Innovations

Financial Inclusion and Economic Development in Selected Sub-Sahara Africa Countries (1999 -2024)

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Abstract: *This study examined the impact of financial inclusion on economic development in SSA countries in SSA countries covering the period 1974 to 2023. The choice of SSA as the geography of the study was informed by the degree of financial exclusion in the financial system and the widening level of human underdevelopment. The dependent variable is economic development represented by gross domestic product per capita while financial inclusion indicators were used as the independent variables. The panel data for this study was sourced from the World Development Indicator and International Financial Statistics. Two variants of Panel-ARDL were used, namely, mean group and pooled mean group with Haussmann test serving as the guide in the choice of the more efficient and consistent of the two models. Findings arising from this study are summarized as follows: That Number of Formally Banked Adults (FBA) has positive (∂=0.29) and significant (0.000) effect on human development in Sub-Saharan African countries. Also, that Adults with Credit (AWC) has negative (∂=-0.32) and significant (0.000) effect on human development in Sub-Saharan African countries and that Number of Formally Banked Enterprises (FBE) has negative (∂=-0.00) and insignificant (0.1485) effect on human development in Sub-Saharan African countries. It was also found that Number of Enterprises with Credit (EWC) has negative (∂=-0.03) and insignificant (0.0000) effect on human development in Sub-Saharan African countries and that Point of Financial Services (PFS) has positive and significant (pvalue-0.0000) effect on human development in Sub-Saharan African countries. Spread of ATM Services (SAS) has negative (∂=-0.04) and significant (0.000) effect on human development in Sub-Saharan African countries. The study in agreement with some prior studies found that the human development index benefits from intentional policies designed to enhance financial inclusion. It is recommended that government should enhance access to credit by individuals to drive human development. This can be achieved through strengthening microfinance and other rural based financial institutions.*

Keywords: *Financial inclusion; Economic Development; SSA; Human Development Index*

Introduction

Financial inclusion is a crucial driver of economic development in Sub-Saharan Africa (SSA). By providing access to financial products and services, it fosters resilience against economic shocks, improves access to essential services like education and healthcare, and supports entrepreneurial investment. Marginalized and poor individuals, who typically lack access to financial services, stand to benefit the most from inclusive financial systems. Despite its transformative potential, financial exclusion remains a significant issue in SSA. Approximately 1.4 billion adults globally lack access to formal financial services, with the problem being particularly acute in SSA, where the financial inclusion rate averages only 55.1% (Demirgüç-Kunt et al., 2022). Nigeria and other regional economies contribute substantially to the world's unbanked population, highlighting stark inequalities in financial resource access compared to high-income nations where nearly all adults have financial accounts.

Efforts to promote financial inclusion in SSA have gained momentum, particularly since the introduction of mobile money platforms. The launch of M-PESA in Kenya in 2007 marked a pivotal moment, revolutionizing access to financial services. In Nigeria, mobile money adoption has led to 73% of adults holding accounts, while Tanzania saw formal financial service access rise from 11% to 44% (Demirgüç-Kunt et al., 2018). These advancements illustrate the potential of mobile money to bridge financial service gaps. However, several barriers persist. Limited mobile phone access and inadequate internet infrastructure in rural regions hinder widespread adoption. Additionally, the dominance of a few mobile money providers restricts market competition, leading to higher costs for users. Disparities in financial inclusion rates also persist across sub-regions, with East Africa leading at 44% while Central Africa lags at 28% (Global Findex Data, 2019).Empirical evidence underscores the critical role of financial inclusion in reducing poverty and fostering economic growth. Studies have demonstrated that expanding rural bank branches and broadening access to financial products reduce poverty rates, increase savings, and spur entrepreneurial activities (Bruhn & Love, 2020). For small and medium enterprises (SMEs), access to credit supports asset investment, job creation, and improved welfare (Baidoo et al., 2020).

Institutional frameworks play a vital role in advancing financial inclusion. Effective regulation and supervision are essential for fostering financial stability and expanding access to financial services (Mehrotra & Yetman, 2015). In SSA, weak institutional environments have hindered progress, underscoring the need for reforms to enhance financial infrastructure and governance. Addressing financial exclusion requires a multi-faceted approach. Expanding mobile connectivity, fostering competitive market environments, and promoting digital literacy are essential steps. Additionally, targeted policies aimed at improving access to formal financial services can enhance socio-economic wellbeing and contribute to sustainable economic development. The success of mobile money

demonstrates the potential of digital innovations to reshape financial landscapes in SSA. However, sustained efforts to address infrastructure gaps and regulatory challenges are necessary to achieve comprehensive financial inclusion and foster inclusive economic growth.The interconnectedness of the variables under study which represents the conceptual framework of this study follows the form shown in Fig below.

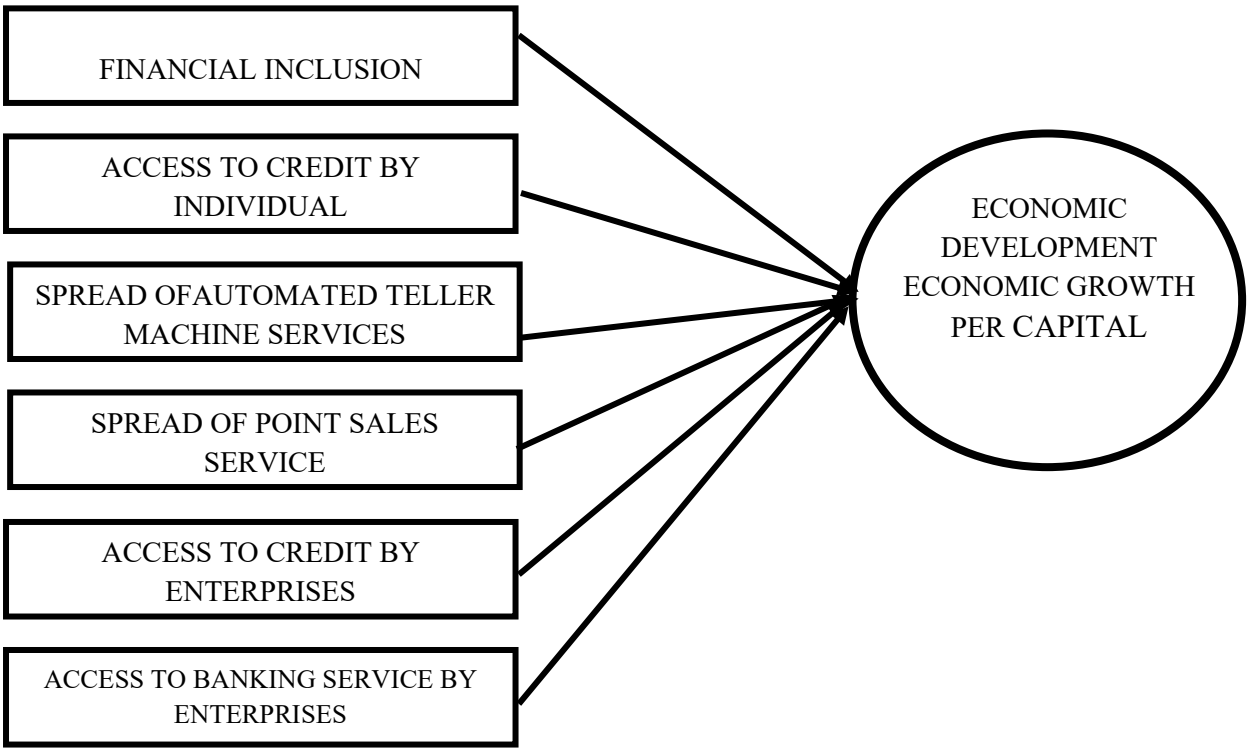

Figure 2.1: Financial inclusion and economic development nexus
Source: Author's creation, 2025
Figure 2.1 shows the financial inclusion variables as drivers of economic development. This shows financial inclusion as the lead or influencing variable while economic development is the lag or outcome variable.

Theoretical Underpinning and Literature Review
Theories provide structured concepts that guide research and analysis. This work draws on the systems theory of financial inclusion, which suggests that financial inclusion outcomes are influenced by interconnected sub-systems, including economic, financial, and social structures. The theory posits that increased financial inclusion positively impacts the broader economic system, fostering a cycle of growth and development.
A key idea within this framework is that changes in one sub-system can significantly affect overall financial inclusion outcomes. For example, imposing restrictions on financial service providers such as regulations to protect consumers can align the interests of providers with those of users. This

alignment encourages providers to offer affordable, accessible, and high-quality financial services. Such regulatory measures also protect consumers from exclusion and exploitative practices, contributing to broader financial inclusion. The relevance of this theory to financial inclusion and economic development lies in its emphasis on a balanced system where financial services are accessible to all. As more individuals and businesses gain access to financial resources, economic activities expand, productivity increases, and social equity improves, thereby fostering sustainable economic development.

Rational Choice Theory

Rational Choice Theory, introduced by Adam Smith in 1776, centers around the concepts of a rational actor, self-interest, and the invisible hand. The theory suggests that individuals make economic decisions by conducting a cost-benefit analysis to select the option that maximizes their utility, even when faced with uncontrollable factors (Ulen, 1999).Applying this theory to financial inclusion, it can be posited that individuals similarly evaluate the costs and benefits before adopting financial services. Factors such as the quality of financial services, affordability, convenience, and trustworthiness of service providers play a critical role in this decision-making process (Awunyo, 2018; Wamuyu et al., 2022).

This perspective has strong implications for financial inclusion and economic development. When financial service providers offer reliable, accessible, and affordable services, they enhance the perceived benefits for users, encouraging greater participation in the formal financial sector. Higher financial inclusion leads to improved savings, investment, and borrowing behaviors, which in turn foster entrepreneurship, productivity, and broader economic growth. Consequently, understanding and leveraging the principles of Rational Choice Theory can help policymakers and financial institutions design strategies that align with consumer preferences, ultimately driving economic development.

System Theory

The systems theory of financial inclusion, proposed by Ozili (2020), posits that financial inclusion outcomes are influenced by the interconnected functioning of sub-systems such as economic, social, and financial structures. Greater financial inclusion strengthens these sub-systems, and significant changes in any of them can impact the overall outcomes (Ozili, 2020). For instance, regulations targeting financial sector agents can align their interests with users of essential financial services, encouraging the provision of affordable and high-quality financial products. However, the theory cautions that substantial changes at the macro-system level do not automatically translate into corresponding improvements in sub-systems. Instead, the efficiency and effectiveness of these sub-systems determine the success or failure of financial inclusion initiatives.

The systems theory offers several benefits. It recognizes the critical role of existing economic, financial, and social structures in fostering financial inclusion, provides a macro-level analytical framework, and highlights the dynamic interconnections among sub-systems. Nonetheless, the theory also has limitations, such as overlooking factors external to the system and assuming a linear relationship between financial inclusion outcomes and the systems they rely upon.

Institutional quality plays a crucial role in advancing financial inclusion and economic development. Both formal and informal institutions encompassing long-standing policies, procedures, laws, and organizational structures shape how individuals interact with financial services. These institutional elements influence users' choices and perceptions regarding formal financial services, yielding either positive or negative effects on the degree of financial inclusion in society.

The literature emphasizes the importance of institutional quality in enhancing financial inclusion (Ouechtati, 2022). Empirical studies underscore the need for independent formal institutions capable of enforcing rules impartially, penalizing misconduct, and fostering an environment where trust in financial systems is strengthened. By ensuring adherence to fair rules and practices, such institutions facilitate greater participation in formal financial services, fostering economic development through improved savings, investment, and entrepreneurial activities. Thus, effective institutional frameworks are pivotal for promoting financial inclusion and sustaining economic growth.

Private Money Theory of Financial Inclusion

The Private Money Theory of Financial Inclusion, proposed by Ouechtati (2022), asserts that financial inclusion programs should be financed through private capital, such as shareholders' equity. The theory highlights several benefits of using private funding. First, private financiers demand greater accountability from fund recipients, ensuring efficient use of funds and effective delivery of financial services to excluded populations. Additionally, private funders can make faster funding decisions due to shorter approval processes compared to bureaucratic public funding procedures.

Private funders often contribute through equity ownership or donations, enabling them to participate directly in financial inclusion programs. They may assume ownership of these programs, generating income by managing them or exchanging benefits with local authorities. Furthermore, private funders have the flexibility to adjust charges to cover program costs and often offer superior project management, innovative solutions, and effective risk management strategies to achieve financial inclusion goals. They can also pressure contractors to complete projects on time without compromising quality.

Despite these advantages, the theory has notable drawbacks. One key challenge is the potentially high cost of raising private funds for financial inclusion

initiatives. Additionally, private financiers may prioritize their interests over the welfare of poor or marginalized populations, undermining the social objectives of financial inclusion. Moreover, government influence over financial inclusion infrastructure may diminish due to partial or full ownership by private investors, potentially limiting public oversight and control.

Public Money Theory of Financial Inclusion

The Public Money Theory of Financial Inclusion, developed by Dashie et al. (2013), emphasizes the use of public funds, such as taxpayer money, to finance financial inclusion initiatives. According to the theory, government budgets should be the primary source of funding for these programs. Evidence suggests that public funding for financial inclusion has grown at a faster rate than private funding, underscoring its significance in addressing financial exclusion (Dashie et al., 2013).

One key advantage of this approach is that governments can redistribute wealth by taxing higher-income individuals to fund financial inclusion efforts, thereby reducing income inequality and benefiting economically disadvantaged groups. Additionally, the cost of raising public funds is relatively low, making it a viable option for sustained financial inclusion investments. Public funding also reduces the risk of self-interested parties hijacking financial inclusion agendas for personal gain, ensuring that such initiatives remain focused on public welfare.

However, the theory has its drawbacks. A lack of proper planning often results in overspending, inefficiencies, and the misallocation of resources. Public funding processes may also face delays due to bureaucratic hurdles, lobbying, and political disruptions, slowing the delivery of financial services to marginalized populations. Moreover, governments with limited financial resources may resort to borrowing, which increases national debt. Finally, when the responsibility for financial inclusion is assigned to an already burdened government agency rather than a dedicated institution, it may hinder the agency's effectiveness and lead to suboptimal outcomes.

Linking this theory to financial inclusion and economic development highlights the role of government intervention in expanding access to formal financial services. By investing in financial infrastructure, promoting literacy, and ensuring the availability of affordable services, public funds can foster greater financial stability, enhance individual economic participation, and drive inclusive economic growth. When properly managed, such public investments help reduce poverty, empower underserved communities, and stimulate long-term economic development.

Intervention Fund Theory of Financial Inclusion

The Intervention Fund Theory of Financial Inclusion, proposed by El-Zoghbi et al. (2011), posits that financial inclusion initiatives should be funded through special intervention funds from diverse sources rather than relying on taxpayer

money. These sources may include philanthropists, non-governmental organizations (NGOs), and foreign governments. In many cases, cross-border funding accounts for a significant share of financial inclusion financing, with much of it allocated to microfinance institutions (El-Zoghbi et al., 2011). These special funders often select specific financial inclusion projects to fund and provide the necessary resources to achieve those goals.

The theory offers several advantages. First, it bypasses the bureaucratic bottlenecks typically associated with the allocation of public funds, thereby accelerating the implementation of financial inclusion projects. Second, special funders can mobilize both capital and human resources, drawing on local and international expertise to achieve targeted financial inclusion objectives. Third, the establishment of new pro-development institutions by these funders ensures a lasting developmental impact, as these institutions often remain in the community to continue promoting financial services and development after the completion of initial projects.

However, the theory also has notable limitations. One challenge is the need for special funders to develop effective methodologies to identify segments of the population excluded from formal financial services. There is also a risk that the chosen methodologies may not accurately capture the true extent of financial exclusion. Additionally, reliance on foreign governments or international donors can negatively affect a country's reputation, implying that its government is incapable of independently financing development for its own people.

Linking this theory to financial inclusion and economic development reveals its potential to address financial access gaps in emerging economies. By leveraging global resources and expertise, intervention funds can support the establishment of innovative financial services, promote entrepreneurship, and empower marginalized groups. This contributes to inclusive economic growth, poverty reduction, and the development of sustainable financial ecosystems that benefit entire communities.

Empirical Review

Sethi and Acharya (2018) examined 31 developed and developing nations (2004–2010), finding a long-run positive relationship between financial inclusion and economic growth. They identified bidirectional causality, advocating for inclusion-focused policies to sustain economic growth. Kim et al. (2018) also analyzed OIC countries, affirming financial inclusion's role in GDP growth and mutual causalities between inclusion and economic prosperity.

In a related study, Anyanwu, Ananwude, and Nnoje (2018) assessed the impact of microfinance banks' products on women empowerment in rural communities, focusing on rent savings, child education, newborn, and daily savings accounts. A descriptive survey design was employed, with 200 questionnaires distributed to respondents, 190 of which were fully completed and analyzed. The study

recommended the development of more women-specific products by microfinance banks to provide a broader selection tailored to their needs. It also suggested that collateral for women accessing finance should be community-based rather than individual-based.

Inoue and Hamori (2019) explored the role of financial inclusion in fostering economic growth in developing nations. Using differenced GMM on a panel of 168 countries from 2004 to 2014, the study found a positive correlation between the number of commercial bank branches and real per capita GDP, with financial deepening significantly contributing to economic growth.

Similarly, Makina and Walle (2019) analyzed the influence of financial inclusion on economic growth in 42 African nations during 2004-2014, employing the system GMM dynamic panel data estimator. They concluded that financial inclusion, measured by the number of commercial bank branches per 100,000 adults, positively impacted economic growth in Africa.

Van and Linh (2019) investigated the effect of financial inclusion on economic development in 23 Asian countries from 2010 to 2015. The findings confirmed a relationship between the prevalence of bank branches, ATMs, domestic credit in the private sector, and improvements in economic development.

In a micro-level study, Amendola et al. (2019) examined the link between financial access and household economic development in Mauritania, using data from a 2014 household survey. Their analysis revealed that households led by the elderly, educated individuals, and urban residents had better access to financial services, which enhanced welfare.

Zhang (2019), using data from China's national household finance survey, explored how financial inclusion affects household income. The results showed that financial inclusion significantly improved household income across all income levels, with lower-income households benefiting the most.

Addury (2019) studied the financial inclusion-economic development nexus in Indonesia, using data from the Indonesia Family Life Survey (2000, 2007, and 2014). The study found that credit availability significantly impacted household income, consumption, and savings, thereby influencing welfare.

Mallick and Zhang (2019) examined the effects of financial inclusion on household economic development in China. Their findings indicated that the impacts of financial inclusion on consumption were more pronounced in urban areas compared to rural ones.

Anthony-Orji et al. (2019) employed the autoregressive distributed lag unrestricted error correction model to investigate the relationship between financial stability, inclusion, and institutional quality in Nigeria. The study indicated that strong institutions positively influence financial inclusion in both the short and long term.

Ali et al. (2020) researched the contribution of financial inclusion to economic growth in the member countries of the Islamic Development Bank. The study used dynamic panel estimation and found that financial inclusion, measured by

the financial inclusion index (FII), had a significant positive impact on economic growth, with a bidirectional causality observed.
Chatterjee (2020) examined the roles of financial inclusion and ICT in economic growth across 41 countries from 2004 to 2015. The results highlighted that financial inclusion, especially when combined with mobile telephony and internet access, significantly enhanced economic growth. However, ICT's role was less pronounced in developing countries.
Singh and Stakic (2020) explored the link between the financial inclusion index and economic growth in the eight SAARC countries from 2004 to 2017, employing the Pedroni panel co-integration test and FMOLS and DOLS methods. The study confirmed a long-term relationship between financial inclusion and economic growth, with bidirectional causality.
Ain et al. (2020) investigated the relationship between financial inclusion and economic growth, employing GMM from 2004 to 2016. Their results affirmed a positive impact of financial inclusion on economic growth.
Dahiya and Kumar (2020) examined the connection between economic growth and financial inclusion in India from 2005 to 2017 using Bayesian auto regression. Their study found that financial inclusion, particularly its usage dimension, was positively linked to economic growth.
Nizam et al. (2020) analyzed the impact of financial inclusiveness on economic growth in 63 countries between 2014 and 2017. The results revealed a non-monotonic positive relationship, with the effect more pronounced at higher levels of financial inclusion.
Using panel GMM, Ali et al. (2020) examined the relationship between financial integration and institutional soundness in 52 countries from 2004 to 2010. Their findings suggested that improving institutional quality is essential for boosting financial inclusion in emerging nations. Furthermore, Nanziri (2020), using ordinary least squares, explored the relationship between financial inclusion and economic development in South Africa. The study found that greater financial inclusion is linked to higher welfare, while women using non-formal credit reported lower welfare.

Ofori-Abebrese, Baidoo, and Essiam (2020) investigated the impact of financial inclusion on economic development using cross-sectional data from 33 sub-Saharan African countries, employing the ordinary least squares (OLS) technique. Their findings revealed that financial inclusion is generally low in the region, with 29 out of the 33 sampled countries exhibiting low financial inclusion index scores. However, financial inclusion was found to have a positive effect on welfare. In line with this, similar studies, such as those by Inoue and Hamori (2019) and Makina and Walle (2019), have demonstrated a positive relationship between financial inclusion and economic growth in developing regions, including Africa. Additionally, Ofori-Abebrese et al. (2020) found that education and income also contribute to improved welfare, echoing the conclusions of

Amendola et al. (2019) and Zhang (2019), who identified the role of education and income levels in enhancing the welfare benefits of financial access. The study provides important policy recommendations to foster financial inclusion in sub-Saharan Africa, reinforcing suggestions made by Tita and Aziakpono (2019) and Ali et al. (2020), who emphasized the need for tailored financial services to improve economic outcomes.

Similarly, Huang et al. (2021) examined the financial inclusion-economic development nexus by comparing the older and newer EU (27) countries between 1995 and 2015. Using FMOLS and panel ARDL models, the study found that financial inclusion plays a crucial role in economic growth. However, it was more significant for low-income and new EU countries than for high-income and old EU countries, similar to findings by Van et al. (2021), who also observed that financial inclusion had a stronger impact in low-income nations with lower financial inclusion levels.

Emara and El Said (2021) explored the relationship between economic growth, governance, and financial inclusion in the Middle East and North Africa, using data from 44 countries spanning 1990 to 2018. Applying the General Method of Moments (GMM) dynamic panel model, they found that financial inclusion positively influenced GDP per capita growth. This aligns with Ozili's (2021) findings, which emphasized the importance of legal institutions in fostering financial inclusion. Ozili found that a robust legal system, measured by the "rule of law" index, correlated positively with financial inclusion, echoing Emara and El Said's conclusion that effective governance (e.g., judicial independence and political stability) is necessary for financial inclusion to contribute meaningfully to economic growth.

Additionally, Singh and Ghosh (2021) noted that savings accounts alone did not seem to contribute to economic growth, aligning with the notion that the type and usage of financial products can determine their impact on economic outcomes. This perspective resonates with findings from Van et al. (2021), who noted that the benefits of financial inclusion were most pronounced in countries with low income and low levels of financial access.

Atta-Aidoo, Saidi, Abdulkarim and Ester (2023) studies financial inclusion choices in post-conflict and fragile states of Africa. However, the adoption of instruments of financial inclusion such as bank account, microfinance account and mobile money account is low due to weak institutional capacity leading to high-risk exposure and a greater risk of economic instability. This study examines the factors that influence the adoption of these instruments of financial inclusion using the Multivariate Probit and Poisson regression models. The results show that there is a significant correlation between the instruments of financial inclusion, signifying that the adoption of these instruments is interrelated. The analysis also reveals that, factors such as receipt of government transfers, receipt of remittances, education, membership of a social network,

access to electricity, employment status, and area of residence influence both the probability and intensity/extent of adoption of the instruments of financial inclusion.

Mohammed, Kassem and Ali (2023) studied financial inclusion, institutional quality and economic growth in Sub-Saharan African Countries. This study examines the impact of financial inclusion and institutional quality on economic growth in Sub-Saharan Africa (SSA). It finds that financial inclusion has a positive impact on SSA's economic growth irrespective of the measure of economic growth examined. The results also reveal varied effects of institutional quality on various measures of economic growth. The implication is that institutions and financial inclusion should not be ignored in growth policies.

Mohammed and Haruna (2024) conducted study on the effect of financial development and legal institutions on financial inclusion in Sub-Saharan Africa. This study investigates the impact of financial development on financial inclusion, with a particular focus on the moderating role of legal institutions in sub-Saharan Africa. The findings, derived from sys-GMM estimation, demonstrate that financial development has a positive effect on financial inclusion, consistent across various measures of financial development and estimation techniques. These results are in line with the work of Ozili (2021), who found that stronger legal institutions are positively correlated with increased financial inclusion. Furthermore, the study applies the quantile regression approach and reveals that at the 25th, 50th, and 75th quantiles of financial inclusion, the effect of financial development remains positive, aligning with Van et al. (2021) who observed stronger impacts of financial inclusion in low-income countries. This reinforces the idea that financial development is crucial for enhancing financial inclusion, especially when supported by strong legal institutions, as highlighted by Emara and El Said (2021).
Olatunde and Edward (2020) investigated financial inclusion and human development in Sub-Saharan Africa. Therefore, this study examined the relationship between financial inclusion and human development in sub-Saharan Africa (SSA). The study covers 41 countries in sub-Saharan Africa, using panel data spanning from 2004 to 2016. Annual data on all the variables were sourced from World Bank, World Development Indicators and United Nations Development program database. The model specification for the study expressed Human Development Index as a function of financial inclusion indices using panel System Generalized Method of Moment (system GMM) and the panel fixed effects models in analyzing the data for the study. The results from the analysis showed that with the exception of real interest rate (a controlled variable in all the models for the study) which has negative signs, all financial inclusion variables have positive and significant effect on Human Development Index in SSA. However, the results from the analysis of data for the different

blocs within the SSA varied to various extents from the one obtained for the SSA as a whole both in signs and significance.

Ayu Az Zahra and Ajija (2023) examined the effect of financial inclusion on inclusive economic growth in Indonesia. This study examines the influence of financial inclusion on inclusive economic growth in Indonesia using data from 34 provinces. Financial inclusion is measured using the number of bank branch offices, the ratio of credit savings to GRDP, and third-party funds. Meanwhile, economic growth is described by the logarithmic variable of the difference in GRDP per capita. Secondary data from the Central Statistics Agency (BPS) and the Financial Services Authority (OJK) are used in this study. According to the statistical panel regression estimation results, the savings ratio per GRDP and third-party funds significantly positively affect inclusive economic growth. In contrast, the number of bank branch offices has no significant effect on inclusive economic growth.

Nguena and Asaloko (2023) examined financial inclusion, growth and poverty: Evidence from Africa in COVID-19 era. The Covid-19 pandemic threatens to undermine committed efforts to reduce poverty in Africa. Using panel data on 39 African countries covering the period 2004- 2021, our analysis shows that financial inclusion, particularly access to financial services, can be an important driver of poverty reduction in African countries. in the era of Covid19. Moreover, we have identified the reduction of inequalities as the main channel through which financial inclusion can contribute to alleviating poverty. These results are robust and consistent using different estimation methods and poverty change index. Faced with the risks of increasing extreme poverty due to Covid-19, a policy aimed at improving financial inclusion seems necessary.

Eshun and Kočenda (2023) carried out the determinants of financial inclusion in Africa and OECD countries. Using a dynamic panel data analysis, we explore the factors influencing financial inclusion in Sub-Saharan Africa (SSA) and countries belonging to the Organization for Economic Co-operation and Development (OECD). We employ the System Generalized Method of Moments (GMM) estimator and assess 31 SSA and 38 OECD countries from 2000-2021. We found that the differences in trade openness, banks' efficiency, income, and remittances are some macro-level factors that explain the variation in financial inclusion levels.

Gautam (2023) examined financial inclusion and its impact on economic growth: empirical evidence from south Asian countries in European. This study explores the contribution of financial inclusion to economic growth in four South Asian countries by examining the role of financial infrastructure in accelerating economic activities and generating employment. Various panel data models and multiple measures of financial inclusion were employed to analyze the

relationship between financial inclusion and economic growth. The findings confirm that financial inclusion positively impacts economic growth in these countries, although the extent of its effect varies across different measures. This aligns with the work of Emara and El Said (2021), who found that financial inclusion plays a crucial role in economic growth, particularly when coupled with effective governance. Similarly, Van et al. (2021) highlighted that financial inclusion significantly contributes to economic growth in low-income countries, further supporting the positive relationship observed in this study. The results suggest that financial inclusion, through the development of financial infrastructure, fosters economic growth and development, particularly in emerging economies.

Okonkwo and Nwanna (2021) investigated effect of financial Inclusion and Economic Growth in Nigeria. This study examines the effects of financial inclusion on economic growth in Nigeria from 1992 to 2018, using variables such as currency outside banking, currency in circulation, microfinance bank deposits, commercial bank branches, and loans and deposits of rural branches of commercial banks. Nominal GDP is used as the measure of economic growth, and the ex-post facto research design is applied. Regression analysis and the Granger Causality test were employed to explore the relationships between these variables. The results revealed that currency in circulation has an insignificantly positive relationship with economic growth and a causal effect, while loans extended by rural branches of commercial banks show a positive and significant relationship and causal effect on growth. Deposits from rural branches have a causal effect on GDP, though the relationship is positive but not significant. These findings align with those of Van et al. (2021), who observed that financial inclusion positively influences economic growth, especially in developing regions. Similarly, Emara and El Said (2021) emphasized the importance of financial access, particularly in rural areas, for driving economic growth, which is consistent with the positive effects observed from rural bank loans and deposits in this study.

Gap in Empirical Review

The literature review presents compelling evidence that stable financial inclusion can significantly foster economic development. Financial inclusion, however, thrives when institutions actively support the operations of financial systems. While extensive literature exists on the positive relationship between institutions and financial inclusion, the body of work examining the direct link between financial inclusion and economic development is relatively sparse, particularly in the context of sub-Saharan Africa. This area remains underexplored, despite the systems theory of inclusion suggesting a potentially positive and mutually reinforcing relationship between financial inclusion and economic development. Furthermore, the existing literature does not

adequately address how institutions might moderate this relationship within the sub-Saharan African context. Additionally, the literature does not sufficiently explore how shifts in economic development may influence the dynamics of financial inclusion in the region. This gap in the literature provides the rationale for the current study, which aims to explore and address these overlooked aspects of financial inclusion and economic development in sub-Saharan Africa.

Methodology

Research Design

This study will adopt the *ex post*-factor research design. The *ex post* facto research design is described as after-the-fact research using time series data (Onwumere, 2009). This is suitable for the work given that it is based on an already completed event and the researcher is meant to analyses the outcomes of the already completed event and draw reasonable conclusions. Another justification for the research design is the desire of the researcher to use secondary data to test the hypothesis formulated. These are already existing data, thus, cannot be manipulated by the researcher.

Sources and Nature of Data

Data refers to facts, information, ideas which can be represented in figures, charts, and graphs (Ozo, Odo, Ani and Ugwu, 2017). The nature and sources of data for this research is secondary data sources. The secondary data source is from the World Development Indicator under consideration in the research. All the data to be employed for this work will be panel data and purely quantitative. They are annualized time series data with cross sectional identifier represented by the investigated SSA countries. The covered period will be a period of 25 years from 1999-2024 and 48 SSA countries will be covered.

Mode Specification

The study specifies the following model for estimation following Amendola *et al.* (2016) and Zhang (2017) stated thus:

Wi = f(FINCLU, INC, UNEMP, EDUCt) - - - - - - - 1

Where:

ED = Economic Development

FINCLU = Financial Inclusion

INC = Income

UNEMP = Unemployment

EDUC = Education

The estimable form of Equation

(1) is specified in Equation

(2). Wi ¼ α þ βlnFINCLUi þ γlnINCi þ δlnUNEi þ θlnEDUCi þ εi

where the variables are as explained earlier in Equation (1),

β is the elasticity of financial inclusion which measures the effect of financial inclusion on welfare,
γ, δ, and θ are, respectively, the elasticities of formally banked adults, adults with credit, formally banked enterprises, point of financial services and spread of ATM services, α and εi represent the constant and error terms, respectively, and in is the logarithm notation.

This study deviated from the above model by introducing proxies for financial inclusion such as formally banked adults, adults with credit, formally banked enterprises, point of financial services and spread of ATM services to have a wider scope in measuring the financial inclusion and economic development nexus in SSA countries.
Consequently, the investigated functional relationship of this study appears thus:
ED =F(FBA, AWC, FBE, PFS and SAS),
Where,

ED	=	Economic development (Dependent variable)
FBA	=	formally banked adults (Independent variable)
AWC	=	Adults with credit (Independent variable)
FBE	=	Formally banked enterprises
PFS	=	Point of financial services
SAS	=	Spread of ATM services

The baseline mathematical expression for the relationship is written thus:

$$ED_{it} = B_o + B_1FBA_{it} + B_2AWC_{it} + B_3FBE_{it} + B_4PFS_{it} + B_5EWC_{it} + B_6SAS_{it} + B_7INF_{it} + \varepsilon_{it} \quad \text{- - - - - - - - - - - (1)}$$

Where:

ED	=	Economic Development
FBA	=	Formally banked adults (Independent variable)
AWC	=	Adults with credit (Independent variable)
FBE	=	Formally banked enterprises
EWC	=	Enterprise with Credit
PFS	=	Point of financial services
SAS	=	Spread of ATM services

Et = Error term
B_o = Coefficient of Equilibrium. Or Center of origin
β_1, β_2 β_3..... β_5 = Proxies of the Coefficient of the parameter estimates.
t = time dimension of the dataset (1990 – 2023)
i = cross sectional identifier (SSA countries)
The general econometric model for this study with due recognition for the cross sectionality and time dimension, appears as follows:

$$ED_{it} = \delta_o + \sum_{t=1}^{k} \delta_1 ED_{it} + \sum_{t=1}^{k} \delta_2 FBA_{it} + \sum_{t=1}^{k} \delta_3 AWC_{it} + \sum_{t=1}^{k} \delta_4 FBE_{it} + \sum_{t=1}^{k} \delta_5 PFS + \sum_{t=1}^{k} \delta_6 EWC + \sum_{t=1}^{k} \delta_7 SAS_{it} + \sum_{t=1}^{k} \delta_8 INF_{it} + \varphi_1 ED_{it} + \varphi_2 FBA_{it} + \varphi_3 AWC_{it} + \varphi_4 FBE_{it} + \varphi_5 PFS_{it} + \varphi_6 EWC_{it} + \varphi_7 SAS_{it} + \varphi_8 INF_{it} + \mu_{it}$$

Following the Panel-ARDL approach, the model for the test of each of the formulated hypotheses are presented below:

H_{o1}: Number of formally banked adults did not positively and significantly affect economic development in SSA countries.

$$ED_{it} = \delta_o + \sum_{t=1}^{k} \delta_1 ED_{it} + \sum_{t=1}^{k} \delta_2 FBA_{it} + \varphi_1 ED_{it} + \varphi_2 FBA_{it} + \varphi_3 INF_{it} + \mu_{it}$$

H_{O2}: There was no significant positive effect of adults with credit from regulated institutions on economic development in SSA countries.

$$ED_{it} = \delta_o + \sum_{t=1}^{k} \delta_1 ED_{it} + \sum_{t=1}^{k} \delta_2 AWC_{it} + \varphi_1 ED_{it} + \varphi_2 AWC_{it} + \varphi_3 INF_{it} + \mu_{it}$$

H_{O3}: There was no significant positive impact of formally banked enterprises on economic development in SSA countries.

$$ED_{it} = \delta_o + \sum_{t=1}^{k} \delta_1 ED_{it} + \sum_{t=1}^{k} \delta_2 FBE_{it} + \varphi_1 ED_{it} + \varphi_2 FBE_{it} + \varphi_3 INF_{it} + \mu_{it}$$

H_{04}: Number of enterprises with credit from regulated institutions had no positive and significant impact on economic development in SSA countries.

$$ED_{it} = \delta_o + \sum_{t=1}^{k} \delta_1 ED_{it} + \sum_{t=1}^{k} \delta_2 EWC_{it} + \varphi_1 ED_{it} + \varphi_2 EWC_{it} + \varphi_3 INF_{it} + \mu_{it}$$

H_{O5}: There was no significant positive impact of point of financial services on economic development in SSA countries.

$$ED_{it} = \delta_o + \sum_{t=1}^{k} \delta_1 ED_{it} + \sum_{t=1}^{k} \delta_2 PFS_{it} + \varphi_1 ED_{it} + \varphi_2 PFS_{it} + \varphi_3 INF_{it} + \mu_{it}$$

H_{O6}: Economic development in SSA countries did not positively and significantly respond to the spread of ATM services.

$$ED_{it} = \delta_o + \sum_{t=1}^{k} \delta_1 ED_{it} + \sum_{t=1}^{k} \delta_2 ATM_{it} + \varphi_1 ED_{it} + \varphi_2 ATM_{it} + \varphi_2 INF_{it} + \mu_{it}$$

3.4 Description of Model Variables

A summary of the variables and their respective proxies as well as sources of data is shown in table 3.1 below:

Table 3.1: Summary of Model Variables

S/No	Name of Variable	Notation	Proxy	Role	Source	Expected Outcome
	Economic development	ED	Human Development Index (HDI)	Dependent Variable	WDI and UNDP Sources	None
	Formally Banked Adults	FBA	Number of Formally banked adults	Independent Variable	Global Financial Development Database (GFDD)	Positive
	Formally Banked Enterprises	FBE	Number of Formally banked adults	Independent Variable	Global Financial Development Database (GFDD)	Positive
	Point of Financial Services	PFS	Value of Point of Financial Services transactions	Independent Variable	Global Financial Development Database (GFDD)	Positive

Table 3.1: Summary of Model Variables continued

S/No	Name of Variable	Notation	Proxy	Role	Source	Expected Outcome
	Spread of ATM Services	SAS	Value of ATM Services transactions	Independent Variable	Global Financial Development Database (GFDD)	Positive
	Adult with Credit from Regulated Institutions	AWC	Number of adults with Credit from Regulated Institutions	Independent Variable	Global Financial Development Database (GFDD)	Positive
	Enterprises with Credit from Regulated Institutions	EWC	Number of enterprises with Credit from Regulated Institutions	Independent Variable	Global Financial Development Database (GFDD)	Positive

	Inflation	INF	Core inflation represented by the Growth rate of the General Consumer Price Index	Control Variable	World Development Indicator	Negative or Positive

Source: Author's Compilation, 2024

3.5 Techniques of Analyses

The study will adopt panel estimation techniques and shall follow the under listed steps:

Step 1- Preestimation Tests: These will cover panel descriptive statistics, panel unit root tests, panel correlational analyses, test for cross sectional dependence, tabulation, graphing and charting.

Step 2- Panel Estimation: Following the results of the preestimation tests, the study shall adopt the most suitable panel estimation techniques. The key consideration will be the pooled mean group and mean group estimators and the dynamic fixed effect model shall be used as a robustness check. The choice of the most appropriate model shall be done following the Haussmann tests.

Step 3- Post estimation Tests: Panel estimation relevant validity and reliability tests shall be performed on the outcomes obtained from step 2. The key aim will be to ensure that only valid estimates are used for hypotheses testing.

Step 4- Post Estimation Tests: The validated estimates shall be used to test the formulated hypotheses on the basis of which inferences will be made which will form the outcome of the research work.

3.6- Appriori Expectation

The appriori expectation are as follows:

Poverty Reduction: Another expectation could be a reduction in poverty levels. With better access to financial services, individuals and households may be better equipped to lift themselves out of poverty or better cope with economic shocks.

Financial Stability: A priori expectations might consider the impact of financial inclusion on overall financial stability. If more people have access to formal financial services, it might lead to a more stable financial system in the country.

4. Presentation and Analyses of Data

The data for this study is arranged in panel form and presented in the Appendix A of this study due to the quantum in value and length of pages. The data covered a period between 1972-2023.

This study showed the panel descriptive statistics dataset as presented in Table 4.2.1 below. This part is essentially to quantitatively describe the main features of the data for this study. Descriptive statistics enables us to present the data in a more meaningful way, which allows simpler interpretation of the data. The mean represents the average value of the variables while the standard deviation indicates how variables are distributed around their mean values. The table also shows the descriptive statistics of the variables. The minimum, maximum, mean, standard deviation, measures of normality: Kurtosis which measures the peakness or flatness of the distribution series, skewness which measures the degree of asymmetry of the series and Jarque-Bera test which measures the difference of the skewness and kurtosis of the series with those from the normal distribution.

Table 4.2.1: Panel Descriptive Statistics

	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Jarque-Bera
HDI	1620.78	1037.26	5378.32	250.54	1554.27	1.45	3.95	928.77
AWC	25.46	20.45	58.06	3.31	18.11	0.40	1.78	210.28
EWC	28.82	26.00	61.10	11.40	15.11	0.91	2.91	327.17
FBA	5.38	5.56	13.53	0.94	3.44	1.07	3.91	538.34
FBE	87.59	93.50	98.50	70.40	10.89	-0.61	1.65	330.77
PFS	245.90	113.65	881.12	33.07	289.63	1.32	3.09	701.47
SAS	10.77	4.41	56.70	0.98	16.67	2.20	6.31	3010.76

Source: Author's Computation (2025)

Table 4.2.1 revealed the mean value of Human Development Index (HDI) which is 1620.78, the median is 1037.26, maximum and minimum is 5378.32 and 250.54 respectively. The standard deviation of 1554.27 which implies that the Human Development Index deviated from the mean by 1554.27. HDI has a positive Skewness value of 1.45. The Kurtosis has a positive value of 3.95 which implies that the distribution is leptokurtic (peaked-curve) indicating that they are higher value than the sample mean for this variable. The JB value is 928.77.

The result showed the mean value of Adults with Credit (AWC) which is 25.46, the median is 20.45, maximum and minimum is 58.06 and 3.31 respectively. The standard deviation of 18.11 which implies that the Adults with Credit (AWC) deviated from the mean by 18.11. Adults with Credit (AWC) has a positive Skewness value of 0.40. The Kurtosis has a positive value of 1.78 which implies that the distribution is leptokurtic (peaked-curve) indicating that they are higher value than the sample mean for this variable. The JB value is 210.28.

The result also showed the mean value of Number of Enterprises with Credit (EWC) which is 28.82, the median is 26.00, maximum and minimum is 61.10 and 11.40 respectively. The standard deviation of 15.11 which implies that the Number of Enterprises with Credit (EWC) deviated from the mean by 15.11. Number of Enterprises with Credit (EWC) has a positive Skewness value of 0.91. The Kurtosis has a positive value of 2.91 which implies that the distribution is leptokurtic (peaked-curve) indicating that they are higher value than the sample mean for this variable. The JB value is 327.17.

The result also revealed the mean value of Number of Formally Banked Adults (FBA) which is 5.38, the median is 5.56, maximum and minimum is 13.53 and 0.94 respectively. The standard deviation of 3.44 which implies that the Number of Formally Banked Adults (FBA) deviated from the mean by 3.44. Number of Formally Banked Adults (FBA) has a positive Skewness value of 1.07. The Kurtosis has a positive value of 3.91 which implies that the distribution is leptokurtic (peaked-curve) indicating that they are higher value than the sample mean for this variable. The JB value is 538.34.
The result also showed the mean value of Number of Formally Banked Enterprises (FBE) which is 87.59, the median is 93.50, maximum and minimum is 98.50 and 70.40 respectively. The standard deviation of 10.89 which implies that the Number of Formally Banked Enterprises (FBE) deviated from the mean by 10.89. Number of Formally Banked Enterprises (FBE) has a negative Skewness value of -0.61. The Kurtosis has a positive value of 1.65 which implies that the distribution is leptokurtic (peaked-curve) indicating that they are higher value than the sample mean for this variable. The JB value is 330.77.

The result also revealed the mean value of Point of Financial Services (PFS) which is 245.90, the median is 113.65, maximum and minimum is 881.12 and 33.07 respectively. The standard deviation of 289.63 which implies that the Point of Financial Services (PFS) deviated from the mean by 289.63. Point of Financial Services (PFS) has a positive Skewness value of 1.32. The Kurtosis has a positive value of 3.09 which implies that the distribution is leptokurtic (peaked-curve) indicating that they are higher value than the sample mean for this variable. The JB value is 701.47.

The result revealed the mean value of Spread of ATM Services (SAS) which is 10.77, the median is 4.41, maximum and minimum is 56.70 and 0.98 respectively. The standard deviation of 16.67 which implies that the Spread of ATM Services (SAS) deviated from the mean by 16.67. Spread of ATM Services (SAS) has a positive Skewness value of 2.20. The Kurtosis has a positive value of 6.31 which implies that the distribution is leptokurtic (peaked-curve) indicating that they are higher value than the sample mean for this variable. The JB value is 3010.76.

Next, the panel correlational matrix of the datasets is presented in Table 4.2.2 as shown below. Correlation analysis shows whether they exist degree of linear association among the variable. Furthermore, it shows the direction (positive) and magnitude (significance) between the variables. The outcome may either be positive correlation, negative correlation or zero correlation. Decision rule: If the t-statistics is greater than 2.5 (rule of thumb) and the p-value less than 0.05, the correlation is significant. Therefore, the alternate hypotheses is accepted and the null rejected.

Table 4.2.2: Panel Correlation Matrix

Correlation						
T-Statistics						
Probability						
	HDI	**AWC**	**EWC**	**FBA**	**FBE**	**PFS**
HDI	1.000000					

AWC	0.800317	1.000000				
	65.25529	--------				
	0.0000	--------				
EWC	-0.466079	-0.477197	1.000000			
	-25.75377	-26.54659				
	0.0000	0.0000				
FBA	0.867914	0.843915	-0.253810	1.000000		
	85.42181	76.90368	-1282824	--------		
	0.0000	0.0000	0.0000	--------		
FBE	-0.078293	-0.268130	0.156517	-0.047036	1.000000	
	-3.839334	-13.60647	7.74248	-2.302008	--------	
	0.0001	0.0000	0.0000	0.0214	--------	
PFS	0.958954	0.819745	-0.423240	0.774855	-0.233683	1.000000
	165.3288	69.97275	-22.83751	59.92486	-11.74953	--------
	0.0000	0.0000	0.0000	0.0784	0.0000	--------
SAS	0.956681	0.749439	-0.302291	0.883753	0.122736	0.900102
	160.6456	55.33880	-15.50360	92.32673	6.045977	101.008
	0.0000	0.0000	0.0000	0.0784	0.0000	0.0000

Source: Author's Computation (2025)

Given that the correlation "R" is (0.80) and the t-stat (65.26) which is higher than 2.5 and with an associate p-value of (0.000) it therefore concludes that Adults with Credit (AWC) and Human Development Index (HDI) showed a positive and significant linear association. By this, we accept the null hypotheses and reject the alternate hypotheses.

Given that the correlation "R" is (-0.47) and the t-stat (-25.75) which is lower than 2.5 and with an associate p-value of (0.000) it therefore concludes that Number of Enterprises with Credit (EWC) and Human Development Index (HDI) showed a negative and significant linear association. By this, we reject the null hypotheses and accept the alternate hypotheses.

Given that the correlation "R" is (0.87) and the t-stat (85.42) which is higher than 2.5 and with an associate p-value of (0.000) it therefore concludes that Number of Formally Banked Adults (FBA) and Human Development Index (HDI) showed a positive and significant linear association. By this, we accept the null hypotheses and reject the alternate hypotheses.

Given that the correlation "R" is (-0.08) and the t-stat (-3.84) which is lower than 2.5 and with an associate p-value of (0.000) it therefore concludes that Formally Banked Enterprises (FBE) and Human Development Index (HDI) showed a negative and significant linear association. By this, we reject the null hypotheses and accept the alternate hypotheses.

Given that the correlation "R" is (0.96) and the t-stat (165.33) which is higher than 2.5 and with an associate p-value of (0.000) it therefore concludes that Point of Financial Services (PFS) and Human Development Index (HDI) showed a positive and significant linear association. By this, we accept the null hypotheses and reject the alternate hypotheses.

Given that the correlation "R" is (0.96) and the t-stat (160.65) which is higher than 2.5 and with an associate p-value of (0.000) it therefore concludes that Spread of ATM Services (SAS) and Human Development Index (HDI) showed a positive and significant linear association. By this, we accept the null hypotheses and reject the alternate hypotheses.

Next, this study also conducted a panel unit root tests test to ascertain the stationarity of the respective variables that was used by this study as shown below;

Table 4.2.3: Summary of Panel Unit Root Test

	LLC	Breitung	IMP	ADF	PP	Inference
AWC	-21.66	-15.68	-25.12	701.07	1336.86	I(0)
EWC	-23.64	-16.29	-26.03	731.87	1309.90	I(0)
FBA	-21.25	-18.27	-26.63	751.96	1389.03	I(0)
FBE	-24.27	-13.53	-26.48	748.38	1391.53	I(0)
GDPPC	-22.08	-15.74	-26.48	746.59	1438.13	I(0)
PFS	-22.91	-13.75	-25.94	727.71	1412.91	I(0)

Source: Author's Computation (2025)

This study conducted panel unit root tests using Livin-Lin-Chu (LLC), Breitung, IMP, ADF and PP test was conducted. to investigate whether the dependent and

independent variable have unit roots at level or they are stationary 1st difference. Based on the result, it was discovered that the variables are all stationary at levels order of integration.

Next, Haussmann test was conducted to determine whether fixed effect model or random effect model is feasible for this study as presented in Table below.

Table 4.2.4: Estimation Output

Variables	Pooled Mean Group		Hausmann	Random Effect Mean Group	
	Coeff	T-stat		Coeff	T-stat
C	6.49	29.49**	2.113 0.3252 > 0.05	7	0.3252
PFS	0.002	33.53**		0.002	23.61**
SAS	-0.04	-19.28**		-0.04	-14.62**
EWC	-0.03	-109.93**		-0.03	-75.93**
FBA	0.28	56.17**		0.29	40.07**
FBE	-0.003	-4.23**		-0.002	-1.45
AWC	-0.03	-49.53**		-0.03	-31.10**
ECM	-0.91	-29.51**		-1.003	-427.63**

Source: Author's Computation (2025)

The results of the Haussmann Test as showed in Table 4.2.4 above showed that the chi-square value of (2.113) with a probability value of (0.3252) which is insignificant, meaning that variation across entities is assumed to be random with the explanatory variables included in the model.

As shown in Table above, Number of Formally Banked Adults (FBA) and Human Development Index (HDI) in SSA countries result showed (∂ = 0.29, t-stat of 40.07, p-value of 0.000) which shows that Number of Formally Banked Adults (FBA) has positive and significance effect on Human Development Index (HDI) in SSA countries. This implied that a unit increase in Number of Formally Banked Adults (FBA) would lead to increase in Human Development Index (HDI) in SSA countries.

As shown in Table 4.3.2 above, Adults with Credit (AWC) and Human Development Index (HDI) in SSA countries result showed (∂ = -0.32, t-stat of -31.10, p-value of 0.000) which shows that Adults with Credit (AWC) has negative and significance effect on Human Development Index (HDI) in SSA countries. This implied that a unit increase in Adults with Credit (AWC) would lead to increase in Human Development Index (HDI) in SSA countries.

As shown in Table 4.3.3 above, Number of Formally Banked Enterprises (FBE) and Human Development Index (HDI) in SSA countries result showed (∂ = -0.00, t-stat of -1.44, p-value of 0.1485) which shows that Number of Formally Banked Enterprises (FBE) has negative and insignificance effect on Human Development Index (HDI) in SSA countries. This implied that a unit increase in Number of

Formally Banked Enterprises (FBE) would lead to decrease in Human Development Index (HDI) in SSA countries.

As shown in Table 4.3.4 above, Number of Enterprises with Credit (EWC) and Human Development Index (HDI) in SSA countries result showed (∂ = -0.03, t-stat of -75.93, p-value of 0.000) which shows that Number of Enterprises with Credit (EWC) has negative and significance effect on Human Development Index (HDI) in SSA countries. This implied that a unit increase in Number of Enterprises with Credit (EWC) would lead to increase in Human Development Index (HDI) in SSA countries.

As shown in Table 4.3.5 above, Point of Financial Services (PFS) and Human Development Index (HDI) in SSA countries result showed (∂ = 0.00, t-stat of 23.61, p-value of 0.000) which shows that Point of Financial Services (PFS) has positive and significance effect on Human Development Index (HDI) in SSA countries. This implied that a unit increase in Point of Financial Services (PFS) would lead to increase in Human Development Index (HDI) in SSA countries.

As shown in Table 4.3.6 above, Spread of ATM Services (SAS) and Human Development Index (HDI) in SSA countries result showed (∂ = -0.04, t-stat of -14.62, p-value of 0.000) which shows that Spread of ATM Services (SAS) has negative and significance effect on Human Development Index (HDI) in SSA countries. This implied that a unit increase in Spread of ATM Services (SAS) would lead to increase in Human Development Index (HDI) in SSA countries.

Discussion of Results

The study found that Number of Formally Banked Adults (FBA) has positive (∂=0.29) and significant (0.000) effect on human development in Sub-Saharan African countries. This implies that a unit increase in Number of Formally Banked Adults (FBA) would result in increase in human development index in SSA countries. As the number of formally banked adults rises, the unbanked, under banked, unserved and under served are brought into the mainstream of the financial system. This draws empirical support from such studies as Emara and El Said's (2021), Van et al. (2021) and Dinh and Nguyen (2019).

Furthermore, the study found that Adults with Credit (AWC) has negative (∂=-0.32) and significant (0.000) effect on human development in Sub-Saharan African countries. This implies that a unit increase in Adults with Credit (AWC) would lead to an increase in human development index in SSA countries.

This finding is consistent with the private money theory of financial inclusion (See Ouechtati (2022), which holds that private funders can make faster funding decisions due to shorter approval processes compared to bureaucratic public funding procedures.This makes them faster drivers of financial inclusion as evidenced by the findings arising from the pursuit of this objective.

This is further supported by Aina and Oluyombo (2014) who found high access to bank accounts, with a majority operating savings accounts and that bank accounts facilitated sending and receiving money between distant family members, strengthening familial bonds a vital element in African social structures.

The study also found that Number of Formally Banked Enterprises (FBE) has negative (∂=-0.00) and insignificant (0.1485) effect on human development in Sub-Saharan African countries. This implies that a unit increase in Number of Formally Banked Enterprises (FBE) would lead to decrease in human development index in SSA countries. This finding agrees with the systems theory of financial inclusion, proposed by Ozili (2020), which posits that financial inclusion outcomes are influenced by the interconnected functioning of sub-systems such as economic, social, and financial structures. Simply put, the provision of institution-based financial services as shown by the outcome of this objective enhances the degree of financial inclusion in SSA countries.

The study also found that Number of Enterprises with Credit (EWC) has negative (∂=-0.03) and insignificant (0.0000) effect on human development in Sub-Saharan African countries. This implies that a unit increase in the number of Enterprises with Credit (EWC) would lead to decrease in human development index in SSA countries. This is understandable because an increase in the number of enterprises with credit reduces access to credit by individuals who usually are the main targets of financial inclusion. Evidently, credit supply in the form of loanable funds are in limited supply in SSA countries, consequently, the more the funds to enterprises increase by way of credit the less the inclusiveness especially at individual or household level, (see Eshun and Kočenda 2023Omojolaibi, 2017)

The study found that Point of Financial Services (PFS) has positive and significant (pvalue-0.0000) effect on human development in Sub-Saharan African countries. This implies that a unit increase in Point of Financial Services (PFS) would lead to increase in human development index in SSA countries. Olubanjo (2017) agreed with this finding in a study that analyzed factors influencing financial inclusion in Nigeria using survey data from over 20,000 respondents across 37 states (2008–2016). The study found that proximity to bank branches positively affected inclusion, emphasizing the importance of financial literacy and targeted poverty alleviation strategies. Malinda and Maya (2018) explored 11 countries (2007–2016) and confirmed a long-term relationship between financial inclusion and enhanced access to points of financial service.

Mose and Thomi (2021) focused on East Africa and investigated factors influencing financial inclusion from a demand-side perspective. They found that financial access was positively impacted by both economic growth and internet usage, which ties into the findings of Singh and Ghosh (2021).

The study found that Spread of ATM Services (SAS) has negative (∂=-0.04) and significant (0.000) effect on human development in Sub-Saharan African countries. This implies that a unit increase in Spread of ATM Services (SAS) would lead to increase in human development index in SSA countries.

Empirical studies such as Van and Linh (2019) investigated the effect of financial inclusion on economic development in 23 Asian countries from 2010 to 2015. The findings confirmed a relationship between the prevalence of bank branches, ATMs, domestic credit in the private sector, and improvements in financial inclusion.

This is also consistent Nkoa and Song (2020) who looked at the relationship between the calibre of institutions and financial inclusiveness in Africa. They offer proof that financial inclusion tends work through an improvement in financial products and services' accessibility, uptake, and utilisation in Africa; of which the spread of ATM services is a key offering.

5. Conclusion

This study examined the impact of financial inclusion on economic development in SSA countries in SSA countries covering the period 1974 to 2023. The choice of SSA as the geography of the study was informed by the degree of financial exclusion in the financial system and the widening level of human underdevelopment. Two variants of Panel-ARDL were used, namely, mean group and pooled mean group with Haussmann test serving as the guide in the choice of the more efficient and consistent of the two models.

The study in agreement with some prior studies found that the human development index benefits from intentional policies designed to enhance financial inclusion. This is by way of enhanced access to financial services, spread of financial inclusion infrastructure (such as ATM), access to credit by both individuals and enterprises and a host of other inclusion drivers.

This study is believed to have added to the discussion on financial inclusion by way of showing what can help the move by mangers of the financial system in SSA countries to deepen access to financial services. Also, the human development index growth enhanced through financial inclusion and other related financial development activities is essential for the region given that it is in search of development and growth of appreciable proportion.

6.3 Recommendation

Findings from this study gave rise to the following:

- Government should enhance access to credit by individuals to drive human development. This can be achieved through strengthening microfinance and other rural based financial institutions.

- Enhance enterprise credit access is recommended as this will help small and medium scale enterprises which were hitherto excluded to gain access to credit. In addition, such access to enterprise credit should be defined as priority areas.

- Increasing the number of adults with regular bank accounts and enterprise with formal accounts by reducing the account opening conditions will increase the inclusion rate in the SSA region while accentuating the level of human development.

- Creating collaborative impact for financial inclusion and other human development index enhancing factors will go a long way in boosting the standard of living of the populace in SSA countries.

- Increasing financial access in the region through increased spread in branch network, agency banking and other means can assist in improving financial inclusion and enhancing human development index.

- The spread of Automated Teller Machines and the increase in its functionality in SSA countries can enhance inclusion since it is reported that increase in ATM services enhances the developmental impact of financial inclusion.

6.4 Contribution to Knowledge

This study contributes to knowledge in the following ways:

- It expands and updates the literature in the enhancing effect of financial inclusion on human development index in SSA countries which can provide a blueprint for other financial systems in the likeness of the region.

- This study makes some contribution in the area of the way the instruments or variables were set up. It used a combination of individual-focused and enterprise-focused financial inclusion variables. This differs from the approach by prior studies.

- This study fills a geographical gap by studying SSA which has received less attention in the human development effect of financial inclusion.

- The fact that the study extends the study to 2023 from 1974 means that it has filled an intertemporal gap by investigating from areas when financial inclusion was less common to periods where it is a burning issue in local and international financial development conversation.

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