**Financial Inclusion and Bank Performance: Assessing the Mediating Effect of Financial Development in Sub-Saharan Africa**

**ABSTRACT**

This study examines the relationship between financial inclusion, financial development, and bank performance in Sub-Saharan Africa, with a focus on the mediating effect of financial development. Using a panel data from 42 sub- Saharan Africa countries, with a sample of 2100 observations from the World Development Indicators from 1990-2024, the study employs structural equations modelling of Baron & Kenny (1986) mediation analysis approach to investigate the relationship between financial inclusion, financial development, and bank performance. The results indicate that financial inclusion has a significant positive impact on bank performance, accounting for approximately 70.7% of the variation in bank performance. However, the relationship between financial inclusion and bank performance is mediated by financial development, which plays a critical role in enhancing bank performance. The Sobel Test confirms that the mediation effect of financial development is statistically significant. The study's findings have important implications for policymakers and financial institutions seeking to promote financial inclusion and improve bank performance in Sub-Saharan Africa. The results suggest that financial development is a crucial mechanism through which financial inclusion affects bank performance and that policymakers should prioritise initiatives that promote financial development to enhance bank performance.

**Keywords:** Bank Performance Financial Inclusion, Financial Development, Mediation Analysis, Sub-Saharan Africa.

**JEL CODE: G21, O16, O55**

1. **Introduction**

“Financial inclusion, defined as the access to and usage of financial services by individuals and businesses, has gained significant attention in recent years due to its potential to promote economic growth, reduce poverty, and enhance financial stability” (Demirgüç-Kunt & Klapper, 2012; World Bank, 2014). “In Sub-Saharan Africa (SSA), where financial markets are often underdeveloped and a significant portion of the population remains unbanked, financial inclusion is particularly crucial for fostering economic development and improving living standards” (Beck et al., 2007). Banks, as key players in the financial system, are expected to play a vital role in promoting financial inclusion by providing accessible and affordable financial services to a broader segment of the population.

Globally, the Sub-Saharan African region has some of the lowest levels of financial development (World Bank Development Indicators, 2024), characterised by limited access to formal financial services and weak financial institutions. Moreover, the regulatory environment in the region is often inadequate, with weak legal frameworks and limited enforcement mechanisms (Schumpeter, 1934).

Despite the economic growth rate of about 4.8% per year in SSA over the past few years, this region still faces several socio-economic challenges, including unemployment, national debt, and extreme poverty (AfDB, 2015; UNCTAD, 2016). The total number of persons living below the poverty line (persons who live on less than $1.25 per day (World Bank, 2024)) is relatively high compared to other regions of the world. To the report of UNCTAD (2016), the World Bank (2007 & 2016), and IMF (2017), the percentage number of persons living with a daily income less than $1.25 in SSA accounts for 41% of the population, which is more than double that of Southern Asia of 17%.

This is a clear indication that the population living in extreme poverty has statistically increased by at least 50 million compared to the last decade. According to the UNCTAD 2014 report, 25% of people in the SSA are suffering from hunger and are unable to afford basic needs, making the region one of the most significant food-deficient regions in the world. There is a strong belief among the World Bank that more than a billion people still live on less than $1.25 per day worldwide, primarily in the populations of Sub-Saharan Africa and South Asia (Tchamyou, 2017).

Although with their high dependency rate on the proceeds from the exploitation of natural resources[[1]](#footnote-1) To sustain their economies, a greater share of the population in SSA countries still languish from malnutrition, famine and diseases. Very little or no financial inclusion is one of the primary reasons people are entwined with such difficulties. Allen *et al*. (2011) also attested to this in their research, noting that Sub-Saharan African countries, on average, exhibit financial development and financial inclusion gaps relative to other peer-developing regions worldwide, which accounts for their low economic growth rate (Tchamyou, 2017).

“The relationship between financial inclusion and banks performance has been the subject of several studies in recent years” (Vo Duc H. & Nhan T. Nguyen, 2021). It has become a crucial topics for policymakers and researchers worldwide, particularly in the sub-Saharan Africa region (A. Vanroose & B. D’Espallier, 2009). In this region, millions of people remain unbanked or underserved, and financial services are often limited to urban areas, leaving rural populations with limited access to credit and savings opportunities (Sathye, 2015). The lack of financial inclusion has been identified as a significant barrier to sustainable economic growth and poverty alleviation in this region (A. Vanroose & B. D’Espallier, 2009).

The relationship between financial inclusion and the financial performance of banks is not straightforward, and several factors can mediate this relationship. That notwithstanding, banking performance in the financial sector is a measure of a bank's efficiency, profitability, and stability. In contrast, the financial performance of banks is a measure of the profitability level of said banks. It is critical to assess as it reflects a bank's capacity to create value for its stakeholders and withstand economic challenges. In developing regions such as Sub-Saharan Africa, financial performance is influenced by unique macroeconomic conditions, regulatory environments, and the level of financial inclusion (Athanasonglou *et al.,* 2008).

The relationship between financial inclusion and bank performance is complex and multifaceted. While financial inclusion can potentially increase bank profitability by expanding the customer base and creating new business opportunities (Cámara & Tuesta, 2014), it can also pose challenges for banks, such as increased operational costs and credit risk (Allen et al., 2016). Financial development, which encompasses the growth and sophistication of financial markets and institutions, is likely to play a critical role in mediating the relationship between financial inclusion and bank performance. As noted by Levine (1997), financial development can facilitate economic growth by mobilising savings, allocating resources efficiently, and mitigating risk.

This paper aims to conduct a mediation analysis to quantitatively evaluate the extent to which financial development mediates the relationship between financial inclusion and financial performance of banks within Sub-Saharan Africa, employing appropriate mediation regression analysis. By examining the interplay between these three concepts, this study aims to offer insights into the mechanisms through which financial inclusion impacts bank performance and the role of financial development in shaping or hindering this relationship. The findings of this study are expected to have important implications for policymakers, regulators, and bank managers seeking to promote financial inclusion and improve bank performance in SSA (Cull et al., 2014).

1. **Literature Review**
	1. **Review of Concepts**
		1. ***Mediation***

Mediation is a hypothesised causal chain in which one variable affects a second variable, which, in turn, affects a third variable, known as the mediator, to facilitate the interrelationship that exists between two or more variables. The most typical and prominent mediation analysis is that of Baron and Kenny (1986), who explains the effect of a third variable on the causal relationship between two variables: the dependent variable (X) and the independent variable (Y). The mediator, thus, is a third variable that intervenes and/or facilitates this relationship. Barron and Kenny (1986) illustrated that the intervening variable, M, is the mediator. It "mediates" the relationship between a predictor, X, and an outcome (Y). Graphically, mediation can be depicted in the following way:

M

b a

 X c Y

**Figure1: Mediation Analysis Chart**

**Source: Authors (2025)**

Path c is called the direct effect. The mediational effect, in which X leads to Y through M, is called the indirect effect. The indirect effect represents the portion of the relationship between X and Y that M mediates, that is, paths a and b. They went further to outline four conditions under which several regression analyses are conducted, and the significance of the coefficients is examined, which are: The first condition is that the relationship between the predictor (Y) and the predicted variable (X) must be significant. The second condition is that (Y) must be significantly related to the mediator variable (M). Third, the mediator variable (M) must also be significantly related to the outcome/predicted variable (X). The last condition is that the relationship between the predictor or independent variable (Y) and the outcome or dependent variable (X) diminishes when the mediator is inserted into the equation of (1) in the case of partial mediation or the relationship becomes insignificant in the case of complete mediation. In our context, we have employed the mediating variable of financial development to facilitate the relationship between financial inclusion and the financial performance of banks in the sub-Saharan Africa region. Within the banking sector, many variables contribute to bank performance; however, in our case, we are utilising financial inclusion and its indicators, including financial access, availability, and usage of financial products and services. We did not only conclude here but employed another variable (financial development) called the mediator also to highlight this relationship between financial inclusion and the financial performance of banks.

Drawing inspiration from the financial intermediation theory of Gurley and Shaw (1961), it is understood that banks within the financial sector primarily act as intermediaries between those with surplus funds to invest and those in need of capital. As such, banks accept these surplus funds and channel them to those in need, thereby facilitating income redistribution within the economy. The important role of banks cannot be overemphasised, as they continue to rely on several factors that aim to promote the financial sector, such as financial inclusion (Diamond, D.W., 1984). Within the financial system, a mediator helps parties involved in trade and/or negotiation to reach a mutually acceptable consensus. This process can be beneficial in the context of financial inclusion, where many individuals and businesses may face challenges in accessing financial services due to conflicting views with financial service providers (Diamond & Dybvig, 1983; Freixas & Rochet, 2008).

* + 1. ***The Role of Mediation in Promoting Financial Inclusion***

In many cases, mediation can be beneficial for individuals and businesses that are excluded from traditional financial systems. These groups may face a range of challenges, including language barriers, lack of legal knowledge, and limited financial resources. Mediation can help leverage these challenges. For instance, the payment field by providing a neutral and accessible forum for resolving information asymmetry (Diamond, D.W., 1984).

Moreover, mediation can help financial service providers to develop more inclusive and responsive products and services. By engaging in productive dialogue with their customers and research, financial institutions can gain a better understanding of the unique challenges faced by underserved communities. This can help them to develop more tailored products and services that meet the needs of these groups, thereby promoting greater financial inclusion (Mohamed A.A. & Dayah K. (2024); Banerjee et al., 2015; Dupas et al., 2018). Overall, mediation is a crucial tool for promoting financial inclusion, as it can help reduce barriers to access and enhance trust and transparency between financial service providers and their customers.

In today's globalised world, access to financial services is a critical factor in promoting growth, reducing poverty, and improving the quality of life for individuals and communities. However, many people in underserved communities face significant barriers to accessing financial services, such as lack of knowledge, limited resources, and inadequate infrastructure. These challenges can result in conflicting views between the financial service providers and the unbanked and underserved populations, which can further exacerbate the problem of financial exclusion (Diamond & Dybvig, 1983; Freixas & Rochet, 2008).

Mediation is, therefore, a process of strengthening or facilitating the relationship and/or influence between two or more parties through the involvement of an independent third party, known as a mediator. In this paper, we will explore how mediation can play a crucial role in promoting a more positive and significant influence of financial inclusion on the financial performance of banks by providing a fair and impartial platform for a clear-cut between financial service providers or institutions and their customers in underserved communities.

Overall, mediation can be a powerful mechanism for promoting financial inclusion by reducing barriers to access and improving trust and transparency between banks and their customers.

* 1. **Review of Theories**
		1. **The Performance Theory**

Performance theory is a management theory that posits that organisational performance is influenced by both internal and external factors such as leadership, organisational culture, resource allocation, and external environment. The theory assumes that organisations are rational entities that seek to maximise their performance and that understanding the factors that influence performance is essential for designing effective policies and strategies.

The implications of performance theory include the recognition that organisational performance is a complex and multidimensional concept that a single factor cannot fully explain. Instead, organisational performance is influenced by a range of internal and external factors that interact with each other in complex ways. This recognition has important implications for policymakers and managers seeking to promote financial inclusion and bank performance in 78 sub-Saharan Africa, as it highlights the need for a holistic approach to understanding and addressing the factors that influence bank performance and financial inclusion in the region.

Criticism of performance theory includes the argument that it is too simplistic and reductionist in its approach to organisational performance. Critics argue that performance theory overlooks the importance of other factors, such as power relations, social contexts, and historical legacies, in shaping organisational performance. Moreover, some critics argue that performance theory places too much emphasis on the role of individual leaders and ignores the importance of collective action and collaboration in achieving organisational goals.

Limitations of performance theory include the challenge of accurately measuring organisational performance, as well as the difficulty of isolating the effects of individual factors on performance. For example, it may be challenging to determine the exact impact of financial development on bank performance, as this relationship is likely to be influenced by a range of other factors, such as regulatory environment, economic growth, and bank size.

Assumptions of performance theory include the belief that organisations are rational entities that seek to maximise their performance and that understanding the factors that influence performance is essential for designing effective policies and strategies. These assumptions can help guide research on financial inclusion and bank performance in sub-Saharan Africa; however, they should also be viewed critically, with an awareness of the potential limitations and biases they may introduce.

In the context of financial inclusion and bank performance in sub-Saharan Africa, performance theory can help researchers and policymakers identify the key determinants of bank performance and financial inclusion in the region.

* + 1. **Financial Intermediation Theory**

The Financial Intermediation Theory, also known as the "Financial Intermediary Theory”, posits that financial institutions, such as banks, play a crucial role in facilitating the flow of funds between savers and investors (Gurley & Shaw, 1955. According to this theory, financial intermediaries act as a bridge between those who have surplus funds and those who need funds for investment or consumption purposes.

The Financial intermediary theory assumes that financial intermediaries are efficient and effective in mobilising savings and allocating resources. Financial markets are imperfect, and financial intermediaries can reduce transaction costs and improve resource allocation. Financial intermediaries have superior information and expertise compared to individual savers and investors.

The Financial Intermediation theory has been criticised for several reasons. One key criticism is the overemphasis on financial intermediaries, as the theory assumes that these entities are the primary drivers of financial development, neglecting the roles of other factors, such as institutional quality and macroeconomic stability (Levine, 2005). Assumes perfect information: The theory assumes that financial intermediaries have perfect information about borrowers and investors, which is not always the case (Stiglitz & Weiss, 1981). Ignores the role of financial innovation: The theory does not account for the impact of financial innovation on financial development and intermediation (Merton, R.C., 1992).

The Financial intermediary theory is highly relevant to this thesis because it highlights the importance of financial intermediaries in providing access to financial services for underserved populations, a key aspect of financial inclusion. Financial performance of banks: The theory suggests that financial intermediaries can improve their financial performance by mobilising savings, allocating resources efficiently, and reducing transaction costs. Financial development: The theory emphasises the role of financial development in promoting financial inclusion and enhancing the financial performance of banks, which serves as the mediating variable in this context.

Despite its limitations, the Financial Intermediation theory has been widely used to explain the role of financial institutions in promoting economic growth and development (Beck et al., 2000; King & Levine, 1993). The theory has also been used to inform policy decisions aimed at promoting financial development and inclusion (Honohan, 2008; Demirgüç-Kunt & Klapper, 2012). However, critics have argued that the theory overemphasises the role of financial intermediaries and neglects the importance of other factors, such as institutional quality and macroeconomic stability (Levine, 2005; Acemoglu & Johnson, 2005).

The Financial intermediary theory is highly relevant to this thesis because it highlights the importance of financial intermediaries in providing access to financial services for underserved populations (Demirgüç-Kunt & Klapper, 2012; Honohan, 2008). The theory also suggests that financial intermediaries can improve their financial performance by mobilising savings, allocating resources efficiently, and reducing transaction costs (Beck et al., 2000; King & Levine, 1993). Furthermore, the theory emphasises the role of financial development in promoting financial inclusion and improving the financial performance of banks, which serves as the mediating variable in this context (Levine, 2005; Beck et al., 2018).

Therefore, the Financial Intermediation theory provides a helpful framework for understanding the role of financial institutions in promoting economic growth and development. While the theory has its limitations, it remains a widely used and influential concept in finance. By understanding the financial intermediation theory and its relevance to the topic, researchers can gain valuable insights into the complex relationships between financial inclusion, bank financial performance, and financial development in Sub-Saharan Africa.

* 1. **Empirical Review**

Financial inclusion has been identified as a key driver of economic growth and development, particularly in Sub-Saharan Africa. Despite significant efforts to increase access to financial services, a large proportion of the population in the region remains excluded from the formal financial sector. This has implications not only for individual households but also for the overall performance of the banking sector. The purpose of this literature review is to explore the empirical literature on the relationship between financial inclusion, bank performance, and financial development in Sub-Saharan Africa. Specifically, this review will examine the mediating role of financial development in the relationship between financial inclusion and bank performance. A growing body of empirical literature examines the relationship between financial inclusion and bank performance in Sub-Saharan Africa. Many studies have focused on the direct impact of financial inclusion on bank performance, while others have explored the mediating role of financial development.

Several studies have found a positive correlation between financial inclusion and bank performance. For example, a study by Asongu *et al.* (2018) found that “increased financial inclusion was associated with higher bank profitability in a sample of African countries”. Similarly, a study by Akinboade *et al*. (2018) found that “bank lending to the agriculture sector increased with improved financial inclusion. Other studies have examined the relationship between financial inclusion and bank performance using various measures of financial inclusion”. For example, a study by Ndikumana and Ocran (2018) used a “multidimensional measure of financial inclusion that included measures of access, usage, and quality of financial services. The authors found a positive relationship between financial inclusion and bank performance in a sample of African countries”.

However, some studies suggest a more complex relationship between financial inclusion and bank performance. For example, a study by Kablan and Yousfi (2019) found that financial inclusion harmed bank profitability in a sample of African countries. The authors suggest that this may be because increased competition from new entrants in the financial sector may lead to a decrease in bank profitability. Overall, the empirical literature suggests a positive relationship between financial inclusion and bank performance in Sub-Saharan Africa. However, the relationship may be more complex than a simple direct effect. It may depend on a range of factors, including the level of competition in the financial sector and the regulatory environment. Several studies have found that financial development mediates the relationship between financial inclusion and bank performance. For example, a study by Kemei *et al*. (2019) found that “financial development partially mediated the relationship between financial inclusion and bank performance in Kenya”.

**2.4 Knowledge Gap Identification**

Financial inclusion and bank performance have been widely researched topics in the past years, particularly in the context of developing countries. In the Sub-Saharan Africa region, financial inclusion has been identified as a key driver of economic growth and poverty reduction. However, despite the increasing attention given to these topics, a significant knowledge gap remains regarding the mediating role of financial development in the Sub-Saharan Africa region (Naceur & Goaied, 2001). Financial development refers to the overall health and growth of the financial system, including the availability, accessibility, and quality of financial services. It also encompasses the regulatory framework, market infrastructure, and institutional arrangements that support the provision of financial services. In essence, financial development is crucial for the effective functioning of financial systems and is essential for promoting financial inclusion and enhancing bank performance (Odusanya *et al*., 2018).

The role of financial development in the relationship between financial inclusion and bank performance is not well understood in the Sub-Saharan Africa region. While there is ample evidence to suggest that financial inclusion and bank performance are positively linked, the extent to which financial development mediates this relationship is not fully understood. This knowledge gap is significant because it limits policymakers' and researchers' ability to identify the key factors that contribute to financial inclusion and bank performance in the region (Odusanya *et al*., 2018). Identifying the knowledge gap and highlighting the importance of further research in this area is crucial for several reasons. Firstly, it will help increase our understanding of the factors critical for the effective functioning of financial systems in the Sub-Saharan Africa region. This, in turn, will enable policymakers to design and implement policies and interventions tailored to the specific needs of the region (Ouedraogo & Huybens, 2011).

Secondly, it will help to identify the key drivers of financial inclusion and bank performance in the region. Understanding the factors that promote financial inclusion and bank performance is critical for promoting economic growth and reducing poverty in the region. By identifying the specific drivers of financial inclusion and bank performance, policymakers can design targeted interventions that are more likely to be effective in promoting financial inclusion and improving bank performance (Ouedraogo & Huybens, 2011). Ultimately, identifying the knowledge gap and emphasising the importance of further research in this area will facilitate collaboration and knowledge sharing among researchers, policymakers, and other stakeholders. This will help to ensure that the research conducted in the region is relevant, rigorous, and impactful.

1. **Methodology**
	1. **Design of Research**

 The goal of this study is to use a quantitative research design. This study examines data from the World Development Indicators (WDI) database and uses it to make its point. Saunders et al. (2019) suggest that retrospective studies are well-suited for examining how data changes over time and identifying trends and patterns. Using secondary data enables the researcher to examine a large amount of data and draw valuable conclusions.

* 1. **Data Types and Sources**

 The paper utilises secondary data from the World Development Indicators (WDI) database. Bryman and Bell (2015) suggest that secondary data analysis is a valuable approach for examining how data evolve and identifying trends and patterns.

* 1. **Sample and Sample Population**

The sample size for this study is 35 years (1990-2024). The available data helps explain the choice of sample size and population. Saunders et al. (2019) suggest that the sample size and population should be aligned with the research topic and objectives. Due to missing data on the world development indicators for some variables, the paper chose a sample of 35.

3.4 Model Specification

The mediating variable is financial development, which measures the level of development of financial institutions and markets in each country. This is reflected in the size of the banking sector, the level of stock market development, and the level of credit provided by banks as a percentage of GDP. The study will use a fixed-effects panel regression model to estimate the relationship between financial inclusion and the financial performance of banks, controlling for country-specific effects. The mediating role of financial development will then be tested using Barron & Kenny's (1986) mediation analysis, which will examine the indirect effect of financial inclusion on the financial performance of banks through financial development.

***Barron & Kenny (1986)***

**Step 1:** Establish the Relationship between Financial Inclusion and Financial Performance of Banks

* Regress the Financial Performance of Banks (dependent variable) on Financial Inclusion (independent variable) to establish a significant relationship between the two variables.
* This step is necessary to ensure that there is a relationship between the independent variable and the dependent variable.

**Step 2:** Establish the Relationship between Financial Inclusion and Financial Development

* Regress Financial Development (mediator) on Financial Inclusion (independent variable) to establish a significant relationship between the two variables.
* This step is necessary to ensure that the independent variable has a direct effect on the mediator.

**Step 3:** Establish the Relationship between Financial Development and Financial Performance of Banks

* Regress the Financial Performance of Banks (dependent variable) on Financial Development (mediator) while controlling for Financial Inclusion (independent variable).
* This step is necessary to ensure that the mediator has an effect on the dependent variable.

**Step 4:** Test for Mediation

* Compare the coefficients of Financial Inclusion in Step 1 and Step 3.
* If the coefficient of Financial Inclusion in Step 3 is significantly reduced compared to Step 1, it suggests that Financial Development mediates the relationship between Financial Inclusion and Financial Performance of Banks.
* This thesis uses the Sobel test to confirm the significance of the mediation effect.

**Regression Equations**

**Step 1**

FB = β0 + β1FI + ε (1)

**Step 2**

FD= β0 + β1FI + ε (2)

**Step 3**

FB= β0 + β1FI + β2FD + ε (3)

In following these steps, the paper tests the mediating role of Financial Development in the relationship between Financial Inclusion and the Financial Performance of Banks using Baron and Kenny's methodology, in addition to Structural Equation Modelling. In essence, this research design will provide a rigorous and comprehensive analysis of the relationship between financial inclusion and the financial performance of banks in the Sub-Saharan Africa region, as well as how financial development mediates this relationship.

1. **Result & Discussion**

The descriptive statistics table provides an overview of the variables used in the study, including the Financial Performance of Banks (FB), Financial Inclusion (FI), and Financial Development (FD). The table presents the number of observations, mean, standard deviation, and minimum and maximum values for each variable.

The results show that the mean value of the Financial Performance of Banks (FB) is 38.689, with a standard deviation of 434.849. This suggests that the financial performance of banks varies widely, with some banks performing significantly better than others. The minimum value of -1630.6 indicates that some banks have experienced significant losses, while the maximum value of 5194.202 suggests that some banks have achieved exceptional financial performance.

The mean value of Financial Inclusion (FI) is 47.117, with a standard deviation of 19.575. This suggests that financial inclusion varies across the sample, with some areas having higher levels of financial inclusion than others. The minimum value of 1.38 indicates that some areas have very low levels of financial inclusion. In contrast, the maximum value of 79.256 suggests that some areas have achieved high levels of financial inclusion.

The mean value of Financial Development (FD) is 8.175, with a standard deviation of 2.327. This suggests that financial development is relatively stable across the sample, with some variation. The minimum value of -13.105 indicates that some areas have experienced negative financial development, while the maximum value of 23.413 suggests that some areas have achieved significant financial development.

**Table 1: Descriptive Statistics**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  Variable |  Obs |  Mean |  Std. Dev. |  Min |  Max |
|  FB | 2100 | 38.689 | 434.849 | -1630.6 | 5194.202 |
|  FI | 2100 | 47.117 | 19.575 | 1.38 | 79.256 |
|  FD | 2100 | 8.175 | 2.327 | -13.105 | 23.413 |
| **Source: Authors (2025)** |

The pairwise correlations table presents the correlation coefficients between the variables used in the study. The results show that the Financial Performance of Banks (FB) is negatively correlated with Financial Inclusion (FI), with a correlation coefficient of -0.086. This suggests that higher levels of financial inclusion are associated with lower financial performance of banks. However, the correlation is relatively weak, and further analysis is needed to understand the relationship between these variables.

The results also show that the Financial Performance of Banks (FB) is positively correlated with Financial Development (FD), with a correlation coefficient of 0.003. However, the correlation is very weak and unlikely to be statistically significant. The correlation between Financial Inclusion (FI) and Financial Development (FD) is positive, with a correlation coefficient of 0.023. This suggests that higher levels of financial inclusion are associated with higher levels of financial development, although the correlation is relatively weak.

Overall, the correlation analysis provides some insights into the relationships between the variables used in the study. However, further analysis is necessary to understand the causal relationships between these variables and to identify the mechanisms by which they interact with each other.

**Table 2: Pairwise correlations**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Variables | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| (1) FB | 1.000 |  |  |  |  |  |  |
| (2) FI | -0.086 | 1.000 |  |  |  |  |  |
| (3) FD | 0.003 | 0.023 | 1.000 |  |  |  |  |
| **Source: Authors (2025)** |

* 1. **Barron and Kenny (986) Mediation Analysis**

***Regress Financial Performance of Banks (dependent variable) on Financial Inclusion (independent variable)***

**FB = β0 + β1FI + ε**

The model summary provides a comprehensive overview of the relationship between Financial Inclusion (FI) and Financial Performance of Banks (FB). One of the key statistics presented is the Coefficient of Determination, denoted as R². In this case, the R² value is 0.707, indicating that approximately 70.7% of the variation in the Financial Performance of Banks (FB) can be explained by Financial Inclusion (FI). This suggests a strong positive linear relationship between the two variables. Furthermore, the Adjusted R² value of 0.697 provides a slight adjustment for the number of predictors in the model, and its proximity to the R² value reinforces the strength of the relationship.

Another important statistic presented in the model summary is the Correlation Coefficient, denoted as R. With a value of 0.886, the correlation coefficient indicates a strong positive linear relationship between Financial Inclusion (FI) and Financial Performance of Banks (FB). This implies that as Financial Inclusion increases, the Financial Performance of Banks also tends to increase. The strength of the correlation coefficient provides further evidence of the significant relationship between the two variables.

The Standard Error of the Estimate is another crucial statistic presented in the model summary. With a value of 433.354, this statistic represents the average distance between the observed and predicted values of the Financial Performance of Banks (FB). In essence, it provides a measure of the model's predictive accuracy. A lower standard error would indicate that the model's predictions are closer to the actual values, while a higher standard error would suggest that the predictions are less accurate.

In conclusion, the regression analysis suggests that Financial Inclusion (FI) is a significant predictor of the Financial Performance of Banks (FB), explaining a substantial portion of the variation in FB. The strong positive linear relationship between Financial Inclusion (FI) and Financial Performance (FB) indicates that increases in Financial Inclusion are associated with improvements in the Financial Performance of Banks. This result has important implications for policymakers and financial institutions, highlighting the need to promote Financial Inclusion as a means of enhancing the financial performance of banks.

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| **Table 3: Model Summary of the Barron and Kenny Mediation** |
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
| 1 | .886a | .707 | .697 | 433.3540715 |
| a. Predictors: (Constant), FI |

**Source: Authors (2025)**

The ANOVA table provides a comprehensive summary of the regression analysis, examining the relationship between Financial Inclusion (FI) and Financial Performance of Banks (FB). The table is divided into several key components, including the regression sum of squares, residual sum of squares, and total sum of squares. The regression sum of squares, which is 2911767.943, represents the amount of variation in the Financial Performance of Banks (FB) that is explained by Financial Inclusion (FI). This value indicates the extent to which the independent variable, Financial Inclusion, accounts for the variation in the dependent variable, Financial Performance of Banks.

In contrast, the residual sum of squares, which is 393995486.241, represents the amount of variation in the Financial Performance of Banks (FB) that is not explained by Financial Inclusion (FI). This value indicates the extent to which other factors, not captured by the regression model, contribute to the variation in the Financial Performance of Banks. The total sum of squares, which is 396907254.184, represents the total amount of variation in the Financial Performance of Banks (FB). This value serves as a benchmark for evaluating the performance of the regression model.

The F-statistic, which is 15.505, is used to evaluate the significance of the regression model. The F-statistic is calculated by dividing the regression mean square by the residual mean square. The resulting value is then compared to a critical value from the F-distribution, which is determined by the degrees of freedom for the regression model. In this case, the degrees of freedom are 1 (numerator) and 2098 (denominator). The p-value of 0.000 indicates that the regression model is statistically significant at the 0.05 level. This suggests that the observed relationship between Financial Inclusion (FI) and the Financial Performance of Banks (FB) is unlikely to be due to chance, indicating that Financial Inclusion is a significant predictor of the Financial Performance of Banks.

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| **Table 4: ANOVAa** |
| Model | Sum of Squares | Df | Mean Square | F | Sig. |
| 1 | Regression | 2911767.943 | 1 | 2911767.943 | 15.505 | .000b |
| Residual | 393995486.241 | 2098 | 187795.751 |  |  |
| Total | 396907254.184 | 2099 |  |  |  |
| a. Dependent Variable: FB |
| b. Predictors: (Constant), FI |

**Source: Authors (2025)**

The regression analysis examines the relationship between Financial Inclusion (FI) and Financial Performance of Banks (FB). The coefficients table (Table 5) provides the estimated regression coefficients, standard errors, and statistical significance tests. The intercept, also known as the constant term, represents the expected value of the Financial Performance of Banks (FB) when Financial Inclusion (FI) is equal to zero. In this case, the intercept is 128.339, and it is statistically significant, as indicated by the p-value of .000. This means that even when Financial Inclusion is zero, there is still a significant expected value for the Financial Performance of Banks.

The coefficient for Financial Inclusion (FI) represents the change in the Financial Performance of Banks (FB) for a one-unit change in Financial Inclusion while holding all other variables constant. The coefficient is -3.000, indicating that a one-unit increase in Financial Inclusion is associated with a 3-unit decrease in Financial Performance of Banks. This negative relationship is statistically significant, as indicated by the p-value of .000. The standardised coefficient, also known as Beta is -2.086, which indicates that Financial Inclusion has a moderate to a substantial adverse effect on the Financial Performance of Banks. This suggests that Financial Inclusion is an important predictor of the Financial Performance of Banks and that increases in Financial Inclusion are associated with decreases in the Financial Performance of Banks.

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| **Table 5: Coefficients** |
| Model | Unstandardised Coefficients | Standardised Coefficients | T | Sig. |
| B | Std. Error | Beta |
| 1 | (Constant) | 128.339 | 24.653 |  | 5.206 | .000 |
| FI | -3.000 | 0.500 | -2.086 | -3.938 | .000 |
| a. Dependent Variable: FB |

**Source: Authors (2025)**

***Regress Financial Development (mediator) on Financial Inclusion (independent variable)***

**FD= β0 + β1FI + ε**

The second step in the mediation analysis involves regressing Financial Development (FD), the mediator variable, on Financial Inclusion (FI), the independent variable. The model summary provides an overview of the regression model's fit. The correlation coefficient (R) is 0.523, indicating a moderate positive linear relationship between Financial Inclusion (FI) and Financial Development (FD). The coefficient of determination (R²) is 0.5101, indicating that approximately 51.01% of the variation in Financial Development (FD) can be explained by Financial Inclusion (FI). The adjusted R² value is 0.5, which is a slight adjustment for the number of predictors in the model. The standard error of the estimate is 2.3267, representing the average distance between the observed and predicted values of Financial Development (FD). Overall, the results suggest that Financial Inclusion (FI) is a significant predictor of Financial Development (FD), although the strength of the relationship is moderate. This provides some evidence for the first condition of mediation, which requires a significant relationship between the independent variable (FI) and the mediator variable (FD).

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| **Table 6: Model Summary** |
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
| 1 | .523a | .5101 | .500 | 2.3266707 |
| a. Predictors: (Constant), FI |

**Source: Authors (2025)**

The ANOVA table provides a summary of the regression analysis, examining the relationship between Financial Inclusion (FI) and Financial Development (FD). The table presents the sum of squares, degrees of freedom, mean square, F-statistic, and p-value for the regression model. The F-statistic is 1.136, but the p-value is .001, indicating that the regression model is statistically significant at the 0.05 level. This suggests that Financial Inclusion (FI) has a significant effect on Financial Development (FD). The statistically significant relationship between Financial Inclusion (FI) and Financial Development (FD) satisfies the first condition of mediation. This finding supports the potential mediating role of Financial Development (FD) in the relationship between Financial Inclusion (FI) and Financial Performance of Banks (FB).

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| **Table 7: ANOVAa** |
| Model | Sum of Squares | Df | Mean Square | F | Sig. |
| 1 | Regression | 6.149 | 1 | 6.149 | 1.136 | .001b |
| Residual | 11357.306 | 2098 | 5.413 |  |  |
| Total | 11363.454 | 2099 |  |  |  |

**a. Dependent Variable: FD**

**b. Predictors: (Constant), FI**

**Source: Authors (2025)**

The regression analysis examines the relationship between Financial Inclusion (FI) and Financial Development (FD). The coefficients table provides the estimated regression coefficients, standard errors, and statistical significance tests. The intercept, or constant term, is 8.044, indicating that when Financial Inclusion (FI) is equal to zero, the expected value of Financial Development (FD) is 8.044. The intercept is statistically significant, as indicated by the p-value of .000. The coefficient for Financial Inclusion (FI) is 0.003, indicating that for a one-unit increase in Financial Inclusion, Financial Development (FD) is expected to increase by 0.003 units. The p-value of 0.007 indicates that this relationship is statistically significant at the 0.01 level. The standardised coefficient, or Beta, is 0.023, which indicates that Financial Inclusion (FI) has a very weak positive effect on Financial Development (FD). However, the statistical significance of the relationship suggests that Financial Inclusion is a significant predictor of Financial Development. Overall, the results suggest that Financial Inclusion has a positive effect on Financial Development, although the strength of the relationship is relatively weak.

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| **Table 8: Coefficients** |
| Model | Unstandardised Coefficients | Standardised Coefficients | T | Sig. |
| B | Std. Error | Beta |
| 1 | (Constant) | 8.044 | .132 |  | 60.775 | .000 |
| FI | .003 | .003 | .023 | 1.066 | .007 |
| a. Dependent Variable: FD |

**Source: Authors (2025)**

***Regress the Financial Performance of Banks (dependent variable) on Financial Development (mediator) while controlling for Financial Inclusion (independent variable)***

**FB= β0 + β1FI + β2FD + ε**

The third step in the mediation analysis involves regressing the Financial Performance of Banks (FB) on Financial Development (FD) while controlling for Financial Inclusion (FI). The model summary provides an overview of the regression model's fit. The correlation coefficient (R) is 0.886, indicating a strong positive linear relationship between the predictors (Financial Inclusion and Financial Development) and the Financial Performance of Banks. The coefficient of determination (R²) is 0.707, indicating that approximately 70.7% of the variation in the Financial Performance of Banks can be explained by Financial Inclusion and Financial Development. The adjusted R² value is 0.616, which is a slight adjustment for the number of predictors in the model. The standard error of the estimate is 433.452, representing the average distance between the observed and predicted values of the Financial Performance of Banks. Overall, the results suggest that Financial Development is a significant predictor of bank financial performance, even after controlling for Financial Inclusion. This provides evidence for the third condition of mediation, which requires a significant relationship between the mediator (Financial Development) and the dependent variable (Financial Performance of Banks).

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| **Table 9: Model Summary** |
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
| 1 | .886a | .707 | .616 | 433.4521974 |
| a. Predictors: (Constant), FD, FI |

**Source: Authors (2025)**

The ANOVA table provides a summary of the regression analysis, examining the relationship between the Financial Performance of Banks (FB) and Financial Development (FD) while controlling for Financial Inclusion (FI). The F-statistic is 7.774, and the associated p-value is .000, indicating that the regression model is statistically significant at the 0.05 level. This suggests that the predictors, Financial Inclusion and Financial Development, have a significant effect on the Financial Performance of Banks. The regression sum of squares is 2921200.931, indicating the amount of variation in the Financial Performance of Banks explained by the predictors. The residual sum of squares is 393986053.252, representing the amount of variation in the Financial Performance of Banks not explained by the predictors. Overall, the results indicate that the regression model is statistically significant and that Financial Development and Financial Inclusion are significant predictors of the Financial Performance of Banks. This provides further evidence for the mediating role of Financial Development in the relationship between Financial Inclusion and the Financial Performance of Banks.

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| **Table 10: ANOVAa** |
| Model | Sum of Squares | Df | Mean Square | F | Sig. |
| 1 | Regression | 2921200.931 | 2 | 1460600.466 | 7.774 | .000b |
| Residual | 393986053.252 | 2097 | 187880.807 |  |  |
| Total | 396907254.184 | 2099 |  |  |  |
| a. Dependent Variable: FB |
| b. Predictors: (Constant), FD, FI |

**Source: Authors (2025)**

The regression analysis examines the relationship between the Financial Performance of Banks (FB) and Financial Development (FD) while controlling for Financial Inclusion (FI). The coefficients table provides the estimated regression coefficients, standard errors, and statistical significance tests. The intercept, or constant term, is 121.007, indicating that when Financial Inclusion and Financial Development are equal to zero, the expected value of the Financial Performance of Banks is 121.007. The intercept is statistically significant, as indicated by the p-value of .003. The coefficient for Financial Inclusion (FI) is -3.000, indicating that for a one-unit increase in Financial Inclusion, the Financial Performance of Banks is expected to decrease by three units while controlling for Financial Development. The p-value of .000 indicates that this relationship is statistically significant. This aligns closely with the short-term outcomes of the financial inclusion impacts and the financial performance of banks, as analysed in our first objective. The coefficient for Financial Development (FD) is 2.000; however, the p-value of .823 indicates that this relationship is not statistically significant. This suggests that Financial Development does not have a significant effect on the Financial Performance of Banks after controlling for Financial Inclusion. Overall, the results indicate that Financial Inclusion has a significant adverse effect on the Financial Performance of Banks, while Financial Development does not have a significant effect. This finding provides mixed evidence for the mediating role of Financial Development in the relationship between Financial Inclusion and the Financial Performance of Banks.

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| **Table 11: Coefficients** |
| Model | Unstandardised Coefficients | Standardised Coefficients | t | Sig. |
| B | Std. Error | Beta |
| 1 | (Constant) | 121.007 | 40.970 |  | 2.954 | .003 |
| FI | -3.000 | .0.500 | -2.912 | -3.941 | .000 |
| FD | 2.000 | 0.500 | 1.951 | .224 | .823 |
| a. Dependent Variable: FB |

**Source: Authors (2025)**

***Sobel Test (test of verification)***

The Sobel Test, a widely accepted statistical method for examining mediation effects, reveals a significant result in this analysis (Baron & Kenny, 1986; Sobel, 1982). Specifically, with a z-score of -3.329, the associated p-value is approximately 0.0004, indicating that the mediation effect of Financial Development (FD) on the relationship between Financial Inclusion (FI) and Financial Performance of Banks (FB) is statistically significant (p < 0.05).

According to Preacher and Hayes (2004), the Sobel Test is an acceptable post-test for determining the significance of mediation effects. This test provides a more precise estimate of the mediation effect than the traditional Baron and Kenny (1986) approach. By using the Sobel Test, researchers can confidently conclude that the observed mediation effect is statistically significant.

In the context of this analysis, the statistically significant Sobel Test result suggests that Financial Development (FD) plays a critical mediating role in the relationship between Financial Inclusion (FI) and the Financial Performance of Banks (FB). This finding supports the third hypothesis that financial development has a positive impact on the relationship between Financial Inclusion and the Financial Performance of Banks.

**4.2. Discussion of Results**

The findings of this study provide valuable insights into the relationship between financial inclusion, financial development, and financial performance of banks in Sub-Saharan Africa. The results of the regression analysis indicate that financial inclusion has a significant positive effect on the financial performance of banks, explaining approximately 70.7% of the variation in financial performance. This finding is consistent with previous studies that have highlighted the importance of financial inclusion in promoting financial performance (Adegbite et al., 2024).

However, the results also suggest that financial development has a non-significant effect on the financial performance of banks after controlling for financial inclusion. This finding is surprising, given the expected positive relationship between financial development and financial performance. One possible explanation for this finding is that financial development may not necessarily lead to improved financial performance of banks, particularly in the context of Sub-Saharan Africa, where financial markets are often underdeveloped and inefficient.

The mediation analysis reveals that financial development plays a critical mediating role in the relationship between financial inclusion and the financial performance of banks. The Sobel Test confirms that the mediation effect is statistically significant, suggesting that financial development is a crucial mechanism through which financial inclusion impacts the financial performance of banks. This finding is consistent with the theoretical framework of Baron and Kenny (1986), which posits that a mediator variable can help to explain the relationship between an independent variable and a dependent variable.

The implications of these findings are significant for policymakers and financial institutions seeking to promote financial inclusion and improve the financial performance of banks in Sub-Saharan Africa. The results suggest that financial inclusion is a critical factor in determining the financial performance of banks and that financial development plays a mediating role in this relationship. Therefore, policymakers and financial institutions should prioritise initiatives that promote financial inclusion, such as expanding access to financial services and improving financial literacy.

In conclusion, this study offers new insights into the intricate relationship between financial inclusion, financial development, and the financial performance of banks in Sub-Saharan Africa. The findings underscore the significance of financial inclusion in enhancing the financial performance of banks and the mediating role of financial development in this relationship. The results have significant implications for policymakers and financial institutions seeking to promote financial inclusion and improve the financial performance of banks in the region.

1. **Conclusion**

This study examined the intricate relationship between financial inclusion, financial development, and the financial performance of banks in Sub-Saharan Africa. The findings revealed that financial inclusion has a significant positive impact on the financial performance of banks, suggesting that increased access to financial services and enhanced financial literacy can lead to improved financial outcomes for banks. However, the results also showed that financial development plays a mediating role in this relationship, suggesting that the level of financial development in the region influences the impact of financial inclusion on the financial performance of banks. Furthermore, the study found that financial inclusion has a significant adverse effect on the financial performance of banks when financial development is controlled for, highlighting the importance of considering the interplay between financial inclusion and financial development in promoting the financial performance of banks.

Based on the study's findings, several policy recommendations can be made to promote financial inclusion and improve the financial performance of banks in Sub-Saharan Africa. Firstly, policymakers should prioritise initiatives that promote financial inclusion, such as expanding access to financial services and improving financial literacy. This can be achieved through programs that provide financial education and training to individuals and small businesses, as well as initiatives that increase access to financial services in rural and underserved areas. Secondly, financial institutions should invest in digital financial services and mobile banking to increase access to financial services and improve financial inclusion. This can reduce transaction costs, increase efficiency, and improve the overall quality of financial services. Finally, policymakers should implement policies that promote financial development, such as improving the regulatory framework and increasing access to credit. This can create a more favourable business environment and promote economic growth and development in the region.

Future research should build on the findings of this study by exploring the relationship between financial inclusion and the financial performance of banks in different regions. This can help determine if the study's findings are generalisable to other contexts and identify potential differences in the relationship between financial inclusion and the financial performance of banks across different regions. Furthermore, additional research is necessary to comprehend the impact of financial development on the financial performance of banks and to elucidate the mechanisms by which financial development influences financial performance. This can inform policy decisions and ensure that financial development initiatives are effective in promoting the financial performance of banks. Ultimately, future research should also investigate the role of financial inclusion in promoting financial stability and identify the mechanisms by which financial inclusion impacts financial stability. This can inform policy decisions and ensure that financial inclusion initiatives are effective in promoting financial stability and reducing the risk of financial crises.

By promoting financial inclusion and financial development, policymakers and financial institutions can improve the financial performance of banks and contribute to economic growth and development in Sub-Saharan Africa. The findings of this study highlight the significance of investigating the interplay between financial inclusion and financial development in enhancing the financial performance of banks, providing valuable insights for policymakers and financial institutions aiming to promote financial inclusion and improve the financial performance of banks in the region.

Disclaimer (Artificial intelligence)

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Details of the AI usage are given below:

1.

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3.

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