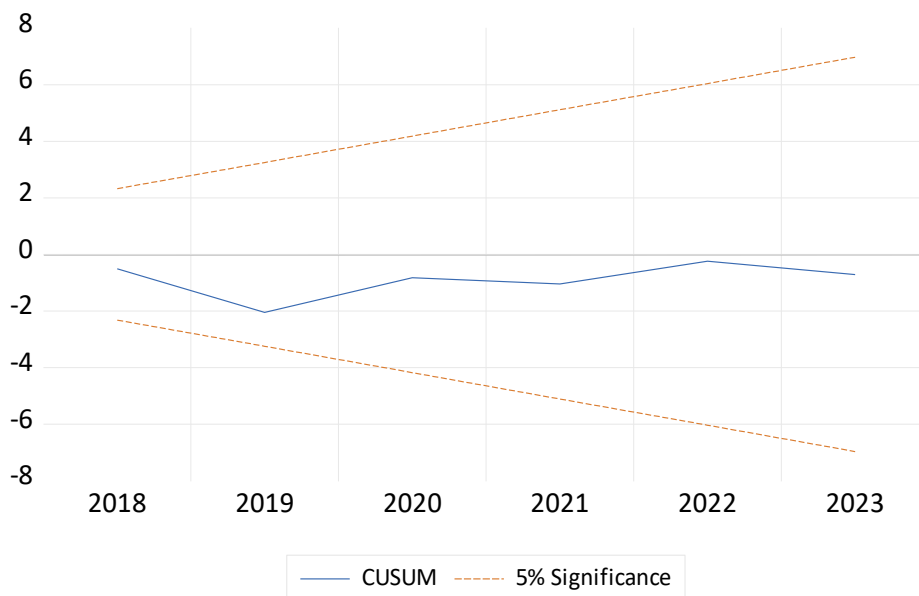
Table 6 presents the evidence of a long run cointegration between the independent variables and the profitability of DMBs as the coefficient of the CointEq is negative with a significant p-value. To further validate the robustness and acceptability of the model result, the post diagnostic tests as presented on Table 7 indicate the absence of serial correlation, autocorrelation and heteroskedasticity. Fig 1 confirmed the stability of the model while Fig 2 revealed normal distribution of residuals.

Table 7. Results from Post Diagnostic Tests

Test	Q/F Statistics	P-value
Correlogram of residuals squared	0.2126	0.645
Breusch-Godfrey Serial Correlation LM Test	0.542847	0.6186
Heteroskedasticity Test: ARCH	0.897435	0.5200
Ramsey RESET Test	0.414827	0.5479

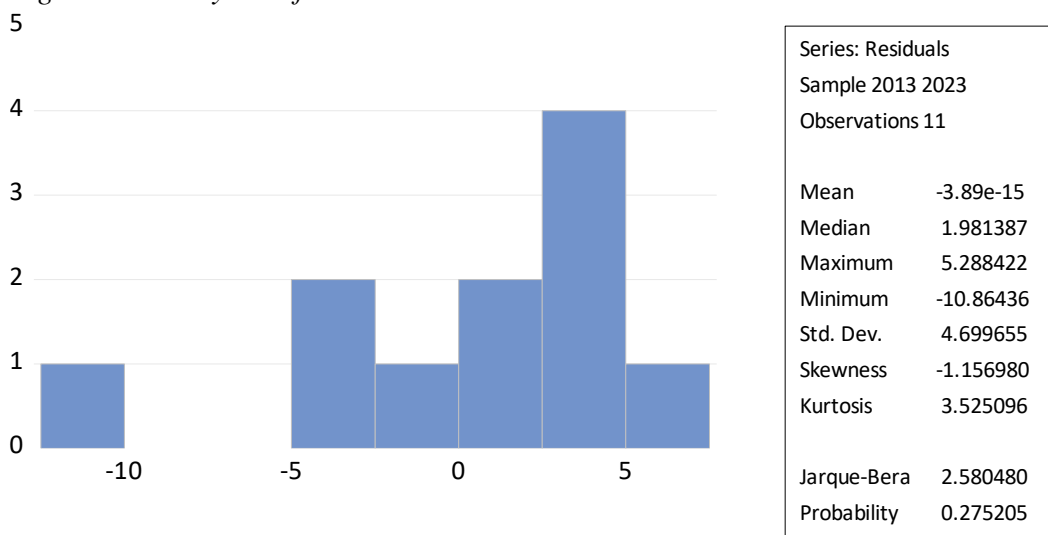
Source: Extract from various E-views post diagnostic tests

Fig 1 CUSUM Test for Stability



Source: E-views Output

Fig 2: Normality Test for Residuals



Source: E-views Output

The findings of the study revealed that though financial inclusion strategies jointly exerted a significant long run effect on the profitability of DMBs in Nigeria, only Credits to small scale enterprises had a significant and positive effect on the profitability of DMBs in Nigeria. Agricultural loans and rural banking had negative but insignificant impact on profitability. This significant and positive effect exerted by Credits to small scale enterprises is consistent with

The findings of Jajah et al. (2020) Shihadeh (2020) Oyetoyan (2021) Shihadeh (2020), Vo and Nguyen (2021) and Wang et al. (2022). While the negative but insignificant effect of agricultural loan and rural banking align with the results revealed by Al-Eitan, et al. (2022) and Obeid (2023). Contrary to the findings of the study, Khatib et al. (2022) had revealed an insignificant effect of credit to small scale enterprises.

## 5. Conclusion

Financial inclusion has been identified as an indispensable ingredient of economic growth and development because of the crucial role it plays within an economy as a vital tool for poverty alleviation. This pivotal role has engendered the central bank of Nigeria to establish strategies targeted at creating an enabling environment to promote financial inclusion. Overtime, these strategies have had positive effect on financial inclusion however the trade-off between these attained benefits and the profitability of DMBs, a major player in the pursuit of financial inclusion, demands empirical investigation. Responsively, this study examined the effect of financial inclusion strategies on DMBs profitability in Nigeria employing ARDL analysis. The results revealed that credits to small scale enterprises had a positive and significant effect while agricultural loans and rural banking exerted insignificant effect on the determination of profitability of DMBs in Nigeria. Based on the results, the policy implication of this study is that policy makers must accord greater focus on developing and implementing appropriate policies that increase the availability of credits for small business enterprises. This would yield effective financial inclusion results whilst maintaining DMBs' profitability. Furthermore, Nigerian Banks should effectively automate the credit approval processes so as streamline the loan approval process by optimizing workflows, automating routine tasks, and resource optimization. This will to limit the process to products available for small scale enterprises and facilitate seamless credit approval and management.

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