



**IMPACT OF FINANCIAL INCLUSION ON FIRM BORROWING AND
PERFORMANCE IN SELECTED AFRICAN COUNTRIES**

BY

HAYATU AHMED

**Thesis submitted to the School of Graduate Studies, Universiti Putra Malaysia,
in Fulfillment of the Requirement for the degree of Doctor of Philosophy**

August 2024

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DEDICATION

This thesis is dedicated to:

My late parents, Alhaji Hayatu and Hajiya Maryamu Hayatu, to whom I am much indebted, my loving wife, my caring children, and my helpful brothers and sisters.

My supervisors were helpful, especially Professor (Dr.) Bany-Ariffin Bin Amin Noordin, Dr. Soh Wei Ni, and Associate Professor (Dr.) Matemilola Bolaji Tunde for their patience, guidance, and encouragement that helped foster and carry out this research.



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of the requirement for the degree of Doctor of Philosophy

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August 2024

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This study investigates the impact of financial inclusion on firm borrowing, growth, and performance, focusing on a sample of firms from 10 selected manufacturing firms in African countries between 2010 and 2019. The research has three key objectives: (1) to examine how financial inclusion influences firms' borrowing capacity, (2) to analyze its effect on firms' growth, and (3) to assess its impact on firm performance. The study uses the two-step system Generalized Method of Moments (GMM) as the primary estimation technique. GMM is particularly suited for addressing dynamic relationships and potential endogeneity, making it ideal for examining how financial inclusion affects firm-level outcomes over time. This method ensures the results are robust and reliable, accounting for unobserved differences across firms and countries.

The findings reveal that financial inclusion significantly positively affects firm borrowing. Firms with better access to financial services are more likely to secure the financing they need, which is especially important in Africa, where many businesses, small and medium-sized enterprises (SMEs), face difficulties accessing credit.

Financial inclusion helps to bridge this gap by offering a wider range of financial products, making it easier for firms to obtain loans and other forms of capital for investment and expansion. In addition to borrowing, financial inclusion also positively impacts firm growth. Firms that can access various financial services are better positioned to invest in new projects, hire additional employees, and expand their operations. This highlights the role of financial inclusion in enabling firms to obtain financing and use it effectively to drive growth and scale their business activities. The improved access to financial products helps firms grow in size, market reach, and capacity.

The study further finds that financial inclusion positively affects firm performance. Firms with better access to financial services tend to perform better in profitability, productivity, and competitiveness. Whether measured through metrics like return on assets or sales growth, firms with greater financial inclusion perform better across the board. This shows that access to reliable and affordable financial services is crucial for firms to manage their resources effectively, invest in productive assets, and stay competitive. The study's results are consistent across different model specifications and various measures of financial inclusion, underscoring the robustness of the findings. For financial managers, the study suggests that adopting financial inclusion strategies can help attract deposits and raise capital, fueling growth initiatives. For policymakers, the research points to the need for supportive regulations that encourage the development of financial markets, enabling more firms to access financial services and capital. This research contributes to understanding financial inclusion's role in firm-level outcomes in African countries. Combining financial inclusion and trade-off theories thoroughly explains how access to financial services drives borrowing,

growth, and performance, offering valuable insights for businesses, policymakers, and researchers interested in the economic impacts of financial inclusion.

Keywords: Firm Borrowing, Firm Growth, Financial Inclusion and Firm Performance.

SDG: GOAL 8: Decent Work and Economic Growth



Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

**KESAN RANGKUMAN KEWANGAN TERHADAP PEMINJAMAN DAN
PRESTASI FIRMA DI NEGARA- NEGARA- AFRIKA TERPILIH**

Oleh

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Kajian ini menyiasat kesan rangkuman kewangan terhadap peminjaman, pertumbuhan dan prestasi firma, memfokuskan pada sampel firma daripada 10 firma pembuatan terpilih di negara Afrika antara 2010 dan 2019. Penyelidikan ini mempunyai tiga objektif utama: (1) untuk mengkaji bagaimana kewangan kemasukan mempengaruhi kapasiti pinjaman firma, (2) untuk menganalisis kesannya terhadap pertumbuhan firma, dan (3) untuk menilai kesannya terhadap prestasi firma. Kajian menggunakan sistem dua langkah Kaedah Generalised Moments (GMM) sebagai teknik anggaran utama. GMM amat sesuai untuk menangani perhubungan dinamik dan potensi endogeniti, menjadikannya ideal untuk mengkaji cara rangkuman kewangan mempengaruhi hasil peringkat firma dari semasa ke semasa. Kaedah ini memastikan keputusan adalah teguh dan boleh dipercayai, mengambil kira perbezaan yang tidak dapat diperhatikan merentas firma dan negara.

Penemuan mendedahkan bahawa rangkuman kewangan secara signifikan memberi kesan positif kepada peminjaman firma. Firma yang mempunyai akses yang lebih baik

kepada perkhidmatan kewangan berkemungkinan besar memperoleh pembiayaan yang mereka perlukan, yang amat penting di Afrika, di mana banyak perniagaan, perusahaan kecil dan sederhana (PKS), menghadapi kesukaran untuk mengakses kredit. Rangkuman kewangan membantu merapatkan jurang ini dengan menawarkan rangkaian produk kewangan yang lebih luas, memudahkan firma mendapatkan pinjaman dan bentuk modal lain untuk pelaburan dan pengembangan. Selain meminjam, rangkuman kewangan juga memberi kesan positif kepada pertumbuhan firma. Firma yang boleh mengakses pelbagai perkhidmatan kewangan mempunyai kedudukan yang lebih baik untuk melabur dalam projek baharu, mengambil pekerja tambahan dan mengembangkan operasi mereka. Ini menyerlahkan peranan rangkuman kewangan dalam membolehkan firma memperoleh pembiayaan dan menggunakannya secara berkesan untuk memacu pertumbuhan dan meningkatkan aktiviti perniagaan mereka. Akses yang lebih baik kepada produk kewangan membantu firma berkembang dari segi saiz, jangkauan pasaran dan kapasiti.

Kajian selanjutnya mendapati bahawa rangkuman kewangan memberi kesan positif kepada prestasi firma. Firma yang mempunyai akses yang lebih baik kepada perkhidmatan kewangan cenderung menunjukkan prestasi yang lebih baik dalam keuntungan, produktiviti dan daya saing. Sama ada diukur melalui metrik seperti pulangan atas aset atau pertumbuhan jualan, firma yang mempunyai rangkuman kewangan yang lebih tinggi menunjukkan prestasi yang lebih baik secara menyeluruh. Ini menunjukkan bahawa akses kepada perkhidmatan kewangan yang boleh dipercayai dan berpatutan adalah penting untuk firma mengurus sumber mereka dengan berkesan, melabur dalam aset produktif dan kekal berdaya saing. Keputusan kajian adalah konsisten merentas spesifikasi model yang berbeza dan pelbagai ukuran rangkuman

kewangan, menekankan keteguhan penemuan. Bagi pengurus kewangan, kajian itu mencadangkan bahawa penggunaan strategi rangkuman kewangan boleh membantu menarik deposit dan meningkatkan modal, memacu inisiatif pertumbuhan. Bagi pembuat dasar, penyelidikan menunjukkan keperluan untuk peraturan sokongan yang menggalakkan pembangunan pasaran kewangan, membolehkan lebih banyak firma mengakses perkhidmatan kewangan dan modal. Penyelidikan ini menyumbang kepada pemahaman peranan rangkuman kewangan dalam hasil peringkat firma di negara-negara Afrika. Menggabungkan teori rangkuman kewangan dan pertukaran secara menyeluruh menerangkan cara akses kepada perkhidmatan kewangan mendorong peminjaman, pertumbuhan dan prestasi, menawarkan cerapan berharga untuk perniagaan, penggubal dasar dan penyelidik yang berminat dengan kesan ekonomi rangkuman kewangan.

Kata kunci: Pinjaman Firma, Pertumbuhan Firma, Rangkuman Kewangan dan Prestasi Firma.

SDG: MATLAMAT 8: Pekerjaan Yang Sesuai dan Pertumbuhan Ekonomi

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This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Doctor of Philosophy. The members of the Supervisory Committee were as follows:

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LIST OF ABBREVIATIONS

ATM proxy)	Automated Teller Machine per 100,000 adults (Financial inclusion proxy)
BB	Bank Branch per 100,000 adults (Financial inclusion proxy)
BTM	Ratio of book equity to market equity
CREDITINFO	Depth of credit information ranging from zero to ten (Financial inclusion proxy)
DCPR	Domestic credit to the private sector as a percentage of GDP (Financial inclusion proxy)
EBITTA	Ratio of Earnings before Interest and Tax to Total Assets
FATA	Ratio of Property, Plant, and Equipment to Total Assets
FBR	Firm borrowing
FG	Firms' Growth (annual growth rate in sales)
FININC	Financial inclusions
GDPG	Gross Domestic Product Growth (GDP) growth rate
INTR	Interest rate
Log of TA	Log of total asset
NDTSTA	Non debt tax shield (Ratio of depreciation to total assets)
Tobin Q	Ratio of Market of Value Equity Plus Book Value of Debt to Book Value of Total Assets
TobinQ	Firms' Performance

CHAPTER 1

INTRODUCTION

1.1 Background to the study

Financial inclusion is generally identified as a factor that helps emerging nation grow and develop nations grow (Abubakar et al. (2020). Financial inclusion (accessibility of money) and the presence of accessible financial products play a crucial role in fostering the growth of emerging economies (Demirguc-Kunt et al., 2018; De la Torre et al., 2017). Finance is a significant aspect that strengthens economic development and growth (Goel and Sharma, 2017). Financial limitations influence businesses in developing nations. It is an interesting field of study in corporate finance. Research has shown that limited access to financing is a primary limitation to creativity, strength, and advancement (Ayyagari et al., 2008; 2011) and that financial and institution-based inclusive growth has a detrimental impact on some enterprises (Beck et al., 2005; 2006). Numerous empirical studies have demonstrated that useful, productive, and well-functioning financial systems are essential for channelling capital or directing it to its most efficient uses and distributing it where it is most required, thereby boosting economic growth, expanding business opportunities, and enhancing the distribution of wealth.

Moreover, better financial availability refers to the innovation of providing affordable and accessible financial services like loans, savings, insurance, debit cards, and other uncertainty-control products to facilitate continued production efficiency, particularly

for families and firms. This shows an essential appeal for elevating the nation to a higher level (Ahamed et al., 2017).

Financial inclusion (that is, access to formally provided Banking services) has the possibility to enhance the survivors of poor families and companies. Saving, credit facilities and payment will play a crucial part in household struggle to stabilize spending; in company efforts to invest in people or creative capital; and in efforts to limit exposure to uncertainty. These products are especially essential for the impoverished in emerging countries. It also helps people whose wages in the informal sector change a lot and who remain exposed to major health and organizational shocks Demircuc-Kunt et al. (2019a). Approximately 2.5 billion individuals globally do not have access to financial services, primarily the desperately deprived residing in middle-income nations and the poorest regions. In addition, it is estimated that about 80% (about 300 million individuals) in African nation do not possesses a formal bank account, making them "financially excluded." These circumstances demonstrate the significance of financial inclusion in emerging nations. In addition, a shortage of funds is viewed as the primary impediment to advancement in developing nations, particularly in Africa (Zins & Weill, 2016).

In addition, within the last three years, 515 million adults globally initiated financial accounts, while between 2010 and 2017, 1.2 billion people established accounts with conventional financial institutions or mobile financial service providers. This represents remarkable progress by any standard. However, there is still considerable work to be done. By the end of 2017, over 31% of the worldwide adult population, equivalent to 1.7 billion individuals aged 16 and older, remained without access to a bank account (Demircuc-Kunt, et al., 2018).

Demirguc-Kunt et al. (2018b) as per Deep Knowledge Analytics & Future Fintech (2019), in numerous economies, the number of adults who lack access to financial services surpasses the number of adults living below the poverty threshold of \$2 per day. In addition, the survey revealed that every second person on earth lacked access to formal bank deposits, insurance, borrowing, and additional financial offerings. The study also revealed that less than a quarter of individuals held an account with a formal financial institution, with most depending on informal methods of saving and borrowing, notably through familial and social networks (Demirguc-Kunt et al., 2018). Examining account ownership and usage as indicators of financial inclusion, it was evident that many people faced financial exclusion due to the requirement of maintaining a relatively high account balance, limited proximity to financial institutions, inadequate legal safeguards, and a lack of eco-friendly practices (Allen et al., 2016).

According to Ozili (2021), in many African nation, financial inclusion is a government goal for advancement, and financial inclusion aims are frequently realized through a combination of activities, programs, and laws designed to reach unbanked residents. When done appropriately, financial inclusion can help lift poor people out of poverty. However, when handled improperly, it can expose poor people to risk in formal banking institutions, particularly potential dangers linked to the utilization of financial products and services if these threats come true, they can hurt the poor, make income inequality worse, and maybe even cause people to be left out of society.

Similarly, over 70 per cent of Kenyans are Money transfer users, making Kenya the continent's leader in the money banking business, particularly in East Africa. 36 of the

54 nations in Africa offer mobile banking facilities. However, according to Zins and Weill (2016), as cited by (Mhlanga David & Denhere, Varaidzo 2020) there are 2.5 billion people living in middle- and low-income countries who do not have access to financial services. Furthermore, savings habits in Africa diverge from global norms, with education (21.3%), farming (19.6%) and retirement is 23.9.

The table 1.1 below are the motivating and savings considerations in Africa:

Table 1.1: Motivating and savings considerations in African countries

Motivating and saving in Africa	Percentages
Education	21.3%
Farming	19.6%
Retirement (savings for old age)	23.9%

(Source: Mhlanga David & Denhere, Varaidzo. 2020)

In addition, 37% of the primary credit sources in Africa are comprised of family and friends, 7.9% of retailers, 6.7% of official lenders, and 4.7% of private lenders. In Africa, 41% of individuals are claimed to have borrowed from informal sources, and 51.4% have gotten from any source over the previous years, a greater percentage than the global average of 42.4% (Zins & Weill, 2016; Mhlanga & Denhere, 2020). Consequently, the largest source of income in Africa was determined as follows:

Table 1.2: Principal sources of income in African nations

Credit Sources	Percentages
Family and Friends	37%
Store	7.9%
Formal Borrowing	6.7%
Borrowing from another private lender	4.7%
Borrowing from informal sources	41%
Borrowing from every source	51.4%

(Source: Mhlanga & Denhere, 2020)

Research by the United Nations Development Program researched in Africa as cited by (U. Sharma & Changkakati, 2022) and the results showed that Kenya had the highest level of financial inclusion on the continent (67%). Following closely, Nigeria has a rate of 60%, while Cameroon registers at 47%. Conversely, Mozambique exhibits the lowest financial inclusion rate in Africa is 13% whilst other African nations have rates of less than 30%. Thus, Table 1.3 illustrates the financial inclusion of several African nations.

Table 1.3: The illustration of financial inclusion of selected African nations

Nations	Percentages
Kenya	67%
Nigeria	60%
Cameroon	47%
Uganda	28%
Zambia	23%
Senegal	20%
Benin	20%
Mozambique	13%

[Source: United Nations Development Programme, 2015) (U. Sharma & Changkakati, 2022)]

Table 1.4 reveals the ownership level in account dissemination in Sub-Saharan Africa. South Africa has the greatest account penetration rate in Africa at 42%, then followed by West Africa at 23%, then East Africa at 22%, North Africa at 20%, finally Central Africa at 7%. Despite worldwide advances in financial inclusion, Africa remains overdue. Consequently, the disparities in the account penetration sample revealed irregular development throughout the region which may have contributed to the continent's devastating unemployment and deplorable poverty.

Table 1.4: Account penetration in Sub-Saharan Africa

Africa	Percentages
Southern Africa	42%
Western Africa	23%
Eastern Africa	22%
North Africa	20%
Central Africa	7%

(Source: Demirgüç-Kunt et al., 2020)

Although there were improvements in the financial inclusion levels in developing nations as reported by many researchers in the area of financial inclusion with reference to the statistic presented in table 1.4 above respectively.

Maity & Sahu (2022), examined Automated teller machines (ATMs) and Bank branch locations work together to expand banking services in developing nations, instead of spending hours in a bank branch to withdraw cash, individuals would rather use an ATM. By offering necessary services related to banking, ATMs additionally perform a significant role in the absence of a completely traditional location. In Africa, a sizable portion of the population lacks access to banks. The current study looks at the impact of ATMs and bank distribution on financial inclusion. The investigation spans the years 2008–2009 through the differences between the branch and the ATM using Welch's t-test. The research also examines how expanding branch and ATM networks affect financial inclusion through regression analysis. The research showed no discernible differences between the growth of branches and ATMs, even though customers are more inclined to use an ATM and the rate of change is more prominent in branches. Additionally, regression results indicate both ATMs and branches have a significant influence on financial inclusion. Each plays a well-known role in providing excellent client service through the micro-approach. A list of particular services can

only be offered at the branch level under the macro concept, given the significance of branches or ATMs and the expense of constructing an actual branch.

Furthermore, the findings demonstrate a rising trend in these two banking methods' geographic and demographic penetration. The number of banks per 1,000 km² increased from 24 in 2008–2009 to around 46 in 2019–2020, bringing the total number of branches to 149,977. The number of ATMs per 1,000 km² expanded from 13 in 2008–2009 to approximately 64 in 2019–2020, bringing the total number of ATMs to 210,760. Regarding demographic penetration, the number of banks. The per million people went from 68 in 2008–2009 to about 107 in 2019–2020, while the number of ATMs increased from 36 to almost 150 (Maity & Sahu, 2022).

In line with the data presented in Table 1.5, it is notable that 34% of adults in sub-Saharan Africa possessed financial accounts, a percentage that, compared to global regions, places Africa ahead of only the Middle East, where 14% of adults held accounts. Religious convictions, bank interest rates, account maintenance fees, and other aspects of traditional financial inclusion all have an impact on this gap. In contrast, high-income countries demonstrated the highest account penetration at 94%, largely attributed to the widespread availability and adoption of digital financial services and mobile banking at their peak. The East and Pacific Asia region had a 69% account penetration rate, ranking second only to high-income countries. This indicates their commitment to simplifying opening accounts and enhancing financial access for their residents. Furthermore, within Europe, Central Asia, Latin America, and the Caribbean, 51% of adults with accounts are increasingly adopting digital financial services and mobile banking. It's crucial to remember, though, that there is still a sizable difference compared to high-income nations. (Demirgüç-Kunt et al., 2020b).

Table 1.5: Global Account Penetration

Regions	Percentages
High income	94
East Asia and pacific	69
Europe and central Asia	51
Latin America and Caribbean	51
South Asia	46
Sub Saharan Africa	34
Middle East	14

(Source: Demirgüç-Kunt et al., 2020b)

Globally, it is evident that nearly all adults possess accounts, yet only 60% of them hold traditional bank accounts. A mere 1% of the population maintains bank and mobile money accounts. In Africa, roughly one-third of account holders, equivalent to 12% of adults with accounts, are noted to have mobile money accounts. Among these 12%, 6% have mobile and bank accounts, while the other 6% exclusively rely on mobile accounts. In East Africa, 20% of adults use mobile money accounts, but only 10% use mobile banking. The figures vary across sub-regions, with Kenya boasting the highest percentage of adults (58%) holding mobile money accounts, followed by Somalia, Tanzania, and Uganda, each with 35%. South Africa records a high percentage of adults with accounts at 14%, whereas only 2% have mobile money accounts.

Moreover, table 1.6 present the global assessment of financial inclusion also considers factors such as the presence of automated teller machines (ATMs), the density of bank branches, and the number of individuals holding accounts. The availability of ATMs and bank branches per 100,000 adults exhibits significant variation on a global scale. In terms of ATMs and bank branches per 100,000 adults, developing (African) countries lag significantly behind. Despite the region comprising over 40 countries, the penetration rates for ATMs and bank branches are just 7.0% and 4.1%, respectively

in Sub-Saharan African nations (SSA) stand out for having the least prevalence in both ATMs and bank branch access in developing Asia, the adoption rate was 17.7% for ATMs and 10.6% for bank branches (BB). Conversely, the Middle East and North Africa exhibited a greater ATM penetration rate of 22.0% and a higher BB penetration rate of 19.1%. The most substantial ATM and BB availability levels were observed in affluent nations, with ATM coverage reaching 76.8% and BB presence at 32.3%. Europe followed closely, with ATM penetration at 51.6% and BB penetration at 23.3%. In Latin America and the Caribbean, the ATM penetration rate was 37.3%, while BB had a penetration rate of 17.3.

Table 1.6: Global Penetration of ATMs and Bank Branches per 100,000 adults

Regions	ATM'S	Bank Branches
High income	76.8	32.3
Europe	51.6	23.3
LAC	37.3	17.3
MENA	22.0	19.1
Asia	17.7	10.6
SSA	7.0	4.1

(Source: Ehiedu et al., 2021)

Similarly, table 1.7 presents a comprehensive summary of the worldwide population of adult individuals who do not possess bank accounts. The region of South Asia exhibits the highest proportion of adults lacking access to a bank account, with a prevalence of 31%. This is followed by the East and Pacific Asia region, where 24% of adults face a similar circumstance. Conversely, Africa has a comparatively lower percentage of individuals without bank accounts, at 17%. Conversely, nations with higher income levels exhibit the most minimal proportion of adult individuals lacking access to banking services on a global scale, standing at a mere 3%. The Middle East and other economies are next, at 4% each, and Europe and Central Asia are last, at 5%. Latin America and the Caribbean have a slightly higher unbanked rate at 10%.

Table 1.7: World's unbanked adults by region Adults without an account (%), 2014

Regions	Percentages
High Income	3%
Middle East	4%
Europe and Central Asia	5%
Latin America and Caribbean	10%
Sub Saharan Africa	17%
East Asia and Pacific	24%
South Asia	31%
Other Economies	4%

(Source; Demirgüç-Kunt et al., 2020)

In addition, these statistics revealed differences in obtaining financial services worldwide, especially in Africa and other developing nations. Hence, this research strongly prioritizes the issues of developing countries, with a specific concentration on African nations. Given the apparent difficulties associated with achieving financial inclusion in these developing regions, it is evident that ongoing research in this field will remain crucial. Many developing countries around the world, especially those in Africa, who face significant obstacles to financial inclusion, highlight this significance.

Consequently, recognizing the pivotal role of financial inclusion in economic development and its far-reaching effects on firm borrowing, growth, and performance, this study seeks to narrow its focus. It aims to investigate the specific issues of financial inclusion within African nations, shed light on the problems, and propose empirical solutions and policy recommendations. In the finance literature, the impact of financial inclusion on firm borrowing in African countries has been discounted, despite increasing firms' access to debt financing in these nations. Also, most businesses in emerging nations were able to get the bank loans they needed to run businesses that made money (Fowowe, 2017) The borrowing structure shows how a firm's activity is

financed in terms of debt and equity ratios. The cost to the company varies depending on which borrowing structure component is used. As a result, the enterprises are still determining the right proportion of debt to equity required to fund their business activities. What needs to be solved is the question of how much debt and equity are sufficient.(Chakrabarti & Chakrabarti, 2019). Company confidence in the improvement of the broader economic situation is essential to efficiency. It increases the flow of capital, (borrowing) promotes a nation's products, and creates new employment opportunities (Farooq et al., 2021).

Additionally, financial inclusion boosts the bank deposit base and firms' ability to access debt capital, improving firms' performance. In the face of information asymmetry and agency problems, company financial policies, including the level of the firm's performance, the level of borrowing, and the practices to ensure debt, are jointly determined and associated with the firm's business investment policy (Nnadi et al., 2021).

Tabiri et al. (2022) study examines the impact of financing on the performance of informal businesses using the World Bank's Informal Enterprise Surveys. According to the findings, using everyday financing is linked to poorer performance, while using legal funding is linked to more incredible performance. Duong et al. (2020) find that a rise in cash flow is not connected with a decline in company borrowing, but that the relationship is stronger for financially constrained firms or those with a greater susceptibility to policy uncertainty. Therefore, cash flows under policy uncertainty helps offset the policy's adverse impact on capital borrowing and innovative outputs. They consider the risk of borrowing and how more significant cash flows may help minimise the higher risk of borrowing.

According to Ozili (2021), in many nations, financial inclusion is a government objective for progress, and financial inclusion goals are frequently achieved by a combination of activities, initiatives, and regulations to reach unbanked individuals. When appropriately implemented, financial inclusion could help to raise impoverished people out of poverty. However, if it is improperly managed, it might expose the poor to risks in conventional banking institutions, namely dangers related to the usage of financial services and financial products. If these dangers materialise, they can harm the poor, worsen income disparity, and possibly lead to social exclusion.

In another hand financial inclusion enhances banks' liquidity position, which helps firms access bank loans to fund lucrative projects that increase firms' growth. Regasa et al. (2020) Examine how various financing forms affect firms' expansion using firm-level data from Ethiopia. The study introduces a new instrumental variable that reflects the local variation of financial depth because the kind of financing could be endogenous to company growth. they uncover evidence of a negative link between the use of outside finance and firm growth, contrary to earlier research of businesses in nations with lower incomes, which shows significant cross-country variances in the finance-growth connectivity. Nevertheless, one aspect is maximising equity asset value. Even though creating shareholder value is a common company goal, value-oriented strategic planning and growth seems to be a fairly new method that has been added to strategic financial management literature. Varaiya et al., (1987) Consequently, firm growth is one of the metrics used to evaluate a company's performance, and it has a favourable impact on financial inclusion.

Furthermore, the borrowing structure has received attention among researchers and policymakers due to its complexity and the mystery related to financial structure decisions on the optimum amount of debt the firms need till today (Chakrabarti & Chakrabarti, 2019).

Ponce et al. (2019), between 2012 and 2016, examined 304 enterprises in Guayaquil's borrowing structure determinants and used the optimum borrowing structure theory for the circumstances. To compare the results to theoretical expectations of trade-offs and pecking order, the study identified the factors that determine enterprises' loans to businesses in developing nations. Next, a fixed effect and panel data structure were used in the research to analyze the data. After that, an ordinary least squares method was used to confirm the statistical significance of the relationship between the debt ratio and several independent factors chosen following the literature study. Results showed that the pecking order hypothesis outperformed the trade-off theory in the investigation. Furthermore, there was no proof that the borrowing structure and the importance of growth are related (Ponce et al., 2019).

Öner (2019) study examines how firm-specific characteristics affect corporate borrowing. The investigation uses year-end records from 100 of Istanbul's top 1000 businesses from 2005 to 2011. Panel data analysis evaluates five firm-specific borrowing option determinants: profitability, firm size, tangibility, growth opportunity, and non-debt tax shielding. The study of the dependent variable, leverage ratio, represents firms' borrowing strategy. Using the book and market-based measures to test if key results are substantial with alternative leveraged definitions, they defined leverage as the firm's total debt to total assets ratio and long-term debt to total asset

ratios. The study found that tangibility positively affects the long-term debt ratio but negatively affects the total debt ratio. Successful organizations have less leverage, while giant corporations have more excellent debt ratios than smaller ones. Furthermore, enterprises with higher growth potential and non-debt tax shields have lower debt levels. Excluding growth prospects, which exclusively affect market-based leveraged ratios, all other variables are robust across leverage standards.

Lian & Ma (2021) examine the macro-finance research that frequently relates the bankruptcy value of actual assets to borrowing restrictions on businesses. It reveals that for non-financial enterprises, 20% of borrowing by worth is secured by tangible assets (referred to as "asset-based borrowing" in the banking industry). In comparison, 80% is primarily based on income from business activities ("cash available flow-based borrowing"). Normal borrowing restrictions ("income-based borrowing limits") limit how much debt can be borrowed as an indicator of income determined by operating income. These characteristics have an impact on how a firm performs on the loan. Firstly, cash generated through operating income can immediately loosen borrowing restrictions. Secondly, companies become less likely to experience damage from asset price falls, and flash sale expansions may be reduced (Lian & Ma, 2021).

Similarly, the article further explores how corporate borrowing limitations affect business outcomes.

Moreover, firm growth requires more vital productivity and positioning in the market to achieve long-term growth, which necessitates wisely allocating resources.

Solomon & van Klyton (2020) examined how adopting digital technology influenced firms' growth in 39 African countries between 2012 and 2016. The study employs a system GMM estimator to assess to what extent the implementation of digital technology fosters growth, using the Internet-Based Readiness Index as a measure of digitalization. Unlike previous studies, this research distinguishes between the effects of individuals, firms, and public usage of information and communication technology (ICT) on firm growth. The findings indicate that only personal usage of ICT has a positive impact on growth. According to a disaggregated examination of usage patterns, the role of social networks and ICTs in public vision are two additional variables essential for growth.

Diao, Mcmillan and Rodrik (2021) explored how the firm growth in Africa has been characterized by notable advancements in firms' productivity and a decline in the proportion of the workforce engaged in firms. Surprisingly, there has been a decrease in productivity in modern sectors like manufacturing firms. They used a pair of fresh datasets that included production companies in Ethiopia from 2008 to 2016 and Tanzania from 1996 to 2017 to thoroughly analyst production enterprises by size to better understand this phenomenon. The study reveals a distinct separation between more significant organizations with excellent productivity but little job creation and smaller enterprises with more hiring but no appreciable efficiency development. They argue that the use of capital-intensive processes, which are in line with global technology trends, is to blame for the poor job performance of larger enterprises (Diao et al., 2021).

In a similar vein, firm performance refers to how well a firm is achieving its strategic goal and objective and overall effectiveness in delivering value.

Arabeche et al. (2022) investigated the relationship between entrepreneurial orientation and firm performance in SMEs engaged in manufacturing in Algeria. For 2021, a sample of 180 Small and Medium-Sized Enterprise (SME) owners in Algeria was gathered using structured questionnaires. This research demonstrates that entrepreneurial orientation has a moderate impact on firm performance (Arabeche et al., 2022). Likewise, Ledi and Ameza–Xemalordzo (2023) study investigate how through corporate governance, corporate image impact manufacturing firm performance in Ghana using questionnaire approach. The study found that effective corporate governance practices improve firms' performance and corporate image. The studies above have shown how corporate governance affects manufacturing enterprises' performance positively. The study provides deep insight into firm performance in the rising economy and advances knowledge on the interaction and harmony of corporate governance systems and entrepreneurial orientation but the questionnaire approach is unable to resolve endogeneity concern (Ledi & Ameza–Xemalordzo, 2023).

Konte and Tetteh (2023) Examine how mobile money can enhance the productivity-boosting impacts of conventional financial services. The finding indicates a significant effect of access to traditional financial services on firm performance using firm-level data from the World Bank Enterprise Survey across 14 sub-Saharan African countries. However, formal firms should be encouraged to access conventional financial services, including bank funding and banking services. Credit information and ATMs also have a significant and positive effect on the development of the economy. In contrast, deposit accounts, existing loans, and existing deposits have a more negligible but still negative effect (Ifediora et al. 2022). The size of the financial system, the

number of automated teller machines (ATMs), credit information (Credit Infor), The number of bank branches, the distance from a bank, the availability of mobile phones and the digital availability of financial services and products, the technological infrastructure, government rules, traditions, and cultural beliefs, the development and implementation of a national financial inclusion strategy, and direct legislation all play a role in influencing financial inclusion. (Ozili 2022).

Therefore, greater financial inclusion enhances firm borrowing opportunities, particularly for more extensive, smaller startups, by providing more access to affordable and appropriate financial products. As a result, firms can fund their operations, purchase capital, and hire more employees. In Africa, where many economies are still developing, financial inclusion is essential for driving growth and improving economic stability.

Moreover, the capacity to get enough funding for business expansion, new product development, or market entry is often a prerequisite for firm growth. Financial inclusion is crucial, providing businesses with the financial resources to expand. Financial inclusion not only provides businesses with the financial resources to expand but also inspires business development by increasing access to various financial goods, including credit, payment services, and insurance. It opens up business opportunities to grow, penetrate new markets, and engage in more competitive pricing.

Businesses with more financial access usually have more substantial profits, productivity, and sales. For example, companies may reduce the time and expenses of cash-based transactions by streamlining transactions using digital payment systems.

Furthermore, having access to financing enables businesses to improve overall performance by investing in R&D, hiring skilled workers, and upgrading gear.

In Africa, firm borrowing, growth and performance are closely linked to financial inclusion. By enhancing access to financial services, businesses may borrow money more readily, expand, and increase the effectiveness and performance of their operations. This, in turn, promotes expanding individual companies and the continent's overall economic growth, employment creation, and poverty alleviation, offering a hopeful outlook for the future.

Conceptually, financial inclusion is influenced by the growing recognition of the importance of access to financial services for economic development and poverty reduction globally. This ensures that everyone, regardless of status or region, has access to financial tools needed to improve their lives. World Bank (2016). therefore, based on this background, the African nation was chosen because it is one of the affected nations on the globe that has a setback in economic growth and development compared to other nations, even the developing ones, not to mention developed countries. Also, the samples of 255 listed manufacturing firms from 10 African countries for the 2010-2019 period are selected because, according to the World Bank Report in 2022, manufacturing firms contributed significantly to the growth of the African countries. The countries were selected based on the four African regions and the availability of data and performance: Egypt, Ghana, Kenya, Malawi, Morocco, Nigeria, South Africa, Tunisia, Zambia and Zimbabwe.

Additionally, most firms in Africa are at the developing stage. They seriously need financial support, as the initial literature view indicates that most African firms need

more access to loan money, the loan-to-access ratio of firms, a slow growth rate, and weak market values. What are some of the problems faced by African firms? With the development of financial inclusion as a formal financial institution, African firms can access funds needed to support their firm and make a viable investment through debt financing or equity to grow and expand their firms and overall effectiveness in delivery value and return on investment.

This study's novelty lies in its unique approach. Unlike previous research that primarily focused on firm-level and macro data, this study delves into the impact of financial inclusion on firms' borrowings. It uses four proxies of financial inclusion-Automated teller machines, bank branches, depth of credit information, and domestic credit to the private sector-to ensure the robustness of its conclusions. The study also introduces a conceptual framework, supported by related theories, and importantly, confirms that Increased access to finance enables firms to fund profitable investment projects, thereby enhancing their growth and maximizing the debt interest tax shield to improve their performance. This was observed in selected manufacturing firms in African nations.

1.2 Statement of problem

1.2.1 Firm Borrowing Issue

The first issue is on financial inclusion and firms' borrowing. Although financial inclusion would boost enterprises' access to bank loans in African nations, the influence of financial inclusion (access to capital) on the firms' borrowing in African nations has received little attention from previous studies, particularly in the area of

financial literature. In addition, most enterprises in emerging nations lack sufficient access to loan money to finance viable investment possibilities (Fowowe, 2017; Wasiuzzaman & Nurdin, 2019). Furthermore, the loan-asset ratio of enterprises in most emerging markets appears to be lower than in developed countries, partly due to banks' inability to raise sufficient funds to lend to firms. But if financial inclusion made it easier for people to get loans, firms' borrowing levels would go up.

On the other hand, the borrowing structure shows how a firm's activity is financed in terms of debt and equity ratios. The cost to the firms varies depending on which borrowing structure component is used. As a result, the enterprises are still determining the right proportion of debt borrowings to equity required to fund their business activities. What needs to be solved is the question of how much debt and equity are sufficient (Chakrabarti & Chakrabarti, 2019). firm borrowing opportunities, particularly for more extensive, smaller and startups, by providing more access to affordable and appropriate financial products. As a result, firms can fund their operations, purchase capital, and hire more employees. In Africa, where many economies are still developing, financial inclusion is essential for driving growth and improving economic stability.

1.2.2 Firm Growth issue

Secondly, the phenomenon of financial inclusion impacting firms' growth is worth investigating. African firms still face the problem of rapid growth which may be due to inadequate access to capital to stimulate business expansion to achieve the desired growth level. This raises the question of how financial inclusion (i.e., access to

finance) affect firms' growth? Financial inclusion appears to increase banks' deposit base which enables firms to access debt borrowing to fund profitable investments that impact firms' growth. The adoption of digital technology (using the Internet-Based Readiness Index as a measure of digitalization) and the implementation of digital technology make access to funding easy and fosters growth (Solomon & van Klyton, 2020). Therefore, firms' growth should be influenced by financial inclusion. Concurrently, financial inclusion can expand banks' capital base. This ultimately made it easier for firms to obtain the necessary loans to boost firm growth. the capacity to get enough funding for business expansion, new product, or market entry is often a prerequisite for firm growth. Financial inclusion plays a crucial role in this, providing businesses with the financial resources they need to expand. By increasing access to various financial goods, including credit, payment services, and insurance, financial inclusion promotes business development and opens up opportunities for businesses to grow, penetrate new markets, and engage in more competitive pricing.

1.2.3 Firm Performance issue

Thirdly, the performance of firms in terms of market values of shares appear low in several African countries compared to other developing countries. The reason is that the stock markets of several African countries are at the developing stage compared to the stock markets in the developed countries and firm access to finance is still problematic. But financial inclusion seems to make it easier for firms to borrow more money so that, they could maximize the tax-shield benefits of debt and improve their performance in African countries. Precisely, financial inclusion could increase bank deposit base and firms get more access to debt borrowing which in turn improved their

performance. The informal sector plays a significant role in the private sectors of numerous developing economies. Although its exact size is difficult to measure, it is widely recognised for contributing to sub-Saharan Africa's economic output (Tabiri et al., 2022). However, smaller firms need help accessing more credit due to the nature of their operations to improve their performance. Compared to informal financing methods, formal financing options improve firms' performance (Tabiri et al. 2022).

1.3 Research Objectives

This specific research aims to assess the impact of financial inclusion on firms' borrowing, growth, and performance using data from the African nation. The specific objectives are:

- i. To examine the impact of financial inclusion on firms' borrowing in selected manufacturing firms in African countries
- ii. To investigate the impact of financial inclusion on firms' growth in selected manufacturing firms in African countries
- iii. To determine the impact of financial inclusion on firms' performance in selected manufacturing firms in African countries.

1.4 Motivations of the study

Concerning the relevant literature, particularly in finance, topics like firms' borrowing and firm performance are frequently discussed, but the debate on the determinants of firms' borrowing is unending. Therefore, the motivation for researching how financial inclusion affects firm borrowing and performance in selected African nations covers everything from promoting economic expansion and comprehending obstacles to business financing to assessing the efficacy of financial regulations and assisting in the

fight against poverty. The research is critical to advancing academic understanding of financial inclusion's role in fostering company development and performance in Africa and providing empirical information that may influence policy choices and enhance financial sector practices. However, according to Demirguc-Kunt et al. (2018), many adults lack formal access to savings accounts, loans, and other financial services for financial inclusion. On the other hand, Fowowe (2017) Stated that the possibility of firms borrowing could boost the majority of African nations.

Furthermore, researchers ignored the importance of financial inclusion, firms' borrowing, and firms' growth and performance in African countries. The goal of creating inclusive finance was to include all unbanked firms and people, including businesses, in the formal financial system. Still, this also poses hurdles for traditional financial institutions to access the unbanked economy. (Ayyagari & Beck, 2015). Moreover, understanding how financial inclusion influences firm borrowing and performance can offer valuable insights into fostering economic growth, reducing poverty, and improving Africa's business environment. This potential for improvement should inspire a sense of possibility and optimism in our collective efforts.

1.5 Significance of the study

Generally, examining how financial inclusion affects firm borrowing and performance in selected African countries is important because it may show how financial services accessibility promotes economic growth, business expansion, and decreased poverty. It provides information on how to help African businesses, enhance financial systems, and promote equitable and sustainable economic growth to governments, financial

institutions, and international development organisations. By removing obstacles to financial access and comprehending the practical effects of financial inclusion on businesses, the study contributes to developing a more prosperous and just economic environment across the continent.

This study aims to provide significant contributions to the impact of financial inclusion on firm borrowing and performance and empirically confirm the relationship between firm borrowing growth and performance from the perspective of developing countries such as Africa. Furthermore, there are conflicting results within the existing literature on the impact of financial inclusions. The findings of this study help clear these ambiguities and uncertainties in the literature. In addition, the study provides an empirically validated conceptual framework for evaluating the impact of financial inclusion on firm borrowing, growth, and performance, which can help the government, regulators, practitioners, policymakers, employees, and customers identify those areas where improvement is required that should be prioritized.

The study makes three specific contributions to the literature. First, unlike previous studies focusing on firm-level and macro-level determinants of debt borrowings, this study focuses on financial inclusion impact on firms' borrowings. It uses four proxies of financial inclusion, namely, the Automated teller machines, bank branches, depth of credit information, and domestic credit to the private sector to improve the robustness of the conclusion. Secondly, the study emphasizes how financial inclusion impacts firms' growth and confirms that financial inclusion increases firms' growth because firms can access more debt borrowing to finance profitable investments to raise firms' growth levels in African nations. The African continent has been

overlooked in the literature on debt borrowing; hence, there is a need to fill this gap. Third, the study adds financial inclusion into the performance model and confirms the positive impact of financial inclusion on firms' performance in African nations. Fourth, the study draws insights from the financial inclusion and the Myers (1984) trade-off theories to explain the connection between financial inclusion and firms' borrowings. Furthermore, the study draws insight from financial inclusion and Modigliani-Miller's tradeoff theories to explain the connection between financial inclusion and firms' performance as well as the connection between financial inclusion and firms' growth.

In addition, the financial inclusion theory emphasizes the importance of firms getting access to finance. As firms get more access to finance, they can fund profitable investment projects to increase firms' growth. They can also maximize the debt interest tax shield to increase firms' performance, especially in African countries. The positive impact of financial inclusion on firms' borrowings implies that managers of firms may benefit from raising additional capital because the financial inclusion strategies of banks attract more deposits to lend to firms.

The study has practical significance. The managers of firms may benefit from raising additional capital because the financial inclusion strategies of banks attract more deposits to lend to firms. Investors could encourage firm managers to raise the needed debt to finance profitable investments from banks, using financial inclusion strategies to lure in more deposits. Policymakers should be encouraged to create enabling environments and enact policies that promote the development of the financial markets for inclusive growth.

1.6 Outline of the study

This specific thesis consists of five chapters in the study. The context of the study on financial inclusion, firms' borrowing, firms' growth, and firms' performance are outlined in Chapter 1. Also, the second part of the thesis discuss the theoretical framework, and reviews of the empirical findings on financial inclusion, firms' borrowing, firms' growth, and firms' performance in developing nations are presented. Next, Chapter 3 of the research content items such as methodology, data, model specification, estimation technique, and variable justification. Chapter 4 discusses the results is in line with the stated objectives. Finally, Chapter 5 as the name implied presents the summary of the entire thesis and highlights a number of recommendations. Similarly, the chapter discusses the implications and limitations of the study as identify by the researcher in the course of undertaking the work and the directions for future research.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter presented the financial inclusion theory, the theoretical framework of the impact of financial inclusion and firms' borrowing, firms' growth, and firms' performance. The specific section delineated the concepts of financial inclusion, firms' borrowing, growth, and performance. It briefly explained some theories that relate to this study such as the trade-off theory, financial literacy theory, and dissatisfaction theory of financial inclusions. Besides, this segment of the thesis also reviewed financial inclusion determinants in African countries, firms' borrowing, firms' growth, and firms' performance in African countries.

2.2 Financial inclusion theory

Financial inclusion has become widely acknowledged as a key tool for decreasing income disparities and poverty and promoting faster economic growth (Neaime & Gaysset, 2018). Improving access to banking services has been demonstrated to enhance low-income and underprivileged populations by enhancing their capacity to maximize utility and withstand financial distress and their long-term financial stability and overall life satisfaction (Neaime & Gaysset, 2018). To meet all demands, access to finance is crucial (Maity & Sahu, 2020). This is true for both preserving and enhancing social and economic status. According to Rafiq and Adewale (2019), a

sizable portion of the population is not eligible for financial services. There is no coherent financial inclusion theory. Despite this, prior literature studies have laid the groundwork for an understanding of financial inclusion. Most previous approaches focused on the importance of finance to economic expansion.

Schumpeter (1911) claimed that financing drives economic growth. Consequently, the financial system, through its products, not only enables individuals and businesses to access cash through borrowing but also stimulates creativity, invention, investments, and productivity, resulting in both financial growth and enhanced performance. As a result, the financial system promotes capital development and accumulation by extending loans to businesses. This stimulates competition among banks and develops control investments, resulting in financial growth and superior firm performance.

King and Levine (1993), in confirmation of Schumpeter's theory, it was suggested that robust long-term growth and profitability are the results of banking activities as a key financial facilitator. Therefore, changes in the economic system's activities and performances emerge as a result of time, locations, and lengths that appear to be distinct (Ozili, 2018). Furthermore, Robinson (1952) proved that finance and growth do not always have a causal relationship, as is found in the majority of scenarios, and also that, in other instances, the links exhibit a linear relationship. Nonetheless, King & Levine, (1993b) identified wealth creation and technological progress as the routes through which the financial system will influence growth.

In addition, Goldsmith (1969), McKinnon and Shaw (1973) acknowledged Schumpeter's theory that the financial system plays a major role in economic growth.

Also suggested that since rates of interest are liberalised, especially in developing nations, the actual rate of interest will rise, raising savings, encouraging investments, and ultimately leading to expansion and growth. All the strategies rely on market forces to determine the credit rate and increase financial service demand. This can help tremendously towards increased competitiveness between financial institutions such as banks, a rise in the savings rate and investment, financial growth, and enhanced business performance. Aghion et al. (2004), Boyd & Prescott, (1986), and Diamond (1984) said that financial market activity boosted income and investment, which led to innovation and more competition between businesses. As a result, these methods enhance financial sector operations and serve as a crucial symbol for expanding businesses and the economy. In short, many financial inclusion theories say money and growth have a positive relationship.

2.2.1 Trade-off Theory and Financial Inclusion

In firm research, the trade-off theory helps firms balance debt and equity to optimize financial performance. In contrast, financial inclusion provides broader access to the financial tools needed to make those decisions. Both are vital for understanding how firms can grow and succeed by effectively managing their financial resources, especially in emerging markets.

According to the trade-off theory (Myers, 1984), a firm should find the optimal level of debt financing by balancing the costs and benefits of borrowing. This involves considering factors like interest costs, tax benefits, and the firm's capacity to maintain resources and sustain investment. Schumpeter (1911), on the other hand, proposed that

financial inclusion plays a key role in firm growth. With greater access to capital, firms are more inclined to borrow, as the deductibility of interest makes debt financing more attractive, leading to an increased use of debt for expansion and investment.

In this context, firms strategically utilize debt to enhance their operational scale, benefiting from the tax shield that borrowing provides. However, they must carefully manage the associated risks, such as the potential for financial distress if borrowing becomes excessive. Expanding access to credit through financial inclusion, especially for underserved firms, the potential for growth increases, yet this must be tempered with prudent financial management. (Abeywardhana, 2017) to fund business expansion. As a result, borrowing money to start a business is advantageous because the interest paid is tax deductible (Clemente-Almendros & Sogorb-Mira, 2018). Even though extensive equity funding incurs no interest costs, it also raises tax rates (Abeywardhana, 2017). Businesses will seek a financing ratio that maximizes firms' value. Financial inclusion and Fintech have brought about significant transformations in the financial sector, fundamentally altering how people store, save, borrow, transfer, and invest money.

Ashenafi, B. & Dong, Y. (2022). Examines the influence of financial inclusion and Fintech on income inequality trade-off theory across 39 African countries, using survey data from 2011, 2014, and 2017. The research uncovers three critical insights by applying pooled ordinary least squares (OLS) and two-stage (2SLS) estimation methods. First, institutional factors such as political stability, the control of corruption, and the effectiveness of governments play a crucial role in determining the success of both Fintech adoption and financial inclusion. Fintech is likelier to flourish in stable environments with strong institutions and promote greater financial access.

The study's second finding reveals that Fintech catalyzes financial inclusion by encouraging more people to open formal bank accounts. This has had a broad impact in regions with limited traditional banking infrastructure, offering new opportunities for individuals to engage with the formal financial system. Fintech platforms, such as mobile banking and digital payments, have made it easier for individuals to save money, make transactions, and access credit. By reducing barriers, these technologies have significantly improved access to financial services for previously excluded people, especially in underserved areas.

However, the third finding of the study points to a more complex reality: financial inclusion and Fintech can also contribute to widening income inequality. While they help more individuals enter the financial system, the benefits are disproportionately skewed toward wealthier and more digitally literate populations, leaving poorer segments further behind. This suggests that policymakers face difficult trade-offs between promoting financial inclusion and reducing income inequality. The study highlights the need for pro-poor financial sector development to address these challenges. Solutions such as easing access to loans, offering agriculture-focused Fintech services, and enhancing digital literacy are critical steps for ensuring that the benefits of Fintech and financial inclusion reach the most vulnerable populations and help reduce inequality rather than exacerbating it. Ashenafi, Biruk & Dong, Yan. (2022).

The trade-off theory emphasizes that firms should aim to maintain an optimal balance between debt and cash financing. This approach is both practical and widely adopted because it helps companies maximize the benefits of debt, such as tax advantages from

interest deductions, while avoiding the risks associated with excessive borrowing, like financial distress. By carefully managing debt and liquidity, firms can sustain growth, finance new investments, and navigate market uncertainties more effectively, making this theory a fundamental part of corporate financial strategy.

2.2.2 Financial literacy theory of financial inclusion

According to the financial inclusion concept, increasing people's financial literacy increases their passion for working in the industry. It contends that raising citizens' financial literacy through education can improve financial inclusion (Ozili, 2020b). Financial literate people shall look for formal financial services if they cannot find them. There are certain benefits to the financial inclusion concept of financial literacy. One is that having a good understanding of the financial services available can help people be more thoughtful and informed. They shall establish a connection to the formal financial sector by holding a formal account once they become aware of the recent formal financial system that can increase their welfare. Second, through enhanced financial knowledge, people can gain a lot from additional advantages in the formal financial system, like investing and loan products. Thirdly, financial knowledge can assist people to become independent and give them confidence in their finances. (Ozili, 2020b).

Furthermore, Financial illiteracy is the main barrier to financial inclusion (Hasan et al., 2021; Koomson et al., 2022; Lyons & Kass-Hanna, 2021). Consumers today must specify a wide range of financial goods and services. Financial literacy, particularly the relevance and importance of financial education about investment products,

activities, and operations, has been significant in assisting consumers in choosing appropriate financial products (Sprenger & Lazareva, 2022). Bianchi (2018) noted that the evolution of any nation's financial system is closely related to financial literacy, boosting economic security and reducing unemployment and it has significant effects on financial decision-making (Maturana & Nickerson, 2019; Hasan et al. 2021) and economic development. Through varied instructions, information, and guidance, financial education helps people better comprehend various financial goods and concepts in order to strengthen their ability to recognize financial dangers and opportunities (Hasan et al., 2021). Investors should increase their financial knowledge to enhance the profitability of their portfolios since someone with little knowledge of financial activities is more likely to make financial errors. People use formal financial practices like financial calculators, procedures, and workshops, as well as planning, investing, and saving, to help them make good decisions about their money (Hasan et al., 2021).

Moreover, financially literate people can learn to differentiate between needs and wants, build and manage budgets, save money to pay their bills on time, and make retirement plans. Finally, since financial literacy education is relatively inexpensive, governments that lack public funds or tax revenue to support financial inclusion initiatives may choose to use it as a national strategy for financial inclusion. This is because financial literacy education teaches the public about financial planning and the benefits of using banking services (Ozili, 2022).

The following are some drawbacks to the financial literacy idea of financial inclusion: One is that it addresses "willingness" rather than "capability" to enter the official

finance system. Through education, one can increase their motivation to work in the formal financial system, but this does not necessarily increase their "ability" to do so, where "ability" is defined as possessing the resources to engage in one or many payment systems. This shows that even people who know a lot about money cannot work in the formal financial industry if they do not have enough money or "ability" (Ozili, 2022).

In addition, creating sustainable welfare and a more open and just society depends on financial inclusion and literacy. Financial illiteracy was one of the most aggravating aspects of the 2008 subprime financial crisis, which is still affecting people worldwide today. The fundamental issue for many clients around the globe is that the standards for acceptable financial literacy have been rising over time. People must make a variety of financial decisions. Regrettably, occasionally, they fail to consider or fail to recognize the risk associated with those decisions until it is already too late. At the micro, medium-, and macro levels, the main obstacles to financial literacy are excessive adherence to the financial sector, a lack of financial literacy; an overestimation of one's financial literacy, an absence of government policies, concepts, and procedures; a lack of personal planning; and an absence of engaging and meaningful ways to teach financial literacy skills (Mitchell & Abusheva, 2016).

Lyons & Kass-Hanna (2021) investigate the MENA region's financial inclusion. Their research shows that economically precarious groups have a considerably lower likelihood of being financially integrated. Higher financial literacy levels among households in MENA nations are associated with better saving habits and lower borrowing, particularly from unofficial sources. However, not all people are affected

equally by financial literacy and other macro-features, particularly the most vulnerable. Channaveerayy. H & Shivakumar, (2022) Financial literacy and financial inclusion are closely related. Financial inclusion is significantly impacted by financial literacy.

2.2.3 Dissatisfaction theory of financial inclusion

The dissatisfaction theory of financial inclusion argues that financial inclusion initiatives in each country should prioritize individuals previously part of the formal banking system but exited due to challenges in complying with banking regulations or negative experiences with financial institutions and their representatives. This theory suggests that a significant portion of the financially excluded population became disillusioned with traditional banking due to rigid policies, lack of transparency, or poor customer service. These individuals require targeted efforts to re-engage them by addressing their specific barriers and offering more accessible, user-friendly financial services that meet their needs.

The dissatisfaction theory of financial inclusion suggests that individuals who leave the formal financial system due to dissatisfaction can be more easily drawn back if the underlying issues that caused their departure are fully addressed. This theory posits that resolving the specific challenges that drove these individuals away—such as poor customer service, high fees, or inflexible policies—creates a pathway to re-engage them more successfully. Furthermore, it contends that it is generally easier to reintegrate these disillusioned customers into the formal financial system than to attract entirely new users who have never had experience with formal banking. These

former users already possess familiarity with the system, making their return more likely once the barriers that caused their departure are removed, unlike new members who may be reluctant to engage with an unfamiliar system.

Similarly, Belayeth-Hussain et al. (2019) used World Bank data on global financial inclusion to investigate how financial inclusion impacts financial self-confidence in Bangladesh. Their study found that individuals with financial accounts demonstrate greater resilience than those without accounts. Specifically, account holders are about 1.4 times more likely to exhibit financial adaptability than non-account holders. Moreover, when additional factors are considered within the regression model, a significant relationship between gender and financial adaptability emerges. The findings show that men are 1.4 times more likely to be financially adaptable than women, underscoring a gender gap in financial resilience (Belayeth-Hussain et al., 2019).

This concept suggests that before expanding financial inclusion efforts to new population segments, priority should be given to re-engaging individuals who previously participated in the formal financial sector but left due to dissatisfaction. These former users, often referred to as "ex-financial sector participants," are likely to seek re-entry into the financial system if their past grievances are effectively addressed. The reasons for their dissatisfaction can vary widely, including experiences such as being victims of financial fraud, having their credit or debit cards lost or stolen, dealing with long wait times for cash withdrawals or deposits, facing slow transaction processing times, or being burdened by excessive fees and operational costs. By first resolving these issues for those who have already had exposure to formal banking,

financial inclusion efforts can have a more immediate and impactful outcome before attempting to attract individuals with no prior experience in the financial system (Ozili, 2022).

Omar & Inaba (2020) explore financial inclusion as a crucial component of social inclusion and a means of alleviating poverty. Their findings emphasize that enhancing access to and using formal financial services for low-income individuals is essential for maximizing the overall social benefits. By improving financial access, marginalized populations are empowered to reintegrate into the formal financial system, which not only helps them improve their economic standing and contribute to broader societal well-being. The study underscores that addressing the financial needs of the poor is vital to creating a more inclusive economy and fostering long-term poverty reduction.

2.3 Concept of Financial Inclusions, Firms' Borrowing, Growth, and Performance

2.3.1 Concept of Financial Inclusion

Financial inclusion or access is the availability of suitable services and financial products. According to the World Bank (2016), financial inclusion and the availability of services are two distinct concepts. However, the non-use of financial products does not always imply a lack of access. Numerous individuals may have access to reasonably priced financial services but choose not to use them for religious or other grounds. However, other individuals may have access to these products or regulatory hurdles that are restricted by expensive prices. Therefore, the measure to which an

absence of inclusion arises from a demand shortage or hurdles that prohibit individuals and enterprises from gaining access to financial services is the determining factor (World Bank Group, 2016). So, the financial institution provides customer-friendly services at an affordable price, is cost-effective or financially impossible, and thinks that the actual availability of credit to consumers is on time (Demirguc-Kunt et al., 2018).

Financial inclusion is the official offering of financial services (Allen et al., 2016). While Sarma & Pais, (2008) and Sahay et al., (2018) Define financial inclusion as the ease of accessibility, obtainability and usage of the formal financial system by all economy members. On the other hand, financial inclusion could also be defined as the delivery of inexpensive financial services to people (Ozili, 2018).

According to Ozili (2021), in many countries, financial inclusion is a government goal for advancement, and financial inclusion aims are frequently realized through activities, programs, and laws designed to reach unbanked residents. Financial inclusion can help lift poor people out of poverty when done appropriately. However, mishandling can expose poor people to risks in formal banking institutions, particularly risks associated with using financial products and services. If these threats come true, they can hurt the poor, make income inequality worse, and maybe even cause people to be left out of society (Ozili, 2021). Financial inclusion is "access to a wide range of useful and cheap financial services and products that meet their needs, such as money transfers, investments, insurance, and loans, for all segments of the economy, including the government, financial institutions, and private and public sectors." (World Bank Group, 2016).

In another hand financial inclusion guarantees that people have access to and can effectively utilise a variety of suitable financial services. The delivery of these items should be reasonable and efficient. In addition, suppliers must receive the items in a well-regulated and appropriate atmosphere. At its most fundamental level, financial inclusion begins with opening a savings or loan facility at a bank or financial institution, or through the provision of mobile payments that may be used to send and receive payments, as well as deposit and save money (Demirguc-kunt, 2015). In addition, financial inclusion includes access to financing from formal banking institutions, allowing individuals to participate in business and educational prospects, as well as the usage of formal insurance products to more efficiently handle financial risks (Demirguc-kunt, 2015).

In addition, financial inclusion might provide vulnerable segments, such as poor groups and weaker parts, with access to financial services within an acceptable timeframe and adequate credit at affordable prices. Therefore, it represents having bank accounts, insurance, adequate credit, and a reliable payment mechanism. (Ahamed et al., 2017).

Therefore, financial inclusion aims to integrate the unbanked sector of the population into the official financial system so that they can access banking services. Ultimately, the outcomes would improve economic activity by transferring resources from the surplus sector to the deficit sector and by increasing the amount of economic investment (Clamara et al., 2014). In contrast, financial inclusion is the process of maximizing access to and usage of banking facilities while reducing unexpected barriers viewed as such by people who do not engage in the financial system. It

comprises financial institutions that help people with different needs get loans, insurance, financing, and services for managing risks. (Clamara et al., 2014).

Based on the literature review above, financial inclusions were most related to fund availability, governmental goal and advisement, and formal banking institutions, allowing individuals to participate in business and educational prospects. This study utilizes the theories of Schumpeter (1911) that related to how to drive economic growth, Modigliani and Millers (1958) that related to a company's capital structure that tradeoff between debt and equity or optimal capital structure and lastly, parking order theory that says firms should prioritize their debt financing by first utilise internal serving, then debt or borrowing and lastly sort for equity financing.

Therefore, all three theories mentioned above were theoretically grounded and contextually rich to investigate the impact of financial inclusion on manufacturing firms in selected African countries.

2.3.2 The Concept of Firms Borrowing

Firm borrowing describes businesses or corporations getting credit or loans from outside sources to fund their activities, investments, or advancement. A company that borrows agrees to pay back the borrowed money plus interest over a predetermined period in exchange for receiving finances from a financier or financial institution. Bank loans, securities, lines of credit, and other types of debt financing are all examples of borrowing. It is a crucial instrument for businesses to access outside funding to support their expansion and development. (Fazzari et al., 2008).

Strong economic performance may also reduce credit restrictions and produce beneficial exchange effects between firm borrowing and overall spending by increasing enterprises' cash flows compared to interest payments. (Fazzari et al., 1988). Models that formalize the mechanisms that explain how borrowing and overall demand promote one another also demonstrate that as cash flows increase, regulatory requirements relax, and credit restrictions loosen, finance markets may enhance demand (Rydal, 2010, 2013; Fazzari et al., 2008).

Haque et al. (2022) examine how do the borrowing limits, debt structures, and leverage dynamics of businesses impact equity investors? In this study, they use administrative firm-bank-credit data at the firm level to analyse an extensive and innovative database of private equity-backed, bank-dependent, small, and middle-market enterprises. They demonstrate how the presence of private equity owners increases cash flow, enabling borrowing against cash flow for private equity-backed businesses (Haque et al., 2022). Comparatively, Stockhammer & Gouzoulis, (2023) Private equity (PE)-backed firms employ higher cash flow-based borrowing. They are more sensitive to fluctuations in earnings than comparable non-price earnings PE-backed enterprises that predominantly rely on asset-based financing. They also provide evidence that PE owners inject stock and maintain earnings in times of adversity, two possible processes that could account for PE-backed firms' ability to access cash-flow-based finance. They conclude that novel ramifications for how we perceive PE investors' influence on firm strategies, performance, and sensitivity to shocks (Stockhammer & Gouzoulis, 2023).

Even though they incorporate mechanisms like increasing debt servicing costs and declining balance sheets that cause crises over time, these models frequently

emphasize improving the short-run connection between borrowing and overall demand and do not look into macroeconomic variables to justify their applicability. (Stockhammer & Gouzoulis, 2023).

2.3.3 The Concept of Firms' Growth

Firm growth describes the growth, advancement, and expansion of a firm's size, scope, and reach over an extended period. It is a way to evaluate how much a business has expanded in several aspects, including sales, market share, resources, personnel, and market dominance. Businesses frequently have firm growth as an investment goal since it can result in higher profits, more vital productivity, and improved positioning in the market. Growth can be achieved by planning carefully, allocating resources wisely, managing well, and adjusting to changing circumstances in the market (Belitski et al., 2023).

Although most businesses do not expand, a select few can gradually sustain and speed up their growth. Researchers, professionals, and policymakers are still debating the variables that boost a company's likelihood of experiencing quick growth and developing into a more significant economic force. Belitski et al. (2023) Examine the propensity of enterprises to increase growth in sales, job opportunities, market share, and efficiency using a reliable long-term data set from the United Kingdom from 2000 to 2017. The outcome demonstrates the variable contributions of company features, industry competition, and geographic variables as faster growth drivers.

The study provides deep insight into firm growth in terms of sales, job opportunities, and company shares, ignoring micro variables like firm assets and debt. It also uses data from one country, which limits it to only one sector and county. Therefore, the research will be comprehensive if it captures both macro and microeconomic data of many countries.

The study examines the heterogeneity of the connection between profitability and growth amid a financial crisis. It also examines how innovation and the quantity of exports relate to growth and profitability. Static and dynamic panel data models are estimated using a huge firm-level dataset, including Spanish industrial enterprises before the crisis (2000–2007) and its aftermath (2008–2014). The outcomes show that profits benefit from growth in the short term, but the influence of profits on growth depends on the growth metric used. (Fuertes-Callén & Cuellar-Fernández, 2019).

2.3.4 The Concept of Firms' Performance

Firm performance describes reviewing and assessing how successfully a company or business reaches its goals and objectives. It offers information about the overall efficacy, success, and efficiency of a firm's business activities and endeavors. Qualitative and quantitative indicators that offer a complete picture of the firm's financial, operational, and economic health are frequently used to assess firm success. Business size and special objectives affect the metrics used to measure a firm's performance. Management may make better judgements, spot areas for development, spend resources more wisely, and evaluate the effectiveness of strategic efforts by evaluating the firm's performance (Mihaela et al., 2018). Mihaela et al.

(2018) said that the concept of company performance was centered primarily on a firm's ability and capability to successfully integrate resources to accomplish results that matched the firm's predetermined objective.

The corporate environment has seen several changes that have increased complexity and instability. Businesses are under intense competitive pressure to do tasks more efficiently, quickly, and affordably in this dynamic environment that describes the current global economy. They must improve their capacity for adaptation as they deal with increasing environmental concerns. Continuous performance is now every company's goal. This is because businesses may only experience development and advancement through performance. Since businesses continually seek for efficient and productive results, evaluating and analyzing business performance is crucial (Taouab & Issor, 2019). From an economic perspective, performance focuses on the relationship among cost effectiveness, realizing output, and achieving outcomes (Masa'deh et al., 2016). Moreover, firm performance is the actual outcomes (i.e., increased company value and returns on assets) the firms achieved compared to their planned outcomes.

2.4 Theoretical Framework and Hypotheses Development

2.4.1 Financial inclusion and firms borrowing relation

The trade-off theory proposes that a corporation's appropriate amount of debt borrowing is determined by trade-offs involving lending costs and benefits while maintaining stable capital and investment portfolios (Myers, 1983). However,

Schumpeter (1911) asserted that the financial inclusion theory helped the expansion of businesses. Therefore, greater access to capital results in firms' frequent use of debt financing, and because interest is tax-deductible, the corporation chooses to pay higher interest rates and lower taxes (Yapa Abeywardhana & Magoro, 2017). Therefore, corporate financing through debt is favorable since interest payments are tax-deductible (Clemente-Almendros & Sogorb-Mira, 2018). Although excessive usage of equity-based financing is interest-free, it results in significant tax payments (Yapa Abeywardhana & Magoro, 2017). Firms will try to reach a level of financing that maximize investment value (Cole & Sokolyk, 2018). The trade-off theory is significant, valuable, and commonly recognized by businesses since it justifies why a firm should hold optimal cash and debt. Financial inclusion is crucial to raising debt and increasing firms' borrowing in African nations (Clemente-Almendros & Sogorb-Mira, 2018). As financial inclusion enables firms access bank funding, it would increase firms' borrowing. Thus, the study put forward the hypothesis (in alternative form) that there is a positive relationship between financial inclusion and firms' borrowing.

2.4.2 Financial inclusion and firms' growth relation

Financial inclusion and growth are two aspects of a similar coin. Mihaela et al. (2018). Financial inclusion relates to measures that help enterprises acquire access to loans and finance their capital stack. At the same time, wealth structure is the finance in the kind of debt an enterprise requires to grow its economic activities. The company's growth is a subjective evaluation of its ability to utilize and grow based on the effective exploitation of its assets. The concept is occasionally employed over time as a broad

measure of a company's financial stability. Utilizing firm growth by analysts and traders evaluate specific companies within the same industry or two composite enterprises (Mihaela et al., 2018).

The economic notion of firm growth represents the value of a corporation. It refers to the importance that a firm deserves at a particular time. Theoretically, it is the sum required to create or acquire a business firm (Fowowe, 2017). The study empirically investigates the implications of access to finance on expanding businesses in African nations. To accomplish this, he employed subjective and objective indicators of access to finance and a new data set of enterprise-level information from the World Bank's Enterprise Surveys.

The intuitive measure of access to capital is derived from the rating of access to finance as an impediment to business operations or as an impediment of moderate severity. The objective assessment of access to finance is a parameter that measures whether enterprises are restricted in their ability to receive credit. Using data from 10,888 enterprises in 30 African nations, they find that access to financing constraints considerably negatively influences firm growth as measured subjectively (Fowowe, 2017). In addition, the results of the objective measure indicate that enterprises that are not credit-constrained experience faster growth than credit-constrained firms. These findings add credence to the notion that funding is crucial for firm growth and justify the numerous activities and steps being taken to make more finance available to African businesses. (Fowowe, 2017). Schumpeter (1934) stresses the importance of banks as intermediating agent bridging the gap between the surplus and deficit units and making access to finance possible to spur growth of firms. As financial inclusion

increases firms' access to financing, which can be used to fund profitable investments that enhance the firm's growth. Therefore, this study put forward the following hypothesis (in alternative form) that there is a positive relationship between financial inclusion and firms' growth.

2.4.3 Financial inclusion and firms' performance relation

According to Modigliani and Miller's (1958) argument, capital costs would remain constant as the debt-to-equity ratio rose in the ideal capital market. Borrowing grew, but the capital cost remained unchanged because a rise in equity costs offset any benefits the firm would have gained from using significantly less expensive debt. As a result, the firms' capital structure has no bearing on the capital cost or the firm's worth. The model is based on the idea that there are ideal capital markets. Still, because there are taxes and imperfect information, among other factors, there is not a perfect capital market. Modigliani and Miller (1963) added them to their model to account for taxes. Due to interest tax shields created by introducing taxes, the model suggested that businesses adopt 100% debt financing. Consequently, companies will inevitably use outside money to finance their investments. Financial inclusion explains differences in companies' performance in countries with low financial development and access to credits (Chauvet & Jacolin, 2017). Likewise, Schumpeter (1934) emphasized that the financial inclusion hypothesis promoted firm expansion. Financial inclusion (access to finance) also expands banks' deposit pool (Chauvet & Jacolin, 2017) because more people bank their money. As a result, businesses can more easily access the loan capital required to fully reap the tax benefits of the debt interest deduction and improve firms' performance. Therefore, this study put forward the

following hypothesis (in alternative form) that there is a positive relationship between financial inclusion and firms' performance.

2.5 Determinant of Financial Inclusion, Firms' borrowing, growth, and performance

2.5.1 Determinants of Financial Inclusion in Developing Countries

Financial inclusion (FI) has been identified as one of the things that boosts economic growth in emerging nations (Abubakar et al., 2020). Financial inclusion is a significant economic priority of both rich and developing nations, as well as international financial authorities like the World Bank and IMF. (Beck, 2016). The ability of the global economy to eliminate income disparity, poverty, and joblessness makes it the top priority for international policy. However, underdeveloped countries are more affected than developed ones by the significant barriers to accessing and using formal financial services (Nirvikar, 2017). According to research on financial inclusion in developing nations, most people and businesses need access to and use formal banking services. Numerous factors contributed to this, including high account creation and maintenance costs, inadequate infrastructure, limited income, little knowledge of the advantages of conventional financial products, and strict laws. (Ammar & Azhar Hassan, 2017). Considering the preceding history, this section focuses on the factors influencing financial inclusion in developing nations.

Girón et al. (2022) aim to investigate the factors that influence financial inclusion in Africa's least developed nations. They used data from the World Bank to estimate the probit econometric approach in the analyzed nations. The findings indicate that women

and young people are groups that are not financially included. That income and education are two of the most important pillars for boosting financial inclusion. The findings also show that a higher level of financial inclusion raises a nation's level of savings, which in turn encourages its development.

Based on the review paper above, Research on financial inclusion in Africa highlights the importance of income and education in accessing financial services, with women and young people being the most excluded. Studies agree that increased financial inclusion boosts national savings and economic growth, but debates remain around the role of technology and regulation. Some argue that fintech and mobile banking are transformative, while others stress that digital access alone will not reach marginalized groups. Emerging trends emphasize financial literacy, gender-sensitive services, and fintech innovations as essential to advancing inclusion and meeting diverse population needs.

Ozili (2022) Studies of the global financial inclusion determinant and the report emphasize the crucial global factors that affect financial inclusion. The study's findings include formal account holding, demand for formal bank loans, formal deposits, financial education and literacy use of credit and debit cards, and the requirement to collect remittances from friends and family. The size of the financial system, the number of automated teller machines (ATMs), the number of bank branches, the distance from a bank, the availability of mobile phones and the digital availability of financial services and products, the technological infrastructure, government rules, traditions, and cultural beliefs, the development and implementation of a national financial inclusion strategy, and direct legislation all play a role in influencing financial inclusion. (Ozili 2022).

Research on financial inclusion shows a consensus that access to financial services, financial literacy, and technological infrastructure are essential for broadening inclusion. However, debates persist regarding the influence of cultural factors and the effectiveness of government policies. Emerging trends highlight the growing role of mobile banking and digital solutions, although the digital divide remains a concern, particularly in rural areas. Tailored policies are also gaining attention to address underserved groups' unique barriers, emphasizing the need for inclusive and accessible financial systems for all.

Salisu (2022) Used panel data from 2010 to 2020 to examine the impact of monetary policy, financial inclusion, and economic growth on developing countries. According to the panel unit root tests, the actual gross domestic product, currency, and interest rates are stationary at this level. The first distinction is that ATMs, bank outlets, inflation rates, and money supply are all constant. According to the Generalized Method of Moment (GMM) results, bank branches in the selected developing nations have a favourable but statistically significant impact on authentic gross domestic product. The gross domestic product in the chosen developing nations is positive but statistically insignificantly impacted by automated teller machines (Salisu 2022).

Salisu's (2022) study offers valuable insights into the relationship between monetary policy, financial inclusion, and economic growth in developing countries, but there are notable weaknesses and contentions. While the Generalized Method of Moments (GMM) results suggest that bank branches have a statistically significant positive impact on gross domestic product (GDP), the paper's finding that automated teller machines (ATMs) have a positive but statistically insignificant effect raises questions

about the role of digital financial infrastructure. This could point to underestimating the increasing importance of fintech and digital banking, especially in regions where physical bank branches are less accessible. Additionally, the study's reliance on traditional measures like bank outlets may overlook emerging trends such as mobile banking and online financial services, rapidly transforming developing countries' economic landscapes. This raises the need for more comprehensive approaches that include newer digital inclusion indicators to capture the full scope of financial inclusion's impact on economic growth.

Wang & Luo (2022), using bank-level data from more than 1500 commercial banks from 2004 to 2018, investigate how financial inclusion affects bank stability in 36 emerging markets. The development of financial inclusion has been shown to promote bank stability. Additionally, it has been discovered that the relationship between financial inclusion and bank stability is dependent on the business cycle, financial situation, level of governmental involvement, and policy contexts (Wang & Luo, 2022). A strong economy and a stable political climate favor enhancing the impact of financial inclusion on bank stability. Improved governmental control and a more favorable economic climate, on the other hand, can encourage greater risk-taking or poorer bank stability during the financial inclusion process (Wang & Luo, 2022). They investigate additional avenues, such as operational effectiveness, financial management, and financial stability, through which financial inclusion may affect bank soundness. Lastly, when governments use our findings to increase financial inclusion programs while keeping the financial system stable, there are several important policy implications for emerging economies (Wang & Luo, 2022).

Sarpong and Nketiah-Amponsah (2022) Using a panel of 46 countries from 2004 to 2018, this study empirically investigates the quantitative relationship between financial inclusion and inclusive growth in sub-Saharan Africa. The research reveals that, in contrast to the availability and knowledge of financial services, the usage of financial services, among other factors, has a quantifiable and significant impact on inclusive growth. In sub-Saharan Africa, for example, inclusive growth goes up by 0.03 units for every unit that uses more financial products and services.

Ifediora et al. (2022) Evaluate the effect of financial inclusion on economic growth and development using panel data from 22 Sub-Saharan African (SSA) nations between 2012 and 2018, and the system's Generalized Method of Moments (GMM) is used in the investigation. The results found that the availability measurement of financial inclusion, the penetration measurement of financial inclusion, and the composite of financial inclusion have a significant and positive effect on economic development. In contrast, the usage measurement of financial inclusion improves economic growth but not significantly. Also, bank branches and ATMs have a big and positive effect on the development of the economy, while deposit accounts, existing loans, and existing deposits have a more negligible but still negative effect (Ifediora et al. 2022).

Ifediora et al. (2022) present valuable findings on the positive impact of financial inclusion on economic growth and development in Sub-Saharan Africa. However, there are vital weaknesses and emerging trends that warrant attention. While the study emphasizes the significance of financial infrastructure, such as bank branches and ATMs, it raises concerns by suggesting that deposit accounts, loans, and existing

deposits hurt economic development. This could indicate a potential mismatch between financial products and the needs of the population or issues related to the accessibility and affordability of these services. Furthermore, the paper underplays the growing importance of digital financial services, such as mobile money and fintech platforms, which are increasingly vital in promoting financial inclusion in SSA, especially in rural and underserved areas. The paper's focus on traditional banking measures may overlook the rapid digital transformation happening in the region, pointing to the need for a more updated analysis that includes these emerging trends in financial inclusion.

Vo et al. (2021) This study uses a dataset of 3071 banks in developing nations from 2008 to 2017 to investigate the relationship between financial inclusion and financial market stability. It uses a generalized method of moments (GMM) strategy. The findings show that a higher degree of financial inclusion brought on by securing access to banking services significantly and positively affects the banking industry's stability, increasing bank adaptability. Banks may boost income, cut costs, and grow their market share by implementing financial inclusion.

Ozili (2020) studied the relationship between social and financial inclusion, which has two crucial development policy priorities in many nations. The results of correlation analysis show a positive and substantial association between social and financial inclusion in Middle Eastern, North African, and African nations. However, a negative correlation was found for European countries. The research also reveals that whereas African and Middle Eastern economies experience lower degrees of social inclusion and account ownership in formal financial institutions, European and Asian economies

experience higher levels of these factors. The results show that some socially open countries tend to have higher financial inclusion, while other countries that are not socially open can have lower financial inclusion (Ozili, 2020).

The study highlights the critical link between social and financial inclusion, but key weaknesses and areas of contention exist. While helpful in identifying relationships, the study's correlation analysis does not fully explore the underlying causes or mechanisms driving these connections. For instance, the finding of a positive correlation between social and financial inclusion in African and Middle Eastern countries and a negative one in Europe could be influenced by deeper structural factors like regulatory environments, cultural attitudes, or economic policies that the paper does not explore in detail. Additionally, the broad regional groupings may oversimplify complex realities within individual countries. The study's focus on traditional financial inclusion metrics, like account ownership in formal institutions, also overlooks the growing role of fintech and digital solutions, especially in African and Middle Eastern nations where mobile money services are flourishing. As digital financial services reshape access to banking, future research would benefit from incorporating these trends to provide a more nuanced understanding of financial and social inclusion.

Demirguc-Kunt et al. (2019b). Conducted a comparative analysis of the factors affecting financial inclusion in emerging nations in Central Asia and Europe. There are differences in financial inclusion seen between the two regions, even though both regions' inclusive financial systems encourage people to invest for the long term in terms of retirement savings, education, health, business opportunity capitalization, and

the ability to handle financial shocks. They said that having an account is the initial step toward gaining access to a formal financial institution and that most individuals in emerging Europe had accounts. As a result, financial inclusion in the nation's developing countries rose from 45% to 65% in 2011.

In order to assess the major variables that impacted financial inclusion in 2017, Demirguc-Kunt et al. (2019b) study used cross-sectional, two-stage least squares, and component approaches. The findings suggested that the sample countries' efforts to combat corruption increased the number of new bank accounts opened and ATM usage. The study also revealed that borrowing to start, run, or expand a business had a negative effect on both variables for the rural population. The spread only favored the presence of ATMs in the nation. Therefore, the savings in financial institutions and the funds for establishing a business are smaller in the larger rural population. The research suggests that a number of policies are put in place by the government to increase financial inclusion in these nations (Demirguc-Kunt et al., 2019b).

Financial inclusion between 2011 and 2014 was explored by Datta & Singh (2019) in a number of developing nations. The investigation concentrated on the creation of the financial inclusion index and explored how it relates to the value of the human development report. It explained the observed fluctuation in the financial inclusion index. The three-dimensional indices of availability, access, and usage and the financial inclusion index were measured via the key component technique. A pooled OLS with clustered standard error regression was also used to describe the variables that affect global financial inclusion.

On the other hand, Ngoma (2019) stated that because financial inclusion can speed up economic progress, it has taken over the academic spotlight and policymaking circles in developing nations due to its ability to reduce poverty and inequality. The conditional logit model was utilized in this study to give evidence regarding the factors that affect financial inclusion in Zimbabwe.(Ngoma 2019). Findings showed that factors including age, income, gender, educational level, and employment position were among the factors that determined financial inclusion in Zimbabwe Ngoma (2019). Because of the faith that is placed in banking organizations, the majority of people continue to be unbanked. As a result, promoting an inclusive financial system is critical to close gaps in a nation. Effective policies also increased confidence and trust in Zimbabwe's banking institutions (Ngoma, 2019).

Le et al. (2019) they used panel data from 20 developing countries from 2011 to 2016 to explore the main factors that affect financial inclusion in developing nations using the Random Effects Model (REM). Seven of the seventeen sustainable development objectives were assisted by financial inclusion, which gave people access to all financial products and directly aided in eradicating poverty, fostering the development of skills, and ensuring long-term financial viability. The findings showed that those who had greater resources, income, and better opportunities to use financial services had a significantly higher index of financial inclusion. Second, more financial inclusion results from better knowledge, since people with higher levels of education are more aware of the benefits and implications of financial services and institutions (Le et al.. 2019). Therefore, financial products would be used more effectively. Third, the unemployment rate hurt the financial inclusion index. Fourth, earlier research showed that the links between inflation, population size, network size, the interest rate on deposits, and financial inclusion were not very strong (Le et al., 2019)

The study above provides valuable insights into the factors affecting financial inclusion in developing countries, highlighting the importance of income, education, and access to financial products. However, there are notable weaknesses in the study. The use of the Random Effects Model (REM) might overlook country-specific factors that could be better captured by a more tailored approach, such as fixed-effects or mixed methods, to account for individual nation variations. Additionally, while the study finds that unemployment negatively impacts financial inclusion, it doesn't delve deeply into the reasons behind this link, leaving room for more granular analysis. The weak relationships between inflation, population size, and financial inclusion might suggest that other structural factors were not adequately considered. Nonetheless, the study's strength lies in its emphasis on education and resource availability as key drivers of financial inclusion, which aligns with broader global development trends. The growing role of digital financial services, which the paper doesn't explore in detail, also represents an emerging trend that could further enhance financial inclusion, particularly in underserved populations.

Based on the literature review above, most studies focus on the determinants of financial inclusion. However, previous studies have not addressed how financial inclusion impacts firms' borrowing and performance in selected manufacturing firms in African countries. Therefore, this study contributes to the financial inclusion literature by investigating the impact of financial inclusion on firm borrowing, growth, and performance in selected manufacturing firms in African countries.

2.5.2 Determinants of firms' borrowing in African Nations

The borrowing structure has received attention among researchers and policymakers due to its complexity and the mystery related to financial structure decisions on the optimum amount of debt the firms need till today (Chakrabarti & Chakrabarti, 2019).

Ponce et al. (2019) between 2012 and 2016, examined 304 enterprises in Guayaquil's borrowing structure determinants and use the optimum borrowing structure theory for the circumstances. To compare the results to theoretical expectations of trade-offs and pecking order, the study identified the factors that determine enterprises' loans to businesses in developing nations. Next, a fixed effect and panel data structure were used in the research to analyse the data. After that, an ordinary least squares method was used to confirm the statistical significance of the relationship among the debt ratio and several independent factors chosen following the literature study. Results showed that the pecking order hypothesis outperformed the trade-off theory in the investigation. Furthermore, there was no proof that the borrowing structure and the importance of growth are related (Ponce et al., 2019).

The research finding provide valuable insights into the borrowing structure of enterprises in Guayaquil, but the study has several weaknesses and areas for contention. While the use of both the trade-off and pecking order theories offers a solid theoretical foundation, the study's finding that the pecking order hypothesis outperforms the trade-off theory may oversimplify the complex nature of firm financing decisions in developing countries. The absence of a relationship between borrowing structure and growth could be due to the limited scope of the study, which

may not have considered other significant factors, such as market conditions, industry dynamics, or the role of informal financing in developing economies. Additionally, the use of ordinary least squares (OLS) to confirm statistical significance, while a common approach, may not fully capture the nuanced relationships in panel data or account for potential endogeneity. Emerging trends like fintech, alternative financing options, and digital credit channels are reshaping borrowing dynamics, and the study doesn't account for these changes, which could offer more comprehensive insights into modern borrowing behavior in developing countries.

Hirdinis (2019) study ascertains how borrowing and business size, when combined with profitability, affect the value of a business. Firms listed on IDX serve as the study's sample. The not-participating method of observation combined with the methodology of the path evaluation approach is used in this study. The multiple linear regression approach is the data analysis technique employed, and SPSS 22 is the statistical analysis tool. According to the analysis, borrowing significantly impacts a firm's value, while business size has a significant negative impact. While the business has a considerable positive impact on profits, profitability has little influence on the organization's values. However, it cannot balance the effects of borrowing and business size on the company's worth (Hirdinis, 2019).

The study exclusively covers IDX-listed mining businesses, which may limit its applicability to another sector. Secondary data may not cover any essential variables or contain measurement problems. And only covers three independent factors (firm size, borrowing structure, and profitability) and one dependent factor (firm value), which might fail to sufficiently represent the complexity of the interaction between

mediating variables that may impact the independent-dependent relationship. The study does not prove a causal association between variables because it uses non-participant data (Hirdinis, 2019).

Öner (2019) study examines how firm-specific characteristics affect corporate borrowing. The investigation uses year-end records from 100 of Istanbul's top 1000 businesses from 2005 to 2011. Panel data analysis evaluates five firm-specific borrowing option determinants: profitability, firm size, tangibility, growth opportunity, and non-debt tax shielding. The study of the dependent variable, leverage ratio, represents firms' borrowing strategy. Using the book and market-based measures to test if key results are substantial with alternative leveraged definitions, they defined leverage as the firm's total debt to total assets ratio and long-term debt to total asset ratios. The study found that tangibility positively affects the long-term debt ratio but negatively affects the total debt ratio. Successful organisations have less leverage, while giant corporations have more excellent debt ratios than smaller ones. Furthermore, enterprises with higher growth potential and non-debt tax shields have lower debt levels. Excluding growth prospects, which exclusively affect market-based leveraged ratios, all other variables are robust across leverage standards.

Lian & Ma (2021) Examining macro-finance research frequently relates the bankruptcy value of actual assets to borrowing restrictions on businesses. It reveals that for non-financial enterprises, 20% of borrowing by worth is secured by tangible assets (referred to as "asset-based borrowing" in the banking industry). In comparison, 80% is primarily based on income from business activities ("cash available flow-based borrowing"). Normal borrowing restrictions ("income-based borrowing limits") limit

how much debt can be borrowed as an indicator of income determined by operating income. These characteristics have an impact on how a firm performs on the loan. Firstly, cash generated through operating income can immediately loosen borrowing restrictions. Secondly, companies become less likely to experience damage resulting from asset price falls, and flash sale expansions may be reduced (Lian & Ma, 2021).

Similarly, the article further explores how corporate borrowing limitations affect business outcomes. However, this paper has drawbacks. The research examines cash flow-based lending and earnings-based borrowing limitations, although other factors that may affect borrowing constraints are ignored. It does not explain how cash flow-based lending and earnings-based borrowing limits affect corporate performance. It also ignores macroeconomic considerations affecting borrowing limitations and corporate outcomes. The work sheds light on corporate borrowing limitations, but further research is required to comprehend the intricate relationships between borrowing barriers, business results, and macroeconomic determinants.

Ngatno et al. (2021) study investigates how corporate governance affects the link between borrowing and firm performance. This study uses secondary data from the financial statements of microfinance institutions, which had an overall total of 506 units at the end of 2019. Using a modified regression evaluation, the results were examined. The findings show that judgements on financing through borrowing contribute favourably to financial performance. This only covers recent debt, though. Otherwise, long-term debt harms both the return on equity and the return on assets. These findings are consistent with the pecking order theory, which claims that borrowing has the opposite effect on firm earnings. According to the findings, board size and a high level of ownership can strengthen the link between borrowing and

business success. Instead, they fail to mitigate the link between borrowing and firm performance (Ngatno et al., 2021).

Similarly, it exclusively examined micro-financial institutions (rural banks), which may limit its applicability to other firms. The study solely employed secondary data from financial reports, which might not reflect all significant variables affecting capital borrowing and firm performance. Modified regression analysis was employed instead of GMM, and the hypotheses were not specified. The cross-sectional analysis does not prove a causal association between capital borrowing and company performance.

Chen et al. (2022) examine the implications of the borrowing-firm emissions market on bank emission-linked lending by explicitly considering borrowing-firm credit risks. Additionally, it incorporates regulation incentives for bank renewable lending through borrowing-firm emission allowances financial transactions in the emission trade mechanism. The findings demonstrate that raising the regulation of low emitter borrowing compensation reduces loans with higher interest rates, enhancing the stability of banks and profitability. Strict capital regulations would threaten the performance of banks (Chen et al., 2022). Even though Chen et al. (2022) work has contributed to the study, it has a few shortcomings. Some of these shortcomings include the assumptions used in the model, the accessibility of data, the incorrect assessment of a variable, the period, and the generalizability of the conclusions. In every case, the recommendation for additional investigation was not mentioned.

Chen et al. (2022) note that, according to microeconomic research, financial support for businesses is directly related to their present earnings. They examine the macroeconomic effects of borrowing restrictions based on income. A macroeconomic

model shows that companies facing earnings-based limitations respond to positive development shocks by lending more, but firms with security constraints respond by borrowing less. According to expectations with earnings-based limitations, combined and firm-level borrowing empirically react to identifiable investment shocks.

(Chen et al., 2022). Additionally, earnings-based limitations suggest that supply shocks are quantitatively more significant when prices are sticky. The result is confirmed in a modelling estimate, emphasizing how crucial it is to simulate credit limitations to comprehend policy trade-offs correctly. According to the findings, businesses with earning-based constraints borrow more money, while those with security constraints borrow less (Chen et al., 2022).

Habibniya et al. (2022) argued that debt financing is usually associated with financial risk whenever it is used as a source of funding. Still, in typical business operations, it is also seen as a source of higher profitability. The right borrowing combination has always been challenging to discover. The total liability-to-total assets ratio of the cell phone sector sample under discussion was extremely high. It is therefore inclined to investigate how borrowing affects a firm's profitability. Unbalanced sectional data (panel data) consisting of 421 firm-year records for 72 firms were analysed using pooled panel regression, correlation analysis, and descriptive statistics models by employing annual data for the cell phone sector from 2012 to 2020. They made the decision to investigate the effects of borrowing on the earnings of companies in the cell phone sector. The findings demonstrate that total equity and the total liability ratio to total assets significantly impact ROA. However, ROE is unaffected by Total Liability to Total Assets or Total Equity to Total Assets (Habibniya et al., 2022).

The study findings of Habibniya et al. (2022) provide an insightful analysis of how borrowing affects profitability in the cell phone sector, but there are some notable weaknesses and areas of contention. While the study finds that the total liability-to-total assets ratio significantly impacts return on assets (ROA), it is puzzling that return on equity (ROE) remains unaffected by these same factors. This raises questions about the robustness of the findings, as ROE typically reflects how effectively a company is using shareholders' equity to generate profits. The study's focus on the liability-to-assets ratio might oversimplify the relationship between debt and profitability, neglecting other variables like industry competition, technological innovation, or market demand that could influence firm performance. Additionally, the use of pooled panel regression, while helpful, may not fully account for firm-specific factors or dynamic market conditions over time. Emerging trends such as increased reliance on digital financing, venture capital, and the growth of fintech in the tech industry are reshaping the borrowing landscape. These trends could provide a more comprehensive understanding of how debt impacts profitability, but the study does not account for these shifts, potentially limiting the relevance of its findings.

Ezeani et al. (2022) stated that according to theoretical justifications, borrowing will change in response to the environment's dynamism for corporate governance. In accordance with this prediction, they investigate how board characteristics affect borrowing dynamics and response speed. They discover that firms in a stakeholder-oriented business regulation environment modify their leverage more quickly than those in a shareholder-oriented one, based on firm-year records from 2009 to 2018. Additionally, it was discovered that corporate board traits affect how quickly firms borrow money and adjust to their desired leverage. Their results hold up well against

alternate metrics of endogeneity and leverage. The weight of the data suggests that the membership of corporate boards matters in situations where corporate governance is focused on stakeholder orientation as well as shareholder-oriented corporate governance. They conclude that board makeup reduces conflict among agencies (Ezeani et al., 2022).

Haque et al. (2022) focused on how do the borrowing limits, debt structures, and leverage dynamics of businesses impact equity investors? In this study, they use administrative firm-bank-credit data at the firm level to analyse an extensive and innovative database of private equity-backed, bank-dependent, small, and middle-market enterprises. They demonstrate how the presence of Private Equity owners increases cash flow, enabling borrowing against cash flow for Private Equity-backed businesses. Comparatively, Private Equity-backed firms employ higher amounts of cash flow-based borrowing. They are more sensitive to fluctuations in earnings than comparable non-PE-backed enterprises that predominantly rely on asset-based financing. They also provide evidence that PE owners inject stock and maintain earnings in times of adversity, two possible processes that could account for PE-backed companies' ability to access cash-flow-based finance. The authors conclude their findings, their findings have novel ramifications for how we perceive PE investors' influence on firm strategies, performance, and sensitivity to shocks in line with time frame the study covered that is between 2009 to 2018 the finding might not be generalized to other periods. (Haque et al., 2022).

Haque et al. (2022) research discussed above covered the years 2009 to 2018 and the results might not be generalizable to other periods. Similarly, It measures capital

borrowing using book leverage, which might not accurately reflect a firm's underlying leverage position. The purpose cannot be explained by theory, and the effect of macroeconomic circumstances on enterprises' capital borrowing decisions is not considered.

Using data representing 66 non-financial firms from the Oman securities market and Muscat Securities, for a seven-year period between 2013 and 2019, Yilmaz (2022) examined the impact of debt on the firms' investment cash flow sensitivity (ICFS). He employed a panel data analysis investment system based more on the Euler equation technique and run panel regression using a dynamic panel system using the generalized method of moments (GMM). The study assesses the impact of firms' debt levels on the investment's sensitivity to free cash flow. The results of the sampled firms revealed a sizable investment sensitivity to the presence of financial limitations, as shown by the operating cash variable's positive coefficient. The findings demonstrated that leverage significantly influences each firm's ICFS, demonstrating that more indebted enterprises have higher investment cash-flow sensitivity.

Kong et al. (2023) investigated the relationship among borrowing and the economic viability of 28 registered non-financial enterprises in Ghana. For the evaluation, panel data from 2008 to 2019 was employed. According to the findings, the panel under study was diverse and cross-sectional. The variables under investigation were also first-difference static and cointegrated over a long period. The elasticity of predictions was investigated using the expected correlation effect mean group estimator (CCEMG). According to the results, borrowing enhanced the firms' economic viability by raising the return on equity (ROE), as measured by loan and equity ratios. In each

of the panels, company size and asset expansion also contributed to the economic viability of the companies. However, there were differences in the associations between operational efficiency and business viability across panels. Asset tangibility significantly impacted the businesses' capacity to maintain their financial health. The research results suggested that policymakers should choose a borrowing mix that would decrease costs and enhance enterprises' economic viability when considering capital formation choices (Kong et al., 2023).

Also, the article examined listed non-financial enterprises in Ghana. Thus, its findings may not apply to other nations or firms. The study only covers a narrow set of variables. Therefore, other factors that affect capital borrowing may be overlooked. Panel data may have endogeneity and omitted variable bias, which may bias the study results. The study does not include macroeconomic factors affecting firms' borrowings and financial sustainability.

Based on the empirical studies reviewed on the phenomenon of firm borrowing above, most of the studies concentrate on borrowing and business size and profitability, firm-specific characteristics effect on borrowing, bankruptcy value and actual assets to borrowing, corporate governance and the link between borrowing and firm performance, how borrowing limits debt structure, and borrowing and economic viability, but overlooked how financial inclusion impact firms' borrowing in a selected manufacturing firm in African nations. Therefore, this study fills the gap in financial inclusion literature by evaluating the link between financial inclusion and firm borrowing in 10 selected manufacturing firms in African countries.

2.5.3 Determinants of Firm Growth in African Nations

Businesses frequently have firm growth as an investment goal since it can result in higher profits, more vital productivity, and improved positioning in the market. But to achieve long-term growth, it is necessary to plan carefully, allocate resources wisely, manage well, and adjust to changing circumstances in the market.

Ngozi et al. (2019) examined the relationship between ICT (Information and Communication Technology) adoption, firm growth, and economic growth. The focus is on investigating the ICT firm's connection and its impact on firms' growth. Specifically, the study explores whether the adoption of ICT enhances or distorts the influence of firms' growth. The study uses data from 54 African countries spanning from 2005 to 2015. Mobile phones and secure telephone payments are used as indicators of ICT adoption. The research employs both static (pooled OLS) and dynamic (difference GMM) approaches to provide comprehensive insights. The findings reveal that. First, firms have a significant and positive correlation with firm growth. Second, the impact of firms' growth varies significantly across the five sub-regions of Africa. Third, the effect of ICT adoption also differs significantly across these sub-regions. Fourth, ICT innovation amplifies the impact of firm growth. Finally, the relationship between ICT and firms varies significantly across the sub-regions. The study concludes that these variables, namely ICT adoption and firm growth, play crucial roles in driving economic growth in Africa. However, the lack of consistent results across the sub-regions suggests that the level of ICT development in Africa is still relatively undeveloped compared to other regions globally (Ngozi et al., 2019).

The above study's inconsistent results within sub-regions suggest that the findings may not apply to the entire African continent, indicating that Africa's technological growth is still low in contrast to other regions. The research only uses mobile phones and fixed telephone services as ICT indicators, which might not represent the full range of ICT in Africa. It does not address the research method's limitations, such as the pooled OLS and different GMM approaches or the goals being investigated.

Bahrini and Qaffas (2019) Study examines the impact of information and communication technology (ICT) and firms' growth of selected firms in two selected regions: Sub-Saharan Africa (SSA) and the Middle East and North Africa (MENA). The analysis utilizes a panel Generalised Method of Moment (GMM) model, covering the period from 2007 to 2016. The results obtained from the econometric model reveal that, except for the immobile telephone, various other information, and communication technologies, including moveable phones, Cyberspace usage, and wideband adoption, significantly contributed to the firm's growth of developing countries in both the SSA and MENA regions during the current period from 2007 to 2016. Furthermore, the study finds that MENA countries outperform SSA countries in terms of Cyberspace usage and wideband adoption. Based on these findings, the study suggests that policymakers and authorities in MENA and SSA countries should consider increasing funds for ICT firms to leverage the potential of ICT as a driving force for firms' growth.

This study focuses on how ICT affects corporate growth. It ignores political stability, education, and infrastructural development, which affect firm growth in emerging countries. Moreover, data from 2007–2016 only may not capture ICT's long-term

effects on firm growth. A more extended period of the relationship between ICT and firm growth is needed.

Regasa et al. (2020) examined how various financing firms affect firms' expansion using firm-level data from Ethiopia. The study introduces a new instrumental variable that reflects the local variation of financial depth because the kind of financing could be endogenous to firm growth. They uncover evidence of a negative link between the use of outside finance and firm growth, contrary to earlier research of businesses in nations with lower incomes, which shows significant cross-country variances in the finance-growth connectivity.

.Lee et al., (2020) Study the Financial inclusion and firm sales growth in emerging countries are examined in this research. This study further examines this effect by manufacturing against other sectors, Asia versus non-Asia, smaller and medium-sized organisations versus big and medium-sized businesses, and crisis versus not. First, financial inclusion boosts company sales in non-Asian countries and throughout typical economic cycles. Our second finding is that financial innovation hurts sales growth for financial inclusion enterprises. The connection between financial inclusion and uniqueness yields this result. Our study has implications and gives regulators and lawmakers new views..(Lee et al., 2020)

Solomon & van Klyton (2020) They examined how adopting digital technology influenced firms' growth in 39 African countries between 2012 and 2016. The study employs a system GMM estimator to assess to what extent the implementation of digital technology fosters growth, using the Internet-Based Readiness Index as a

measure of digitalization. Unlike previous studies, this research distinguishes between the effects of individuals, firms, and public usage of information and communication technology (ICT) on firm growth. The findings indicate that only personal usage of ICT positively impacts growth. According to a disaggregated examination of usage patterns, the role of social networks and ICTs in public vision are two additional variables essential for growth.

The study offers a compelling look at how digital technology adoption influences firm growth across 39 African countries, but their study has some notable weaknesses and areas of contention. While using the system GMM estimator provides robust analysis, the finding that only personal usage of ICT positively impacts growth may oversimplify the broader impact of digital technology. The study's emphasis on personal ICT use over firm or public ICT usage could be problematic, as firms might benefit from enhanced digital infrastructure, firm-specific technology investments, or public ICT policies that support broader technological integration. The limited focus on personal usage might overlook the potential synergies between different types of ICT usage and how they collectively influence firm growth. Additionally, the study does not deeply explore emerging trends like the rapid expansion of mobile technology and fintech, which are transforming the digital landscape in Africa. Incorporating these trends could offer a more comprehensive view of how various dimensions of digital technology contribute to firm growth, highlighting the evolving role of technology in shaping business success in the region.

Diao, Mcmillan and Rodrik (2021) explored how the firm growth in Africa has been characterized by notable advancements in firms' productivity and a decline in the

proportion of the workforce engaged in firms. Surprisingly, there has been a decrease in productivity in modern sectors like manufacturing firms. They used a pair of fresh datasets that included production companies in Ethiopia from 2008 to 2016 and Tanzania from 1996 to 2017 to thoroughly analyse production enterprises by size to better understand this phenomenon. The study reveals a distinct separation between more significant organisations with excellent productivity but little job creation and smaller enterprises with more hiring but no appreciable efficiency development. They argue that the use of capital-intensive processes, which are in line with global technology trends, is to blame for the poor job performance of larger enterprises (Diao, Mcmillan and Rodrik, 2021). The research has contributed immensely, but data restrictions have impeded manufacturing trend assessments in some African countries. The study only covers Tanzania and Ethiopia; thus, its conclusions may not apply to other African nations.

Tsaedu & Chen (2021) noted that despite the considerable amount of research on firm growth principles, research that utilizes large census data has been scarce, especially in developing countries, primarily due to limited data availability. They extensively analyse comprehensive microdata from Ethiopian manufacturing firms over a lengthy period of 22 years. Consequently, the study contributes significantly to the ongoing debates on firm growth dynamics by presenting compelling econometric findings derived from an inclusive methodological approach and utilizing complete long-term census data. These factors provide clear and consistent evidence refuting Gibrat's equation. The results indicate that, among surviving firms, newer and smaller firms experience faster growth. On the other hand, there is a pattern of persistent negative growth, where favorable growth is often followed by a decline in growth in the

subsequent year. Generally, these findings indicate the presence of firms established by entrepreneurs seeking subsistence in the economy (Tsaedu & Chen, 2021).

This study above only covers Ethiopia's industrial sector, which may limit its generalizability. The application of data from censuses may have errors and biases while collecting its data. Moreover, the endogeneity issue is not addressed, but it does include subjective variable regression. However, industry-specific factors and the state of the economy may affect firm growth behaviour but the study does not consider them.

Tabiri et al. (2022) noted that the informal sector plays a significant role in the private sector of numerous developing economies. Although its exact size is difficult to measure, it is widely recognised for contributing to sub-Saharan Africa's economic output. However, informal firms need help accessing formal credit due to the nature of their operations. As a result, many entrepreneurs in the informal sector rely on informal credit sources. Tabiri et al. (2022) research examines the effect of funding on the performance of informal industries, utilizing data from the World Bank's Informal Enterprise Surveys. The study reveals that informal financing methods are associated with poorer business performance, while formal financing options led to better performance.

Based on the results, the study suggests combining community-based group borrowing schemes with credit information systems. This would make it easier to evaluate informal businesses and make it easier for them to get credit, which would help them grow and perform better (Tabiri et al. 2022).

Olaoye (2022) Examined the impact of revenue as firms' growth on listed Nigerian firms. The study employed secondary sources to acquire data over the period from 2011 to 2020 financial statements. The sample size of this research consists of eight Group Stock Exchange enterprises. Purposive sampling was used to choose four firms. Correlation analysis and OLS were used to estimate the data. The revenue growth coefficient on ROA is positively and substantially significant with a correlation of 0.8965. The study found a strong positive association between revenue growth and the corporate performance of listed enterprises in Nigeria.

The findings of Olaoye (2022) provide valuable insights into the relationship between revenue growth and corporate performance among listed Nigerian firms, but there are several weaknesses and areas of contention. The study's reliance on a small sample size of just four firms from the Group Stock Exchange might limit the generalizability of the findings. Using purposive sampling could introduce selection bias, potentially affecting the robustness of the results. While the correlation analysis and OLS indicate a strong positive relationship between revenue growth and return on assets (ROA), the study doesn't delve into the underlying mechanisms or external factors that might influence this relationship. For example, industry-specific conditions, market dynamics, or economic fluctuations in Nigeria could play a role but are not addressed. Additionally, the study's focus on traditional financial metrics may overlook emerging trends such as digital transformation and fintech, which are increasingly significant in shaping firm performance. Incorporating these trends could offer a more comprehensive understanding of how revenue growth impacts corporate performance in the contemporary business environment.

Sarpong & Nketiah-Amponsah (2022b) study empirically investigates the quantitative connection between inclusive firm growth in Sub-Saharan Africa and inclusive financial inclusion. Using a panel of 46 countries from 2004 to 2018, the research reveals that, in contrast to the provision and awareness of financial services, consumption of financial services, among other factors, has a concrete and noticeable influence on inclusive growth. An increase of 0.03 units in the use of financial goods and services increases the firm's growth rate in sub-Saharan Africa. What makes this study unique is the creation of a more comprehensive measure of inclusive growth and the use of the Generalised Method of Moment estimator to quantitatively assess the distinct impact of all three groups of financial inclusion variables on inclusive growth. The result emphasizes the need for regulators to create creative, viable, and inclusive financial institutions that can spread growth advantages fairly. Acceptable lending rates and transaction costs, greater access to personal and business finances such as mortgages, debit cards, and letters of credit, and accessible financial services. These measures can contribute significantly to accomplishing inclusive firms growth objectives in the region (Sarpong & Nketiah-Amponsah, 2022b). This study adds to the literature, but it fails to address the variability or account for other variables that may affect financial inclusion as well as inclusive growth. Its findings might not be relevant to other nations.

Masenyetse & Manamathela (2023) study investigates the primary factors influencing firm growth in three Southern African countries: Lesotho, Eswatini, and Namibia. Additionally, it assesses whether engaging in transfer activities and utilizing information and communication technology (ICT) have any impact on firm growth. The World Bank's company surveys between 2014 and 2016 provided the data for the

study's findings. The research employs ordinary least squares regression to analyse the data. The findings indicate that firm growth is influenced by several factors, including firm size, age, adoption of information and communication technology, engagement in transferring activities, external title, and the legal structure of the firm. These results are still solid even after accounting for variances between industries and nations.

The study favours the commencement of industrial policies to support small businesses through investments in ICT infrastructure and the facilitation of exporting enterprises' access to overseas markets. These actions aid in encouraging business growth in the area (Masenyetse & Manamathela, 2023).

Zhou & Zondo (2023) examined how Gibrat's 1993 model relates to South African micro, small, and medium-sized enterprises (SMMEs) that have recently been prepared for incubation, this study seeks to close the gap in the literature. This is done through the research's investigation of data from 300 SMMEs across the country collected in a 4-year survey between 2018 and 2021. The study employs Law's expanded growth rate theory and least squares regression analysis using Regression software. Modelling findings using sales as a proxy for firm size backed Gibrat's Law, indicating that firm size does not significantly influence the sales growth rate of raised firms. These results have important consequences for investors and entrepreneurs in the South African SMME sector, providing valuable insights into the factors influencing firm growth within incubated SMMEs (Zhou & Zondo, 2023).

The research lacks sample variety because the dataset only includes incubated small, medium, and micro enterprises (SMMEs) in South Africa. It may not be a good

representation of all SMMEs in the entire nation. The study was limited to South Africa, which may limit its generalizability. The research also evaluates how business size affects revenue growth and workforce growth without addressing industry-specific features or external market conditions.

Based on the literature review on firm growth above, most of the studies concentrated on the link between firm growth and information technology, financing firm effect and firm growth, adoption of digitalization technology influence and firm growth, firm growth and productivity, impact of revenue on firm growth, inclusive firm growth and financial inclusions, and factors affecting firm growth but overlook the link between financial inclusion and firms' growth in selected African nations. Thus, this study extends the literature by evaluating the impact of financial inclusion on firms' growth in 10 selected African countries.

2.5.4 Determinants of Firms' Performance in African Nations

Firm performance captures how successfully firms reach its goals. Moreover, firm performance is the actual outcomes (i.e., increased firm value or returns on assets) the firms' achieved compared to their planned outcomes.

Mertzanis et al. (2019) analysed the effects of social institutions, firm-specific governance practices, and ownership features on business performance in the Middle East and North Africa using a distinctive combination and combining financial and regulatory data from 225 firms listed between 2007 and 2017 on 11 MENA stock marketplaces using regression analysis. The results reveal that enterprise performance

measurement affects firms' performance. In many statistical techniques, board size, insiders, and stockholder ownership greatly influence the results. The research adds to enterprise governance expertise by showing how, relying on performance measurement, firm leadership and performance vary across MENA nations. (Mertzanis et al., 2019).

The article has provided a comprehensive analysis of how social institutions, firm-specific governance practices, and ownership features impact business performance in the MENA region, but there are several areas for critical examination. While the use of financial and regulatory data from 225 firms across multiple MENA stock markets offers a broad perspective, the study's reliance on regression analysis might oversimplify the complex interplay between governance practices and firm performance. The finding that board size, insider ownership, and stockholder ownership significantly impact performance is insightful, but the study does not fully explore the contextual factors, such as regional political dynamics or economic instability, which could influence these relationships. Additionally, the focus on traditional governance metrics might overlook emerging trends in corporate governance, such as the impact of digital technology on board operations or the growing importance of environmental, social, and governance (ESG) criteria. Incorporating these contemporary trends could provide a more nuanced understanding of how governance and ownership affect business performance in the evolving MENA landscape.

Chege et al. (2020) study analyse the relationship between technological innovation and business performance in Kenya. A sample of 240 firms and structural equation

modelling were employed in the analysis. The evidence suggests that technological innovation affects business performance positively. According to the examination, entrepreneurs should create cutting-edge plans to improve firm performance. The government should enhance the ICT infrastructure to support small and medium-sized firms (SMEs) and enhance firm performance. The research result expands existing ideas and contributes to corporate management techniques in developed and developing nations (Chege et al., 2020).

The study's sample methodology includes drawbacks that could restrict how the findings can be applied. Given the kind of data acquired from the SME business, the method used was thought to be suitable for the study. However, because IT innovation and business performance vary, using semi-structured questionnaires as a data-gathering technique may impair construct validity. The study does not include other interactions between employees and entrepreneurs that could affect firm performance.

Puni and Anlesinya (2020) study how Ghana's Securities and Exchange Commission (SEC) recommendation that the governance of a firm's mechanisms affects firm performance as measured by accounting ratios (return on funds, earnings per share, and return on equity) and market-based measures (Tobin's Q) in some Ghanaian firms from 2006 to 2018. The study indicated that company boards with internal and external members performed better financially. The board size, meeting frequencies, and investor/ownership structure also improved financial performance. Board committees generally hurt financial performance, but dual CEO roles did not impact performance. The study helps academics and Ghanaian policymakers understand how excellent corporate governance affects a firm's prosperity. The discovery adds to knowledge by

showing that some business governance practices do not reduce agency problems in African countries (Puni & Anlesinya, 2020). Although the study adds to the body of knowledge, it has certain limitations because it only considers the effects of the corporate governance tools suggested by Ghana's SEC and ignores other possible factors that could affect financial performance. Firms' debt, size, and growth opportunities are examples of control factors that are not included in the study but may impact financial performance.

Boachie and Mensah (2022) examine the connection between managing earnings and financial firms' viability across sub-Saharan African nations in a dynamic framework. The results show that income management affects performance even when considering dynamic variation and unexplained time-invariant diversity. The findings also corroborate the agency theory's assertion that adopting corporate governance systems that follow best practices has an effective monitoring influence on firms' earnings control practices, improving firms' performance. Regarding the moderation effect, research shows that effective corporate governance makes earnings management's favorable impact on a firm's performance greater (Boachie & Mensah, 2022).

Neneh and Welsh, (2022) study determines the best possible support combinations from relatives to improve firm performance. A fuzzy-set qualitative comparison analysis (FSQCA) is used in this study to identify the family assistance policies that are best for successful firm performance. The results show that female entrepreneurs require significant emotional and instrumental support to achieve an exceptionally high firm performance ranking when instrumental support at home is absent. Comparatively, male entrepreneurs can still reach high levels of firm performance

even without strong emotional and financial backing. The study adds to the mass of information on South African women entrepreneurs as well as family-based business systems. It contributes to the body of knowledge on the potential drawbacks of family integration when people rely on their families financial support when developing entrepreneurial goals and its impact on firm performance (Neneh & Welsh, 2022). Although the study increased business knowledge, its dependence on revealed data from proprietors of small enterprises in South Africa's technological enterprise sector may lead to response bias in firm performance analysis. The study only examined South African technological enterprises, which may limit their generalization to other industries.

Arabeche et al. (2022) investigated the relationship between entrepreneurial orientation and firm performance in SMEs engaged in manufacturing in Algeria. For 2021, a sample of 180 Small and Medium-Sized Enterprise (SME) owners in Algeria was gathered using structured questionnaires. This research demonstrates that entrepreneurial orientation has a moderate impact on firm performance (Arabeche et al., 2022). Likewise, Ledi and Ameza-Xemalordzo (2023) study investigate how through corporate governance, corporate image impact manufacturing firm performance in Ghana using questionnaire approach. The study found that effective corporate governance practices improve firms' performance and corporate image.

The studies above have shown how corporate governance affects manufacturing enterprises' performance positively. The study provides deep insight into firm performance in the rising economy and advances knowledge on the interaction and harmony of corporate governance systems and entrepreneurial orientation but the

questionnaire approach is unable to resolve endogeneity concern (Ledi & Ameza–Xemalordzo, 2023).

Konte and Tetteh (2023) examine how mobile money can enhance the productivity-boosting impacts of conventional financial services. The finding indicates a significant impact of access to conventional financial services on firm performance using firm-level data from the World Bank Enterprise Survey across 14 sub-Saharan African countries. However, formal firms should be encouraged to access conventional financial services, including bank funding and banking services. Due to data limits and endogeneity, the study only examines labour productivity, not firm performance.

The sources do not describe the analysis methodologies. Therefore, it is unclear how the authors adjust for confounding factors like endogeneity. It also ignores the possibility of biases in measuring mobile currency use and access to conventional financial services.

Attia et al. (2023) explore firm performance and size-threshold effects. This research employs dynamic panel threshold regression to examine the determinants of firm performance (i.e., Tobin's Q, ROA, and ROE) and the debt threshold using panel data of firms from the Middle East and North African nations from 2007 to 2020. The results support the trade-off theory prediction that to improve performance, small and large MENA firms should use more debt. The study restricts the applicability of the findings to other areas or financial institutions by concentrating mainly on non-financial enterprises listed in the MENA. The analysis does not consider financial inclusion or access to finance, which can impact debt and firm performance in the

MENA region. Additionally, it does not examine the precise mechanisms by which the size-threshold impact operates, allowing room for additional research into the causes of this association. Moreover, the analysis spans a sizable amount of time, from 2007 to 2020. However, it does not consider any shifts in the macroeconomic factors that might impact the link between debt and firm performance.

Bellakhal and Mouelhi (2023) examine the connection between digitalization and the business performance of Tunisia's small business firms, and the results show that digitalization is positively associated with firm performance, helping them to expand their operations, increase their sales, and build a stronger presence in global markets. This research relies on a firm-level dataset of 466 firms in Tunisia. This beneficial relationship is related to the firm's participation in a worldwide digitalization plan, where it views digitalization as a crucial component of its operations. As a result, the report makes several policy proposals to aid firms in Tunisia in their digital transition. However, the primary shortcoming of Bellakhal and Mouelhi (2023) study is the dearth of comprehensive data on Tunisian firm-level digitalization that may have improved the model formulation. Due to the cross-sectional quality of the data utilised in the study, cause-and-effect mechanisms cannot be inferred; rather, statistical causal connections between digitalization and company performance can be understood. Due to the study's emphasis on a selected group of service and manufacturing SMEs and its limitations in Tunisia's specific context, the findings may not be adaptable to all Tunisian small and medium enterprises. They may not be relevant to other MENA nations with varying support systems for business ownership and distinct financial contexts.

The study explores how corporate board features affect Nigerian listed deposit money banks' performance. This analysis utilizes secondary data from the 2011–2020 annual reports of 12 Nigerian-listed corporations. The study used Tobin's Q as a proxy for firm performance and board size, autonomy, diligence, and diversity of genders as characteristics of boards. Data analysis employed pooled OLS and panel fixed effect regression. The size of boards and cultural diversity significantly negatively affect deposit money banks' financial performance. In contrast, independence of the board, diligence, and diversity of genders have a positive but insignificant impact on firm performance. The research findings recommend that stockholders carefully analyse the size of the board and balance it according to the projected outcome; that board independence be continually upheld and regularly reviewed; that gender should be considered; an average of six meetings of the board should be held annually; and that there be ethnic diversity on Nigerian firm boards for equity and equal treatment (Aernan et al., 2023).

This study uses only data from 12 listed Nigerian deposit money banks (DMBs) from 2011 to 2020 which is too small and no control for macroeconomic factors that affect firm performance. Furthermore, the study does not explain the statistical methods and equations used in the analysis and. Moreover, the study focuses only on Nigeria, and the conclusion cannot be generalized to other African countries. Abbas et al. (2024) examine Technology has created digital finance, which blends new models with inclusive financial innovation. This necessitates those businesses to prioritize competitive and imaginative product market competition. Therefore, the implementation of business environment rules and the adoption of financial digitalization contribute to the improvement of commercial enterprises' financial

performance. This study investigates how digital financial innovation mediates the effect of product market rivalry on company performance. The Pakistan securities market provided 2014–2020 statistics for 90 businesses. We evaluate empirical results using three methods, including structural equation model (SEM) regression. The scientific study found that the level of competition in a company's product market positively affects its performance. Digital financial innovation, which boosts corporate success. It shows how financial innovation must fully explain corporate success. This analysis excludes many other corporate success factors. The study's findings advance product innovation and digitization theoretically and empirically. Results help explain financial innovation and firm performance. This study model may help researchers develop crucial company performance evaluation methods. This method could provide valuable insights for researchers. In terms of distinctiveness, these results demonstrate that digitalized innovation improves corporate performance by offering novel products and digital tools. According to the report, corporate organisations should focus on improving financial innovation and digitalisation in their company operations. The findings contribute to the existing knowledge in the field of digital innovation.

Based on the literature review on firm performance in this specific thesis, most of the studies concentrated on the link between the corporate board effect and firm performance, the link between digitalization and firm performance, the link between equity structure and firm performance, and the link between entrepreneurial operation and firm performance, but they ignored the link between financial inclusion and firms' performance in selected African Nations. Thus, this study extends the literature by evaluating the impact of financial inclusion on firms' performance in 10 selected manufacturing firms in African countries (Abbas et al., 2024).

2.6 Research Gap

Many African firms, tiny and medium-sized enterprises (SMEs), face significant challenges in accessing financial resources, which restricts their ability to grow and compete. These firms often struggle with limited access to loans and credit due to stringent lending criteria, lack of collateral, and insufficient financial history. As a result, their growth is slow, and their market value remains weak, limiting their capacity to innovate, expand, and improve their competitiveness. Without adequate financial support, many African businesses rely on expensive and unsustainable informal funding sources, hindering their ability to thrive.

The development of financial inclusion through formal financial institutions offers a potential solution to these problems. By expanding access to financial services such as loans, credit lines, and equity, financial inclusion helps firms secure the necessary capital to invest in growth and improve their performance. With better access to funds, firms can enhance their market presence, improve productivity, and increase their return on investment. Financial inclusion not only addresses the financial constraints faced by African firms but also empowers them to deliver greater value to their stakeholders and contribute to overall economic development across the continent. Therefore, this gap can be overcome by evaluating the impact of financial inclusion on firm borrowing and performance in selected African manufacturing firms.

2.7 Summary of the chapter

This chapter thoroughly reviews financial inclusion and its impact on firm borrowing, growth, and performance, focusing on manufacturing firms in selected African countries. It highlights how various studies have applied different variables and methodologies to assess the factors influencing financial inclusion and borrowing in developing nations. The chapter also explores the connections between financial inclusion and firm outcomes, examining how increased access to financial services can affect borrowing capabilities, growth potential, and overall performance. The empirical review aims to synthesize findings from different contexts to provide a comprehensive understanding of these relationships.

However, while the chapter offers valuable insights, it has some limitations. The review might benefit from a more critical examination of the methodologies used in the studies discussed, as well as a deeper analysis of how contextual factors in African countries, such as regulatory environments or economic conditions, influence the findings. Additionally, the chapter could expand on emerging trends like digital finance and fintech innovations, which are increasingly shaping financial inclusion and firm dynamics. By integrating these contemporary developments, the review could provide a more details and up-to-date understanding of how financial inclusion impacts firm performance in the rapidly evolving African business.

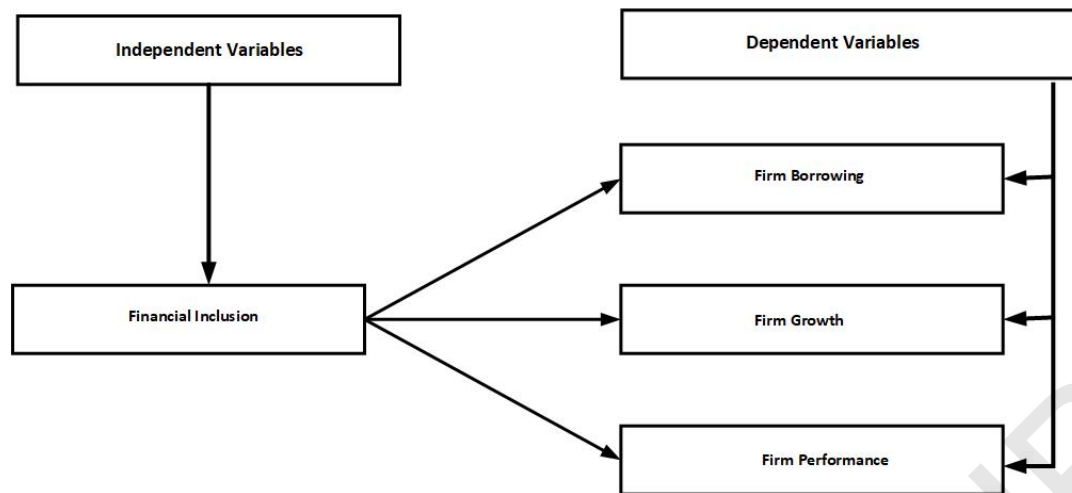


Figure 2.1: Research framework of the study

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

This chapter have cover in-depth discussions of data, model definition, estimation, and justification based on certain variables. The model is chosen to test the study hypotheses. To ascertain the connection among financial inclusion and firms' borrowing. The dynamic model explicitly examined the connection among firms' borrowing and financial inclusion. Finally, this chapter also examines how financial inclusion impacts the firms' growth and performance.

3.2 The Data for the Study

The data covers 255 listed companies in African Nations from 2010 to 2019 periods. The meticulous process of selecting these companies, based on Kreje and Mogan sample size, ensures that the sample is representative of the larger population. For instance, the data cleaning approach ensures that the firms included have non-missing data for the dependent variables (i.e., firms' borrowing, firms' performance, and firms' growth). Furthermore, banks and other financial institutions are excluded because their financial statements are significantly different from the non-financial firms and heavily regulated. Moreover, real estate investment trust companies are excluded because they are also regulated firms. The companies are in the same sector, that is, manufacturing firms from 10 African countries for the 2010-2019 period selected

because, according to the World Bank Report in 2022, manufacturing firms contributed significantly to the growth of the African countries. The countries were selected based on the four African regions and the availability of data and performance: Egypt 25, Ghana 25, Kenya 22, Malawi 24, Morocco 24, Nigeria 33, South Africa 30, Tunisia 25, Zambia 23, and Zimbabwe 24. Moreover, starting with data from 2010, the impact of the 2008/2009 financial crisis is excluded. It avoids its impact on the result because many companies were affected globally during the financial crises of 2008/2009. If they were included, the result would not be consistent due to the impact of that crisis. Ending the data in 2019 excludes the impact of the COVID-19 pandemic, which started at the end of December 2019. Because many African countries were affected by the pandemic, especially the manufacturing sector, getting reliable data that can give accurate results will be a severe problem, which is why it has been excluded.

The thesis does not intend to study the impact of the COVID-19 pandemic and the financial crisis of 2008/2009 on firms' borrowing, growth, and performance. The financial inclusion data and other macroeconomic data (e.g., GDP growth rate and inflation) are obtained from the World Bank database. The firm-level data (e.g., firm borrowing (FBR), Firms' Growth, Tobin Q, firms' size (LTA), profitability (EBITTA), and Tobin's Q is a good measure of company performance because it includes market and asset views. A comparison of a company's market value to its replacement cost shows how effectively it uses its assets to produce value. As the market estimates the firm's future growth potential, Tobin's Q is a favourable indicator for analysing financial inclusion and borrowing's influence on performance.

However, recognizing a firm's economic health and sustainability requires profitability. It shows how well a corporation manages its resources to make money. By analysing profitability (EBITDA) with Tobin's Q, the research may better assess how financial inclusion and borrowing capacity affect immediate financial outcomes and long-term economic potential. economic and market equity-to-book equity ratio (MTB) are obtained from the DataStream databases. The ratios of depreciation (NDTSTA), book equity to market equity (MBT), total assets, and property, plant, and equipment (PPE) are appropriate control variables for evaluating financial inclusion, company borrowing, and performance. Asset management necessitates knowing the depreciation ratio (NDTSTA), which influences borrowing capacity and long-term investment decisions by indicating how old a firm's assets are. The MBT ratio, which compares a firm's book value to its market value, influences investor mood and market perception of its financial health and borrowing risk. As a key control variable, total assets represent the firm's size and capability, which affect borrowing limitations and financial strategy. Lastly, the PPE ratio displays the firm's investment in physical assets, which can serve as collateral for financing and establish capital intensity and operational efficiency. Control variables for asset quality, size, and market value provide a complete examination of how financial inclusion and borrowing affect company performance.

Understanding the economic environment influencing financial inclusion, company borrowing, and performance necessitates selecting GDP and interest rate as macroeconomic control variables. GDP measures a country's economic health and growth, which affects a firm's expansion, customer demand, and profitability. A high GDP suggests a thriving economy where enterprises can flourish, whereas a smaller

GDP may imply economic constraints that restrict borrowing and growth. In contrast, interest rates determine borrowing costs. Low interest rates allow corporations to borrow cheaply, promoting investment and development. However, high interest rates raise borrowing costs, deterring enterprises from borrowing. The study considers GDP and interest rates to account for external economic influences influencing businesses' financial choices and performance. Automated Teller Machines per 100,000 adults, bank Branches per 100,000 adults, depth of credit information, and the domestic credit to private sector ratio serve as proxies for financial inclusion. Firms' Borrowing is the total debt to total assets ratio.

3.3 Methodology for the study

Jen (2007) argued that data analysis involves managing large datasets and summarizing them into interpretable results. In this study, Stata software is employed for data analysis due to its robustness in handling complex datasets and statistical models. The study applies three main estimation techniques: Pooled Ordinary Least Squares (OLS), Panel Fixed Effects, and Random Effects methods. The choice of the OLS method is justified by its desirable statistical properties, as described by Lucey (1996), including being unbiased, efficient, consistent, and reliable, which make it appropriate for analyzing the data at hand.

Moreover, the study incorporates the two-step system Generalized Method of Moments (GMM) estimation technique to address potential endogeneity issues. Endogeneity problems arise in two ways and cause biases in estimating the variable coefficients. Firstly, the omission of important independent variables that are

correlated with the error-term can cause biases in estimating the coefficients of the variables in the empirical models. Secondly, the possibility that causality may go from firms' borrowing to financial inclusion and vice versa and this can cause biases in the estimation of the coefficients of the variables. To overcome the endogeneity problems, researchers have used the instrumental variable technique (Jiang, 2017). This technique requires searching for instruments that are correlated with the independent variables of interest but have no correlation with the error term. This approach improves the accuracy of the estimations by accounting for possible biases that might arise from the correlation between the independent variables and the error terms. The Blundel and Bond (1998) GMM internal instruments techniques ensure a comprehensive and rigorous analysis, strengthening the reliability of the results and providing deeper insights into the relationships being studied.

3.4 Model Specification

As firms can deviate from their target borrowing level in the short run, the dynamic model proved crucial for studying financial inclusion and firms' borrowing. However, firms can eventually adjust to their long-run target borrowing level. Likewise, the dynamic model proved crucial for studying the link between financial inclusion and firms' growth and the link between financial inclusion and firms' performance. Precisely, previous year firms' growth can affect the current year firms' growth, and the previous year firms' performance can affect the current year firms' performance. The dynamic model is also advantageous because endogeneity problems plagued the majority of studies on finance research and because several explanatory variables may be correlated with the unobservable firm-specific effects (Sharma, 2017; Bazdresch et

al., 2018; Öztekin & Flannery, 2012; Flannery & Hankins, 2013). Therefore, this study specifies the dynamic panel models in the current investigation.

3.4.1 Model Specification for Objective 1

Model 1

$$FBR_{ijt} = \lambda FBR_{ijt-1} + \beta_0 + \beta_1 ATM_{jt} + \beta_2 BB_{jt} + \beta_3 DCPR_{jt} + \beta_4 CREDITINFOR_{jt} + \beta_5 FATA_{ijt} + \beta_6 EBITTA_{ijt} + \beta_7 LogTA_{ijt} + \beta_8 NDTSTA_{ijt} + \beta_9 GDPG_{jt} + \beta_{10} INTR_{jt} + \Phi_i + \alpha_t + \mu_{it}$$

H_{1Null}: There is no positive relationship between financial inclusion and firms' firm borrowing.

H_{1Alternative}: There is a positive relationship between financial inclusion and firms' borrowing.

3.4.2 Model Specification for Objective 2

Model 2

$$FG_{ijt} = \lambda FG_{ijt-1} + \beta_0 + \beta_1 ATM_{jt} + \beta_2 BB_{jt} + \beta_3 DCPR_{jt} + \beta_4 CREDITINFOR_{jt} + \beta_5 FBR_{ijt} + \beta_6 LogTA_{ijt} + \beta_7 EBITTA_{ijt} + \beta_8 INTR_{jt} + \beta_9 GDPG_t + \Phi_i + \alpha_t + \mu_{it}$$

H_{2Null}: There is no relationship between financial inclusion and firms' growth.

H_{2Alternative}: There is a positive relationship between financial inclusion and firms' growth.

3.4.3 Model Specification for Objective 3

Model 3

$$\begin{aligned} \text{TobinQ}_{ijt} = & \lambda \text{TobinQ}_{ijt-1} + \beta_0 + \beta_1 \text{ATM}_{jt} + \beta_2 \text{BB}_{jt} + \beta_3 \text{DCPR}_{jt} \\ & + \beta_4 \text{CREDITINFOR}_{jt} + \beta_5 \text{FBR}_{ijt} + \beta_6 \text{LogTA}_{ijt} + \beta_7 \text{BTM}_{ijt} + \beta_8 \text{INTR}_{jt} \\ & + \beta_9 \text{GDPG}_t + \varphi_i + \alpha_i + \mu_{it} \end{aligned}$$

$H_{3\text{Null}}$ There is no relationship between financial inclusion and firms' performance.

$H_{3\text{Alternative}}$ There is a positive relationship between financial inclusion and firms' performance.

In all the models above, ATM and BB are the main proxy of financial inclusion. Moreover, domestic credit to private sector (DCPR), and depth of credit information (CREDITINFO) are used as additional proxies of financial inclusion.

Where:

FBR = Firm borrowing

FG = Firms' Growth (annual growth rate in sales)

TobinQ = Firms' Performance

ATM = Automated Teller Machine per 100,000 adults (Financial inclusion proxy)

BB = Bank Branch per 100,000 adults (Financial inclusion proxy)

DCPR= Domestic credit to the private sector as a percentage of GDP (Financial inclusion proxy)

CREDITINFO= Depth of credit information ranging from zero to ten (Financial inclusion proxy)

NDTSTA= Ratio of depreciation to total assets

BTM= Ratio of book equity to market equity

Tobin Q = Ratio of Market of Value Equity Plus Book Value of Debt to Book Value of Total Assets

Log of TA = Log of total asset

FATA = Ratio of Property, Plant, and Equipment to Total Assets

EBITTA = Ratio of Earnings before Interest and Tax to Total Assets

INTR = Interest rate

GDPG = Gross Domestic Product Growth (GDP) growth rate

Φ_i = firm fixed effect

α_t = Year Fixed Effects

λ = Adjustment Parameter

μ = Error Term

3.5 Hypothesis

The following are the research hypothesis for the study:

- i. There is a significant positive relationship between financial inclusion and firms' borrowing in selected manufacturing firms in African countries.
- ii. There is a significant positive relationship between financial inclusion and firm growth in selected manufacturing firms in African countries.
- iii. There is a significant positive relationship between financial inclusion and firms' performance in selected manufacturing firms in African countries.

3.6 Estimation method

The examination of the study's hypothesis's used panel data estimation techniques. As a result, the study's estimation methods use Ordinary Least Squares (OLS) and took firm-specific factors into account as baseline method. The study adds the lagged value of the dependent variables in the models' formulation to account for the dynamic nature of firms' borrowing, growth, and performance. A dynamic panel model with a lag in the dependent variable included many firms and a limited number of years. Additionally, using Ordinary Least Squares (OLS) to estimate the parameters would yield reliable results if all the OLS assumptions are satisfied. According to the Gauss-Markov theorem, OLS has the slightest variance of all linear free-of-bias estimators, making it the best linear unbiased estimator (BLUE). Additionally, it possesses advantageous traits, including consistency, exponential normalcy, and exponential efficiency.

The OLS estimators produce reliable estimates if the error term is orthogonal to the right-side variables. The fixed-effects estimators (F.E) will prove consistent if the independent variables are strictly uncorrelated. Therefore, neither the fixed-effects technique nor the simple ordinary least squares technique will produce reliable estimates of the parameters (Gujarati, 2009). Firstly, the Breush-Pargan LM test is applied to choose between the pooled ordinary least squares (OLS) and random effects estimation. If the calculated value of the Breush-Pargan LM test exceeds the tabulated chi-square value or, equivalently, the p-value is too small. Therefore, the random effect is more appropriate to estimate the model than the pooled OLS based on Breush-Pargan LM test. Furthermore, the Hausman test is used to choose between the random

effects and the fixed effect estimation. If the Hausman test is large or equivalently, the p-value is too small. Thus, we may reject the null and conclude that the fixed effect is more appropriate to estimate the model based on Hausman test.

Furthermore, confirming all the traditional ordinary least squares regression method assumptions is challenging. Moreover, the unpredictable nature of liabilities or funding may induce auto-regression into the model's error structure. As a result, Sharma (2017) suggested a dynamic panel estimation that took advantage of the constraints that a changing panel model implied. This method uses lagged values of the exogenous variables and historical values of the endogenous variables as internal instruments. The model began by estimating the model in differences.

First, the level equation was specified in the model specification as follows:

$$Y_{it} = \lambda Y_{it-1} + \gamma X_{it} + \eta_i + \mu_{it}, \quad (4)$$

Where Y (the dependent variable) depends on its previous values. The models included explanatory variables X that were strongly uncontrolled with the firm-fixed effects. Second, following model 4's transformation into the first difference, it becomes

$$\Delta Y_{it} = \lambda \Delta Y_{it-1} + \gamma \Delta X_{it} + \Delta \mu_{it}, \quad (5)$$

The firm-specific effects (η_i) were eliminated by the transformation of model 4 into the first difference. However, the association between the lagged explanatory variable ($X_{(it-1)}$) and the different error terms (μ_{it}) and the potential endogeneity of some independent variables also created a new endogeneity issue. Therefore, higher-order

lags of the explained variable, such as $X_{(it-2)}$ as instruments for $X_{(it-1)}$ and higher-level lags for the variables that are explained, such as $X_{(it-2)}$ as instruments, were used to solve these challenges (Sharma, 2017).

$$E[\Delta\mu_{it}Y_{t-k}] = E[\Delta\mu_{it}X_{t-k}] = 0 \quad k > 1 \quad (6a)$$

The above equation showed no correlation between the differenced error term and the lagged explanatory variables used as instruments. When the dependent variables were lagged and included in models, the explanatory variables in levels become weak instruments if they are persistent (Arellano & Bover, 1995). Thus, the System GMM includes additional moment conditions:

$$E[\Delta Y_{it} \eta_i] = 0 \quad (6b)$$

According to the abovementioned equation, there is no association between the different instruments and the level equation's unobservable firm-specific effects.

The GMM system used the moment conditions from equations 6a and 6b to estimate the parameters. System GMM, according to Blundell & Bond (1998), increases efficiency when the independent variables are persistent because the variable's lag level is weak. As a result, persistence occurred if the explained variable's past values ($Y_{(t-1)}$) impact on the current value (Y). The firms' borrowing, firms' growth, and firms' performance showed persistent behaviour (Sharma, 2017). As the GMM System includes the difference and level equations, the GMM system provides an accurate method for estimating the dynamic model. System GMM combines "level instruments for the difference equation" with "difference instruments" for the level

equation. The System GMM was created by Arellano and Bover in 1995 and expanded by Blundell and Bond in 1998. Furthermore, it was believed that the difference instruments is not correlate with the firm specific effects in the equation in level.

Recent studies have used the OLS technique to conduct financial inclusion research (e.g., Koomson et al., 2020; Ali et al., 2021; Ozturk & Ullah, 2022; Agyekum et al., 2016; Sunday, 2016) and firm borrowing research (e.g., Amin et al., 2023; Pathak & Chandani, 2023; Almarayeh, 2023); Mehralian & Khazaei, 2022). However, generalized method of moment is biased in a sample with small cross-sectional units (i.e., firms). This can bias the standard errors and estimated parameters (Wind-Meijer, 2005). Also, a small sample of the cross-sectional units (i.e., firms) can weaken the over-identification test because the number of instruments may exceed the number of firms (Roodman, 2009). There is no doubt this study cannot have the challenges highlighted in similar previous studies because the number of firms is more than the number of instruments.

3.7 Variable Justification

3.7.1 Justification of variables in firms' borrowing model

3.7.1.1 Firms' borrowing (Dependent variable)

Firm borrowing, or debt capital, plays a crucial role in a company's financial structure. Debt can be categorized into short-term, long-term, or total debt, with each serving different financial needs. Short-term debt is typically used to cover daily operational expenses and is repaid within a year. In contrast, long-term debt is often used to finance

major investments like property, equipment, or machinery, with repayment plans that stretch over several years. As highlighted by Dakua (2019) and Koksai & Orman (2015), these different forms of debt are essential for supporting a firm's growth and financial health. In many studies, including the current one, the total debt to total asset (TD/TA) ratio is commonly used to measure a firm's overall debt burden, providing insight into how much of a firm's assets are financed through borrowing.

3.7.1.2 Firms' Growth (Dependent variable)

Firm growth refers to the expansion and advancement of a company's size, scope, and market reach over time. It is often measured through indicators such as sales, market share, and overall business performance. Growth is a key investment objective for businesses, as it leads to increased profitability, improved productivity, and stronger market positioning. Achieving growth typically requires careful planning, effective resource allocation, sound management, and adaptability to market changes (Belitski et al., 2023). Despite significant research, there remains ongoing debate among scholars, practitioners, and policymakers regarding the factors that enhance a firm's likelihood of sustained growth and its development into a more substantial economic force. Studies like those of Fuertes-Callén & Cuellar-Fernández (2019) highlight that while profitability can support firm growth in the short term, its long-term impact depends on how growth is measured. This study focuses on firm growth by evaluating the annual change in sales, offering a clear, quantifiable metric for assessing expansion.

3.7.1.3 Firms' Performance (Dependent variable)

Firms' performance describes the success of firms at achieving their target goals. It offers information about the overall efficiency of firms' business activities. Firms' performance captures the qualitative and quantitative indicators which indicate the overall picture of the firms' operational and financial health conditions. Furthermore, managers make better decisions, detect development areas, resources management, and evaluate the effectiveness of strategic efforts to achieve targeted level of performance for firms (Mihaela et al. 2018). Miheala et al (2018) said that the concept of firms' performance centered mainly on firm's ability and capability to achieve results that matched the firms' targeted goals. From an economic perspective, performance focuses on the relationship among cost effectiveness, realizing output, and achieving outcomes (Masa'deh et al., 2016). Moreover, firm performance is the actual outcomes (i.e., increased firm value and returns on assets) the firms' achieved compared to their planned outcomes.

This study uses Tobin's Q as a measure of firms' performance. Tobin's Q measures firms' market valuation in relation to their assets-in-place. It captures the markets evaluation of the future cash flow and related risk (Cahan et al., 2016). Tobin's Q is a forward-looking measure of firms' performance, and this is important because investors focus more on the long-term future performance (Pekovic and Vogt 2021). Unlike Tobin's Q, Return on Assets (ROA) is an accounting-based measure of firms' performance, and it measures short-term firm performance (Pekovic and Vogt, 2021). In this study, firms' performance is measured as ratio of market value of equity plus book value of debt to total assets.

3.7.1.4 Financial inclusion variables (Main independent variable)

The financial inclusion variable in this study is measured using several key proxies: Automated Teller Machines (ATMs) per 100,000 adults, bank branches per 100,000 adults, domestic credit to the private sector as a percentage of GDP, and the depth of credit information on a scale of zero to 10. ATMs and bank branches per 100,000 adults serve as significant indicators of financial inclusion, reflecting the accessibility of financial services. Prior studies by Khandare (2019), Ayyagari & Beck (2015), and Sorensen (2015) have employed these proxies to assess equitable financial expansion across regions and nations. Having an account at a formal financial institution is essential in the early stages of financial inclusion, underscoring the importance of bank branches for account setup and debit cards for ATM withdrawals. Additionally, the extent of domestic credit provision to the private sector and the depth of credit information, as recognized by the World Bank, are vital measures of financial inclusion, reflecting the availability and transparency of credit information. These metrics collectively indicate the progress of financial inclusion, making them appropriate proxies for this study's assessment of financial inclusion in African nations.

3.7.1.5 Profitability (Control variable)

Myers and Majluf (1984) emphasized the importance of a strong correlation between profitability and debt ratios, suggesting that firms should prioritize retained earnings over debt and equity when seeking financing. This view is supported by several researchers, such as Chakrabarti and Chakrabarti (2019), Khemiri and Noubbigh

(2018), Dakua (2019), and Flannery and Ayaydin (2014), who found a negative relationship between profitability and debt, indicating that more profitable firms tend to borrow less. Conversely, studies by Bukair (2018), Kaouther et al. (2019), and Iquiapaza (2007) revealed a positive relationship between profitability and debt, suggesting that profitable firms may still rely on debt financing. Profitability is generally expected to influence firms' borrowing decisions, as firms with higher profits may prefer to use retained earnings, reducing the need for external borrowing. In line with previous researchers (e.g., Chakrabarti and Chakrabarti, 2019; Khemiri and Noubbigh, 2018) that include profitability as control variable, this study uses the earnings before interest and tax to total assets ratio (EBIT/TA) as a proxy for profitability.

3.7.2 Firm Size (control variable)

Large firms typically have more stable and predictable cash flows and greater diversification, thus less prone to bankruptcy than smaller businesses. However, larger firms tend to use more debt as they have better access to capital markets, enabling them to secure long-term financing at lower costs. Empirical studies on this relationship have shown mixed results. For instance, research by Chakrabarti & Chakrabarti (2019), Dakua (2019), Amraoui et al. (2018), Acaravci (2019), Gormley and Matsa (2019), and Delcours (2020) found a positive correlation between firm size and debt. In contrast, Hanousek & Shamshur (2011), Chakraborty (2010), and Lemon et al. (2008) observed a negative association between the two. Nevertheless, firm size is generally expected to increase firms' borrowing, as larger firms are more stable and less likely to encounter financial distress. Moreover, larger firms seem to use

additional debt because of better access to capital markets which enables them to obtain long-term capital at reduced costs. In line with previous researchers (e.g. Delcoure, 2020; Dakua, 2019), this study measures firm size using the natural logarithm of total assets.

3.7.2.1 Fixed Assets (Control variable)

A firm's borrowing strategy is significantly influenced by its fixed assets, as these assets are less affected by asymmetric information. In the event of bankruptcy, fixed assets can be valued and used as collateral, enabling firms to secure long-term funding from banks. According to Myers and Majluf (1984), issuing equity carries costs related to asymmetric information. However, issuing debt backed by fixed assets can reduce these costs compared to issuing shares. Consequently, firms with substantial fixed assets are more likely to use debt in their capital structure, as supported by studies such as Flannery & Hankins (2013), Oztekin & Flannery (2012), and Hanousek & Shamshur (2011).

Several empirical studies in developing nations, such as those by Chakraborty (2010), Delcoure (2007), Supanvanij (2006), and Omet (2006), have found a positive relationship between debt and fixed assets, consistent with findings from developed countries. These results align with the firm trade-off theory, suggesting that firms can use fixed assets as collateral to reduce the risks associated with information asymmetry, particularly when securing long-term loans. In African nations, information asymmetry is a common problem, and firms are encouraged to leverage fixed assets to lower borrowing risks. Consequently, fixed assets are expected to

increase firms' borrowing, providing collateral that facilitates loan acquisition. In line with previous studies (e.g., Flannery & Hankins, 2013; Oztekin & Flannery 2012), fixed assets in this study are measured as plant, property, and equipment (PPE) divided by total assets.

3.7.2.2 Non-debt-tax shield (Control variable)

The non-debt-tax shield, often represented by depreciation, plays a crucial role in firm investment decisions. Firms tend to invest only when there is a notable mismatch between efficiency and the capital stock, with the understanding that such investments are irreversible. This suggests that capital depreciation and fluctuations are closely linked to these inefficiencies. During periods of high uncertainty, a standard business cycle model incorporating capital irreversibility indicates that depreciation becomes more significant, especially in firms experiencing rapid capital depreciation. This relationship is supported by a differences-in-differences econometric analysis of industrial growth data from various countries, as demonstrated by Samaniego and Sun (2019).

Li and Shen (2023) argues that tax incentives play a significant role in business financing, particularly through the mechanism of rapid depreciation, which impacts corporate investment strategies. Research on tax incentives identifies two main drivers: saving for emergencies and seeking higher returns. The evidence suggests that the latter is more influential, as rapid depreciation policies reduce the cost of investing in fixed assets, discouraging financial investments. This suggests that non-debt tax shields, such as depreciation, can decrease firms' reliance on borrowing, as these

alternative tax-shield sources make borrowing less attractive (Li and Shen, 2023). Consistent with previous studies (Li and Shen, 2023; Samaniego and Sun, 2019), the non-debt tax shield in this analysis is quantified using the ratio of total depreciation to total assets (NDTSTA).

3.7.2.3 GDP Growth Rate (Control variable)

According to Joeveer (2013), macroeconomic variables significantly influence debt financing by shaping economic growth prospects. In developing nations, where investments are predominantly financed through debt rather than equity, one would expect a positive correlation between GDP growth and debt. This aligns with both the pecking order theory and the trade-off theory, which suggest that as GDP grows, the need for debt increases due to the expanded investment opportunities. Several studies, including those by Drobetz et al. (2013), Gungoraydinoglu and Oztekin (2011), Gropp and Heider (2010), Frank and Goyal (2009), and Daskalakis and Psillaki (2008), support this positive relationship between GDP growth and debt.

Conversely, firms with significant growth potential may face challenges related to excessive debt and financial instability, as suggested by the trade-off theory (Myers, 1977). According to this theory, firms with substantial room for expansion are more likely to encounter difficulties with high levels of debt. Additionally, Dang (2013) highlights that firms might prioritize equity over debt financing due to concerns about agency costs. Myers (1977) also pointed to a negative association between GDP growth and debt from an agency cost perspective. Despite the pecking order theory's positive connection between GDP growth and debt, Myers (1977) arguments that in

period of rapid economic growth, firms may prefer equity finance to debt finance. Therefore, based on Myers' reasoning, this study expects GDP growth would reduce debt borrowing. The GDP Growth Rate is the annual growth rate of Gross Domestic Product (i.e., GDPG).

3.7.2.4 Interest Rate (Control variable)

The cost of borrowing, influenced by both long-term and short-term interest rates, plays a crucial role in shaping firms' debt financing decisions. Interest rates directly impact the attractiveness of debt, as lower borrowing costs encourage firms to seek additional funds from financial institutions and capital markets to support their investments. In developed countries, where interest rates are typically low, often in the single digits, businesses are incentivised to take advantage of affordable debt financing. This trend highlights the significant effect of interest rates on firms' borrowing behaviors, as observed by Semuel & Nurina (2015) and Noor & Nila (2014).

Although financial markets have been liberalised, many emerging market nations still have high interest rates. Financing is typically secured on a short-term basis, with interest rates typically in the double digits. This is the effect of bank depositors' short-term saving habits and expectations of rising savings rates. Furthermore, debt holders provide better significant-cost funds to minimise associated difficulties against the agency due to the significant amount of market imperfections, such as asymmetry of information between debt owners and the firm and the high propensity between ethical risk and danger transfer. (Homapour et al., 2022).

However, the low interest rate, which attracted investors to debt financing, was hypothesised to favourably impact the relationship between interest rates and loans in developed economies. Effective institutions and rules also supported preserving creditors' claims and guaranteeing contract compliance. However, because high interest rates in developing nations are primarily caused by weak institutional performance in most cases, short-term financing was predicted to negatively impact the economy due to the hypothesised relationship between debt and interest rates. This made debt financing for businesses unattractive. The high interest rate in developing nations was primarily caused by weak institutional performance in most developing countries, which did not secure contract rules and creditors' rights (Obudah & Tombofa, 2013).

The relationship between interest rates and debt financing has yielded conflicting results in academic literature. Studies such as those by Nejadmalayeri (2001), Drobetz & Nanzenried (2006), Gonzalez et al. (2007), Homapour et al. (2022), and Mwenda & Ngollo (2022) have found a positive association between interest rates and debt. Conversely, other research by Hackbarth et al. (2006), Gonzalez et al. (2007), Hatzinikolaous et al. (2002), and others has reported a negative relationship. These discrepancies highlight the ongoing debate regarding the impact of interest rates on debt financing. High loan interest rates in developing countries can deter firms from borrowing due to the added financial burden and the associated agency problems with opportunistic managers. This contrasts with advanced economies, where lower interest rates may facilitate long-term debt financing and alleviate agency concerns. The empirical relationship between interest rates and debt remains inadequately understood, given the varying effects observed, particularly in less-studied developing nations. The interest rate in this context refers to the bank lending rate.

3.7.3 Justification of variables in firms' growth and firms' performance models

3.7.3.1 Firms' Borrowing (Control variable)

Firms' borrowing refers to debt. According to Modigliani & Miller (1963), The relationship between debt and firm performance has been extensively debated, with significant contributions from Modigliani and Miller's (1958) theory, which posits that debt positively impacts corporate performance by providing interest tax benefits, despite the increased risk of financial distress. According to their hypothesis, an optimal amount of debt can enhance a firm's success. This perspective is supported by Matemilola et al. (2012, 2018), who found a positive correlation between debt and firm performance, indicating that well-managed debt can drive growth and improve performance. Additionally, Bhaduri (2002) established a link between credit and firm performance, further affirming that debt influences firm growth.

However, the Modigliani and Miller hypothesis also acknowledges potential downsides, including financial distress costs that may offset the benefits of interest tax shields. This negative correlation is supported by George and Hwang (2010), who found that excessive debt could impair firm performance if the costs of financial distress surpass the advantages of debt financing. Nonetheless, empirical evidence from Chauvet and Jacolin (2017) and Rodeiro-Pazos et al. (2022) suggests that, particularly in developing and emerging markets, debt can positively affect firm growth. This implies that firms in these regions may leverage debt to expand operations and enhance growth, with the total debt to total assets ratio (TD/TA) serving as a key measure in these analyses.

3.7.3.2 Firm size (Control variable)

According to Matemilola et al. (2018), The size of a firm has been consistently linked to its performance and growth, with larger firms generally showing more favorable outcomes. Gomes and Schmid (2010) highlighted firm size as a critical determinant of performance and growth, noting that effective management of scale effects ensures a positive relationship between credit and firm performance. Similarly, Fama et al. (2001) identified firm size as a significant risk factor affecting performance, with larger firms typically experiencing higher profitability and lower bankruptcy risk. Abor (2005) and Banz (1981) also supported the view that larger firm size positively influences performance and growth. These studies indicate that larger firms benefit from economies of scale, leading to better financial stability and growth opportunities.

In contrast, some researchers, such as Kanne et al. (2023), Amihud (2002), and Horowitz et al. (2000), have argued that firm size does not necessarily guarantee better performance. They observed that smaller firms could sometimes outperform their larger counterparts, challenging the traditional view that size equates to success. Despite these differing perspectives, the current study anticipates a positive relationship between firm size and performance. Large firms often enjoy steady cash flows and greater capacity for profitable investments, enhancing their performance. Additionally, Chauvet and Jacolin (2017) found that larger firms benefit from economies of scale, which boosts growth. Pagano and Schivardi (2003) also noted that increased firm size is associated with higher productivity growth due to the advantages of scaling. Hence, firm size, measured as the natural logarithm of total assets, is expected to positively impact firm performance and growth.

3.7.3.3 Book to Equity to Market Equity (control variable)

A positive correlation between book-to-market equity and firm performance was revealed by Gomes & Schmid (2010). In a similar vein, Aret & Sinclair, (2006) claimed that book-to-market equity was crucial to determining the firm's performance and showing promising indicators. Like Chan (1991) related distress variables, Fama & French (1992) introduced book-to-market equity as a risk factor proxy. Fama & French (1992) concluded that book-to-market equities influenced firm performance.

The return risk component is closely linked to a firm's earning potential, with higher book-to-market equity values often indicating stronger firm performance. Chan and Chen (1991) highlighted that book-to-market equity could effectively predict the performance of Japanese firms, providing a straightforward explanation for their financial outcomes. Similarly, Stattman (1980) demonstrated a positive correlation between book-to-market equity and firm performance, suggesting that this ratio captures relative earning prospects. Given these findings and in accordance with Chen (1991) and Stattman (1980), the current study anticipates a positive relationship between book-to-market equity and firm performance. Specifically, book-to-market equity, measured as the ratio of the book value of equity to the market value of equity (BTM), is expected to reflect a firm's potential for strong performance.

3.7.3.4 Profitability (Control variable)

Profitability is a significant driver of firm growth, as demonstrated by recent studies. Rodeiro-Pazos et al. (2022) found that higher profitability positively influences firm growth, a finding echoed by Ihenyen et al. (2023), who reported similar results for

firms in European countries. These studies suggest that profitable firms, with their internal financial resources, are better positioned to expand their operations and achieve substantial growth. Essentially, the availability of internal funds enables firms to invest in new opportunities and scale their activities, facilitating enhanced growth and development. The importance of profitability was also emphasised by Myers & Majluf (1984) they argue that profitable firms rely on retained profit to finance investments for growth expansion. In other words, firms should turn to retained earnings first before debt and equity when they need financing (Myers & Majluf, 1984). Likewise, Chakrabarti & Chakrabarti (2019) and Khemiri & Noubbigh (2018) emphasize profitability's importance in stimulating business growth. Based on past studies, profitability is proxied by earnings before interest and tax to total assets ratio (EBIT/TA).

3.7.3.5 Interest Rate (Control variable)

Interest rates are a crucial determinant of firm performance and growth, with higher rates generally exerting a negative impact. Dornbusch et al. (2004) define the interest rate as the annual rate paid on loans or investments beyond the principal amount. High interest rates diminish the present value of anticipated cash flows, making investments less attractive and negatively affecting firm performance and growth (Frank & Bernanke, 2001). Solnik (1983) also notes that elevated interest rates can impair stock performance. This inverse relationship suggests that as interest rates rise, the costs of capital increase, leading to reduced firm performance. This effect is particularly pronounced in developing countries, where high interest rates often reflect institutional inefficiencies and poor contract enforcement (Obudah & Tombofa, 2013).

Empirical evidence supports the negative correlation between interest rates and firm performance. Studies by Hatzinikolaous et al. (2002) and Hackbarth et al. (2006) confirm that higher interest rates are detrimental to firm performance. High interest rates increase capital costs and discourage investment, thereby hindering firm growth. Consequently, in line with past studies (e.g., Dornbusch et al., 2004; Obudah & Tombofa, 2013), this study expects interest rate to reduce both firm performance and growth. Elevated interest rates lead to higher operational costs, dampening investment activities and suppressing growth.

3.7.3.6 GDP Growth Rate

When a nation's economy is thriving, GDP growth generally boosts firm performance. A healthy economy encourages businesses to take on more debt, as they can capitalize on the tax advantages of borrowing. This increased debt can enhance their performance by providing the financial resources needed for expansion and investment. ((Ramli et al., 2019); Frank & Goyal, 2009), As a nation's purchasing power grows and companies earn more revenue, the economy benefits from positive growth. In turn, investors will likely buy more shares in these companies, driving up their stock prices and boosting overall corporate performance. (Tandelilin, 2010).

3.8 T-test statistics

This process determines the individual statistical significance of the estimated coefficients within the model. By assessing the coefficients at specific significance levels, such as 5% or 1%, researchers can evaluate whether the relationship between the independent and dependent variables is statistically meaningful. A 5% level of

significance, commonly used in empirical studies, indicates a 95% confidence level that the observed effect is not due to random chance. A significant coefficient at this level suggests a reasonably strong relationship between the variable and the outcome of interest. In contrast, a 1% significance level is more stringent, requiring a 99% confidence level. A significant coefficient at this higher threshold provides more substantial evidence of a reliable and non-random relationship between the variables.

In practice, the choice of significance level depends on the context of the study and the need for precision. The lower the p-value (e.g., below 0.05 or 0.01), the more confident researchers can be that the relationship observed in the sample reflects an actual effect in the population. By evaluating the coefficients at these specific significance levels, researchers can differentiate between variables with a real impact and those whose effects may be due to random variation. This rigorous approach ensures that the findings are robust and meaningful, contributing to the overall reliability of the research conclusions.

3.8.1 F – statistics

This is used to determine whether the joint impact of independent or explanatory variables significantly influences the dependent variable in the model at a 5 per cent or 1 per cent level of significance. It is also considered the test of overall significance.

3.8.2 Durbin – Watson

The Durbin-Watson (DW) statistics test for the existence of autocorrelation among residuals variables.

3.8.3 Coefficient of determination (r^2)

This is adopted to ascertain the percentage contribution that independent or explanatory variables have on the dependent variable and determine the model's fitness. The values of R—square range from 0 to 1. Therefore, the closer the R—square to 1, the better the model's goodness of fit, and vice versa.

3.9 Summary of the Chapter

This chapter presents the methodology of the study, model specifications, and justification of various variables used, such as variables on firm borrowing growth and performance as the main dependable variables were all reviewed and justified, the control variables such as profitability, firm size, fixed assets, non-debt-tax shield, firm-level variable were used. We used Gross domestic product and interest rate as macroeconomic variables that were fully justified. The chapter also used t-statistic, F-statistics, and ecoefficiencies determination to ascertain the percentage contribution of the independent or explanatory variable and model fitness. Furthermore, the chapter establishes the conceptual framework, revealing the intricate relationship between financial inclusion and firm borrowing growth and performance in African countries. The literature in chapter two fortifies this relationship, and the theory is comprehensively explained. The basis of each construct in the framework was presented in detail. The model serves as the guiding principle of the research process, and the philosophical approaches and methodologies adopted will be presented in chapter four.

CHAPTER 4

EMPIRICAL RESULTS

4.1 Descriptive Statistics

This chapter presents the descriptive statistics, correlation, and panel regression results. The descriptive statistics describe the data characteristics. The correlation results explain the relationship between the variables to detect whether multicollinearity is present. Panel regression findings established a causal relationship between the firms' borrowings and the independent variables, between the firms' growth and the independent variables, and between the firms' performance and the independent variables. However, the macroeconomics control variables, such as gross domestic product (GDP) and interest rate (INR), were reported over time across all three tables in the interpretations of the findings.

Table 4.1 shows the descriptive statistics of all the variables used for the three models. The mean value of firms borrowing is 0.502, which falls within 0.163 (minimum value) and 0.785 (maximum value). This mean value for firms' borrowing indicates that, on average, firms borrow less in African countries. The bank branches have a mean value of 11.143, which falls within 1 (minimum value) and 34 (maximum value) for the firms. This implied that, on average, some African countries have more bank branches than others, which could increase firms' access to borrowing. Next, the automatic teller machine (ATM) has a mean value of 20.282, which falls within 3 (minimum value) and 69 (maximum value). Hence, on average, firms in some African

countries have more access to finance than others. Moreover, the depth of credit information (CREDITINFO) mean value is 4.402 which falls within 0 (minimum value) and 8 (maximum value). Thus, on average, firms in some African countries have more depth of credit information than others. Additionally, the Domestic Credit to Private Sector (DCPR) mean value is 43.809 which falls within 0 (minimum value) and 128.838 (maximum value). Therefore, on average, firms in some African countries can access credit than others. Besides, the standard deviation (a measure the degree of variability around the mean) reveal that the most volatile variable is Domestic Credit to Private Sector and its standard deviation is (39.099). Conversely, GDP growth rate is the least volatile variable with a standard deviation of (1.166).

Table 4.1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
-----+-----					
FBR	2,550	0.502	8.223	0.163	0.785
BB	2,550	11.144	7.826	1	34
ATM	2,550	20.282	16.550	3	69
CREDITINFO	2,550	4.402	3.316	0	8
DCPR	2,550	43.809	39.099	0	128.838
-----+-----					
LogTA	2,550	23.501	5.635	6.758	34.297
FATA	2,550	2.530	1.923	0.136	61.700
EBITTA	2,550	5.000	3.240	-2.620	87.000
TOBINQ	2,550	13.030	5.210	0.610	104.002
NDTSTA	2,550	4.530	7.303	0.834	55.709
-----+-----					
FG	2,500	19.214	3.289	8.033	36.028
BTM	2,550	5.100	3.131	0.601	57.514
INTR	2,550	7.164	8.715	0.263	46.011
GDPG	2,550	24.967	1.166	22.416	27.076

Notes: FBR is the total debt to total asset ratio. FG is firms' growth is measured as yearly change in sales. TOBINQ is ratio of market value of equity plus book value of debt to total assets. ATM is the Automatic teller machines per 100,000 adults. BB is the bank branches per 100,000 adults. DCPR is the Domestic credit to the private sector as a percentage of GDP. CREDITINFO is the depth of credit information ranging from 0 to 10. EBITTA is the ratio of earnings before interest and tax to total assets. FATA is the ratio of plant, equipment, and property to total asset. NDTSTA is the ratio of total depreciation to total assets ratio. GDPG is the yearly growth rate in Gross Domestic Product. INTR is the bank lending rate. BTM is the ratio of book value of equity to market value of equity.

4.2 Correlation Results

4.2.1 Correlation results for objective one (Model 1)

Table 4.2A presents the correlation coefficient between firms' borrowings (FBR) and the financial inclusion variables such as branches (BB), Automatic Teller Machine (ATM), Depth of Credit Information (CREDITINFO), and Domestic Credit to Private Sector (DCPR); and the correlation coefficients between firms' borrowings and other independent variables. The correlation coefficient between firms' borrowings and bank branches (BB) has a positive value (0.030**) and is statistically significant at a 5% level. Similarly, the correlation coefficient between firms' borrowings and Automatic Teller Machine (ATM) is positive (0.055**) and statistically significant at 5% level. Likewise, the correlation coefficient between firms' borrowings and Depth of Credit Information (CREDITINFO) is positive (0.076***) and statistically significant at 1% level. Also, the correlation coefficient between firms' borrowings and Domestic Credit to Private Sector (DCPR) is positive (0.046**) and statistically significant at 5% level. Thus, these variables suggest that as financial inclusion (i.e., firms' access to finance) increases, firms' borrowing also increases. Besides, the correlation coefficient between other independent variables is generally lower which indicate that there is no multicollinearity problem between the independent variables.

Table 4.2A: Correlation result of objective 1 (firms' borrowing and the independent variables)

	FBR	BB	ATM	CREDIT INFO	DCPR	LogTA	FATA	EBITTA	NDTSTA	INTR	GDPG
FBR	1.000										
BB	0.030**	1.000									
ATM	0.055**	0.365***	1.000								
CREDIT INFO	0.076***	0.086***	0.209***	1.000							
DCPR	0.046**	0.553***	0.842***	0.016**	1.000						
LogTA	-0.117***	0.124**	-0.123***	0.030**	-0.006*	1.000					
FATA	0.762***	-0.010**	0.031**	-0.025**	0.032**	-0.063**	1.000				
EBITTA	0.002	-0.005*	0.019**	0.027**	0.012**	0.001	-0.005*	1.000			
NDTSTA	0.375***	-0.004	0.095***	0.028**	0.073***	-0.073***	0.001	0.001	1.000		
INTR	-0.016***	-0.571**	-0.223***	-0.223***	-0.113***	-0.328***	0.124***	0.008*	-0.010**	1.000	
GDPG	0.069***	0.083**	0.576***	0.172***	0.469***	-0.191***	0.017**	0.024**	0.048**	-0.356***	1.000

Notes: FBR is the total debt to total asset ratio. FG is firms' growth is measured as yearly change in sales. TOBINQ is ratio of market value of equity plus book value of debt to total assets. ATM is the Automatic teller machines per 100,000 adults. BB is the bank branches per 100,000 adults. DCPR is the bank branches per 100,000 adults. DCPR is the percentage of GDP. CREDITINFO is the depth of credit information ranging from 0 to 10. EBITTA is the ratio of earnings before interest and tax to total assets. FATA is the ratio of plant, equipment, and property to total asset. NDTSTA is the ratio of total depreciation to total assets ratio. GDPG is the yearly growth rate in Gross Domestic Product. INTR is the bank lending rate. Asterisk *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

4.2.2 Correlation result for objective two (Model 2)

Table 4.2B presents the correlation coefficient between firms' growth (FG) and the four proxies for financial inclusion. The correlation coefficient between firms' growth and bank branches (BB) is positive (0.234) and statistically significant at 1% level. Similarly, the correlation coefficient between firms' growth and Automatic Teller Machine (ATM) is positive (0.136) and statistically significant at 1% level. Likewise, the correlation coefficient between firms' growth and Depth of Credit Information (CREDITINFO) has a positive value (0.069) and is statistically significant at a 5% level. Furthermore, the correlation coefficient between firms' growth and Domestic Credit to the Private Sector (DCPR) has a positive value (0.181) and is statistically significant at a 1% level. Therefore, these positive correlation coefficients suggest that as financial inclusion (i.e., access to finance) increases, firms' growth also increases. Moreover, the correlation coefficient between other independent variables is generally lower indicating that there is no multicollinearity problem between the independent variables.

Table 4.2B: Correlation result of objective 2 (firms' growth and the independent variables)

	FG	INTR	GDPR	BB	ATM	CREDITINFO	DCPR	LogTA	EBITTA	FBR
FG	1.000									
INTR	0.088***	1.000								
GDPR	-0.032**	-0.356***	1.000							
BB	0.234***	-0.571***	0.083***	1.000						
ATM	0.136***	-0.223***	0.476***	0.365***	1.000					
CREDITINFO	0.069**	-0.113***	0.172***	0.086***	0.210***	1.000				
DCPR	0.181***	-0.328***	0.469***	0.453***	0.442***	0.016**	1.000			
LogTA	-0.294***	0.124***	-0.191***	0.124***	-0.123***	0.030**	-0.006*	1.000		
EBITTA	-0.035***	-0.010**	0.024**	-0.005*	0.019**	0.027	0.012**	0.001	1.000	
FBR	0.107***	-0.016**	0.069**	-0.030**	0.055**	0.008*	0.046**	-0.117***	0.001	1.000

Notes: FBR is the total debt to total asset ratio. FG is firms' growth is measured as yearly change in sales. ATM is the Automatic teller machines per 100,000 adults. BB is the bank branches per 100,000 adults. DCPR is the Domestic credit to the private sector as a percentage of GDP. CREDITINFO is the depth of credit information ranging from 0 to 10. EBITTA is the ratio of earnings before interest and tax to total assets. GDPR is the yearly growth rate in Gross Domestic Product. INTR is the bank lending rate. Asterisk *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

4.2.3 Correlation result for objective three (Model 3)

Table 4.2C presents the correlation coefficient between firms' Performance (TobinQ) and the four proxies for financial inclusion. The correlation coefficient between firms' performance and bank branches (BB) has a positive value (0.057) and statistically significant at 5% level. Similarly, the correlation coefficient between firms' performance and Automatic Teller Machine (ATM) has a positive value (0.038) and statistically significant. Likewise, the correlation coefficient between firms' performance and Depth of Credit Information (CREDITINFO) has a positive value (0.026) and statistically significant at 5% level. Also, the correlation coefficient between firms' performance and Domestic Credit to Private Sector (DCPR) has a positive value (0.032) and statistically significant at 5% level. Therefore, these positive correlation coefficients suggest that as financial inclusion (i.e., access to finance) increases, firms' performance also increases. Furthermore, the correlation coefficient between other independent variables is generally lower indicating that there is no multicollinearity problem between the independent variables.

Table 4.2C: Correlation result of objective 3 (firms' performance and the independent variables)

	TOBINQ	BB	ATM	CREDITINFO	DCPR	FBR	LogTA	BTM	INTR	GDPR
TOBINQ	1.000									
BB	0.057**	1.000								
ATM	0.038**	0.365***	1.000							
CREDITINFO	0.026**	0.086***	0.210***	1.000						
DCPR	0.032**	0.453***	0.842***	0.016**	1.000					
FBR	-0.005	-0.078***	0.008*	-0.025**	-0.024**	1.000				
LogTA	0.001	0.124***	-0.123***	0.030**	-0.006*	0.100***	1.000			
BTM	-0.000	-0.021**	-0.011**	-0.006*	-0.013**	0.010**	-0.020**	1.000		
INTR	-0.010**	-0.471***	-0.222***	-0.113***	-0.328***	0.029**	0.124***	0.020**	1.000	
GDPR	0.024**	0.083***	0.474***	0.172***	0.469***	0.068**	-0.191***	-0.015**	-0.356***	1.000

Notes: FBR is the total debt to total asset ratio. FG is firms' growth is measured as yearly change in sales. TOBINQ is ratio of market value of equity plus book value of debt to total assets. ATM is the Automatic teller machines per 100,000 adults. BB is the bank branches per 100,000 adults. DCPR is the Domestic credit to the private sector as a percentage of GDP. CREDITINFO is the depth of credit information ranging from 0 to 10. EBITTA is the ratio of earnings before interest and tax to total assets. FATA is the ratio of plant, equipment, and property to total asset. NDTSTA is the ratio of total depreciation to total assets ratio. GDPR is the yearly growth rate in Gross Domestic Product. INTR is the bank lending rate. BTM is the ratio of book value of equity to market value of equity.

Asterisk *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 4.3 Reports the findings for the Pooled Ordinary Least Squares (OLS) estimation, Random Effect estimation, Fixed Effect estimation, and the two-step System GMM estimation. The main estimation method is the two-step system GMM because the previous year's borrowing may affect the current year's borrowing. The coefficient of the lag dependent variable (i.e., lagged F_{Borrowing}_{t-1}) is statistically significant at the 0.01 level (coefficient = 0.051***, t-statistics = 5.50), which confirms the relevance of the dynamic model to conduct this research. The autocorrelation of order one AR(1) is present as expected because the p-value (0.000) is statistically significant because it is less than 0.01. However, the autocorrelation of order two AR(2) is absent because the p-value (0.109) is statistically insignificant. After all, it exceeds 0.01. Also, the Hansen Test of instruments validity shows that the p-value (0.215) is statistically insignificant because it exceeds 0.05. The AR2 and the Hansen Test results suggest that the model is correctly specified. The autocorrelation of order two (AR2) is a post estimation test. The null hypothesis is that there is no second order autocorrelation in the error-term. Failure to reject the null hypothesis indicate that there is no second order autocorrelation problem, and the model is correctly specified. Moreover, the Hansen Test is a post estimation test, and the null hypothesis is that the instruments are valid. Failure to reject the null means that the instruments are valid, and the model is correctly specified.

The four proxies for Financial Inclusion are used. There are several proxies of financial inclusion used in the literature. Moreover, different researchers use either two proxies or three proxies. However, to make the results comprehensive, this study uses four reliable proxies of financial inclusion for better understanding of the relationship. The four financial inclusion proxies are bank branches (BB), Automatic Teller Machine

(ATM), Depth of Credit Information (CREDITINFO), and Domestic Credit to Private Sector (DCPR). In the primary estimation method and the robustness check, which is the two-step system GMM, the coefficient of BB is statistically significant and positively related to firms' borrowing at the 1% significance level (coefficient of BB = 0.993***, t-statistics = 3.65). In the Pooled OLS model, the coefficient of BB is statistically significant and positively related to firms' borrowing at the 1% significance level. Likewise, as a robustness check, in the Random Effect model, the coefficient of BB is statistically significant and positively related to firms' borrowing at the 10% significance level. Moreover, in the Fixed Effect model, the coefficient of BB is statistically significant and positively related to firms' borrowing at the 10% significance level.

In the main estimation model, which is the two-step system GMM, the coefficient of ATM is statistically significant and positively related to firms' borrowing at the 10% significance level (coefficient of ATM = 1.309***, t-statistics = 7.47). In the Pooled OLS model, the coefficient of ATM is statistically significant and positively related to firms' borrowing at the 5% significance level. Likewise, in the Random Effect model, the coefficient of ATM is statistically significant and positively related to firms' borrowing at the 10% significance level. Moreover, in the Fixed Effect model, the coefficient of ATM is statistically significant and positively related to firms' borrowing at the 10% significance level.

In the main estimation model, as well as robustness check which is the two-step system GMM, the coefficient of DCPR is statistically significant and positively related to firms' borrowing at the 1% significance level (coefficient of DCPR = 0.288***, t-

statistics = 4.07). the Pooled OLS model, the coefficient of DCPR is statistically significant and positively related to firms' borrowing at the 10% significance level. Likewise, the Random Effect model, the coefficient of DCPR is positive but statistically insignificant. Moreover, in the Fixed Effect model, the coefficient of DCPR is positive but statistically insignificant.

Conversely, in the primary estimation method, also as a robustness check, which is the two-step system GMM, the coefficient of CREDITINFO is statistically significant and negatively related to firms' borrowing at the 1% significance level (coefficient of CREDITINFO = -2.38***, t-statistics = -6.16). the Pooled OLS model, the coefficient of CREDITINFO is statistically significant and negatively related to firms' borrowing at the 10% significance level. Likewise, the Random Effect model, the coefficient of CREDITINFO is statistically insignificant. Moreover, in the Fixed Effect model, the coefficient of CREDITINFO is statistically significant and negatively related to firms' borrowing at the 5% significance level.

The firm-level control variables are firm size (LTA), fixed assets (FATA), profitability (EBITTA), and non-debt tax-shield (NDTSTA). In the main estimation model, as well as robustness check which is the two-step system GMM, the coefficient of firm size (LTA) is statistically significant and negatively related firms' borrowing at the 0.01 level (coefficient of LTA = -4.756***, t-statistics = -9.95). the coefficient of firm size (LTA) is statistically significant and negatively related to firms' borrowing in the Pooled OLS, Random Effect, and Fixed Effect models at the 1%, 10%, and 1% levels, respectively.

In the main estimation model, also as a robustness check of the two-step system GMM, the coefficient of fixed assets (FATA) is statistically significant and positively related to firms' borrowing at the 5% level (coefficient of FATA = 0.001**, t-statistics = 2.66). the coefficient of fixed assets (FATA) is statistically significant and positively related to firms' borrowing in the Pooled OLS model, Random Effect model, and the Fixed Effect model at the 1%, 1%, and 1% levels, respectively.

In the main estimation model, which is the two-step system GMM, the coefficient of profitability (EBITTA) is statistically significant and negatively related to firms' borrowing at the 5% level (coefficient of EBITTA = -0.001**, t-statistics = -2.48). As a robustness check, the coefficient of profitability (EBITTA) is statistically insignificant in the Pooled OLS model, Random Effect model, and the Fixed Effect model.

In the main estimation method, which is the two-step system GMM, the coefficient of non-debt tax-shield (NDTSTA) is statistically significant and positively related to firms' borrowing at the 1% level (coefficient of NDTSTA = 0.677***, t-statistics = 41.83). the coefficient of NDTSTA is statistically significant and positively related to firms' borrowing in the Pooled OLS model, Random Effect model, and the Fixed Effect model at the 1%, 1%, and 1% levels, respectively.

The macro-level variables are interest rate (INTR) and gross domestic product growth rate (GDPG). In the main estimation method, the two-step system GMM, the coefficient of INTR is statistically significant and negatively related to firms' borrowing at the 1% significance level (coefficient of INTR = -1.367***, t-statistics =

-5.16). The Pooled OLS model, the coefficient of INTR is statistically significant and negatively related to firms' borrowing at the 10% significance level. Likewise, the Random Effect model, the coefficient of INTR is statistically significant and negatively related to firms' borrowing at the 10% significance level. But, in the Fixed Effect model, the coefficient of INTR is negative but statistically insignificant.

Conversely, in the main estimation method, which is the two-step system GMM, the coefficient of GDPG is statistically significant and positively related to firms' borrowing at the 1% significance level (coefficient of GDPG = 7.568***, t-statistics = 3.65). In the pooled OLS model, the coefficient of GDPG is statistically significant and positively related to firms' borrowing at the 5% significance level. Furthermore, as a robustness check, in the Random Effect model, the coefficient of GDPG is positive but statistically insignificant. Moreover, in the Fixed Effect model, the coefficient of GDPG is statistically significant and negatively related to firms' borrowing.

1. Discussion of results for objective 1

The researcher found more evidence that the proxies for Financial Inclusion are positively related to firms' borrowing. Specifically, as automatic teller machines and bank branches spread across African countries, people can use these services to save money in banks and firms can access the pooled money in form of loan to raise their borrowings level to the point where the tax-shield benefits of debt are maximized. Likewise, as domestic credit to private sector increases, firms can get more credits in form of loan to raise their borrowing to the desired optimal level. Moreover, the result of the primary estimation model and the robustness check, the two-step system GMM, is not driven by biases due to the endogeneity problem. The findings suggest that

financial inclusion increases firms' borrowing levels because of extra access to debt capital. The findings also suggest that improving access to financial services allows banks to attract more deposits, which can be channeled to firms. This gives firms more flexibility in raising the needed debt level to maximize the tax-shield benefits of debt emphasized in the Myers (1984) trade-off theory. The trade-off theory proved that firms should target optimal debt to maximize the tax-shield benefits of debt. Moreover, the positive coefficients of most financial inclusion proxies implied that financial inclusion increased the firms' borrowing due to the additional access to debt capital.

Turning to the firm-level control variables, firms' size is negatively related to firms' borrowing, indicating that they use less borrowing as they grow bigger. The reason is that more prominent firms tend to raise capital through equity to reduce their debt burden and have more capacity to issue equity than smaller firms. These results are consistent with Hanousek and Shamshur (2011) and Chakraborty (2010), who reported that firms' size is negatively related to debt. These results are inconsistent with the findings of Mohammad *et al.* (2022), Chakrabarti & Chakrabarti (2019) and Dakua (2019), who reported that firm size is positively related to debt capital as more prominent firms are less likely to face bankruptcy problems. Fixed assets are positively related to firms' borrowing, indicating that as fixed assets increase, firms' borrowing increases. The reason is that firms can pledge fixed assets as collateral to obtain bank loans. The results agree with Matemilola *et al.* (2019), Flannery and Hankins (2013), and Oztekin and Flannery (2012), who reported the positive impact of fixed assets on debt capital. Non-debt tax shields are positively related to firms' borrowing, suggesting that firms' borrowing increases as non-debt tax shields increase. The results are consistent with Matemilola *et al.* (2019) findings that a non-debt tax shield is positively

related to firms' debt capital in some developing countries, indicating that a non-debt tax shield does not substitute for tax. The results are inconsistent with Jaworski and Santos's (2022) findings that a non-debt tax shield is negatively related to debt capital. They reason that non-debt tax-shield is a substitute for tax shields and should reduce debt usage.

Turning to macro-level control variables, the interest rate is negatively related to firms' borrowing, indicating that as interest rate increases, firms borrowing decreases. The reason is that a higher interest rate represents a cost to the firms, which reduces the attractiveness of debt borrowing. These results are consistent with previous studies (e.g., Mwenda & Ngollo, 2022); Najedmalayeri, 2016; Drobetz et al., 2011) who reported that interest rate is negatively related to debt as higher interest rates represent additional costs to the firms. Conversely, the results are inconsistent with the findings of Matemilola *et al.* (2019), who found that interest rate is positively related to debt, which indicates that the financial markets appear inconsistent in some developing countries. Based on the two-step system GMM results, GDP growth is a growth rate positively related to firms' borrowing. The results are consistent with the findings of Ramli et al. (2019) and Frank & Goyal (2009), who reported a positive impact of GDP growth rate on debt capital. The reason is that as a nation's economy improves, firms can generate more profits to repay debt loans, which encourages using more debt to maximize tax-shield benefits.

Table 4.3: Result of Panel Data Analysis for Objective 1 ((firms' borrowing model)

	Dependable Variable: Firms' Borrowing (FBR)		
	Pooled OLS Model	Random Effect Model	Fixed Effect Model
Firms' Borrowing (FBRit-1)	-	-	-
Interest Rate (INTR)	-0.489* (-1.97)	-0.511* (-1.71)	-0.469 (-1.08)
GDP growth rate (GDPG)	4.500** (2.43)	3.081 (1.13)	-22.83** (-2.30)
Bank Branches (BB)	0.810*** (2.67)	0.615* (1.65)	0.632* (1.99)
Automatic Teller Machine (ATM)	0.534** (2.43)	0.237* (1.97)	1.327* (1.85)
Credit Information (CREDITINFO)	-0.998* (-1.89)	-0.410 (-1.04)	-1.460** (-2.03)
Domestic Credit to Private (DCPR)	0.163* (1.68)	0.038 (0.42)	-0.089 (-0.77)
Log of Total Assets (LogTA)	-0.827*** (-2.79)	-0.900* (-1.94)	-7.256*** (-2.87)
Fixed Assets (FATA)	0.025*** (68.68)	0.251*** (76.70)	0.0210*** (70.78)
Profitability (EBITTA)	9.33 (0.33)	-2.09 (-0.82)	-3.32 (-1.30)
Non-debt tax shield (NDTSTA)	0.812*** (33.47)	0.787*** (32.79)	0.750*** (28.36)
Constant	-76.299 (-1.62)	-40.051 (-0.58)	81.9*** (3.02)
Breusch-pagan LM	824.62 (0.0000)		
Hausman test			27.71 (0.000)
Multicollinearity (VIF)	2.34		
Heteroskedasticity (p-value)			5.308 (0.000)
Serial Correlation (p-value)			(0.000)
Adjusted R-squares			
F-test (p-values)	0.724		
AR1 (p-value)	597.01(0.000)	603.20 (0.000)	681.91 (0.000)
AR2(p-value))	NA	NA	NA
Hansen Test (p-value)	NA	NA	NA
Number of firms	255	255	255
Number of instruments	NA	NA	NA
			2600.32 (0.000)
			0.000
			0.109
			0.215
			255
			170

Note: Asterisk *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Numbers in brackets under the coefficients are t-statistics.

Table 4.4: Results of Panel Data Analysis for Objective 2 (firms' growth model)

	Dependable Variable: Firms' Growth (FG)		
	Pooled OLS Model	Random Effect Model	Fixed Effect Model
Firms' Growth (FG) _{it-1}	-	-	-
Interest Rate (INTR)	-0.006* (-1.97)	0.020* (1.92)	0.025** (2.14)
GDP Growth Rate (GDPG)	0.111** (2.29)	0.014** (2.10)	-0.073 (-0.29)
Bank Branches (BB)	0.070*** (4.39)	0.053*** (3.83)	0.047*** (3.30)
Automatic Teller Machine (ATM)	0.046*** (3.51)	0.010* (1.92)	0.038*** (4.38)
Credit Information (CREDITINFO)	0.001* (1.92)	0.019* (1.93)	0.026* (1.95)
Domestic Credit to Private (DCPR)	0.009 (1.40)	-0.001 (-0.33)	0.002 (0.47)
Profitability (EBITTA)	-0.001 (-1.52)	0.001 (0.91)	0.001 (0.37)
Log of Total Assets (Log of TA)	-0.155*** (-11.71)	-0.107*** (-3.63)	-0.018 (-0.30)
Firms' Borrowing (FBR)	0.001*** (3.12)	0.001* (1.98)	0.001* (1.79)
CONSTANT	21.614*** (9.91)	22.802*** (6.11)	20.795*** (3.14)
Breusch-pagan LM	4201.16 (0.000)		
Hausman test		28.57 (0.002)	
Multicollinearity (VIF)	3.74		
Heteroskedasticity (p-value)		0.000	
Serial Correlation (p-value)		0.000	
Adjusted R-squares			
F-test Value (p-value)	0.0831		
AR (1)	17.40 (0.000)	3.09 (0.002)	2.34 (0.009)
AR (2)	NA	NA	NA
Hansen Test	NA	NA	NA
No. of Firms	255	255	255
Number of instruments	NA	NA	154

Note: Asterisk *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Numbers in brackets under the coefficients are t-statistics.

Table 4.4 Reports the results for the Pooled Ordinary Least Squares (OLS) estimation, Random Effect estimation, Fixed Effect estimation, and the two-step System GMM estimation. The main estimation method for robustness check is the two-step system GMM because the growth of the previous year's firms may affect the growth of the current year's firms. The coefficient of the lag dependent variable (i.e., lagged Firms' Growth_{it-1}) is statistically significant at the 0.01 level (coefficient = 0.478***, t-statistics = 14.25), confirming the dynamic model's relevance to conducting this research. The autocorrelation of order one AR(1) is present as expected because the p-value (0.000) is statistically significant as it is less than 0.01. However, the autocorrelation of order two AR(2) is absent because the p-value (0.107) is statistically insignificant as it exceeds 0.01. Also, the Hansen Test of Instruments' validity shows that the p-value (0.229) is statistically insignificant, exceeding 0.05. The AR2 and the Hansen Test results suggest that the model is correctly specified.

The four financial inclusion proxies, bank branches (BB), Automatic Teller Machine (ATM), Depth of Credit Information (CREDITINFO), and Domestic Credit to Private Sector (DCPR), show a promising relationship with firms' growth. In the main estimation method and robustness check, which is the two-step system GMM, the coefficient of BB is statistically significant and positively related to firms' growth at the 1% significance level (coefficient of BB = 0.030***, t-statistics = 2.71). In the Pooled OLS model, the coefficient of BB is statistically significant and positively related to firms' growth at the 1% significance level. Similarly, in the Random Effect method, the coefficient of BB is statistically significant and positively related to firms' growth at the 1% significance level. Furthermore, in the Fixed Effect method, the coefficient of BB is statistically significant and positively related to firms' growth at

the 1% significance level. These findings suggest that these proxies could positively impact firms' growth, providing a hopeful outlook for the future. In the primary estimation model, which is the two-step system GMM, the coefficient of ATM is statistically significant and positively related to firms' growth at the 1% significance level (coefficient of ATM = 0.038***, t-statistics = 4.38). In the Pooled OLS model, the coefficient of ATM is statistically significant and positively related to firms' growth at the 10% significance level. Likewise, in the Random Effect model, the coefficient of ATM is statistically significant and positively related to firms' growth at the 10% significance level. However, in the Fixed Effect model, the coefficient of ATM is statistically insignificant, indicating no relationship with firms' growth.

Furthermore, in the primary estimation method and robustness check, which is the two-step system GMM, the coefficient of CREDITINFO is statistically significant and positively related to firms' growth at the 10% significance level (coefficient of CREDITINFO = 0.009**, t-statistics = 2.58). In the Pooled OLS model, the coefficient of CREDITINFO is statistically significant and positively related to firms' growth at the 10% significance level. Likewise, in the Random Effect model, the coefficient of CREDITINFO is statistically significant and positively related to firms' growth at the 10% significance level. Moreover, in the Fixed Effect model, the coefficient of CREDITINFO is statistically significant and positively related to firms' growth at the 10% significance level.

Moreover, in the main estimation model which is the two-step system GMM and robustness check, the coefficient of DCPR is statistically significant and positively related to firms' growth at the 10% significance level (coefficient of DCPR = 0.001*,

t-statistics = 1.97). However, the coefficient of DCPR is not significantly related to firms' growth in the Pooled OLS, Random Effect, and Fixed Effect models.

The firm-level control variables are firm borrowing (FBR), firms' size (LTA), profitability (EBITTA), and price-to-book ratio (PB). In the main estimation model, the two-step system GMM, the coefficient of firms' borrowing (FBR) is statistically significant and positively related to firms' growth at the 1% level (coefficient of FBR = 0.002***, t-statistics = 3.20). The coefficient of firms' borrowing (FBR) is statistically significant and positively related to firms' growth in the Pooled OLS model at a 1% significance level. Likewise, the coefficient of firms' borrowing (FBR) is statistically significant and positively related to firms' growth in the Random Effect model. However, the firms' borrowing (FBR) coefficient is not significantly related to firms' growth in the Fixed Effect model. In the main estimation method, the size of the firm is negatively related to the firm's growth. In the random effect model, the size of the firm is negatively related to the firm's growth. However, in the fixed effect model, the firm's size is not significantly related to the firm's growth. Conversely, profitability is not significantly related to firms' growth.

The macro-level variables are gross domestic product growth rate (GDPG) and interest rate (INTR). In the primary estimation method, as well as a robustness check, which is the two-step system GMM, the coefficient of GDPG is statistically significant and positively related to firms' growth at the 1% significance level (coefficient of GDPG = 0.273***, t-statistics = 3.30). In the Pooled OLS model, the coefficient of GDPG is statistically significant and positively related to firms' growth at the 5% significance level. Furthermore, in the Random Effect model, the coefficient of GDPG is

statistically significant and positively related to firms' growth at the 5% significance level. However, in the Fixed Effect model, the coefficient of GDPG is not significantly related to firms' growth.

Conversely, in the primary estimation method, the two-step system GMM, the coefficient of INTR is statistically significant and negatively related to firms' growth at the 5% significance level. In the Pooled OLS model, the coefficient of INTR is statistically significant and negatively related to firms' growth at the 10% significance level. However, in the Random Effect model, the coefficient of INTR is statistically significant and positively related to firms' growth at the 10% significance level. Similarly, in the Fixed Effect model, the coefficient of INTR is statistically significant and positively related to firms' growth at the 5% significance level.

2. Discussion of results for objective 2

The research has uncovered compelling evidence that the proxies for Financial Inclusion are positively linked to firms' growth. Precisely, the spread of automatic teller machines and bank branches across African countries can make more people use banking services to save money which banks can channel to firms to finance profitable investments to raise their growth level. Likewise, domestic credit to private sector make quantity of credits easily accessible to firms. As firms gain more access to credits to finance business expansion, they can grow faster. This is a significant finding, as it underscores the potential of financial inclusion to streamline firms' access to finance, making it easier for them to fund profitable investments and thereby boost their growth. The findings also indicate that an enhancement in access to financial services enables banks to attract more deposits, which can then be directed to firms to meet

their financing needs and growth targets. These findings carry significant implications, reinforcing Nizam et al. (2021) findings for ASEAN 5 countries and supporting the argument that financial inclusion has a substantial impact on economic growth due to the advantage gained from the allocation of financial access to support firms' growth. Similarly, the research validates that financial inclusion positively impacts firms' growth in developing and emerging countries (Chauvet & Jacolin, 2017), making universal access to a broader range of formal financial services feasible at reduced costs to support the growth of firms.

Regarding the firm-level control variables, firms' borrowing positively relates to firms' growth. The results agree with Chauvet and Jacolin (2017), who reported that debt loans positively impact firms' growth in developing and emerging countries. Rodeiro-Pazos et al. (2022) also reported that debt positively impacts firms' growth in eight European countries. The reason is that firms can use more debt capital for business expansion to raise their growth level. Furthermore, a firm's size is negatively related to the firm's growth. The reason is that as firms become more significant, the need to expand further reduces, which slows down their growth rate. The results are inconsistent with those of Chauvet and Jacolin (2017), who found that size increases the growth of firms because of the economic scale advantage that more prominent firms enjoy. In an earlier study, Patrizio Pagano and Fabiano Schivard (2003) also found that size positively relates to firms' growth because larger size raises productivity growth. As such, firms can capitalize on the benefits of increasing return to scale. Conversely, profitability has an insignificant impact on firms' growth. The results are inconsistent with Rodeiro-Pazos et al. (2022) and Ihenyen et al. (2023), who found that profits are positively related to firms' growth in European countries because

profitable firms have internal financial resources to expand business operations and achieve desired growth levels.

Shifting to the macro-level control variables, the impact of interest rates on firms' growth is found to be mixed, indicating an ambiguous relationship. These findings challenge the notion that interest rates represent costs to the firm, which should lower the firm's growth rate level. On the other hand, the study uncovers more evidence that GDP growth positively affects firms' growth. The reason for this is that in periods of economic prosperity, businesses thrive and generate more sales, leading to increased growth for firms. Anande-Kur et al. (2020) reported a positive impact of GDP growth on firms' growth in Nigeria. Beck et al. (2005) also reported a positive impact of GDP growth on firms' growth. The reason for this is that firms grow faster in an economy with more significant growth opportunities (Beck et al., 2005).

Table 4.5: Results of Panel Data Analysis for objective 3 (firms' performance model)

	Dependable Variable: Firms' Performance (TOBIN'S Q)		
	Pooled OLS	Random Effect	Fixed Effect
Firms' Performance (TOBINQ) _{t-1}	-	-	-
Interest Rate (INTR)	1.987 (0.43)	7.051 (1.29)	1.256** (2.55)
GDP Growth Rate (GDGP)	3.153** (2.73)	5.390** (2.41)	8.708** (2.05)
Bank Branches (BB)	2.568** (2.45)	2.126** (2.31)	1.499** (2.36)
Automatic Teller Machines (ATM)	11.807*** (2.92)	10.970** (2.45)	10.080** (2.19)
Depth of Credit Information (CREDITINFOR)	-19.869** (-2.06)	-14.774 (-1.65)	-28.160** (-2.05)
Domestic Credit to Private (DCPR)	2.494** (2.40)	1.450* (1.85)	1.221** (2.55)
Log of Total Assets (Log of TA)	-11.05** (-2.10)	-11.150** (-2.38)	-10.550 (-0.43)
Book Equity-to Market Equity (BTM)	-0.001 (0.04)	-0.001 (-0.03)	0.001 (0.01)
Firms' Borrowing (FBR)	4.987*** (24.00)	4.841*** (24.15)	4.799*** (21.43)
Constant	-19.397** (-2.25)	-25.726** (-2.10)	-21.490 (-0.04)
Breusch-pagan LM	486.09 (0.000)		
Hausman test		14.33 (0.013)	
Multicollinearity (VIF)	2.50		
Heteroskedasticity (p-value)	0.000		
Serial Correlation (p-value)		0.000	
Adjusted R-squares	0.2109		
F-test Value (p-value)	69.50 (0.000)	73.60 (0.000)	61.01 (0.000)
AR (1)	NA	NA	NA
AR (2)	NA	NA	NA
Hansen Test	NA	NA	NA
Number of firms	255	255	255
Number of instruments	NA	NA	NA
			126

Note: Asterisk *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Numbers in brackets under the coefficients are t-statistics.

Table 4.5 Reports the results for objective three using the Pooled Ordinary Least Squares (OLS) estimation, Random Effect estimation, Fixed Effect estimation, and the two-step System GMM estimation. The two-step system GMM is the main estimation method and robustness check because the performance of the previous year's firms impacts the current year's firms' performance. The coefficient of the lag dependent variable (i.e., Lagged Firms' Performance_{it-1}) is statistically significant at the 0.01 level (coefficient = 0.070***, t-statistics = 4.40), which confirms the relevance of the dynamic model to conduct this research. The autocorrelation of order one AR(1) is present as expected because the p-value (0.000) is statistically significant as it is less than 0.01. However, the autocorrelation of order two AR(2) is absent because the p-value (0.127) is statistically insignificant as it exceeds 0.01. Also, the Hansen Test of Instruments' validity shows that the p-value (0.320) is statistically insignificant, exceeding 0.05. The AR2 and the Hansen Test results suggest that the model is specified correctly.

Bank Branches (BB), Automatic Teller Machine (ATM), Depth of Credit Information (CREDITINFO), and Domestic Credit to Private Sector (DCPR) are the four financial inclusion proxies. In the significant estimation method, which is the two-step system GMM, the coefficient of BB is statistically significant and positively related to firms' performance at the 5% significance level (coefficient of BB = 1.094**, t-statistics = 2.34). In the Pooled OLS model, the coefficient of BB is statistically significant and positively related to firms' performance at the 5% significance level. Likewise, in the Random Effect method, the coefficient of BB is statistically significant and positively related to firms' performance at the 5% significance level. However, in the Fixed Effect method, the coefficient of BB is positive but insignificantly related to firms' performance.

In the primary estimation model, as well as a robustness check, which is the two-step system GMM, the coefficient of ATM is statistically significant and positively related to firms' borrowing at the 1% significance level (coefficient of ATM = 6.414***, t-statistics = 5.10). In the Pooled OLS model, the coefficient of ATM is statistically significant and positively related to firms' performance at the 1% significance level. Likewise, in the Random Effect model, the coefficient of ATM is statistically significant and positively related to firms' performance at the 5% significance level. Similarly, in the Fixed Effect model, the coefficient of ATM is statistically significant and positively related to firms' performance at the 5% significance level.

Furthermore, in the primary estimation method, which is the two-step system GMM, the coefficient of CREDITINFO is statistically significant and negatively related to firms' performance at the 5% significance level (coefficient of CREDITINFO = -8.736**, t-statistics = -2.56). In the Pooled OLS model, the coefficient of CREDITINFO is statistically significant and negatively related to firms' performance at the 5% significance level. Likewise, in the Random Effect model, the coefficient of CREDITINFO is insignificant and related to firms' performance. Moreover, in the Fixed Effect model, the coefficient of CREDITINFO is statistically significant and negatively related to firms' performance at the 10% significance level.

Conversely, in the primary estimation model, which is the two-step system GMM, the coefficient of DCPR is statistically significant and positively related to firms' performance at the 10% significance level (coefficient of DCPR = 2.932*, t-statistics = 1.94). In the Pooled OLS model, the coefficient of DCPR is significantly and positively related to firms' performance at the 5% significance level. Similarly, in the

Random Effect model, the coefficient of DCPR is significantly and positively related to firms' performance at the 10% significance level. Likewise, in the Fixed Effect model, the coefficient of DCPR is statistically significant and positively related to firms' performance at the 5% significance level.

The firm-level control variables are firm borrowing (FBR), firms' size (LTA), and book equity-to-market equity ratio (BME). In the main estimation model, the two-step system GMM, the coefficient of firms' borrowing (FBR) is statistically significant and positively related to firms' performance at the 1% level (coefficient of FBR = 2.777***, t-statistics = 6.32). In the Pooled OLS model, the coefficient of firms' borrowing (FBR) is statistically significant and positively related to firms' performance at a 1% significance level. Likewise, in the Random Effect model, the coefficient of firms' borrowing (FBR) is statistically significant and positively related to firms' performance at a 1% significance level. Moreover, in the Fixed Effect model, the coefficient of firms' borrowing (FBR) is statistically significantly and positively related to firms' performance at a 1% significance level. In the Pooled OLS model, firm size is statistically significant and negatively related to firms' performance at the 5% significance level. In the random effect model, firm size is statistically significant and negatively related to firms' performance at the 5% significance level. However, in the fixed effect model, firm size is not significantly related to firms' performance. Overall, there is more evidence that firm size negatively affects performance.

The macro-level variables are gross domestic product growth rate (GDPG) and interest rate (INTR). In the main estimation method, as well as a robustness check, which is the two-step system GMM, the coefficient of GDPG is statistically significant and

positively related to firms' performance at the 5% significance level (coefficient of GDPG = 6.857***, t-statistics = 2.69). In the Pooled OLS model, the coefficient of GDPG is statistically significant and positively related to firms' performance at the 1% significance level. Furthermore, in the Random Effect model, the coefficient of GDPG is statistically significant and positively related to firms' performance at the 5% significance level. Moreover, in the Fixed Effect model, the coefficient of GDPG is significantly and positively related to firms' performance at the 5% significance level.

Conversely, in the primary estimation method, the two-step system GMM, the coefficient of INTR is not significantly related to firms' performance. As a robustness check, in the Pooled OLS model, the coefficient of INTR is not significantly related to firms' performance. Moreover, as a robustness check, in the Random Effect model, the coefficient of INTR is not significantly related to firms' performance. Likewise, in the Fixed Effect model, the coefficient of INTR is not significantly related to firms' performance.

3. Discussion of results for objective 3

The study explored more evidence that the proxies for Financial Inclusion positively impact firms' performance. Specifically, as the spread of automatic teller machines and bank branches increase across African countries, individuals can utilize these services to deposit money and firms can easily access and raise finance required to maximise the tax-shield benefits of debt to increase firms' performance. Likewise, as domestic credit to private sector increases, firms can get more credits to finance profitable investments and maximize tax-shield benefits of debt which enhance firms' performance. Moreover, the finding is contained in the two-step system GMM because

it minimizes the biases caused by endogeneity. The finding maintained that financial inclusion gives firms more access to bank loans needed to maximize debt interest tax-shield to increase firms' performance. The results also suggest that improving access to financial services raises banks' deposit base, which can be channelled to firms as loans. These results agree with Nizam et al. (2021) findings that financial inclusion impacts growth because of the benefits of accessibility to financial access to support investments and growth of firms. Likewise, Chauvet and Jacolin's (2017) results revealed that financial inclusion positively affects the growth of firms in developing and emerging countries. Financial inclusion makes broader access to a range of formal financial services possible at a lower cost to improve firms' performance.

Regarding the firm-level control variables, firms' borrowing positively relates to firms' performance. The results are consistent with Chauvet and Jacolin (2017), who found that debt loans positively impact firms' performance in developing and emerging countries. Likewise, results from Rodeiro-Pazos et al. (2022) reveal that debt positively impacts European firms' performance. The reason is that firms can use more debt capital to finance profitable investments and increase their performance. Furthermore, size has a negative impact on firms' performance. The reason is that the need to expand the business decreases as firms become bigger, reducing firms' performance. The results contradict Chauvet and Jacolin (2017), who found that size increases firms' performance because more prominent firms enjoy the benefits of economies of scale. In an earlier study, Pagano and Schivard (2003) found that size positively impacts firms' growth performance because larger firms can benefit from increasing return to scale. Conversely, book equity-to-market equity has an insignificant impact on firms' performance. The results are inconsistent with Rodeiro-

Pazos et al. (2022) and Ihenyen et al. (2023), who found that profits are positively related to firms' performance in European countries because profitable firms have internal financial resources to expand business operations and achieve the desired expansion level.

Regarding macro-level control variables, interest rates do not impact firms' performance. The findings contradict the reasoning that interest rates represent costs to the firm, which should reduce the firm's performance. GDP growth positively impacts firms' performance (Anande-Kur et al., 2020). Likewise, Beck et al. (2005) found that GDP growth positively impacts firms' performance because firms grow rapidly in an economy with good prospects.

CHAPTER 5

CONCLUSION

This chapter presents the results and implications of financial inclusion's impact on firms' borrowing, growth, and performance. It concludes with the study's contributions and limitations and the direction for future research.

The crux of the literature lies in determining the optimal amount of debt borrowings to finance firms' operations. This ongoing debate, a perpetual puzzle for finance researchers and practitioners, is a testament to the issue's complexity. Firms' attention to debt borrowings is a balancing act, as it can either bolster or hinder performance depending on the economic climate.

About 2.5 billion people are excluded from financial services globally. Approximately 80 per cent (which corresponds to 300 million people) of the population of eleven Sub-Saharan African countries have no formal bank account, and they are deemed financially excluded. A study on financial inclusion regarding ownership and use of accounts reveals that the high minimum amount needed to maintain accounts and the lack of proximity explains why some people are financially excluded. All these reasons partly explain why banks have a lower deposit base than expected and why some firms need help to raise money from banks. Moreover, most African countries have adversely affected firms' growth and performance. One reason is that many firms cannot easily access debt borrowings to fund suitable investments to raise their growth and maximize value. Firms in Africa use more debt borrowing to benefit from the

interest tax shield and raise their value performance. Nevertheless, determining the right debt borrowing amount remains a puzzle, and financial inclusion is a potential factor that can affect firms' borrowing, growth, and value performance.

The present study, conducted with a rigorous approach and employing the two-step system generalized method of moments (GMM) as the main estimation method, aims to achieve three objectives. Firstly, it thoroughly examines the impact of financial inclusion on firms' borrowings in African nations. Secondly, it investigates in depth the impact of financial inclusion on firms' growth in African nations. Third, it meticulously ascertains the impact of financial inclusion on firms' performance in African nations. The results, which are the product of a comprehensive and robust study, reveal that financial inclusion significantly and positively impacts firms' borrowings in African nations. Furthermore, they reveal that financial inclusion is significantly and positively related to firms' growth in African nations. Moreover, they demonstrate that financial inclusion is significantly and positively related to firms' performance (Tobin's Q) in African nations. These findings, arrived at through a thorough and comprehensive study, provide a high level of confidence in the validity of the research in the African context. These findings reinforce the need for banks in African nations to establish more bank branches in remote areas that lack access to finance and locate automatic teller machines in strategic location to attract more deposits to lend to firms as loans. Furthermore, the findings reemphasize the need for banks in Africa to deepen depth of credit information and increase the domestic credits to firms. As more credits becomes available to firms, they can fund business expansion to increase growth and performance of the African nations.

5.1 Findings and Policy Implications of Financial Inclusion and Firms' Borrowings

The study has theoretical implications and policy implications, respectively. On the theoretical implication aspect, the positive impact of financial inclusion on firms' borrowings supports the insights drawn from the trade-off theory and financial inclusion theory. These theories maintain that firms could benefit from interest tax-shield to raise debt borrowing levels when they get additional access to debt financing due to an increase in bank branches, depth of credit information, and the number of ATM centres to attract more deposits.

In addition, focusing on the first practical implication, the positive impact of financial inclusion on firms' borrowings implies that managers of firms may benefit from raising additional capital because the financial inclusion strategies of banks attract more deposits to lend to firms. Besides, the financial inclusion strategies of banks include establishing more bank branches in remote areas, more automatic teller machines (ATMs) in strategic places, and the depth of credit information to the public. This would eventually attract additional deposits, which the banks may lend to firms for profitable business. The second practical implication is the positive impact of financial inclusion on firms' borrowings, which implies that investors should encourage firm managers to raise the needed debt to finance profitable investments from banks with financial inclusion strategies to lure in more deposits. The third practical implication is that policymakers should create enabling environments and enact policies that promote the development of the financial markets. The reason is that as policymakers create an enabling environment and formulate good guidelines, they complement the financial inclusion strategies of banks and firms, giving them more access to debt borrowing.

5.2 Findings and Policy Implications of Financial Inclusion, Firms' Growth, and Firms' Performance

Likewise, the research has theoretical and policy implications. First and for most the theoretical implication has a positive impact of financial inclusion on firms' growth and performance, supporting the insights on the financial inclusion theory and Modigliani and Miller's theory that claims firms that can easily access debt borrowings can benefit from debt interest tax shield to grow and increase the performance of their firms. On the first practical policy implication of the study, the positive impact of financial inclusion on firms' growth and performance implies that firm managers can benefit from the bank's financial inclusion strategies in terms of easy access to debt borrowings to fund profitable projects that increase firms' growth and maximize the benefit of debt interest tax-shield to improve firms' performance.

The second practical implication of the study is that the policymakers should ensure the quality of the financial markets by encouraging banks to promote more financial inclusion strategies to attract more deposits to lend to firms, and firms can use the debt loans to fund good investments that raise their growth level and performance level. The third practical implication of the study is that investors may consider investing their financial resources in firms capitalizing on the financial inclusion policy to attract additional funds required to finance business growth and increase the value of their invested capital.

5.3 Contribution of the study

The study makes three contributions to the literature. First, unlike previous researchers focusing on firm-level and macro-level determinants of debt borrowings, this thesis is

geared toward the impact of financial inclusion on firms' borrowings. The Automated teller machines, bank branches, depth of credit information, and domestic credit to the private sector are proxies for financial inclusion to improve the robustness of the conclusion. Secondly, the study emphasizes how financial inclusion impacts firms' growth and confirms that financial inclusion increases firms' growth because firms can get access to more debt borrowing to finance profitable investments to raise firms' growth levels in African nations. The African continent has been overlooked in the literature on debt borrowing; hence, there is a need to fill this gap. The yearly growth rate of sales is the proxy for firms' growth. Third, the study adds financial inclusion into Modigliani and Miller's performance model and confirms the positive impact of financial inclusion on firms' performance. Fourth, the study integrated insights from the financial inclusion and the trade-off theories to explain the connection between financial inclusion and firms' borrowings.

Further, the study integrates insight from financial inclusion and performance theories to explain the connection between financial inclusion and firms' growth, as well as the connection between financial inclusion and firms' performance, with the use of the conceptual framework. The financial inclusion theory emphasizes the importance of firms getting access to finance. As firms get more access to finance, they can fund profitable investment projects to increase firms' growth. They can also maximize the debt interest tax shield to improve firms' performance, especially in African countries.

5.4 Limitations of the study

This study makes several critical contributions to the existing literature. First, while much of the previous research has concentrated on firm-level and macroeconomic determinants of debt borrowings, this thesis uniquely focuses on the impact of financial inclusion on firm borrowing. By using proxies such as Automated Teller Machines (ATMs), bank branches, depth of credit information, and domestic credit to the private sector, the study aims to enhance the robustness of its conclusions. These financial inclusion indicators provide a more nuanced understanding of how access to finance affects firm borrowing, particularly in the context of African nations, which have been primarily underrepresented in debt borrowing literature.

Second, the study highlights the practical implications of financial inclusion in promoting firm growth. It confirms that increased financial inclusion allows firms to access more debt, which they can use to finance profitable investment opportunities, thus driving growth. This is particularly relevant for African countries, where access to finance can significantly impact firm expansion. The study measures firm growth through the yearly growth rate of sales, providing a practical metric to assess the effects of financial inclusion. Third, by incorporating financial inclusion into the Modigliani and Miller performance model, the research demonstrates a positive link between financial inclusion and firm performance, providing valuable insights for policymakers and financial professionals.

Finally, the study integrates financial inclusion and trade-off theories to explain the relationship between financial inclusion and firm borrowing, growth, and

performance. The financial inclusion theory underscores the importance of firms gaining access to finance. As firms gain access to capital, they are able to fund profitable investments, increasing their growth and benefiting from the debt interest tax shield to improve performance, especially in the context of African economies. Moreover, the second limitation of the study is that only ten countries in Africa are in the sample because the DataStream database collects data for only 10 African countries. Still, these countries are among the largest in terms of population size and contribution to the growth of the African continent. Despite these limitations, the findings of the study can be generalized to other African nations and some other developing nations because of similar level of capital markets development and common characteristics.

5.5 Recommendations for future research

This study examines the impact of financial inclusion on firms' borrowing and growth. Lastly, it ascertains the impacts of financial inclusion on firms' performance in African countries using the two-step system generalized method of the moments as the primary estimation method.

Furthermore, this study confirms the importance of financial inclusion on firms' borrowing, growth, and performance in African countries and integrates insights from various theories. It combines the financial inclusion and trade-off theories to explain the link between financial inclusion and firms' borrowings, the financial inclusion and growth theories to explain the connection between financial inclusion and firms' growth, and the financial inclusion and Modigliani and Miller theories to explain the connection between financial inclusion and firms' performance.

Furthermore, future research can investigate the impact of financial inclusion on other corporate finance outcome variables like cash holdings and green real investments. Besides, future researchers can focus on the interaction effects of cash flow risk and financial inclusion on debt maturity structure. The impact of cash flow risk on debt maturity may be conditional on the financial inclusion levels. However, researchers may face challenges searching for appropriate theories to explain the interaction effects of cash flow risk and financial inclusion on debt maturity structure; a cross-disciplinary theoretical approach may be needed to explain the meaning of the interacted variables.

5.6 Summary

This section concludes and presents the findings and implications. The study results confirm a positive impact of financial inclusion on firms' borrowings. The results also demonstrated a positive effect of financial inclusion on firms' growth. Furthermore, the study ascertains the positive impact of financial inclusion on firms' performance in African countries. This chapter's segment presented the study's contribution, where financial inclusion is added to the firms' borrowing, growth, and performance models. Importantly, relevant theories are integrated to explain how financial inclusion relates to firms' borrowings, growth, and performance in African countries.

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APPENDICES

Table A1: Dependent Variable (Firm Borrowing) Measurement

Proxy (Firms' Borrowing)	Definition
Mohammad <i>et al.</i> (2022); Chakrabarti & Chakrabarti, (2019); Dakua (2019); Chakraborty (2010).	Total Debt / (Total Assets)

Table A2: Dependent Variables: Firms' performance and Firms' Growth Measurements

Dependent Variable (Firms' performance) Measurement

Proxy (Tobin's Q)	Definition
Chauvet and Jacolin (2017); Hanousek & Shamshur (2011); Rodeiro-Pazos et al. (2022); Ihenyen et al. (2023).	Ratio of Market Value Equity Plus Book Value of Debt to Book Value of Total Assets

Dependent Variable (Firms' Growth) Measurement

Proxy (Sales Growth)	Definition
Belitski et al. (2023); Chauvet and Jacolin (2017); Rodeiro-Pazos et al. (2022); Rodeiro-Pazos et al. (2022).	FG is firms' growth is measured as yearly change in sales.

Table A3: Main Independent Variables (Financial Inclusion) Measurement

Independent Variables	Definition	Past Studies
ATM Automated Teller Machine	Automated Teller Machine per 100,000 adults.	Elsayed & Elatroush, (2019); Ayyagari & Beck, (2015); Tuesta, et al. (2015). Khandare (2019); Sorensen (2015)
BB Bank Branch per 100,000 adults.	Commercial Bank Branch per 100,000 adults	Elsayed & Elatroush, (2019); Ayyagari & Beck, (2015); Tuesta, et al. (2015); Khandare (2019); Sorensen (2015).
DCPR Deposit Credit to The Private Sector	DCPR is the Domestic credit to the private sector as a percentage of GDP	Chauvet and Jacolin (2017)
CREDITINFO The depth of credit information.	CREDITINFO is the depth of credit information ranging from 0 to 10.	Chauvet and Jacolin (2017)

Table A4: Independent Variables (Firm Borrowing) Measurement

Independent Variables	Definition	Past Studies
FBR _{it-1}	Lagged one year period of Debt.	Lemmon et al. (2008); Hanousek & Shamshur (2011); Oztekin and Flannery (2012), Abdeljawad et al. (2013).
Size	Log of Total Sales	Mohammad <i>et al.</i> (2022); Chakrabarti & Chakrabarti (2019), Dakua (2019); Amraoui et al. (2018).
Fixed Assets	Ratio of Property, Plant, and Equipment to Total Assets	Flannery and Hankins (2013); Oztekin and Flannery (2012); Hanousek and Shamshur (2011).
Profitability	EBIT/TA (Profits before Interest and Tax/Total Assets).	Chakrabarti & Chakrabarti, (2019); Khemiri & Noubbigh, (2018); Dakua (2019); Flannery & Ayaydin (2014);
Non debt tax shield	Depreciation/ Total Assets	Li and Shen (2023); Samaniego & Sun (2019).

Table A5: Independent Variables (Firms' Performance and Firms' Growth)

Independent Variables	Definition	Past Studies
FBR	Total Debt / (Total Assets)	Chauvet and Jacolin (2017); Rodeiro-Pazos et al. (2022); Hanousek & Shamshur (2011); Mohammad <i>et al.</i> (2022); Chakrabarti & Chakrabarti, (2019).
Size	Log of Total Assets	Mohammad <i>et al.</i> (2022); Chauvet and Jacolin (2017); Dakua, (2018); Chakrabarti and Chakrabarti (2019); Pagano and Schivard (2003).
BTM	Book Equity/Market Equity).	Gomes and Schmid (2010); Abor (2005); Fama and French (1992).
EBITTA	EBIT/TA (Earnings before Interest and Tax/Total Assets).	Rodeiro-Pazos et al. (2022); Ihenyen et al. (2023); Chakrabarti and Chakrabarti (2019).
INTR	Interest Rate in an Economy	Anande-Kur et al. (2020); Homapour et al. (2022); Homapour et al. (2022); Samuel & Nurina (2015).
GDP Growth Rate	Gross Domestic Product Growth in an Economy.	Anande-Kur et al. (2020); Frank and Goyal (2009); Beck et al. (2005); Joeveer (2013).

Table A6: Expected Sign of Dependent Variables (Borrowing Model)

Independent Variables	Expected Sign	Remarks
Size (Log TA)	Positive	Positive (Trade-off Theory): Size increases debt capacity. Large size firms have high debt capacity and may borrow more to maximize the tax-shield benefits.
Fixed Assets (FATA)	Positive	Positive (Trade-off Theory): Fixed assets serve as collateral and have market value in case of bankruptcy. Risk of lending to firms with higher fixed assets is lower, so debt ratio increases.
Profitability (EBITTA)	Negative/Positive	Negative (Pecking Order Theory): Preference for internal finance because it has lower information asymmetry costs (Pecking Order Theory). Positive (Trade-off Theory): Profitable firms generate stable profits, so it encourages more debt.
Non debt tax shield (NDTSTA)	Negative	Negative (Trade-off Theory): Alternative tax shield sources (depreciation) reduce the attractiveness of debt. Thus, motivation to borrow decreases as non-debt tax shield increases.
Interest rate (INTR)	Negative	Negative : When the interest rate is very high, firms prefer not to borrow more money from financial institutions and the capital markets to finance investments.
GDP Growth Rate (GDPG)	Positive	As investment possibilities are typically financed by debt rather than equity in developing nations, one would anticipate debt to be positively correlated with GDP growth. As a result, GDP growth would increase debt usage.

Table A7: Expected Sign of Dependent Variables (Firms' Growth Model)

Independent Variables	Expected Sign	Remarks
FBR	Positive	Positive : Debt borrowing increases firms' growth because they can use more debt capital for business expansion to raise their growth level (Chauvet and Jacolin, 2017).
Financial Inclusion	Positive	Positive : Financial inclusion makes universal access to broader range of formal financial services possible at reduced costs to support the growth of firms (Chauvet and Jacolin, 2017).
Size (Log TA)	Positive	Positive : Larger size raises productivity growth as such firms can capitalize on the benefits of increasing return to scale and finance growth expansion (Pagano and Schivard, 2003).
EBITTA	Positive	Positive : profitable firms rely on retained profit to finance investments for growth (Myers & Majluf, 1984).
Interest rate (INTR)	Negative	Negative : Higher interest rate represents costs to the firm which should discourage investments and lower firms' growth rate level (Obudah & Tombofa, 2013).
GDP Growth Rate (GDPG)	Positive	Positive : In good economic periods, businesses flourish and generate more sales which translate to increased growth for firms (Beck et al., 2005).

Table A8: Expected Sign of Dependent Variables (Firms' Performance Model)

Independent Variables	Expected Sign	Remarks
FBR	Positive/Negative	Positive (M-M Theory): Debt borrowing increases firm returns because of the interest tax-shield benefits of debt, but debt also increases financial risk to shareholders. Thus, debt is positively related to firms' performance. Negative (M-M Theory): Within the framework of M-M Theory and allowing for bankruptcy risk, debt reduces returns if debt exceeds the optimal level.
Financial Inclusion	Positive	Positive: Firms with more access to finance can raise more debt to maximize the benefits of debt interest tax shield to increase firms' performance. Thus, financial inclusion should be positively related to firms' performance.
Book-to-Market Equity (BTM)	Positive	Positive: Book-to-market equity measures relative earnings prospect and it is related to relative distress factors. Thus, high Book-to-Market Equity should increase firms' performance (Fama and French 1992).
Size (Log TA)	Positive	Positive: Size increases firms' performance because bigger firms enjoy the benefits of economic of scales (Fama and French 1992).
Interest rate (INTR)	Negative	Negative: High interest rates lower the actual value of future cash flows which in turn lower firms' performance.
GDP Growth Rate (GDPG)	Positive	Positive: As the economy grows, businesses are incentivized to employ more debt because of the tax benefits of debt to increase firms' performance (Ramli et al., 2019).

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LIST OF PUBLICATIONS

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