

# **FINANCIAL INCLUSION IN EAST AFRICA. DOES ECONOMIC GROWTH MATTER?**

**By**

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**X50/10388/2018**

**A Research Project Submitted in Partial Fulfilment of the Requirements for the Award of  
the Degree of Master of Economics of the University of Nairobi.**

**November 2020**



## DECLARATION

This is my original work and has not been submitted to any institution for the award of a degree.

Signature ..... 

Date.....27/11/2020

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This research project has been submitted with my approval as the University supervisor.

Signature..... 

Date.....27/11/2020

Dr. Peter Muriu

## ACKNOWLEDGEMENT

I am indeed obliged to everyone who supported me through this period of research. Without their support this study would not have been completed. My supervisor, Dr. Peter Muriu has provided invaluable guidance and constructive critique that came in handy in ensuring that this study is completed on time. Many thanks to my family, who always provided company and support in the early mornings and late evenings. Finally, to my friends who reviewed this study despite having busy schedule, thank you very much.

## ABSTRACT

Inclusive financial system in any economy cannot be ignored. In fact, it has become a policy priority in many governments around the world, including East Africa – Kenya, Uganda and Tanzania. Using panel data, this study presents cross country analysis of the variables that determine financial inclusion levels with key focus on economic growth. The study sought to test if economic growth matters in financial inclusion in East Africa. Fixed Effect Method was adopted. In accordance to the findings of the study, economic growth, internet users and inflation rate depict a considerable effect on the financial inclusion rate. The corroboration presented by this study may help the respective countries to adopt policies that focus on improving financial inclusion levels.

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## LIST OF ABBREVIATIONS

<b>ATM</b>	Automated Teller Machine
<b>CBK</b>	Central Bank of Kenya
<b>CBR</b>	Central Bank Rate
<b>CPI</b>	Consumer Price Index
<b>DW</b>	Durbin Watson
<b>EAC</b>	East Africa Community
<b>FII</b>	Financial Inclusion Insights
<b>FER</b>	Fixed Effect Regression
<b>GDP</b>	Gross Domestic Product
<b>ICT</b>	Information and Communications Technology
<b>MIS</b>	Management Information System
<b>NDFI</b>	Non-Deposit Taking Financial Institutions
<b>NFIF</b>	National Financial Inclusion Framework
<b>OLS</b>	Ordinary Least Square

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of the Study

The importance of inclusive financial system in any economy cannot be ignored. In fact, it has become a policy priority in many governments around the world, including East Africa – Kenya, Uganda and Tanzania. In addition, the promise to provide solution to the economic and social empowerment, has resulted to financial inclusion attracting great interest. The importance accorded to an inclusive financial system may be attributed to the view that it is a pre-condition for financial deepening, which plays key role in development. In order to realize sustained financial inclusion, policy makers have always considered economic growth as a major phenomenon in planning. From theoretical perspective, several arguments have been advanced stating that an inclusive financial sector is a driver towards the growth of economy. In an earlier perspective, Schumpeter was able to demonstrate that finance augment growth of the economy (Schumpeter JA, (1911).

Initially, it was simply perceived that by expanding the scope of financial sector, financial tools would be produced to support greater economic growth and reduction of poverty through social inclusion. However, the expansion has had lesser impact on both the economy and social improvement. Overtime, policy attention has been shifting from the development of financial sector towards development of an inclusive financial system Johnson & Arnold, (2012). The shift has been evidenced by some African countries; Lesotho, Nigeria and Rwanda, setting up formal targets with the objective of achieving universal financial access by the year 2020. Conceptually, finance access is an enabler of saving and borrowing to the poor. Through this, the building of assets, investment will render small and medium sized enterprises to leverage on favorable growth opportunities. This makes accessing financial services, singularly credit, of great essence in advancing growth in economy (Demirguc-Kunt et al., 2014).

In East Africa, steps towards ensuring that financial services for all is promoted are being made. Uganda rolled out her National Financial Inclusion Strategy 2017-2022, in 2017, seeking to have financial exclusion levels below 5% by 2022. Tanzania also set up National Financial Inclusion Framework (NFIF 2018-2022) aiming to champion the availability of both financial

goods and services for businesses and individuals. Kenya too has a plan, the Kenya Vision 2030, a development blue print aims at creating a vibrant and globally competitive financial sector with increasing financial inclusion levels as one of the objectives.

The study carried out by Demircuc-Kunt et al., (2014) had its findings that 23% of adults in Africa have bank account. The rates of adults holding formal accounts per region are 24%, 11%, 20% and 28% for Sub – Saharan, Central, Northern and Eastern regions of Africa respectively. However, the rates vary within the countries themselves. In Kenya, the fifth Fin Access survey (Kenya et al., 2019), financial inclusion levels changed to 82.9%, from 26.7% in 2006. The main enablers in the realized change were the positive growth in usage of mobile money, improved government initiatives and support, and innovations in information and communications technology (ICT).

Innovations within financial sector has really brought about great change in the global inclusion landscape. In particular, mobile money has really pushed the levels of financial inclusion high due to its convenience and affordability nature. In the recently released data by InterMedia's Financial Inclusion Insights (FII), Kenya, Tanzania and Uganda had 73, 56 and 46 percent of adults, respectively, being financially included. It was also noted that these adults have registered mobile money accounts. This has allowed bank customers to easily access their accounts and transfer money without necessarily visiting their branches. However, even with the high rates of inclusion being reported, challenges facing these efforts still exist. Kenya has been battling with predatory digital lending while Uganda has had challenge on trust in financial services due to lack of sufficient regulatory framework for Financial Institutions (NDFI), internet-based technologies and self-help groups, CARE International in Uganda VSLA MIS (Management Information System Data, 2014)

There is no doubt that the East Africa Community (EAC) is among the few regions in Africa having resilient economies. Over the last two decades, consistency in growth has been noted and as from 2000 this growth outpaced the other Sub – Saharan African countries. Towards the end of the 20th century, there were stints of civil strife and spells of economic instability. Since then, the region has been committed to strong policies. Amongst these countries, Tanzania and Uganda have had the longest stretch of positive economic growth. In comparison with the other

two countries, Uganda's growth acceleration started earlier, she has sustained an average of 3.4% growth rate for more than 20 years. Since early 2000s, Tanzania's economy has been strong. On the other hand, Kenya, the largest of the three economies, has had her growth rate averaging at 1.9% a year since 2005. This was a commendable improvement when compared to negative 0.2% between the years 1990 and 2004, accelerating the momentum for the whole (McAuliffe et al. 2012).

Generally, policies in the financial sector have been very consistent therefore enhancing strategy implementation in the financial intermediation sector. Moreover, significant innovation geared towards efficiency and convenience has increased the sector's impact on economic growth and development. Convenient banking has remained a priority of most banking institutions thus making the sector more competitive. This has made a shift from traditional brick and mortar arrangement to come up. According to Financial Access Survey (Financial Sector Deepening (FSD) Kenya, 2013), South Africa is ranked ahead of Kenya in financial inclusion based on the proportion of unbanked population. 67% of the Kenyan population was banked as compared to South Africa's 79% while those having access to the banking services was between 20% and 40% by the year 2008 (Kimenyi and Ndungu, 2009).

According to most literature, financial inclusion has been based on the larger issue of social inclusion. Layshon and Thrift, view financial inclusion as a condition where individuals can access appropriate, wanted financial services and products for taking care of their money successfully (Leyshon et al., 2008). On the other hand, Sinclair (2001), describes financial exclusion as the unavailability of basic financial services in a formal way. The exclusion can be spurred by problems resulting from accessing, conditions, pricing, marketing, or even self-exclusion in as a result of negative experiences. In a study conducted in Kenya by Julie (2013), on relationship between financial inclusivity and GDP growth, her conclusion were that the growth in economy has an affirmative relationship with financial inclusion in Kenya. This was based on the findings that as Kenya experienced positive economic growth, the automated teller machines (ATM), cell phone money users and the branch networks were also experiencing a positive change in their numbers.

While attempts to dig out the connection between economic growth and financial inclusion by various scholars may never arrive at a clear conclusion, a relatively more serious concern of the question not considered relates to whether financial inclusion signify economic growth. Conforming with literature, inclusion tends to onboard the excluded into the formal financial system therefore giving them chance to obtain financial services which range from savings, credit, deposits, payments, and insurance transfers (Hannig & Jansen, 2010). On the same breadth, development economics states that with increase in financial services, development at all levels of the society will be realized. Supply-leading hypothesis states that development of financial sector has the ability to spur growth through boosting the general efficiency of the economy, liquidity, savings, increased assets and entrepreneurship.

Unlike supply – leading hypothesis, the demand – following hypothesis portrays lagged response towards growth of the economy. This basically imply that growth creates demand for the financial products. Therefore, meaning that with growth in economy, there will be positive demand in financial services. In turn the financial sector stakeholders will respond by developing the financial sector and finally financial inclusion would be realized.

## **1.2 Statement of the Problem**

In broader context of inclusive development, both in terms of growing the economy and financial inclusion are expected to be at the center. The work of Yunus, Muhammad and Karl Weber (2007), indicated that bank account for savings, small loan, and policies from insurance firms, have the ability to bring in massive changes to the lower income family. These services are expected to improve living standards of the poor in the society. On the other hand, it can only be possible through increased productivity which may translate to increased income. The growth in GDP is a clear evidence that the economy and probably the whole society is progressing in the right direction. In GDP growth, growth with inclusiveness is considered to be the best of all.

Respective researches have been advanced based on linkage between financial inclusivity and economic development. Kisaka et al., (2015), found an affirmative linkage uniting financial sector deepening and growth in economy. This study was conducted in Kenya. A large number of scholars and researchers have channeled their efforts towards the role of financial development on economic growth instead of finding out relationship between growth in

economy and financial inclusion. Claessens & Laeven (2003), showed that financial development is a contribution factor towards economic growth. Their view was similar to many authors who were in agreement that development of financial sector will result to growth who included (Shahbaz & Rahman, 2014; Sehrawat et al., 2012; Shahbaz & Rahman, 2014; Anwar & Sun, 2011).

Income inequality between rural and urban areas is subject to both financial development and economic growth, (Sehrawat & Giri, 2016). Financial inclusion stands out as a complementary to growth since both of them put up towards alleviation of poverty (Onaolapo, 2015). Previous works show that faster growth is related to finance access (Beck et al., 2005). The above mismatches in views together with the recent robust change in both the financial sector and economic growth motivates carrying out this study.

The general concurrence that exists amongst policy makers is that financial inclusion remains vital in economic development process. Despite this agreement, most of the studies that have been undertaken in East Africa have had their objectives focusing on the determinants of financial inclusivity. Wokabi & Fatoki (2019), their study on determinants of financial inclusion in East Africa mainly focused on finding out the effects of rural population, unemployment rates, income level and interest rates on financial inclusion. Other studies have been carried out at a worldwide platform with few African countries being part. With regard to this, my research will pursue to fill the existing gap on role of economic growth on financial inclusion in East Africa. To realize this target, this study is aiming at answering the proceeding research question: What is the role of economic growth on financial inclusion?

### **1.3 Study Objectives**

The research mainly seeks to analyze role of growth in economy on financial inclusion in East Africa between the periods 2013 to 2019.

More specifically, the study seeks to:

- i.** To ascertain if per capita GDP has a positive effect on financial inclusion among East Africa countries.
- ii.** To find out the effect of literacy level on financial inclusion.
- iii.** To find out the effect of the number of internet users on financial inclusion.

- iv. To find out the effect of the rate of inflation on financial inclusion.
- v. To find out the effect of change in deposit interest rate on financial inclusion.
- vi. To draw policy implications from the finding of the study.

#### **1.4 Significance of the Study**

Over recent past, GDP growth in East Africa has been outstanding. Besides that, all her economic sectors are performing well including the financial sector. Correspondingly, increase in financial services demand has been noted. The deepening of financial system is inevitable considering the current rate of GDP growth. For that reason, significant benefit exists in carrying out this study.

There are several sectors in these economies that are directly affected by both growth in economy and financial inclusion. In this work, one of the objectives is to draw policies that can be borrowed by policy makers in the championing of the objectives of involved sectors. Moreover, the prevailing works in literature, examined various factors which decisively affect financial inclusion, without taking into consideration the role of GDP growth.

Despite the existence of consensus amongst policy makers on the role played by financial inclusion in attaining growth in economy, (Aker et al., 2014; Kpodar & Andrianaivo, 2011; Bruce & Flynn, 2013; Harihanan & Marktanner, 2012), in their literature, have the view that its impact on economic growth is still minimal.

In view of the existing literature, no conclusion has been made on the roles of factors that impact financial inclusion over countries. This discourse is still ongoing, just to state a few; Sam and Pais considered income, inequality in income and usage of communications technology as factors affecting financial inclusivity. In their view, countries whose GDP per capita are minimal are bound to have poor or low connectivity and low levels of literacy which as a whole translates to lower financial inclusion levels. Fungáčová & Weill, used China as population of study, showed that level of education and income had significantly affected financial inclusion. The existence of meagre empirical literature on this topic and excessive emphasis on the economic growth impact of financial inclusion drive the carrying out of this research.



## **1.5 Organization of the Study**

This study contains several sections organized in the following order; the second section containing theoretical and empirical literatures. The research methodology and estimations technique formulate the third section, the fourth section has data analysis and interpretations while the fifth which is also last one, has summary and conclusion section.

## CHAPTER TWO

### LITERATURE REVIEW

#### 2.1 Introduction

This section focused on reviewing literature by specific scholars, focusing on the link between GDP growth and financial inclusivity. Theoretical review is done first, followed by empirical review. The empirical review shades light on what this study entails. The chapter summary lies at the end, giving an overview of both the theoretical and empirical literatures.

#### 2.2 Theoretical Literature

There is no doubt that the concept of growth in economy and financial inclusivity has been of great interest to many scholars and researchers. This is evidenced by the great contribution that these individuals have done through their work with regard to this concept. At the center of their contribution, are the theories that help in explaining the role of economic growth on financial inclusion.

It is worth highlighting what literature says about growth in economy and financial inclusivity. Most researchers focused on the role of developing financial sector economic growth and the impact of financial inclusion on economic growth rather than the role of growth in economy on financial inclusion. Though there has existed a global consensus amongst economists that financial inclusion impacts economic growth, there exists causality effect among the two and need to examine the role of economic growth on financial inclusion cannot be ignored.

Samuelson (1947) and Pakinin (1965), supposed that utility function bears a considerable effect in form of real money balance. It therefore signified that in every case that positive correlation between real money balance and output existed, positive change in real money balance will translate to positive change in output growth. Growth in Economy being a constituent of development in economy, then development in economy is bound to be attained. McKinnon (1973), Shaw (1973), Galbis (1977) and Mathieson (1980), were able to proof this view. They put forward the views that development of financial policies has influence on economic development. The domestic agents could either choose to hold their assets in monetary or non – monetary form depending on the monetary policies laid. Consequently, this meant market which

are associated with the demand and supply forces would perform at optimal level if government interference is restrained.

The work of Mac Kinnon (1973) and Shaw (1973), well known as the financial liberalization theory, advocated for financial liberalization in order to increase money demand through two main ways; firstly, through supply induced demand and secondly creation of conducive environment for investment in the economy. They perceived that financial liberalization would be achievable when backed by economic growth. With economic growth, both financial inclusion and financial deepening will be achieved since monetization of the economy will be attained. The McKinnon-Shaw theory of financial liberalization, depicts harmonious connection between money balances and physical capital accumulation.

The salient feature of financial inclusion includes the scale to which economic agents can access credit, deposit, and insurance amongst other financial services. Should financial services be constricted, then both the households and firms' activities will be negatively affected. This therefore means that financial inclusivity depends on level of economic growth since it will dictate the performance and behavior of the existing financial institutions in a given market. Adnan, (Saffari & Adnan, 2011) notes the trends in 1900s supported credit to be granted to the public to set up new businesses. The objective of this being generation of more income which would in turn boost the economy and finally reduce inequality in income only if equality is attained in distribution economic wealth.

In development economics, when there is a positive change in providing financial services then development of all the levels of the society. This is in agreement with supply leading hypothesis that imply that development in financial sector stirs economic advancement through enhancing efficiency in the economy, entrepreneurship, increased assets and liquidity. In distinction, demand following theory attributes the fall back in responding to growth in economy, meaning that positive growth will dictate demand for the products in financial sector. This imply that as economy experiences a positive change, the demand for products and services from financial sector will increase which will be responded to by developing the financial sector and finally inclusion. As stated by Mohan, (2006), among the attributes of developing financial sector, is the acceleration in it brings about in growth of the economy via the extension of finance access to

those without sufficient financing. The accessibility of finance from an external source, will definitely support the new entrepreneurs and small firms, at the same time supporting competition to existing and as a result motivating entrepreneurship and productivity.

The finance- growth nexus theory is coined with the presumptions of complete information, economy with no frictions and mobility of resources. This theory brings out the connection across two spheres, real economy and financial spheres. Championed by Walter Bagehot 1873, (Kurian, 2014), this theory brings out how occurrences in money market impact capital spill overs in an economy as individuals look for maximum returns from the funds. Under normal circumstances, financial funds will stir economic activities due to the multiplier effect of credit. The theory plays a key role in identifying factors that influence inclusion of the players in the informal sector. In addition, it spots the need for funds to be channeled where there is critical need. This theory thus set the mood for the case for financial inclusivity and requirement for proper guidelines that uphold financial inclusion to be put in place.

In relation to financial inclusion, neoclassical economic theory and new-Keynesian theories are capable of examining this phenomenon. The neoclassical theory puts its focus on economic agents. It goes further to state that these agents are well informed and competitive due to their rationality and self-interest. These assumptions lead to the conclusion that financial inclusion is the outcome of consumer choice or government policy. On the other hand, new – Keynesian analyses focuses on market distortion in micro economy.

### **2.3 Empirical Literature**

There exists extensive empirical evidence that put forward for consideration the role of economic growth on financial inclusion. Despite universal consensus of financial inclusion impacting the economic growth, it is not obvious that there will be a unidirectional outcome when this relationship is tested.

The boom in economic activities as well as formation of new ones recently, has increased income to the citizens. Government's investment in infrastructure development has also transformed the living standard of her citizens by increasing their income through improving levels of income. There is no doubt that with the sustained economic growth, most of the corporates profitability have increased and declined depending with the different existing sectors.

For those that have been increasing at a faster rate have relied on the existing economic growth momentum. These developments have transformed to increased demand of financial services, for saving and production purposes.

With regard to study on economic growth impacting financial inclusion, Adegboye and Omankhale, (Babajide et al., 2015), deduced that economic growth is a driver of financial inclusion after testing the demand following hypothesis. They used the comprehensive rate of demographic penetration of financial services and the overall rate of financial services usage as financial indicators and found out a bi-directional causality between the growth of economy and Financial Inclusion. In their recommendation, they championed for consideration of policies that favor macroeconomic growth since it is a decisive factor of Financial Inclusion.

The work of Kosmidou & Tanna, (2005), depicted that GDP growth would intensify profits thus sustaining stability. Focusing in the United Kingdom's commercial banking industry, he used panel data from the period 1955 to 2002 to investigate the determinants of their profitability. He found out that in every case the ratio cost to income is negative and therefore significant. The basic reason to this was that, growth in GDP would transform into increased income within the economy. Contrary to this view, Tan and Floros (2012)f, noted that growth in GDP has capability of causing reduction in profitability and hence negatively affect stability. Their view was that an improved economic growth would increase competition in the financial sector simply because of less barriers.

Fungáčová & Weill (2015) deduced that increased earnings and improved schooling are connected with substantial usage of both formal accounts and uptake of formal credit. This meant that the growth in economy experienced directly affected the financial inclusion levels of that society. The same case was observed In Argentina, under the work of Tuesta et al., (2015) which proofed that schooling and earnings are both salient features of financial inclusion. Furthermore, Chithra & Selvam (2013) demonstrated that the socio-economic characteristics that include earnings, population, deposit, literacy and penetration of credit have great relationship with Financial inclusion in India. These studies have greatly put a question on the norm that only financial inclusion can impact economic growth.

Financial inclusion is an intricate issue in many nations, according to Dash et al. (2013), estimated that 2.5 billion adults are unable to obtain formal financial service. Several data have proofed that financial inclusion has not been attained as expected due to different reasons. The pattern has been identified in India (Rayan Serrao et al., 2013), and other developing countries that have high populations. Therefore, in order to realize financial inclusion, Nalini and Mariappan (2012) suggests that all the three objectives of inclusion which include economic, social and political must be met. This anchors inclusive growth at the core of having everyone in the society being financially included (Umar et al., 2013) which may be a mirage where economic growth is at a slower pace.

Mwaitete and George (2018), studied effect of financial inclusion on the growth of economy in Tanzania within 2008 and 2015 with regression analysis. From their work, they found the existence of positive connection between financial inclusivity and growth in economy. Similar work was carried out in Kenya by Waiyaki (2013), focusing on the banking sector and securities market. His study tried to ascertain the causality direction effect between financial development and growth in economy. He adopted broad money, bank deposits, credit to private sector, stock market capitalization and volume of stock traded as the variables. OLS method was used in the analysis process. The analysis clearly depicted that bank deposits led to economic growth unlike the other variables; credit to private sector and broad money supply which did not.

In conclusion, economic growth through avenues such as the stock markets development across the globe has made it easier for financial inclusion interventions, increasing the global development rate. As world development agenda, the sustainable development goals in respect to sustainable financial inclusion, financial inclusion aims at providing financial support to these vulnerable groups by offering equal economic opportunities, thus reducing poverty and social inequity for a stable economic growth. Being able to get credit from formal financial institutions, insurance products that help in minimizing of risk such as fire, floods and crop damage keeps the future of financial inclusion alive. Economic growth, through increased rates of employment and access to productive capital is one such aspect that has a huge tendency in influencing outcomes in global financial inclusion strategies across the globe.

## **2.4 Overview of Literature**

The chapter evaluated existing literature in line with financial inclusion and growth in economy in East Africa and different regions of the globe. It is clear that most of studies, though in developing countries, have been conducted outside East Africa. It is also clear that financial inclusion stands out as a top priority in the contribution to macroeconomic stability, employment and business creation which can be stated as economic growth. In addition to that, the previous researches have had their objectives anchored on financial market alone and therefore filling this existing research gap by determining the role of growth in economy on financial inclusion. This is informed by the fact that financial inclusion encompasses a larger size of the economic players as compared to financial market.

## CHAPTER THREE

### METHODOLOGY

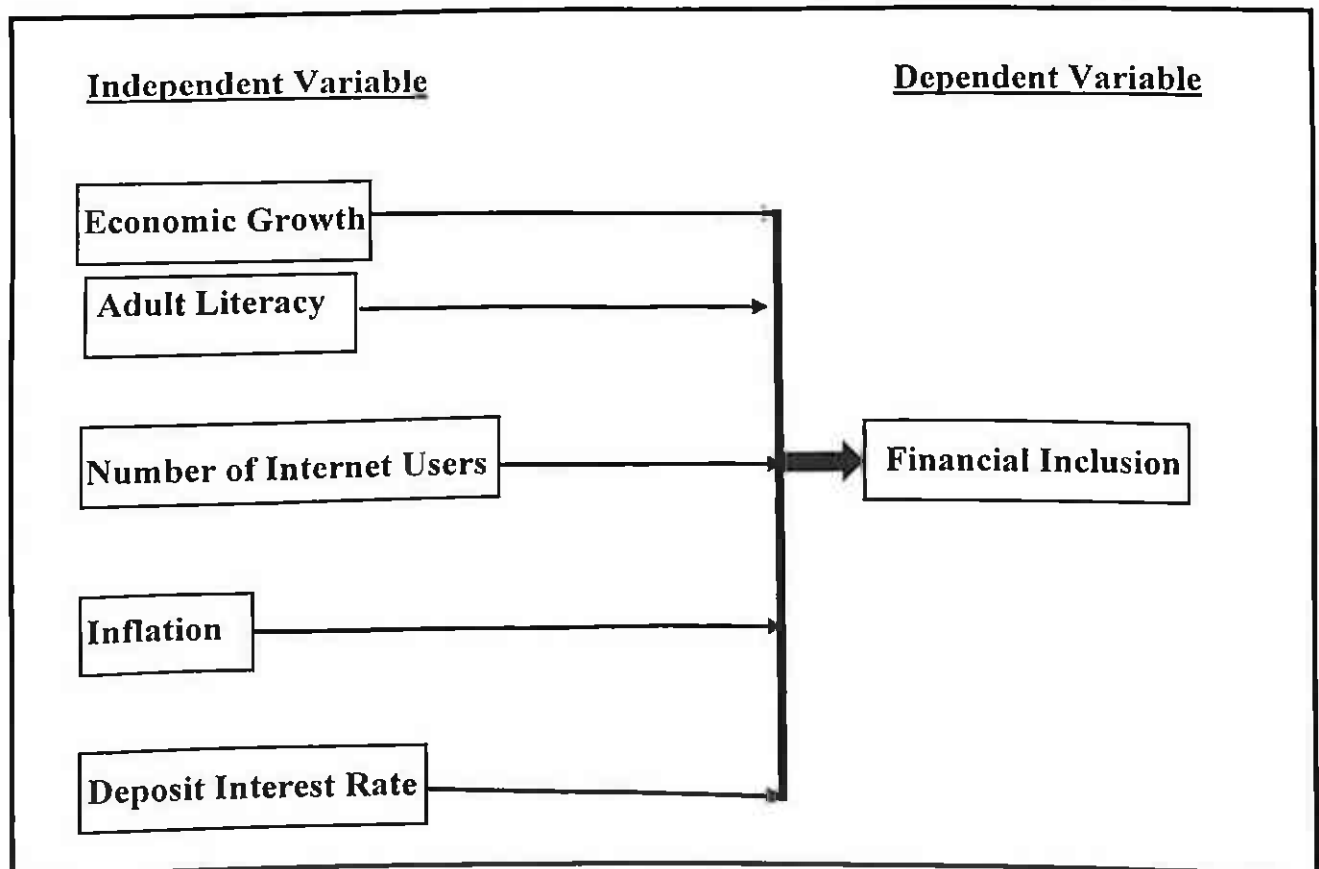
#### 3.1 Introduction

This division explains what guided the research, research design, data sources, targeted population, conceptual framework, operationalization and variable measurements, data collection instrument and the regression model formulated to achieve the research objectives.

#### 3.2 Conceptual Framework

Mugenda (2008), states conceptual framework as a brief description of the phenomenon under study followed by a graphic impression of the main variables of the study. It simply brings out the relationship between the endogenous variables and exogenous variable. **Figure 1** below illustrates the linkage between financial inclusivity and growth in economy.

**Figure 1: Conceptual Framework**





Economic growth can be attained through value formation in smaller businesses that have positive spillover effect on the indicators of human development that include schooling and health (Agnello et al. 2012 Park and Mercado, 2015; Nanda and Kaur, 2016) will definitely increase financial inclusion. This is because, with high levels of literacy individuals will understand the need to leverage on formal financial system services.

Emphasis on economic growth driving financial development was also put forward by Robinson (1952) "where enterprise leads, finance follows". Her argument which agrees with the demand following hypothesis was that that finance does not promote economic growth, instead, the finance responds to demands for financial services as the economy grows. This therefore projects that with changes in economic growth, financial inclusion levels will be affected.

Though insignificant, it has been proven that there is existence of favorable association between interest rates and financial inclusion. Their findings were in order with Sarma & Pais, (2008) and Evans & Adeoye, (2016), who established an affirmative relationship between interest rates and financial inclusion. This implies that interest rate is a key player when it comes to accessing finances and therefore directly have a role in impacting financial inclusion levels.

According to Sarma & Pais, (2008) and Allen et al. (2014), the growing number of those having access to internet is an indicator that internet access is crucial in a rapidly expanding African economy. With respect to this, it cannot be ignored that access to internet is of great importance to financial inclusion for example in Kenya, M-Pesa which is a mobile-based money transfer resulted to unprecedented both birth and growth of several financial services. This clearly depicts that internet's impact on financial inclusion cannot be overlooked.

The level of literacy has had great importance in the financial market when it comes to decision making. This is basically cause of the complexness that the uneducated may face in the financial market when making of an informed decision is expected. According to Sarma & Pais (2011) and Chithra & Selvam (2013), in accounting for the levels of financial inclusivity, adult literacy level is a key factor. In addition, low levels of literacy limits adoption of digital financial services. Therefore, it is very clear that literacy affects the financial decision-making process.

According to Li, Xu, and Zou (2000), inflation distorts the distribution of income. In their view, inflation in turn increases the earnings share of the rich, while at the same time reduces though insignificantly the earnings shares of middle class and the poor. Since financial inclusion relates to access to finances then inflation has a role in impacting

### 3.3 Empirical Model

The demand following hypothesis as developed by Patrick, 1966, was adopted in coming up with the research model for this study. This hypothesis posits that demand for financial services relies on positive increase in real output, commercialization and modernization of sustenance sectors. It simply implies that a unidirectional causation from growth in economy to financial development exists.

In order with previous research literatures, specifically by Sarma & Pais (2011), Segal & Kim, (2015) and Kuri & Laha, (2011), the structured model for the research was expressed as,

$$FINC = f(\text{Economic Growth, Literacy, Internet Users, Inflation, Deposit Interest rate}) \dots (1)$$

Where Economic Growth measured in GDP per capita is the proxy for development in economy (Lucas, 1988; Mankiw, Romer & Weil, 1990; Gallup, Sachs & Mellinger, 1999). Adult literacy rate, Number of Internet Users, Inflation and Deposit Interest Rates are incorporated as control variables. These are key variables that have effect on financial inclusivity (Marshall, 2004; Sarma & Pais, 2011; Laha, Kuri & Kumar, 2011; Mehrotra & Yetman, 2015).

From (1) above, econometric model for the study was expressed as;

$$FINC_{it} = \alpha t + \beta_1 G_{it} + \beta_2 LIT_{it} + \beta_3 INT_{it} + \beta_4 INF_{it} + \beta_5 DIR_{it} + \mu_{it} \dots (2)$$

Where;

$FINC_{it}$  is the number of deposit accounts with commercial banks per 1,000 adults of country  $i$  at time  $t$  with  $i = 1, \dots, N$  and  $t = 1, \dots, T$ .

$G_{it}$  - economic growth at time  $t$  for country  $i$ ,

$LIT_{it}$  - adult literacy rate at time  $t$  for country  $i$ ,

$INT_{it}$  - the number of internet users at time  $t$  for country  $i$ ,

$INF_{it}$  - inflation at time  $t$  for country,

$DIR_{it}$  - the deposit interest at time  $t$  for country,

$t$  - the period 2006 - 2019

$\mu_{it} = \nu_i + \mu_{it}$  - the error term where  $\nu_i$  is the unobserved heterogeneity across the countries and  $\mu_{it}$  the idiosyncratic error

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$  - the regression coefficients

### 3.4 Definition and Measurement of Variables

The model adopted here has a combination of several variables. Some of the variables are from previous studies and have been modified to fit this study. For us to examine the level of financial inclusion which is an independent variable, several banking service indicators have been proposed including number of branches, credit availability and deposit advancement as important indicators (Sarma, 2008; Rashmi, 2010; Sarma and Pais, 2011; Moldovan et al., 2011; Ghosh, 2011; Allen et al., 2012; Sarma, 2012; Gupte et al., 2012; Inclusix C.R.I.S.I.L, 2015; Sharma, 2016; Sethi & Acharya, 2018). In this study we calculated financial inclusion by getting the number of deposit accounts with commercial banks per 1,000 adults.

Economic growth is enlargement in output capacity of economy, that is in form of goods and services production, in comparison between two different periods of time. The measure of growth in economy can be in nominal terms, meaning the inclusion of inflation or real terms during this calculation, adjusted for inflation. The total produce of goods and services is presented as the Gross Domestic Product. GDP per capita will be used to get the economic growth.

According to the United Nations, when total number of learned persons in a given age group, expressed as a percentage of the total population in same age group it gives the rate literacy. The adult literacy rate measures literacy among persons aged at least 15 years and over. Results from such calculation can suggest the being of a constructive learning system and literacy initiative that can enable a large portion of the population to gain ability of using written word in day to day life and to continue learning. The number of internet users is an indicator of digital access progress. This study will measure this penetration by getting the internet users per 100 inhabitants of a specific country.

Inflation is the sustained increase in prices of goods and services overtime. Consumer price index (CPI) is the indicator of inflation (Christopoulos & Tsionas, 2004 and Giri and Sehrawat,

2017). In this study, inflation rate which is rate at which price levels change over time, will be calculated using the CPI. Deposit Interest Rate is calculated by getting average rate paid by commercial banks to individuals or corporations based on their deposits. The study will use the commercial bank rates set by the commercial banks as a measure of the deposit interest rates. In accordance to the Central Bank of Kenya (CBK), this rate is usually calculated based on several weights as distributed on repo and reverse repo rate, Central Bank Rate (CBR), Interbank Rate and Government Treasury Bill Rates.

**Table 1: Definition and Measurement of Variables**

Variable	Notation	Measurement
Financial Inclusion	FINC	Number of deposit accounts with commercial banks per 1,000 adults
Economic Growth	G	GDP per capita, ratio of total countries output to its citizens
Adult Literacy	LIT	Adult literacy rate; ratio of literate citizens from 15years of age and above by the number citizens from 15years of age and above
Number of Internet Users	INT	Number of internet users per 100 inhabitants
Inflation	INF	Inflation Rate, percentage change in price levels over time
Deposit Interest Rates	DIR	Commercial bank rate

### 3.5 Estimation Techniques

This research assumed cross country panel design with the objective of getting aggregated observations across the countries formulating the jurisdiction of study. This necessitated a panel data analysis for the topic. Panel data methodology carries with it the advantage of controlling for individual heterogeneity hence the level of biasness of model estimators was less. This methodology also offered more degrees of freedom (Hsiao & Heller, 2007), making it capable of capturing more complex behavior, and uncovering dynamic relationships controls the impact of omitted variables.

To avoid spurious regression, several checks including Pesaran and Shin W-stat, ADF-Fisher Chi-square and PP-Fisher Chi-square tests were adopted in identifying properties of unit root.

This also helped in informing the integration order of the data used. The selection of either Fixed effect or random effect model was guided by the Hausman test. This test identified the most efficient model and ensured that the model gave consistent results (Baltagi et al., 2018).

### **3.6 Data Sources**

This study used secondary data set from for the period 2006 to 2019. These data were acquired from World Development Indicators database of the World Bank and the Human Development Data of United Nations Development Programme to investigate the impact of economic growth on financial inclusion.

## CHAPTER 4

### EMPIRICAL FINDINGS

#### 4.1 Introduction

This chapter gives summary statistics, correlation examination and estimation outcomes.

#### 4.2 Descriptive Statistics

Summary of variables adopted in study are presented in the **Table 2** over the period, 2006 to 2019. This was done to ascertain the statistical characteristics of the data prior to making estimations. Descriptive Statistical tools, including mean, standard deviation, minimum and maximum were used.

**Table 2: Descriptive statistics**

	<b>FINC</b>	<b>G</b>	<b>LIT</b>	<b>INT</b>	<b>INF</b>	<b>DIR</b>
<b>Mean</b>	3.180915	920.4684	0.5108205	10.4418	8.149163	8.433492
<b>Std. Dev</b>	1.355928	318.4512	0.0334883	6.795336	4.678668	2.698929
<b>Min</b>	1.178142	347.9904	6.795336	1.3	2.623975	4.557367
<b>Max</b>	5.585676	1816.547	4.678668	23.70653	26.23982	16.79831
<b>Obs.</b>	38	42	39	37	41	41

Financial inclusion had 3.18 as the mean and 1.3 as standard deviation, indicating that the series are distributed normally since standard deviation is small. The minimum and maximum values of financial inclusion were 1.18 and 5.59 respectively, implying that during this sample period there was a systematic change in financial inclusion levels. With respect to economic growth, mean of 920.47 and quite lower standard deviation of 318.45 was noted in the sample period. In relation to the economic growth range, the minimum and maximum values were 347.99 and 1816.55 respectively. This depicts that there has been higher disparity in economic performance of the respective countries.

The standard deviation for the other variables, adult literacy levels, deposit accounts with commercial banks and deposit interest rates were relatively low. However, for the ranges, other

than the adult literacy levels which had a small range all the others had significantly large range indicating variation in the levels of this variables amongst the three countries.

### 4.3 Correlation Analysis

Correlation analysis helps in bringing out the relationship between the variables. Multicollinearity, which is a condition that occurs when independent variables in a multiple regression are highly correlated with each other, can falsify standard error of estimates therefore resulting to challenges when carrying out t-tests for statistical significance of parameters.

Correlation matrix in **Table 3** below, represents the correlation relationship of the variables in study. The matrix is based on coefficient ranging from -1, being perfect negative linear relationship, to +1 being perfect positive linear relationship, while zero depicts nonexistence of linear relationship amongst the variables. Other than the number of internet users, inflation rates and deposit interest rates, financial inclusion is highly positively correlated with economic growth and adult literacy rates. Inflation rate is negatively correlated with all the other variables while deposit interest rate is positively correlated to deposit interest rate alone.

**Table 3: Pair-wise Pearson Coefficient of Correlation**

	<b>FINC</b>	<b>G</b>	<b>LIT</b>	<b>INT</b>	<b>INF</b>	<b>DIR</b>
<b>FINC</b>	1					
<b>G</b>	0.8328	1				
<b>LIT</b>	0.923	0.9222	1			
<b>INT</b>	0.484	0.5673	0.6214	1		
<b>INF</b>	-0.0345	-0.1676	-0.2027	-0.3946	1	
<b>DIR</b>	-0.1411	-0.1074	-0.0906	0.4298	-0.1892	1

### 4.4 Hausman Test

Hausman test was carried out with the aim of choosing either fixed effect or random effect models. This test has the ability of checking against two main options, an efficient model against an inefficient model. The outcome is given out in the **Table 4**;

**Table 4: Hausman Test**

Variable	(b) fixed	(B) random	(b - B) Difference
<b>G</b>	0.0013217	0.0029195	-0.0015978
<b>LIT</b>	1.743068	2.501775	-0.7587069
<b>INT</b>	0.0196522	0.0457354	-0.0260831
<b>INF</b>	0.015616	0.0678771	-0.0522611
<b>DIR</b>	-0.0262394	-0.0588067	0.0325673

$\chi^2 (10) = 13.94$	$\text{Prob} > \chi^2 = 0.0160$
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Should p-value be significant (for instance  $<0.05$ ), fixed effects method would be adopted, should it be insignificant then random effects method would be used. From the result, p-value 0.0160, hence the null hypothesis is rejected and the fixed effect model selected.

#### 4.5 Empirical results and discussion

The study sought to test if economic growth matters in financial inclusion in East Africa. Fixed Effect Method was adopted. The findings are given on **Table 5**

**Table 5: Fixed Effects Regression Results**

**Dependent Variable: FINC**

Variable	Coefficient	Std. Error	t – Statistic	p - value
<b>CONSTANT</b>	2.539179	0.409423	6.201852	0.0000
<b>G</b>	0.0022334	0.0004315	5.18	0.000
<b>INF</b>	-0.038016	0.013611	-2.793113	0.0130
<b>INT</b>	0.0222102	0.0164581	1.35	0.0459794
<b>DIR</b>	0.019668	0.021187	0.928316	0.3670
<b>R<sup>2</sup> = 0.861961</b>	<b>F (2, 27) = 54.35</b>	<b>Prob &gt; F = 0.0000</b>	<b>D.W = 2.008</b>	

Economic growth whose proxy is GDP per capita, is a significant variable at 5%. As GDP grows it is expected that financial inclusion increases. In accordance to this regression results, the unit change in GDP growth rate of per capita leads to a change of 0.2% in financial inclusion. This is



in line with outcome found by (Sarma & Pais, 2008) and (Zins & Weill, 2016). These earlier works showed that there existed positive relationship between income and financial inclusivity.

Inflation rate has negative but significant relationship with inclusivity level. This relationship hints that inclusion levels decreases as the levels of inflation increases. In this case, a decrease by 3.8% will be experienced. The number of internet users is positively and significantly relates to financial inclusion. This means that unit change in the number of internet users relays to 0.2% change in level of financial inclusion.

Deposit interest has positive effect on financial inclusion levels. However, it is insignificant in describing the levels of financial inclusion. The outcome on deposit interest rates are partially in line with (Sarma & Pais, 2008); (Evans & Adeoye, 2016) who deduced positive connection amongst interest rates and financial inclusion.

## CHAPTER FIVE

### CONCLUSION

#### 5.1 Introduction

The chapter summarises findings, logical conclusions and policy inference.

#### 5.2 Summary of key findings

In the earlier chapters, economic literatures discussed implied a positive connection allying economic growth and financial inclusion. We set out empirical framework to investigate the effect of per capita GDP on financial inclusion among East Africa countries. Panel data set from three East Africa countries during the period of 2006 to 2019 provided the basis of our analysis.

In accordance to the findings of the study, economic growth, number of internet users' rate and inflation rate have significant influence on financial inclusion rate. Specifically, GDP per capita, proxy for economic growth and number of internet users depict a positive and significant effect on financial inclusivity. Consistent with outcome, it is supposed that with an increase in both economic growth and number of internet users then there will be increase in financial inclusion. Countries having higher GDP per capita tend to poses better inclusive financial system which corresponds to high levels of financial inclusion which corresponds to earlier researchers.

This finding implies that improvement of economic growth was crucial in enhancing financial inclusion among countries in east Africa. It therefore shades light the critical role that economic growth plays in improving level of financial inclusion, more specifically among EAC countries. On the same note, the number of individuals using the internet either through finding it efficient, cost effective or more secure, will result to rise in level of financial inclusion and therefore makes internet access a critical determinant of financial inclusion.

On the other hand, from regression coefficients, inflation rate has negative but significant effect on the financial inclusion rates. From this, it can be presumed that as the levels of inflation rates grows the levels of financial inclusion falls. It is generally agreeable that high inflation rate, would reduce the level of financial inclusion due to its effect on money circulation.

### **5.3 Policy implications**

Based on the conclusion of the study, the EAC countries should focus on accelerating economic growth as it positively affects the levels of financial inclusion. The individual governments of these countries should focus on maintaining low inflation levels in order to facilitate money circulation in the economy. This will also play a key role in advancing economic growth. In terms of internet usage, access to internet through improving internet network coverage should be enhanced. This will help in increasing number of internet users and therefore boost financial inclusion levels. Further, alternative approaches to availing affordable smart phones and computers to the citizens can be considered. Through this, internet-based transactions such as mobile banking and internet banking will be improved. This will help in increasing access to the bank accounts.

Finally, a possible extension of this study should be carried out to consider the impact of other determinants of financial inclusion. This study only focused on economic growth as a determinant of financial inclusion. It would be preferable to also consider variables such as gender and religion.

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## APPENDICES

### Appendix I

YEAR	FINC	G	LIT	INT	INF	DIR
<b>KENYA</b>						
2006	2.687554008	685.9545322	0.499	3.6	14.45373421	5.0825
2007	3.506993073	825.6665976	0.507	4.4	9.75888023	5.138702951
2008	4.069849518	902.0700258	0.515	5.2	26.23981664	5.162251046
2009	4.360072581	905.1317861	0.524	6.1	9.234125924	5.302130634
2010	4.652535718	951.6879611	0.533	7.2	3.961388891	5.96701675
2011	4.917271795	971.633329	0.54	8.8	14.02249396	4.557366667
2012	5.188353201	1136.871406	0.545	10.5	9.377767482	5.628563398
2013	5.282860364	1210.388014	0.551	13	5.71749357	11.57214466
2014	5.479832538	1315.804535	0.556	16.5	6.878154993	8.641769671
2015	5.58567556	1336.883349	0.562	16.58785485	6.582174403	8.373379608
2016	5.367629126	1410.527568	0.568	16.6	6.297157525	9.188945211
2017	5.207446301	1572.335496	0.574	17.82710021	8.005722791	8.688625573
2018	5.001978011	1707.986805	0.579		4.689819761	7.674123258
2019	4.65145974	1816.546916		22.56511937		8.292700217
<b>UGANDA</b>						
2006	1.215596365	347.9903568	0.447	2.529363038	7.310676136	9.085366086
2007	1.41083948	416.8986194	0.457	3.671965351	6.138510833	9.262094704
2008	2.084471622	467.9005703	0.469	7.9	12.05085555	10.67053623
2009	2.415248309	793.4832855	0.478	9.78	13.01725619	9.752509389
2010	2.519937491	815.8736791	0.489	12.5	3.976552885	7.687276001
2011	2.450832584	825.8384352	0.494	13.01354333	15.12515394	13.34350798
2012	2.765730388	783.717921	0.497	14.1	12.67873624	16.79830458
2013	2.965156957	803.5093739	0.503	15.5	4.902714419	12.11567268
2014	3.052431932	876.3543005	0.509	16.9	3.074677606	10.80950659
2015	3.032893312	840.4015715	0.515	17.83485947	5.410004196	12.7676244
2016	2.88251491	730.6250405	0.52	21.87617046	5.445758784	13.23795523
2017	2.665509215	747.1969074	0.522	23.70653091	5.640931922	9.697234199
2018	2.584578227	767.0977596	0.528		2.623975052	9.384952714
2019	2.575553873	776.7685759			2.86909425	
<b>TANZANIA</b>						
2006	1.178141991	485.4974874	0.452	1.3	7.250972621	8.925580862
2007	1.342047577	552.8395296	0.461	1.6	7.02551437	7.390829342
2008	1.811292054	687.3904455	0.47	1.9	10.27839376	6.729482741
2009	1.924151789	695.2167768	0.479	2.4	12.14222787	7.058679564
2010	2.049436499	743.4037847	0.487	2.9	6.200155956	7.920833333



2011	2.121358553	781.4370143	0.492	3.2	12.69096947	8.185
2012	2.267076056	867.8676806	0.501	3.95	16.00109385	6.011666667
2013	2.528145817	970.4169384	0.503	4.4	7.870723646	5.8925
2014	2.523086879	1030.092917	0.509	7	6.13161433	6.435833333
2015	2.549239831	947.9334465	0.519	20	5.58816953	6.2075
2016		966.4746224	0.518	13.50423285	5.174766293	5.4625
2017		1004.841121	0.522	15.99999943	5.318716052	6.589166667
2018		1060.994615	0.528		3.494458489	9.214166667
2019		1122.12181			3.46428058	9.866666667