FINANCIAL INCLUSION DETERMINANTS AND THEIR EFFECT ON UTILISATION OF FORMAL FINANCIAL SERVICES BY SMALLHOLDER FARMERS IN KENYA

JOSEPH MASINDE WABWIRE

A Thesis Report Presented to the Institute of Postgraduate Studies of Kabarak University in Partial Fulfilment of the Requirements for the Award of Doctor of Philosophy Degree in Business Administration (Finance option)

KABARAK UNIVERSITY

SEPTEMBER, 2020

DECLARATION

1. I do hereby declare that:

(i) the work contained in this Doctoral thesis is my own original work and to the best of my knowledge it has not been presented for the award of a degree in any university or college.

(ii) the work has not in-cooperated material from other works or a paraphrase of such material without due and appropriate acknowledgement

(iii) the work has been subjected to processes of anti-plagiarism and has met Kabarak University 15% similarity index threshold

2. I do understand that issues of academic integrity are paramount and therefore I may be suspended or expelled from the University or my Degree may be recalled for academic dishonesty or any other related academic malpractices.

Signed: _____ Date: _____

Joseph Masinde Wabwire

GDB/M/1148/9/11

RECOMMENDATION

To the Institute of Post-Graduate Studies:

The research thesis entitled "Financial inclusion determinants and their effect on **utilisation of formal financial services by smallholder farmers in Kenya** and written by **Joseph Masinde Wabwire** is presented to the Institute of Postgraduate Studies and Research of Kabarak University. We have reviewed the research thesis and recommend it be accepted in partial fulfilment of the requirement for the degree of Doctor of Philosophy in Business Administration (Finance).

Signed: _____ Date: _____

Dr. Stella Muhanji

School of Business and Economics

Kabarak University

Signed: _____ Date: _____

Prof. Amos Njuguna

Chandaria School of Business

United States International University- Africa

DEDICATION

I dedicate this work to my Lord and saviour Jesus Christ, whose grace and mercy has enabled me to fight a good fight and finish this academic race

ACKNOWLEDGEMENT

I will begin by thanking my lord and saviour Jesus Christ, for granting me the strength to pursue and complete this work. My deepest gratitude goes to my supervisors Dr. Stella Muhanji and Prof. Amos Njuguna, for their enormous intellectual help, encouragement, thoughtful comments, advice, valuable guidance and suggestions during the research which made my work easier.

My greatest thanks goes to my dear wife Phylyce Imboywa Masinde and our children; Ephraim Favour Masinde, Patience Shisa Masinde and David Vuyanzi Masinde for the moral, emotional and financial support towards completion of this work. A special word of thanks goes to colleagues and friends for their supportive roles during the study. Special thanks go to my father Jared Aketi Wabwire and my late mum Josephine Nabwire for their love, support and encouragement. The researcher owns up any errors and omissions.

ABSTRACT

Kenya's financial services sector has witnessed significant technological revolution in the past decade resulting to new financial products. Whereas 80 percent of Kenyan adults owned a formal bank account as at 2019, the level of usage of formal financial services among the smallholder farmers was still low with usage of bank accounts at 17 percent. This study aimed at addressing this low utilisation of formal financial services by the smallholder farmers in Kenya by determining suitable financial inclusion approaches which could raise the level of utilization of formal financial services among the small holder farmers thus increasing productivity in the agricultural sector. The main objective of this study was to establish financial inclusion determinants and their effect on the utilisation of formal financial services by smallholder farmers in Kenya. The specific objectives were; to determine the impact of demographic factors on utilisation of formal financial services among smallholder farmers, to evaluate the effect of socio-economic factors on utilisation of formal financial services among smallholder farmers, to determine the effect of institutional factors on utilisation of formal financial services among smallholder farmers, to examine the extent of technological factors on utilisation of formal financial services among smallholder farmers. The study also sought to explore the moderating effect of financial literacy on the utilisation of formal financial services among the smallholder farmers. The study adopted a descriptive cross-sectional survey research design. The target population of the study was 3,666,294 from Nakuru, Busia and Kirinyaga counties in Kenya from which a sample size 560 of smallholder farmers was selected. Simple random sampling was used to select the three counties and sub-counties while convenience sampling was used to select the smallholder farmers for study in each ward. Data was collected using structured and semi-structured questionnaires which were administered to smallholder farmers identified through random sampling. Descriptive and inferential statistical techniques were used to analyse the data using SPSS (Statistical Package for Social Sciences) in order to address each study objective. Descriptive statistics used were frequencies, percentages and chi-squares. Inferential statistics comprised correlation, Multinomial logistic regression and multiple linear regression analyses were then conducted. Regression results showed that age group, marital status and education levels of the respondents were the significant demographic variables. It is also evident that the socio-economic variable annual income, land size and occupation institutional factors and product differentiation were all significant financial inclusion variables. Technology factors were also significant to the formal predicting utilisation of financial services. The findings also revealed that financial literacy had a significant moderating effect on the utilisation of formal financial services. The study, therefore, recommends that policymakers should also consider reviewing policies that present obstacles to financial inclusion along demographic lines and address them to increase utilisation of formal financial services. Policymakers should also encourage smallholder farmers by way of incentives to disclose their annual income to improve their chances of accessing formal financial services that can expand their enterprises. Also, financial services providers and their technological intermediaries such as mobile service providers should revise their product strategies to encourage subscription from smallholder farmers. Policymakers should encourage more investment in the digitalisation of small scale farming activities to encourage more technology adoption. Financial institutions in the country need to develop more friendly and accessible products with features that encourage not only their uptake but also integrate into other financial services.

Keywords: Financial inclusion, formal financial services, utilisation of formal financial services, financial literacy, smallholder farmers

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS AND ACRONYMS

AFC	Agriculture Finance Corporation
ASCA	Accumulating savings and credit association
ATM	Automated teller machine
CMA	Capital Markets Authority
CRB	Credit Reference Bureau
DFI	Development finance institution
DPFB	Deposit Protection Fund Board
DTS	Deposit taking SACCO
FAO	Food and Agriculture Organisation
FIN ACCESS	Financial Access
FSD	Financial Sector Deepening
IRA	Insurance Regulatory Authority
KES	Kenya shilling(s)
MFI	Micro-finance Institution
MFS	Mobile Finance service
NASSEP	National Sample Survey and Evaluation
ROSCA	Rotating savings and credit association
SACCO	Savings and credit co-operative
SASRA	SACCO Societies Regulatory Authority
SPSS	Statistical Package for Social Sciences

OPERATIONAL DEFINITION OF TERMS

Access*:* The ability or capacity to use available financial services and products from formal institutions. (Hannig & Jansen, 2010).

Demographic Factors: These are factors such as age, mortality rate, birth rate, gender, level of education, occupation, all these expressed in a statistical manner (Dinesh,& Mhlanga, 2015).

Financial Inclusion: Leeladhar (2006) defines financial inclusion as the expanding outreach of banking or financial services at an affordable cost to a vast section of disadvantaged groups of society which may provide them with financial cushion for their sustenance as well as social empowerment.

Formal Financial Services: These are financial services that are offered to people with bank accounts (Acharya, & Subramanian, 2009).

Informal Financial Services: Refers to loans from moneylenders, landlords and family who base the financial transaction on business/personal relationships, as well as loans from institutions such as credit cooperatives and savings and credit associations in certain countries that provide financial intermediation between savers and borrowers but do not rely on the state to enforce contractual legal obligations (Ayyagari*et al.*, 2011).

Institutional Factors: These relate to structures in society, which involve rules, norms and routines that guide behaviour. These processes can exist in an Organisation or be part of the culture in a particular area (Okpara, 2009).

Merry-go-round: A group in which members contribute a fixed amount for a fixed duration and members are paid the entirety of the collected money on a rotating schedule

Product Differentiation: It involves distinguishing a product or service from others making it more attractive to a specific target population or market. It may involve bringing out the product's differences or variations from a competitor's product or service. Dirisu, Iyiola and Ibidunni (2013) suggest that product differentiation brings about competitive advantage.

Smallholder Farmer: Is defined as the household that operate farms of 2 hectares or less. In this study a small holder farmer is one who farms less than 5 acres.(FAO,2013)

Socio-economic Factors: These refer to society related economic factors which relate to and influence one another e.g., employment and level of income, level of education influences employment with impacts on income levels. According to Al-Azzam et al. (2012), socio-economic factors in many ways affect the 'access'.

Technological Factors: These factors help us adapt to our environment, control our environment and even change it using technology. Technological factors can be categorised into products and processes whereby products are meant for consumer consumption, while processes are meant to improve products and services (Pikkarainen, et al., 2004).

Usage of Formal Financial Services adoption of banking services, usage focuses more on the permanence and depth of financial service and product use. (Hannig & Jansen, 2010).

CHAPTER ONE
INTRODUCTION

1.1 Background Information

Financial inclusion is a part of social inclusion policy that has elicited widespread interest both in economic and finance fields; conceivably because of the fact that globally, all-inclusive financial system bolsters economic growth. Specifically, financial inclusion according to Aduda and Kalunda (2012: 12) is the "process of availing an array of required financial services at fair price, at a right place, form and time without any form of discrimination to all members of the society". It also denotes "all initiatives that make formal financial services available, accessible and affordable to all segments of the population" (Triki, & Faye, 2013). Financial inclusion has also been seen as a deliberate shot to ensure that people with bank accounts have access and use the bank products (Acharya, & Subramanian, 2009). Leeladhar (2006) defines financial inclusion as the expanding outreach of banking or financial services at an affordable cost to a vast section of disadvantaged groups of society, which may provide them with financial cushion for their sustenance as well as social empowerment. Put differently, financial inclusion is the effort to bring the more than 2.5 billion ''unbanked'' people who are mostly the poor and women - who currently lack access to basic financial services into formal financial networks (Lagarde, 2014).

Financial inclusion which is also referred to as the banking sector outreach which is broadly seen as the process of availing whole range of required financial services, at a fair price, at the right place, form and time and without any form of discrimination to all members of the society (Sarm,& Pais, 2011). Financial inclusion is geared towards assisting the poor with meagre resources who do not utilise formal financial services. It is an intervention strategy that seeks to overcome the market policies that encumber the markets from operating in favour of the poor and underprivileged (Adesina, & Ayo, 2010). Financial inclusion presents gradual increase and complementary solutions to deal with poverty, to advance inclusive development and to achieve the millennium development goals (Aduda, & Kalunda, 2012). It aims at drawing the unbanked population into the formal financial system so that they have the opportunity to access financial services stretching from deposits, payments, and transfers to insurance and credit (Demirguc-Kunt & Levine, 2009). Therefore, financial inclusion empowers the poor to provide their own solution (John & Mary, 2016).

Despite the importance of financial inclusion as a driver of growth and income equality, the developing countries globally continue to have significant proportions of individuals and households without access to basic financial services, with at least 80% of adults in developing countries being unbanked compared to a world average of 50 per cent and 8per cent for the developed countries (Chaia et al., 2009; Allen, et al., 2014). The low rates of financial inclusion, therefore, partly explains why despite the relatively high returns on investments in developing countries, their growth remains low while poverty and income inequalities are relatively high.

The challenges of increasing access to finance are numerous and well documented. Financial institutions interested in serving this market face myriad risks and challenges associated with agricultural production and lending, including seasonality and the associated irregular cash flows, high transaction costs, and systemic risks, such as floods, droughts, and plant diseases. While these challenges apply to agricultural lending in general, they impinge on smallholder lending in particular, given the relatively higher transaction costs of provision and smallholders' limited ability to mitigate risks (International Finance Corporation, 2014). Low or non-access to formal financial services could also arise from involuntary exclusion.

Involuntary exclusion may be caused by a variety of determinants which include financially challenged brackets or great risk, favouritism, information in the contract to amount charged or the type of products offered (Claessens, 2006). Amount charged or product attributes: financial services may not be affordable or the attributes of the product being provided may not be appropriate for particular segments of the populace. For instance, it may not be attractive for micro-entrepreneurs to pledge personal assets as security before credit is extended to them. Conversely, Kempson (2006) profiles diverse fundamental reasons or categorization of financial exclusion. These include access barriers such as identity requirements, the terms and conditions of bank accounts, levels of bank charges, physical access problems brought about by bank branch closures and psychological and cultural barriers are all important.

Studies have indicated that a large proportion of people in Africa have been financially excluded from the economy hence not being able to access and use formal financial services (Demirgüç-Kunt, & Klapper, 2013). Globally, bankable adults reported to be financially excluded are close

to three billion (Swamy, 2014). Furthermore, demirguc-kunt and klapper (2012) opines that out of the 50% of banked adults, who have individual or joint accounts at formal financial institutions, it is only 22v that have savings accounts. The situation in Africa is even grimmer from the statistics that show that bankable adults without accounts with financial institutions are more than three quarters (Demirguc-Kunt, & Klapper, 2012). This worrisome picture seems to point to the fact that majority of adults in Africa use informal services to access loans as well as make savings (Aderonke, & Charles, 2010).

Report by World Bank (2012) has depicted that many developing countries face the difficulty of accessing formal financial products. This same situation is replicated in Africa among the majority of the many small and medium businesses. Basically, the key financial inclusion and exclusion indicators/variables in developing countries globally are financial services accessibility, availability and usage (Kempson, et al., 2004). The idea of these broad indicators of financial inclusion is on the premise that in Africa with particular reference to Nigeria, it is not enough to have a bank account because the unbanked or under banked people despite having access to the formal financial institutions, in most cases do not use the financial services due to inaccessibility of bank branch and excessive cost attached to banking services.

Nigeria for instance with an adult population of about 84.7 million, out of this, only 39.2 million adults representing 46.3% of adults are financially excluded with regard to provision of banking and financial services (Nkwede, 2015). Comparatively, the central bank of Ghana reported that out of a 16 million adult populations in Ghana, 40 percent of the extreme poor (those living below us$1 per day, implying 29 percent of women and 27 percent of the youth) have no access to banking and financial services. The adults in Ghana not included both in the formal and informal financial systems comprise of 76percent and 71percent respectively. They are mainly the far off areas of northern and eastern parts of the country (Nkwede, 2015).

The adults in Zimbabwe that are included in the financial system are approximated to be only 30percent as of 2014. In-fact, there are significant access barriers for a significant percentage of the country's population, with 60percent of the population estimated to be going without income for daily life needs and at least 44percent without money for food (Mutsonziwa,& Maposa,

2016). This situation needed to be addressed; this is because Park and Mercado (2015) established that there is a positive relationship between financial inclusion and poverty reduction. Given this information, the government of Zimbabwe has put in place a national financial inclusion strategy to promote access to and use of financial services by the country's unbanked individuals and households.

The economy of Kenya is the largest in east Africa with a robust financial sector. However, statistics show that the distribution of bank branches is skewed where 93percent are in urban and rural areas and 7percent in arid and semi-arid areas. The percentage of bank branches in rural areas seems also to reflect the percentage of unbanked adults hence demonstrating the degree of formal financial exclusion (Beck, et al., 2010). Kenya has a population of 46 million people and adults with accounts in the formal financial institutions in the year 2014 stood at 55.2percent for formal savings 30percent and for formal borrowing 15percent according World Bank data (Demirguc-Kunt, et al., 2015). This information point to the fact that some poorer sections of the society, mostly from the rural, arid and semi-arid areas are excluded from the formal financial systems.

1.1.1 Financial Inclusion Determinants

The study by Chithra and Selvam (2013) on the determinants of financial inclusion depicted that among the socio-economic factors, income, literacy and population were found to have a significant relationship with the level of financial inclusion, whereas, among the banking variables, deposit and credit penetration recorded significant association with financial inclusion. On the other hand, credit-deposit ratio and investment ratio did not have significant relationship with financial inclusion. Moreover, (Akudugu, 2013) established that age of individuals, literacy levels, wealth class, distance to financial institutions, lack of documentation, lack of trust for formal financial institutions, money, poverty and social networks, as reflected in family relations, are the significant determinants of financial inclusion in Ghana. In addition, (Sarma,& Pais, 2011) depicted that socio-economic and infrastructure related factors such as income, inequality, literacy, urbanisation and physical infrastructure for connectivity and information are important. However, according to Chikalipah and Chikalipah (2017), illiteracy is the major hindrance to financial inclusion.

This indicates that financial inclusion is determined by both demand side factors and supply side factors. For instance, a good financial decision is based on financial literacy (demand side factor) which is linked to access and usage of suitable products and services (the supply side) (Mitton, 2008). Although Kundu (2015) in his study indicates that efforts by the government has mostly been directed towards enhancing supply side factors which includes bank penetration and access, that demand side factors have not been sufficiently addressed leading to little usage of the financial products. This study nonetheless, used demographic factors, technology, product differentiation and socio-economic factors, and institutional factors which are both demand and supply factors as supported by other studies (Dev, 2006).

Financial inclusion determinants when used to inform the formulation of suitable financial inclusion approaches and policies would directly influence the level utilisation of formal financial services of smallholder famers and impact on the agricultural productivity of the Country. But if the Country lacks clear policies on financial inclusion like if financial institutions are allowed to offer smallholder farmers what they want, when and how they want, then the usage of formal financial services by smallholder farmers and consequently productivity of the Agricultural sector is likely to suffer. The issue of financial inclusion therefore is central to utilisation of formal financial services by the smallholder farmers and productivity of the Agricultural sector. The status of financial inclusion determinants among the smallholder farmers has not been investigated, and its effect on usage of formal financial services is unknown, yet the utilisation of formal financial services has been low.

1.1.2 Agricultural Financing

Kenya's economic sector is to a great extent supported by the agricultural sector. Kenyan economy largely depends on the agricultural sector, which is key towards accelerating achievement of its agenda 2030 economic pillar and the presidential big four agenda on food and nutrition security (GOK, 2017). The Kenyan agricultural sector contributes about 27% to the gross domestic product (GDP), 65% of export earnings and provides about 80per cent of employment opportunities annually (FAO, 2013; MOALF, 2016; KNBS, 2017). Approximately 15-17 percent of Kenya's total land area has sufficient fertility and receives adequate rainfall for agricultural use, with over 7-8 percent classified as first class land. Over the years about75per

cent of working Kenyans made their living by farming (KPDS, 2011). The agriculture, forestry and fishing sector significantly contributes to Kenya's gross domestic product (GDP) (15.2%) and employment (75%) (KIPPRA, 2017) and was therefore the largest contributor to the Kenya's GDP. It has been recorded that the sector also harnesses 50 percent of revenue from exports (Muchiri,& Kamau, 2011).

Agricultural sector's potential for maximum output and productivity can be boosted by financing the sector. Agricultural finance refers to financial services including savings, insurance, transfers and loans, potentially needed to power and steer the agricultural sector, that is, financing of farming and farm related activities including input supply, processing, whole selling and marketing. These farming activities are largely carried out in rural parts where majority of smallholder farmers practice (meyer, 2011). Agricultural financing as evaluated by Dianne and Zeller (2001) categorises them into those that access and those that use the financing products and services provided.; this therefore, indicates that smallholder farmers may have access without being backed up with actual usage of credit. Credit worthiness as a requirement for borrowing has been debated by Zeller and Sharma (1998), who demystified the notion that poor households earning less than a dollar a day are not credit-worthy by arguing that poor households do actually value reliable and continued access to different types of financial services.

Smallholder farmers that hold land sizes of less than one hectare have been found to have been excluded from rural financial system (Dianne, & Zeller, 2001). Land therefore could be the overarching constraint leading to low agricultural productivity, in particular in the growing of maize or cereals, thus preventing increased diversification into other food and cash crops as well as non-farm enterprises which are key requirements for poverty alleviation. Smallholder farmers majority of who are in the rural areas, need financial services ranging from short, medium and long-term loans, to leasing, to crop and livestock insurance, covering the entire agricultural value chain which includes input supply, production and distribution, wholesaling, processing and marketing (Nagarajan,& Meyer, 2005).

The Agricultural Finance Corporation (AFC) was created under cap 323 in 1963 as part of the government plan to bolster the agricultural credit to Europeans as well as Africans. In 1969 it

was remodelled as bank to finance agriculture and acquisition of land for farming. At its formation AFC's functions were to assist the development of agriculture by availing loans to all farmers, co-operative societies, public bodies, local authorities and any other person involved in the agricultural sector. Albeit mandated to avail credit to all farmers, financing by the agricultural finance corporation was skewed and mostly benefited the large scale farmers. The smallholder farmers and the farmers' cooperative society were left to be served by the cooperative bank.

The household survey conducted by Tegemeo in 1997 was able to elucidate on the way AFC functioned and its activities in the mid-1990s. AFC granted loans to only one percent of households and this translated to 3.5% of the value of actual loans advanced, suggesting that a few individuals were issued with big loans. Furthermore, about 99% of the loans were advanced in 2 out of the 9 regions covered, 86 percent in the rift valley and 13 percent in the central highlands. This clearly indicates that the credit program left out 7 regions of the country. The loans were granted to large farms averaging 19 acres whereas the sample sizes of the farms averaged 4.3 acres. These loans benefitted individuals who were salaried. This is supported by the fact that at least 73percent of those who were advanced credit from AFC were in salaried employment. This therefore, portrays that AFC was not serving the credit needs of farmers and this gap was filled by self-finance and co-operatives (Argwings-Kodhek, 2004)

The guaranteed minimum return scheme that had been introduced was abused and exploited in the late 1970's. The scheme was by manipulated through corruption where politically and financially endowed farmers had their loans written by falsely reporting that the crop failed and hence there was no production. Meanwhile, they would go ahead and sell their produce directly or through the names of third parties as a cover up. Government and AFC officers were accused of having been accomplices and promoted this vice. This resulted into the scheme being terminated in 1978.

A new seasonal credit scheme was started in 1980 that took the place of the discontinued guaranteed minimum return scheme. However, the new scheme began to suffer problems reminiscent of the guaranteed minimum return scheme. The statistics show that by June 1992 the

non-performing loans amounted to Ksh. 1.5 billion representing 49 percent of the Ksh.3.4 billion loan portfolio. The scheme was suspended in 1996 owing to reduction of revolving funds resulting from massive accrual of non-performing loans of Ksh 6.2 billion against a loan portfolio of Ksh 6.8 billion, or 89 percent (AFC, 2005). The AFC also experienced a backlash during the suspension of funding from donors. This ushered a situation where there was restricted lending, and most of the funds from the loans received were used to finance recurrent expenditure (Argwings-Kodhek, 2004). The government backed AFC model despite charging the lowest interest rate was only advanced to few customers who were rich and drew its support largely from budget allocations and in some cases donor funding. The framework under which the AFC operated was unsustainable and poorly documented (Kibaara, 2007). This has led to the emergence of a traditional banking model with commercial banks such as equity bank reaching the highest proportion of rural people who could not previously be reached (Kibaara, & Nyoro, 2007).

A study by the World Bank (2013) points to a banking experience in Kenya that provides an interesting 'laboratory'. The banking network in Kenya has experienced rapid growth in recent years, an increase led by the financial bank, which pioneered the institution that developed a banking strategy aimed at low-income customers and in previously disadvantaged regions. This branch expansion is strongly associated with greater access to banking services and, thereafter, equity bank has been instrumental in improving household access to bank accounts and bank credit, especially for vulnerable people. This project highlights the importance of institutions, such as the financial bank, and the business model that focuses on the provision of financial services to the segments of the population that are ignored by the regular commercial banks while generating sustainable profits in the process. Such institutions can be an important part of the solution to the financial crisis, which has hampered the development of inclusive financial institutions in many developing countries.

Financial services provided by formal and informal financial institutions in Africa account for about 5% of the resources in the rural and agricultural sectors which is why it affects large investments by smallholder farmers who may be able to get credit for seed, fertilizer and other inputs during the growing season. However, this is often not the position and many interventions

have failed to deliver adequate and timely funding. Meyer (2011) expressed this concern that unless two or three harvests do occur, post-harvest debt does not directly address the annual need for working capital to plant a new harvest. Initially, the rain-related agricultural hazards caused many financial backers to refuse to work in the agricultural sector. However, new ways of providing formal financial services have increased access, but the magnitude of the use is not well known (Maina, et al., 2016).

1.1.4 The Recent Developments Regarding Financial Inclusion in Kenya

In line with the 2030 vision of the financial services sector (GOK, 2007) Kenya aims to have a large and competitive financial sector that drives high levels of savings and financing Kenya's investment needs. The Financial Services Sector (FSS) is critical to achieving a growth rate of between 10percent and requires the sector to drive a significant increase in investment by combining domestic and international resources. The goal of this sector should be achieved by deepening financial markets by improving its accessibility, efficiency, and stability. FSS has banks, major markets, insurance, pensions / development pensions, development finance and Saccos sectors.

The shift from policy statement to fiscal investment and far less money is reflected in the 2008 World Bank's book "finance for all" (World Bank, 2008). This contradicts the need to increase the provision of services to the unpaid and those on low incomes and away from the focus on low income in providing financial services to the poor. According to the Fin Access (2009) survey, total investment increased from 26.4 percent in 2007 to 40.5 percent in 2009. Official investments have also increased from 18.9 percent to 22.6% (FinAccess, 2009). Recent data indicate that this level of improvement in the topic of continuous acquisition rate is continued (FinAccess, 2014). However, they noted emerging and challenging concerns that included; Higher levels of financial services, higher bank lending rates and higher interest rates, lower utilisation of financial services, inadequate financial access to SMES, lower insurance coverage and lower pension benefits.

Some of the areas considered include: promoting long-term savings and reducing risk: the program has four broad objectives: to consolidate sector-level investments to invest in

government and the private sector, to increase individual savings on education and housing, to provide pensions (income) instead of aging and provide appropriate protection, insurance, at risks such as illness, accident, and bad weather. By facilitating the expansion of electronic payments, achieving a 'cash-strapped' economy by increasing electronic payments will significantly reduce transaction costs across the financial system, particularly in the provision of commercial financial services and improved lending and investment space.

Kenya has increased its fiscal consolidation according to the 2006, 2009, and 2013 FinAccess surveys which showed that the proportion of older persons using various forms of formal financial services stood at 66.7percent in 2013 compared to 41.3% in 2009 and 27.4percent in 2006. Similarly, the average adult turnover rate in financial services dropped to 25.4percent in 2013 from 31.4percent in 2009 to 39.3 percent in 2006 (CBK and FSD Kenya, 2013). In addition, research data from a recent global survey show that 75percent of Kenyan adults have a legal account that allows them to save, send or receive money (CBK, & FSD Kenya, 2016).

The increase in investment has been supported and driven by new technologies such as short-term telecommunications loans, Automated Teller Machines (ATMS), e-banking and agency banking, and mobile banking services that have changed Kenya's climate since 2002. In particular, mobile telephony in Kenya has allowed for the growth and availability of financial services in previously underserved areas by improving access to credit facilities and deposits, allowing for efficient credit distribution, facilitating financial transfers, and advancing investment. Agency banking, MFI's, DTM and mobile banks have also gone a long way in expanding financial services to millions of poor people at relatively low cost. With bank and mobile money agents spread across the country, about three-quarters of the population now live within 3 km of the financial sector (Dubus, & Van, 2017; Aduda, & Kalunda, 2012).

However, with these seemingly great strides, formal bank access has not been cured. This is evidenced by the fact that whereas 93.2% of the richest are formally included, 55.3percent of the poorest are still completely excluded from formal and informal financial services (FinAccess, 2013). Accordingly, three quarters of non-banked individuals refer to lack of income or banks being 'too expensive' as major limitations, indicating that price is an unrelenting obstacle to

usage while arrangements of lending are lopsided on the supply side. The notion that agency banking will open up hitherto the unreached areas has also proved to be false hope. An Agent Network Accelerator (ANA) survey found that bank agents are principally offering services to proportions of the populations that are already part of the formal financial system. This is against the hope that they would enlarge the access. The survey report points to the fact that incentives encourage agency models to be in densely populated areas and serving existing clients rather than investing in expanding outreach to new clients (Khan, et al., 2015).

Second, data from the FinAccess (2016) survey show that the use of bank accounts remains low. Active users of bank accounts are those who log into the accounts once a month pointing to the fact that they can be paid. This compares with the frequent use of informal daily and weekly channels. Despite advances in financial sector accounting and account ownership, most Kenyans still consider their most important financial services as 'friends and family' and 'savings under the mattress' (Michael, 2012). Thirdly, it is expected that the use of mobile money transactions will improve the number of people placed in formal financial services as more people do not have cell phones and therefore have access to mobile banking services. Evidence shows that the majority of mobile money users are in the informal sector and do not have a formal bank account. This should recognise and eliminate the segregation of mobile money as a legitimate service thereby reducing the role of mobile money in informal financial institutions. Considering the frequency of various mobile money users, most of them are connected to financial work in the informal sector, especially social media. Especially for women and rural people, the takeover of mobile phones is strongly associated with rising employment rates in the informal sector. Failure to engage and understand the volatile financial situation embedded in Kenya will undermine the legitimacy of the legal sector to bring real value to the lives of consumers (Yenkey, et al., 2015; Simiyu et al., 2012).

Finally, lending is not all-encompassing because the credit arrangements in the banking sector appear to be strongly associated with medium-term growth, with growing lending focused on easy consumer lending (especially secured loans) and real estate markets. This will not produce the desired employment and growth outcomes that can result from increased borrowing in key sectors of the economy such as manufacturing, agriculture and small and medium enterprises

(Johnson, & Upadhyaya, 2015). The challenge will therefore be to design financial products that cater for those in low-income households. There is always the unspoken fear that commercially successful but poorly constructed products will reach market dominance and choke new ones and choices. Following the high level of hardship in the United States and recent research showing the limited impact of low income on the lives of the poor, it has become increasingly important to carefully monitor the social impacts of emerging financial services (Bateman, 2010).

The findings of the analysis of the drivers and effects of the financial revolution in Kenya, shows the poorest Kenyans continue to be excluded, usage remains low and mobile money deters the location of the real financial revolution which lies in informal rather than formal financial exchanges. The financial sector is still not making substantial gains with respect to poverty reduction and inclusive growth- lending is still skewed to the rising middle classes delivering easy profits for bankers, and the value proposition of formal instruments for the average Kenyan remains weak. Therefore, the frameworks and data are needed to support Kenya's financial sector to deliver real inclusion for Kenyans (Heyer, & King, 2015). It is imperative to understand the distinction between access to financial services and usage of financial services as a critical way of comprehending the level of financial inclusion. Access to financial services implies the absence of obstacles to the use of these services and the possibility to use it whereas, usage of financial services means actual use of financial services (World Bank, 2008). Access is different from use in the sense that all those who have access need not necessarily use formal financial services (Demirguc-Kunt, & Klapper, 2012).

The information in Table 1 shows the access of formal financial services based on livelihood in Kenya. It depicts that those who access formal financial services (commercial banks) and derive their livelihood from agriculture are 31.8percent compared to employed at 78.9percent own business at 57percent dependents, 30.3percent others 29.8percent and "casual" 32.1percent. This shows that the access levels of farmers' majority of whom are in the rural areas is still low. The access to other financial services (Sacco, mobile money) is high among the farmers at 36.4percent compared to those in employment 17.2percent and those who own businesses at 29. 4percent.Besides, the percentage of farmers accessing informal financial services is 9.2% which is the highest compared to other players. The picture is even dim when you consider that those

farmers excluded from the financial services are at 21.7 percent compared to those in employment at 2.6 percent.

Table 1: Usage of Financial Service Providers by Livelihood in Kenya (%)

	Agriculture	Employed	Casual labour	Own business	Dependent	Other
Bank usage(overall)	26.0	77.2	29.8	51.5	27.4	51.2
Mobile bank accounts	9.9	32.4	16.9	25.4	11.9	26.9
Banks(excluding mobile bank accounts)	21.2	71.7	20.5	42.5	21.3	47.5
Sacco	12.8	38.0	4.8	12.8	3.4	17.0
Mobile financial service	64.6	93.2	68.2	83.7	59.8	57.7
Microfinance	2.9	4.0	1.8	7.2	2.6	5.4
Insurance	17.8	66.5	13.4	27.6	11.1	27.6
Pension	5.4	53.8	8.8	9.1	3.5	15.1

Source: FinAccess (2016)

Comparing other formal financial services like pension and insurance, it shows that agriculture lags behind in utilisation of formal financial services. It therefore means that the formal financial sector tends to be tilted away from those who derive their livelihood from agriculture since they have low uptake of formal financial services.

Table 2: Usage by Active Segments of the Kenya's Economy (%)

Year	**Small holder farmers**	**Sophisticated businesses**	**Urban small business**	**Public sector employees**	**Private sector Employees**
Bank account	17%	83%	46%	90%	92%
Mobile Account	72%	94%	93%	98%	99%
Digital payments	5%	70%	19%	93%	88%
Formal Savings	48%	96%	82%	99%	100%
Formal Credit	12%	51%	32%	66%	47%
Informal credit	34%	30%	36%	26%	32%
NHIF	18%	67%	30%	96%	92%
Other Insurance	2%	31%	9%	34%	16%

Source: FinAccess (2019)

The results (Table 2) from the survey conducted by Central bank of Kenya in conjunction with Kenya national bureau of statistics and financial sector deepening results show that households who are employed in Public sector and those that own urban small business have 90 percent and 46 percent usage of bank accounts respectively. Despite agriculture being the mainstay of the Kenyan economy, formal Bank account usage by households engaged in agriculture remains low at 17 percent, formal savings 48 percent, formal credit 12 percent, digital payments 5 percent and other insurance 2 percent. Currently, smallholder farmers in Kenya face many challenges in accessing financial services including limited access to financial markets. However, many reforms have been undertaken by the government and donor communities including financial sectors but rural farmers have remained in poverty with limited access to safety nets like loans to mitigate against hunger and disease. Farmers' access and efficient utilisation of credit finance is imperative in increasing farm productivity among rural households and reducing poverty levels in agrarian societies.

The above scenario raises the question of suitable financial inclusion approaches that can raise the level of uptake of formal financial resources and the overall productivity of the small holder

farmers in Kenya. It points to the need to determine the status of financial inclusion vi-a-vis utilisation of formal financial services among the small holder farmers in Kenya.

1.2 Statement of the Problem

Usage of formal financial services is low among the smallholder farmers. Financial access household survey for the year 2019 showed that 80 percent of Kenyan adults own a formal bank account. However, ownership of bank accounts has not resulted in increased uptake of formal financial services by the smallholder farmers since usage of bank accounts is only 17 percent. Low utilisation of formal financial services and inadequacy of financial inclusion approaches has contributed to low productivity in the agricultural sector. This study therefore sought to address this issue and establish the financial inclusion determinants and their effect on utilisation of formal financial services by smallholder farmers in Kenya.

1.3 Purpose of the Study

The purpose of this study was to establish the financial inclusion determinants and their effect on utilisation of formal financial services of smallholder farmers in Kenya. A sample of 496 smallholder farmers was analysed using descriptive study design with a view of understanding the level of uptake of formal financial services. As a result, this study was therefore meant to establish the determinants of low financial inclusion in a bid to determine viable avenues of increasing formal financial usage by the smallholder farmers.

1.4 Objectives of the Study

The main objective of this study was to establish financial inclusion determinants and their effect on utilisation of formal financial services by smallholder farmers in Kenya. This study was guided by the following specific objectives:

i. To determine the effect of demographic factors on utilisation of formal financial services among small holder farmers
ii. To evaluate the effect of socio-economic factors on utilisation of formal financial services among small holder farmers.
iii. To assess the effect of institutional factors on utilisation of formal financial services among smallholder farmers.

iv. To examine the impact of technological factors on utilisation of formal financial services among small holder farmers.

v. To determine the influence of product differentiation on the utilisation of formal financial services among small holder farmers.

vi. To assess the moderating effect of financial literacy on utilisation of formal financial services among smallholder farmers.

1.5 Research Hypotheses

The following research hypotheses were tested in the view of the variables identified and stipulated in the conceptual framework.

H_{01}: There is no significant relationship between demographic factors and utilisation of formal financial services by the small holder farmers

H_{02}: Socio-economic factors have no significant effect on formal utilisation of financial services by the small holder farmers

H_{03}: There is no significant effect of institutional factors on utilisation of formal financial services by the small holder farmers

H_{04}: There is no significant relationship between technological factors and utilisation of formal financial services by smallholder farmers

H_{05}: Product differentiation does not influence the uptake of formal financial services by the small holder farmers

H_{06}: There is no significant effect moderating effect of financial literacy on utilisation of formal financial services among smallholder farmers.

1.6 Justification of the Study

Financial inclusion factors have been observed as drivers in the utilisation of formal financial services. An efficient financial inclusion approach should exhaustively address the issues of gender, financial literacy, accessibility to technology, product features and income levels. An empowered gender will make greater contribution to the society and expand their ability to make strategic life choices and decisions, while financial literacy is critical for one to make sound financial decisions and eventually attain individual financial well-being. It should also embrace innovations in technology which increases access and usage of mobile banking. Attractive

product features and increased income levels are also key drivers. If these factors are built into a financial inclusion approach of an Organisation, utilisation of formal financial services will be high.

In Kenya, however, formal Bank account usage by households engaged in agriculture remains low at 17 percent, formal savings 48 percent, formal credit 12 percent, digital payments 5 percent and other insurance 2 percent (FinAccess, 2019). This trend has impacted negatively on agriculture which is an important tool for promoting both national and rural development. As a poverty reduction strategy, financial inclusion plays an important role in supporting smallholder farmers to improve their production and living standards. Improved rural credit financial system is therefore crucial in achieving pro-poor growth and poverty reduction among the rural communities. This research aims to contribute to the debate on determinants of financial inclusion and constraints faced by smallholder farmers in utilising formal financial services. In addition, the study will also contribute to the pool of literature on financial inclusion and its role on utilisation of formal financial services by small holder farmers in increasing agricultural productivity as a path way for reduction of persistent rural poverty and household food insecurity in Kenya. The findings of this study shall help in designing specific strategies and programs for each of the study areas and simulated for similar contexts.

The findings of this research would provide information that will enable policy makers and financial leaders to take effective measures to improve formal financial utilisation by smallholder farmers. Further, the findings would also help in emphasising the importance of an efficient financial system to economic development as documented by (GOK, 2007). Kenya's vision 2030 also identifies the financial system as one of the six priority sectors under the economic pillars necessary for economic development. Agriculture has always been an important issue in the World Trade Organisation (WTO) meetings where some of the largest economic gains have arisen from reduction of agricultural trade barriers. WTO has identified inaccessibility of credit as a particularly important constraint when enhancing or restructuring agricultural supply capacity to meet opportunities created. The findings of this study will therefore provide useful information in attempting to tackle this issue.

Given a large part of Kenya's population is engaged in agriculture, developing policies that improve the sectors general performance so as to improve livelihoods in the sector would be imperative. The outcomes of this study would therefore be useful in identifying innovative options, appropriate strategies for improving productivity through formal financial utilisation and institutional arrangements that would serve as an input for policy makers in formulating financial inclusion policy. Agriculture has the potential to contribute to poverty reduction in Kenya's economy and there is need therefore for policy makers to provide incentives to boost both agricultural production and private investment in the sector. This study challenges policy makers and decision makers to review policies that present obstacles to financial inclusion along demographic lines so as to increase utilisation of formal financial services.

1.7 Scope of the Study

The study focused on financial inclusion and its effect on utilisation of formal financial services by smallholder farmers in Kenya. This study was limited to the three counties of Nakuru, Kirinyaga and Busia. The smallholder farmers that have less than 5 acres of land were the study units. The independent variables that were considered in this study were demographic factors, socio-economic factors, technological factors, product differentiation and financial literacy as a moderating variable while utilisation of formal financial services was the dependent variable. The study was undertaken from 10th February to 30th May, 2018.

1.8 Limitations of the Study

The study relied on farmers' memory to capture data as most farmers have no records and hence the accuracy of most of the data collected depended on the individuals' ability to recall the information. The mitigation was to introduce redundancy in instruments to cross check responses. The undertakings by smallholder farmers have long term effects that can only be evaluated through a study for the same smallholder farmers for a long period of time. As this study used a onetime response on the questionnaire to assess their perspective of the issues under study, a longitudinal study on the impact of the utilisation of formal financial services would yield more results. The social aspects of culture and religion although not studied could affect the utilisation of formal financial services.

1.9 Assumptions of the Study

This study also assumed that each participant honestly and thoroughly answered each question correctly by giving information that was not biased. The study covered smallholder farmers from Nakuru, Kirinyaga and Busia counties which are assumed to be within the same livelihood zones as indicated in the study although with different poverty indexes.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This chapter presents selected scholarly works on financial inclusion determinants on utilisation of formal financial services by the small holder farmers, but with focus on demographic factors, technological factors, socio-economic factors and product differentiation, and their effect on utilisation of formal financial services in this study. Also, this chapter discusses the key theories underlying financial utilisation of financial services and expounds on research gaps in utilisation of formal financial services by the smallholder farmers.

2.2 Literature Related to Financial Inclusion and Small Holder Farmers

Leeladhar (2006) defines financial inclusion as the expanding outreach of banking or financial services at an affordable cost to a vast section of disadvantaged groups of society which may provide them with financial cushion for their sustenance as well as social empowerment. Specifically, according to Aduda and Kalunda (2012), financial inclusion is the "process of availing an array of required financial services at a fair price, at the right place, form and time without any form of discrimination to all members of the society". Financial inclusion is a purposeful effort to ensure access and availability of financial services such as loans, deposit service, insurance, pension and payments to the bankable citizens (Acharya & Subramanian, 2009).

Put differently; financial inclusion is the effort to bring on board the more than 2.5 billion "unbanked" people; mostly the poor and women who currently lack access to essential financial services into formal financial networks (Lagarde, 2014). Financial inclusion is an integral subset of social inclusion policy which has attracted universal attention in economic and finance discourse; perhaps because globally, all-inclusive financial system buttresses economic growth. Essentially, not much consideration (research-wise) has been given to financial inclusion in Africa with regard to its principal role in African financial system as well as economic development.

There has been much advocacy towards financial inclusion as this plays a major role in reducing poverty and achieving inclusive growth through household investments (Demirguc-Kunt et al., 2015). Countries have made quite significant progress towards financial inclusion. Further, international organisations, including G-20, have put strategies to promote financial inclusion (Demirguc-Kunt et al., 2015). From the efforts towards financial inclusion, surveys have shown that over the 143 economies, 67 percent have set clear mandates to promote financial inclusion. This has ensured that these countries can evaluate the progress of financial inclusion in their countries. Due to much effort towards financial inclusion, there has been a lot of innovation and changes to regulations to accommodate the needs of those who have been financially excluded (Al-Shbiel & Ahmad, 2016; Kalunda, 2014).

Kenya has equally carried this global agenda with zeal. Most of the reforms in the banking sector since 2007 have been largely geared towards enhancing financial inclusion. These reforms have changed the financial landscape, especially with the introduction of mobile and agency banking (CBK, 2014). The Kenyan government does not only advocate for financial inclusion at the policy level; it has also set funds for vulnerable groups; people with disability, women and youth. Women fund and youth fund which have been running for over five years were the first funds to be set to enhance financial inclusion (Kaane, 2014; Kimando et al., 2012; Lagat et al., 2012). In 2013, another fund was launched, the Uwezo fund targeting the same groups where a total of Ksh. 6 billion was set aside (Kaane, 2014). By use of the funds, the government is able to enhance capacity on social capital and financial capability. The purpose of all this was to provide finances to the youth as they do not have the same level of access to financial services compared with the other segment of the society (Mbae et al., 2016).

Due to these efforts, those who are financially included have increased from 26.4% in 2006 to 66.7% in 2013 (FinAccess, 2013) and 75.3% in 2016 (FinAccess, 2016). Studies have confirmed that providing the poor with affordable financial services can help them move out of poverty. This is through household investment which leads to employment and reduction in poverty (Ashraf et al., 2010; Brune et al., 2013; Ellis et al., 2010; UNDP, 2013; Cull et al., 2014; Maigua & Mouni, 2016; Park & Mercado, 2015; World Bank, 2014). Though there has been an increase on those who are financially included, those living below the poverty line have moved to about

42% from about 47% in the same period (World Bank, 2014). Other studies indicate that Kenya compares poorly in reducing unemployment among other developing countries (Kaane, 2014; Mutia, 2014; Muyia, 2014; World Bank, 2015; World Bank, 2016b). Despite the increase in financial inclusion in Kenya, the unemployment and poverty levels are still high and more pronounced among the youth (Mbae et al., 2016). The poor have not been able to undertake household investment. Unemployment, poverty and income inequality are still high in Kenya (Balwanz, 2012; Kaane, 2014; KNBS, 2014; KNBS, 2016; Muyia, 2014; World Bank, 2016). The rate of unemployed youth increased from 12.5% in 2006 to about 25% in 2013 (Mutia, 2014).

According to the working paper of the Asian development bank institute; financial inclusion can be measured through the following ways, catalogued in the order of complexity (Hanning & Jansen, 2010): in the first place, access is the ability to use available financial services and products from formal institutions. Understanding levels of access may require insight into and analysis of potential barriers to opening and using a bank account for any purpose, such as cost and physical proximity of bank service points for instance branches or ATMs. A very basic proxy for access can be derived by counting the number of open accounts across financial institutions and estimating the proportion of the population with an account.

In the second place is the quality, which is the relevance of the financial service or product to the lifestyle needs of the consumer (Hanning & Jansen, 2010). Quality encompasses the experience of the consumer, demonstrated in attitudes and opinions toward those products that are currently available to them. The measure of quality, therefore, would be used to gauge not only the type but also the depth of the relationship between the financial service provider and the consumer as well as the choices available, consumers' levels of understanding of those choices and their implications. It focuses more on the permanence and depth of financial service besides the use of the financial product. Hence determining usage requires more details about the regularity, frequency, and duration of use over time. To measure usage, it is critical that information reflects the user's point of view, that is, data gathered through a demand-side survey. To conclude, the impact which measures the changes in the lives of consumers that can be attributed to the usage of a financial device or service.

There is no universally agreed definition of family farms; most definitions are purely for analytical purposes or implementation of government programs. The common denominator in most definitions considers the aspects of the use of family labour and the farm managed by the family (Garner & De la o Campos, 2014). Causin (2010) argues that existing definitions of smallholder farming tend to obscure important differences between households engaged in agriculture. In the past, the common term for small-scale farmers who rely mostly on household labour, and who sell at least part of their produce for cash, was 'peasant', and this is still a key term for some analysts (Causin, 2010).

In most developing countries, including Kenya, smallholder farmers are defined based on various attributes comprising firstly, the level of production: they produce small volumes of products mainly for household consumption and income. Secondly, they have a small plot/farm sizes. Lastly, they mainly depend on family labour. Out of these, however, the size of the land is the most commonly used. FAO's criterion of plot size is widely used, with 'smallholder farmers' being those who farm plots of 2 hectares or less (FAO, 2013). Chamberlin (2008) using survey data from Ghana, employs farm size as the classification variable and defines smallholders as farmers with operated farm size smaller than 10 hectares and greater than 0.1 hectares ("virtually landless").

Comparative data on farmers who received payments from the agricultural products among the middle-level income economies is presented in Table 3 and show that Kenya seems to be trailing behind and has not fully utilised the financial institutions to receive payments which stand 12.5%, compared to cash at 94% and mobile phone at 30.4%. Comparative data on the usage of financial institutions to receive agricultural products remittances shows Ghana at 5.8%, South Africa 35.6%, Nigeria 16.5% and Botswana 17.9% among the selected African countries. This raises a lot of concern about the low level of usage of the financial institutions by the agricultural sector in Kenya.

Kikulwe, Fischer and Qaim, (2014) analysed the impact of mobile money use among smallholder farm households. The factors influencing the adoption of this innovation were analysed with a probit model while the impact was analysed using panel models. The findings

suggested that mobile money services can be welfare-enhancing for smallholder farm households, who constitute the majority of the rural poor. In Kenya, mobile money also seems to be widely accessible.

Table 3: Comparative Data on Respondents Who Received Payments from Agricultural Products

	Ghana	**Kenya**	**S.Africa**	**Nigeria**	**Botswana**	**Chile**	**Malaysia**	**Mexico**	**Russia**	**Pakistan**	**Turkey**
Total	29.9	53.6	10.7	28.8	27	2.4	8.4	12.3	9.6	5.4	5.4
Female	26	52.6	10.5	28.9	22.9	1	6.3	9.6	11	22	3.1
Income poorest 40%	30.5	55.3	11.1	33.2	28	2.5	9.7	15.2	11	19.8	5.2
Income richest 60%	29.5	52.5	10.3	25.6	26.3	2.3	7.5	10.3	8.7	35.5	5.6
Male	33.9	54.8	10.8	28.6	31.2	3.9	10.3	15.2	7.9	22.6	7.8
Primary education	35.5	58.7	13	36.6	36		11.8	17.6	..	27.2	9.4
Rural	33.4	56.8	14.2	37.5	28.1	10.9	12.7	21.4	19.5	20	13
Secondary school	25.9	48.9	9.7	23.2	22.5	..	7.9	8.5	..	16.9	3.5
Cash	96	94	76	94.3	93.1	..	..	92.3	..	1.7	..
Financial institution	5.8	12.5	35.6	16.5	17.9	..	..	20.3	..	2.2	..
Mobile phone	4.9	30.4	11.6	2.1	11.6	..	..	6.8	..	21.6	..

Source: World Bank data, 2014

2.2.1 Demographic Factors and Utilisation of Formal Financial Services

Studies have shown that there is a relationship between demographic characteristics and the usage of financial services (Ellis et al, 2010). Demographic characteristics that are considered in majority of these studies include age, gender, level of education, marital status and place of residence. Demographic characteristics have effects on usage of financial inclusion on investment. In this section, an empirical review of past studies is done alongside the demographic characteristics age, gender, education and marital status. Zakaria and Sabri (2013) reviewed studies on financial capability. The study noted that financial capability differs across different demographic characteristics. In particular, it was indicated that younger people, women, those on low income and low levels of education, literacy and numeracy were identified to lack financial capability. Lack of financial capability affected the usage of financial services for investment purposes. Another study done by Paaskesen and Angelow (2015) had similar findings where usage of financial services for economic benefits differed across different demographics.

Ardic et al., (2013) carried out an analysis of cross country data set. The study used the financial access database by CGAP and the World Bank group. Using this database, the study counted the number of unbanked adults around the world, analysed the state of access to deposit and loan services as well as the extent of retail networks, and discussed the state of financial inclusion mandates around the world. The findings indicated that there was yet much to be done in the financial inclusion arena. The access to finance services was different across different individuals and where poor people use informal sources as it is perceived to be costly for formal providers to provide services for the poor. This limits access of loans from financial institutions by the poor and thus this less investment from this segment.

The role played by individual characteristics on access and usage of financial services was found to vary for economic reasons alongside demographic characteristics. The study by Mwangi and Sichei (2012) using multinomial probit models drew a comparative analysis of the role played by individual characteristics on access to credit from various strands in 2006 and 2009. The analysis was based on financial access, 2009 and 2006 survey data, collected by the Financial Sector Deepening (FSD) Kenya, in collaboration with the central bank of Kenya and the Kenya national bureau of statistics (KNBS). The results of the study indicated that, there was variance in access and usage of financial services for economic purposes alongside demographic

characteristics. Clamara et al., (2014) study that comprised quantitative approach to the determinants of financial inclusion in Peru based on micro-data from surveys. The study was to identify significant correlations that may affect financial inclusion (or exclusion) of households and enterprises. The study analysed the relevant characteristics for financial inclusion and for those individuals excluded from the formal financial system. The study found that factors such as being a woman, living in a rural area or having a low income and educational level may reduce the likelihood of being included in formal financial system.

2.2.1.1 Age

Ellis et al., (2010), using 2009 survey data noted that there was a positive statistically significant relationship of age with credit from banks, Saccos, MFI and ASCAS. The study also observed that age had a positive statistical significant relationship with access to credit from banks and saccos. In addition, it was noted that, couples were found to be borrowing more than single people are. This is clear evidence that demographic characteristics affect because of financial inclusion. Johnson and Arnold (2012) also noted age was important influence of financial inclusion as older people were much more likely to use a bank account than younger people were. Similarly, Ndii (2011) noted that Kenyans below 25 and above 55 years of age are least likely to use financial services while between 35 and 44 years are the age group that had the highest users of formal financial services. World Bank (2014) had similar studies that indicated older people globally use formal financial services than younger people. On education, Johnson and Arnold (2012) noted that education was strongly associated with the likelihood of bank use. In particular, 39% of persons with secondary education had a bank account, which was higher compared to those with primary or no education. The same relationship was found in saccos where 18.4% of those with secondary education as compared to those without education at 8%.

An investigation depicting the influence of demographic characteristics on investment on financially included youth was done in Nyeri and Kirinyaga counties (Kiai et al., 2016). The target population was Kenyan youth from Kirinyaga and Nyeri counties. The study used a descriptive survey research design where sample size was 463 respondents. A questionnaire was used to collect the data. A cross tabulation of investment and demographic characteristics showed differences between those who had invested and those had not. The study then tested

whether the difference was statistically significant using chi-square of demographic characteristics and investment. The results indicated that gender, age, marital status and level of education were statistically significant in influencing investment on financially included youth. Place of residence though it had influence, it was not statistically significant. This study concluded that demographic characteristics have influence on investment. The study recommends that financial institutions take into consideration demographic characteristics while designing their services.

2.2.1.2 Gender

The importance of legal debt for survival and business growth was found to increase survivors' bias, which affects gender equality differences (Hansen & Rand 2014). Distribution of business size may also be related to the gender of the owners. Significantly, the large effect of size on the spread of debt barriers often leads to gender discrimination in the legal provision of credit. Wachira and Kihiu (2012) established that women appear to have higher access to informal and informal financial services compared to their male counterparts. Ambrose (2012) pointed out that the number of people who depend on her, the level of education, cultural and religious attachments, management skills, age and marital status have a significant relationship and saving power among women entrepreneurs. The need for institutionalization in the informal credit market cannot be overemphasised to encourage women entrepreneurs to combine small savings. Edits of this type have errors. However, they provide reliable sources of income that can be invested in party members for example the Women Economic Development Corporation (WEDCO) case.

Dupas and Robinson (2013) have highlighted the difficulty of saving and investing in the majority of women entrepreneurs but in need of formal savings services or those that offer lower interest rates. Wachira and Kihiu (2012) noted that legal and informal institutions in Kenya rarely have a marital status when they develop their financial services. However, informal service providers rely heavily on the marital status assuming that married people appear to have high levels of responsibility and that is why they are trustworthy. There is therefore a positive balance that indicates that a married person is more likely to receive financial services than an unmarried person, indicating that a married person is less likely to be left without money.

Ololade and Olagunju (2013) in their research investigated determinants of access to credit by rural farmers in Oyo state found out that gender, marital status, guarantor and high interest rates are the main factors determining farmers' access to credit.

The Fin Mark Trust (2016) conducted a study on gender and investment inclusion using an analysis of women's investment in the SADC region. The study used the research method. However, this study was limited to women in the SADC region. Research has shown that gender affects investment even after the control of certain indicators that promote the existence of gender discrimination in the region. Income, employment rate, accommodation and education level have been found to have a significant impact on investment. Employees have better access to bank accounts, debt and savings regardless of their gender, level of education and income which means that each employment increases account ownership due to people's ability to earn regular income.

Simiyu et al. (2012) conducted a study on gender empowerment and access to financial services in Machakos County, Eastern Kenya, using a descriptive approach. However, the focus of the content of this study by Machakos County is very different from other regions in Kenya. These findings show that the majority of people in the study area use the M-Pesa service even though there are other similar resources. Women in the study area have benefited more than men from mobile phone transfer services (MMT). This is because mobile money transfer services have given women the financial freedom they did not have before the acquisition of MMT. It has been concluded that access to financial services through MMT has had a positive impact on empowering women in rural areas who do not have paid employment. However, access to MMT has had a negative and positive impact on gender roles and the first may reflect social costs in rehabilitation.

Barara (2015) conducts research on the financial inclusion of women in India. The study used the research method. However, the focus of this study was India, a very different economy in Kenya, in terms of a large economy. The study concluded that new financial products and services created by the public sector, banks in response to sexually segregated data access to financial

services have opened up financial services according to the needs of female clients. In doing so, they challenged discriminatory practices that traditionally barred women's access to finance.

2.2.1.3 Education

Financial education is the process by which individuals improve their knowledge of financial products. This is achieved through passing of information, which enables people to become more confident, make informed financial decisions and know where to go for financial support Organization for Economic Co-Operation and Development (OECD), 2010). In a study conducted by Cole et al. (2009) on leading theories of low demand for financial services in emerging markets, the study found that financial education programme had modest effects, increasing demand for bank accounts only for those with limited education or financial literacy. In contrast, small subsidies greatly increased demand for bank account. In comparison between small subsidies and financial literacy the study showed that financial trainings had little hope in improving accounts uptake by farmers. In a similar study by Cole and Shastry (2009) aimed at establishing the effect of education, cognitive ability and financial literacy on financial market participation, the study established that normal school education affected saving behaviour. The study also established that financial literacy did not affect individual saving skills. The study was carried out on school graduates. The study found out that those students who graduated prior to introduction of compulsory financial literacy programme in school had identical saving skills as those who graduated after studying financial literacy programme.

Carpena et al. (2011) carried out a study using randomized experiment to unpack the causal mechanism of financial education. The data was collected from 1,200 urban households in India. Approximately half of the sample respondents were clients of microfinance, while the other half were not micro finance clients. The study used a five-week video-based financial education programme in India with modules on savings, credit, insurance and budgeting. The study specifically measured the effect on three distinct dimensions of financial knowledge: numeracy skills, basic financial awareness and attitudes towards financial decisions. The training was concluded with a follow-up survey consisting of financial literacy questions drawn from topics discussed in the video trainings. The respondents were paid for every correct answer given. The findings of the study pointed out that financial literacy did not immediately enable individuals to

differentiate costs and rewards that required high numeracy skills, but it did significantly improve basic awareness of financial choices and attitudes toward financial decisions.

It can be noted that Cole and Shastry (2009) study established that financial literacy programme did not impact any saving skills to graduate. It is also clear from Carpena et al. (2011) study that financial education does not help individuals to interpret advanced financial information. However, the study supported the view that financial literacy was crucial in creating awareness of the available bank products. This motivated this study to establish the effect of financial education on utilization of formal financial services. Carpena et al. (2011) study used a video based education programme where money was used to motivate learners. This study was interested in investigating the influence of a formal financial education programme on credit uptake by small scale farmers. No monetary incentives were given to farmers during the study but affirmation, acknowledgement of their experiences and involvement through discussions.

Muema (2015) sought to investigate the effectiveness of Equity Bank's financial management training programme on small-scale farmers' uptake of credit. The research targeted of small scale farmers in Makueni County from which a sample size of 175 farmers was derived using simple probability sampling technique. Data was collected using a semi -structured questionnaire containing both open and closed ended questions. The study used multiple linear regression models for data analysis. The study found that small scale farmers seeking financial services in Makueni County had acquired financial education from equity bank. It also found that 91.4 percent of the farmers had borrowed a loan. These loans were from different financial institutions and even informal sources like 'chamas'. This is a clear indication that after farmers where equipped with financial literacy skills majority of them accessed credit services. The regression analysis showed that the coefficient of knowledge of bank products was 0.252. This implied that if all other factors are held constant then a unit increase in bank product would lead to 25.2 percent increase in credit uptake. A unit increase in saving would lead to 13.1 percent increase in credit uptake. Budgeting had a coefficient of 0.555. The implication is that a unit increase in budgeting would increase credit uptake by 55.5 percent debt management had a coefficient of 0.662. This means that a unit increase in debt management would lead to 66.2 percent increase in credit uptake. This points out that among the four modules learned debt management contributed the most towards credit uptake. While the study by Muema (2015)

underscores the importance of financial education in accessing formal financial services among, the study population imposed a limitation of the generalization of findings since it was carried out in one county in the entire country. It also conditioned the study to the inclusion strategies of a particular bank and this could not be said of the other lenders.

Kirui et al., (2010) examined the awareness and use of m-banking services among rural farmers in Kenya. Their study also assessed the factors conditioning the use of such services. The study used descriptive analysis to assess the awareness and use of m-banking services with a logit model to examine the factors that condition the use of m-banking services. The study found high awareness of m-banking services among the smallholder farmers. It also found that education, distance to a commercial bank, membership to farmer organizations, distance to the m-banking agents and endowment with physical and financial assets affect the use of m-banking services.

Kalunda (2014) conducted a study that sought to find out the level of financial inclusion in terms of access and usage and its impact on small scale tea farmers in Nyeri County, Kenya. The relationship between gender and age on the demand and use of financial services was also investigated using the Pearson chi square method. The results showed that the level of inclusion is high and usage in terms of credit access is also high. In terms of financial literacy, the farmers are not receiving adequate financial education which is a component of financial inclusion. However, the relationship between gender and age on the demand and use of financial services under the Pearson's chi square method yielded inconclusive results.

Financial literacy (or financial knowledge) is typically an input model showing the need for financial education and explains the variation in financial outcomes (Huston, 2010). Grohmann *et al.* (2017) did a study on the effect of financial literacy on financial inclusion at the cross country level. The study used a descriptive method and was only limited to the secondary data not putting into consideration the primary data. The study established that financial literacy is always strongly related to higher financial inclusion. The study further established that the average marginal effect of financial literacy on financial inclusion tends to be largest in countries with lower income, a less developed financial sector, and fewer bank branches (Bierman, 1999). These findings are in contrast with those of Kaiser and Menkhoff (2017) who opine that financial education is less effective for low-income clients as well as in low and lower-middle–income

economies. Specific behaviours, such as the handling of debt, are more difficult to influence and mandatory financial education tentatively appears to be less effective.

Academic literature also shows that there is a positive relationship between financial literacy and planning and saving for retirement. Financial literacy is linked to low propensity to save. Individuals who were less financially literate are less likely to save for the future (Van Rooij et al., 2011a). Recent research also suggests that financial literacy encourages good debt management skills and reduces the probability of delays in mortgage payments. Financial literate individuals will avoid high unmanageable levels of debt as this will lead to high interest charges and increase the probability of incurring difficulties in meeting the debt obligations and eventually defaulting on payments. Therefore, financial literate individuals are less likely to have high debts levels and default on their loan or mortgage payments which earns them better credit rating scores when seeking out for loans (Fornero & Trucchi, 2011).

Robb and Sharpe (2009) noted a significant relationship between credit card balance behaviour and financial literacy; where it was observed that college students who exhibited higher scores for financial literacy presented more efficient credit spending and payment behaviours. Low financial literacy can lead to adverse outcomes for households. This is because they do not effectively plan for their retirement (Bucher-Koenen & Lusardi, 2011), make little or no savings (Beckmann, 2013), incur high interest rates for huge borrowings which they end up defaulting on (Brown & Graf, 2012) and do invest in an optimal portfolio that's will minimise risk but guarantee them a better return (Guiso & Jappelli, 2008). The 2nd part seems positive, not negative

Amadhila (2016) conducted a study on financing agricultural small- and medium-scale enterprises in Namibia. The study adopted a case study design and purposively sampled 73 farmers from the entire country. Content and thematic analyses were the main techniques for data analysis. To support the analysis, the software atlas was used. The results confirm that there is a mismatch between the demand for and supply of funds. The finance gap increased between 2013 and 2014. From the interviews conducted, it is clear that the mismatch between demand and supply is caused by loan default and insufficient information provided by farmers (on the supply side) and lack of satisfying financing requirements and low supply of funds (on the demand side). While there were farmers outside the green scheme who did not borrow because

they were not sufficiently informed about financial services, the researcher argues that there is no gap in this regard but rather a lack of information on the availability of financial services in the country. This point to imperfections in financial markets as pertains access to information

Ooko (2017) examined the impact of demographic and socio economic factors on financial literacy of employees of Deloitte Kenya. The study focused on a population of 337 employees working in Deloitte Kenya. The sampling frame used was the list of all employees working in the organization. The sampling technique employed in the study was the stratified random sampling where respondents were divided into five strata according to the five departments that is audit, tax, ERS, ICS and consulting. From this, a sample on 183 employees was obtained. The findings of the study revealed that the overall financial literacy level amongst the employees at Deloitte is high. Eighty-four percent of the respondents obtained the pass mark for the financial literacy test. From the research, it was also evident that financial literacy has a significant relationship with demographic factors. The male respondents have higher education levels and young in age were observed to have higher financial literacy levels. Socio-economic factors were also found to have an influence on financial literacy. Respondents who had lower income levels and relied on external formal sources of information were observed to be more financial literate. No significant relationship was observed between employment status and financial literacy.
Wachira and Kihiu (2012) conducted a study on the impact of financial literacy on access to financial services in Kenya using the 2009 national financial access survey data. Using a multinomial logit approach to explain access the four major financial service access strands, the study found that financial literacy remains low in Kenya. Besides, regression results indicate that households' access to financial services is not based on levels of financial literacy but rather on factors such as income levels, distance from banks, age, marital status, gender, household size and level of education (Grohmann & Menkhoff, 2017).

However, the study by Wachira and Kihiu (2012) established that the probability of a financially illiterate person remaining financial excluded is significantly high calling for increased investment in financial literacy programs to reverse the trend. The study recommends the development of a curriculum on financial education and administers it in local, middle level and higher learning institutions. However, the study was only done in the context of Kenya's region.

Therefore, studies on financial literacy should be encouraged so as to establish the dynamics about financial education and its outcomes.

These findings are at variance with Grohmann and Menkhoff (2017), who also established in their study of financial literacy, promotes financial inclusion in both poor and rich countries that financial literacy is greatest on the 'use of financial products' in financial systems that are more developed. On the contrary, the educational effect on 'access to finance' is greatest for countries that are financially less developed. The study in essence differentiated between use and access of the financial services with respect to financial literacy.

Kunovskaya et al., (2014) conducted a study on the use of financial services in Russia. The study applied a descriptive method and the relationship between financial literacy and the likelihood of using financial services currently and in the next two years was examined. The relationship was explored using data from the 2008 nationwide financial literacy survey and a logistic regression was employed. The study established that the Russian population lacks awareness of their rights as financial services consumers. An important conclusion from the analyses regarding current use of financial services confirms that financial literacy does affect use of financial services and the relationship persists regardless of the specific measure of literacy (objective or subjective). However, the results did not provide evidence that the basic financial literacy of respondents affected their plans to use financial services in the next two years which makes their findings incapable of solving the problem of this study. One problem identified by researchers in the analysis of financial literacy is the lack of a uniform tool for measuring financial knowledge (Hung, Parker & Yoong, 2009).

Different researchers have applied the use of different types of tools to collect and analyses data on financial literacy. In their study, Zhan, Anderson and Scott (2006) prepared a questionnaire based on forty-eight true false questions covering credit card use, interest rates, banking and lending practices. The participants were assessed on how many correct answers they obtained. In their study, Allgood and Walstad (2013) analysed financial literacy based on five questions that covered various topics in the finance field such as interest rates, inflation, stock diversification, bond prices and mortgages. The same methodology was applied in the study by Bumcrot et al.,

(2013) to determine the participant's financial literacy levels. Lusardi et al., (2012) designed a questionnaire with three simple multiple choice questions to test the respondent's basic knowledge on financial concepts. The first questions measured ones understanding of interest rates, the second inflation and the third the knowledge of risk diversification (Lusardi & Mitchell, 2011b). These three questions formed the basis of assessing the basic level of financial literacy in many studies.

In their study of Dutch households, Van Rooij et al., (2009) classified financial literacy into basic and advanced levels. Similar to Lusardi and Mitchell (2010), they assessed basic financial literacy based on ones understanding of the working of interest rates and inflation. Advanced financial literacy was determined based on one's understanding of the different financial market instruments such as bond, mortgages, stocks and shares. This was similar to the approach adopted in the survey of adult financial literacy in Australia (Anz, 2008). Financial literacy was classified into two broad levels, basic requirement and advanced competency. The advanced competency was determined by how well the respondents understood the stock market and its products. Splitting the assessment of financial literacy into basic and advances was found to be a more objective way of analysing financial literacy according to (OECD, 2008).

Other researchers incorporated the use of the self-assessment approach in determining the financial literacy levels of the population they were carrying out their research studies on in addition to the tests on their actual knowledge. This is where an individual is asked to rate themselves according to the way they perceive their level of understanding of financial matters (Lusardi & Mitchel, 2009). With this approach, it has been observed that there was often a mismatch between peoples' self-assessed knowledge versus their actual knowledge. People tend to rate their perceived knowledge to be higher than what is reflected by the measurements on the actual knowledge. While the results of actual knowledge are low; respondents are generally rather confident of their perceived level of financial and tend to rate themselves highly. This was reported in the 2009 U.S. financial capability study where 70 % of respondents gave themselves score of 4 or higher out of 7, but only 30% answered the questions correctly (Lusardi 2011a). Similar findings were reported in studies carried out in the Netherlands (Bucher-Koenen & Michael, 2011) where it was observed that most people who rated themselves highly tended to

perform poorly in the financial literacy test. Most people tend to overestimate rather than under estimate themselves when it came to self-rating. It was therefore likely that how people perceived their financial literacy levels could be a valid indicator of their financial behavior.

2.2.2 Technological Factors and Utilisation of Formal Financial Services

The penetration of financial services has increased, and there is a need to address the application of mobile finance applications that go beyond mobile transfers including mobile payments and account services, thus addressing a wider range of financial needs. Mobile networks can support the financial needs of the poor and discriminated against, if those who do not have phones, or who do not have access to nearby areas are helped to access them. Research into new, intermediate solutions, effective participation and integration of relevant community groups into mobile financial services is required. Duncombe (2012) and Porteous (2007) described mobile loan applications as 'convertible' as they target people currently without banks, which has led to significant financial investments.

The mobile money transfer service - 'M-Pesa' - operated by a Kenyan telecommunications company, Safaricom, is widely used by most Kenyans (Beck, & Maimbo, 2012). According to Pulver et al. (2009), in 2009, the Safaricom M-Pesa network had about 9,000 agents compared to the 996 branch banking network (Central Bank of Kenya, 2009). Johnson and Arnold (2012) investigated the potential of mobile technology in their ability to adapt to changes in Kenyan markets and whether there is evidence that this expansion overcomes barriers to access by previously unregistered people such as employment, gender, age, education and location. M-Pesa is considered not to be a substitute but as an excellent service for the main banking services. Can this compliance be used to increase access to the unpaid, given that key financial services indicate strong barriers to entry?

Sorensen (2015) conducted a study on the effect of a banking agency on investment in Kenya. The second data was used for this study because it was easily accessible, cheap and accurate due to the regulations surrounding the submissions of Kenya's largest bank. The study concluded that the banking agency has a significant impact on the increase in investment in the country. The study found that investment rates were low and that there was a significant gap that was not

blocked by the formal banking system. It also notes that the banking agency is facing many challenges ranging from the increase in mobile phone penetration into the country and the sale of mobile phones. However, the study did not consider the main details.

Michelle (2014) conducted a study on the effect of digital finance on investing in the Kenyan banking industry. The research design used was descriptive statistics. The target population of the study was 44 banking institutions in Kenya, of which 43 were commercial banks and 1 was a financial institution as of December 31, 2015. The study used a sample of 13 Kenyan banking institutions. However, the study was limited only to the banking sector. The findings of the study found a negative relationship between banking agency agencies, mobile banking rates and mobile banking transactions and online banking measured by online banking with investments in the Kenyan banking industry. The study concluded that digital finance does not interact with investments in the banking sector in Kenya as banking institutions adopt digital financial services to reduce operating costs associated with opening and operating branches to make their profits and financial performance and not to encourage investment. Research has suggested that to ensure the use and use of digital financial services, banks should create more awareness of such services and provide them with less money to improve their use.

Ouma et al. (2017) seek to establish this connection by considering that increased use of mobile phones to provide financial services is an incentive to raise money in selected countries in Sub-Saharan Africa. The study adopted a descriptive and constructive approach. The logit model was used to test the relationship between the variables. The results show that the availability and use of mobile phones to provide financial services improves the chances of saving at the family level. Access to mobile financial services not only increases the chances of savings, but also has a significant impact on savings, perhaps due to the frequency and ease of use that can be made using a mobile phone. Both of these types of savings, that is, cell phone savings and integrated banking savings may be promoted through the use of mobile phones. Therefore, expanding and deepening the scope of mobile financial services is a way to encourage savings, especially among poor and low-income groups who have difficulty accessing legal financial services.

A study by Agufa (2016) seeks to find the effect of digital finance on investing in the Kenyan banking industry. Digital financial services included banking, mobile banking and the internet while financial deposits had to be used for credit. The study used a descriptive test design and guided a total of 44 banks in Kenya, including 43 commercial banks and one lending financial institution. The study used a sample of 13 banking institutions in Kenya. The sample was deliberately selected to represent 13 banking institutions in Kenya, which provide three digital financial services. The study used a second set of data, which was analysed using retrospective analysis and adjustment with SPSS version 21. The findings of the study found non-significant relationships between agency banking, mobile banking and mobile banking transactions and online.

2.2.3 Socio – Economic Factors and Utilisation of Formal Financial Services

Kabakova and Plaksenkov (2018) carried out an ecosystem analysis of factors affecting financial inclusion in Russia. The study analysed the ecosystems of 43 countries using FSQCA in order to establish the configurations of ecosystem components that enable financial inclusion and those that lead to financial exclusion. Results show that there are three configuration of factors affecting financial inclusion: high socio-demographic and political factors in the absence of economic development; high social, technological and economic factors in the absence of political development; and political and economic factors in the absence of social and technological development. Two combinations of factors affecting financial exclusion are the absence of social and economic factors in the presence of political and technological development; finally, the configuration with absent socio-demographic, technological and political factors of development. The results obtained have policy implications for countries seeking to develop financial inclusion, outlining the most important spheres of the ecosystem to promote and support.

In China, Li (2018) investigated the role of relative income on financial inclusion and poverty. Using the Chinese household finance survey data set, the study found that concern with relative income significantly stimulated poor households to apply for bank credit. The effect of income comparisons on credit applications can be explained by either a “keeping up with the joneses” effect, in which the poor seek financing for costly consumption to emulate the wealthy's

consumption style and thus suffer persistent poverty, or else a “tunnel” effect, in which the poor are inspired by the wealthy's economic success and enlightened to use credit for investment. Although the study did not provide empirical evidence of a “keeping up” effect, it revealed that credit applicants invest significantly more in human capital than non-applicants, and it demonstrates that the “tunnel” effect is the primary incentive for relatively poor households to participate in the credit market. Poor households are capable of using finance to escape from poverty.

Park and Mercado (2015) conducted a study on financial inclusion, poverty and income inequality in developing Asia. The study used empirical methodology in the context of published financial institutions’ data in Asia. The study suggested that per capita income, rule of law, and demographic characteristics significantly affect financial inclusion in developing Asia. Furthermore, the study implied that financial inclusion significantly reduces poverty; and there is also evidence that it lowers income inequality. The findings suggested that the provisions for young and old-age populations, that is retirement pensions, stronger rule of law, enforcement of financial contracts and financial regulatory oversight, will broaden financial inclusion, thereby contributing to poverty reduction and lower income inequality

Salazar-Cantú *et al.* (2015) conducted a study on the financial inclusion and income inequality in Mexican municipalities. The study used econometric estimation method. The study suggested that a higher financial inclusion would initially lead to a greater income inequality within the Mexican municipalities, so that later on, as the inclusion continued growing that inequality would reduce. These findings, suggested the need for more regional approaches, rather than national, in the public policy on the complex social problem of income inequality. These results have implications over public policy. The results supported the idea that the path that financial inclusion public strategy adopted in Mexico in 2009 is coherent with the intention of world agencies like AFI, which gathers leaders and experts in monetary policy worldwide and constitutes a factor that incentivizes a more equalitarian income allocation in the long term. The study emphasized that monetary policy will have more direct effects when focusing on quadrant where inclusion has been lower and where most of Mexican municipalities are located, particularly the 231 municipalities that in the strictest criteria are still in the infant stage, showing null financial inclusion; without access or uptake.

De Klerk et al., (2013) carried out a study on the status of agricultural and rural finance in South Africa. The findings revealed that state's land transfer – and fixed improvement and machinery/equipment – grants have been a major enabling factor in terms of public financial service delivery. However, in terms of their impact on the demand for financial services, it has often been more to increase the size of potential demand than of effective demand, given the restrictions placed on using assets transferred as collateral for loans. The study observed that de-racialization of state social grants and the introduction or extension of some categories of grant has hugely benefitted rural areas in South Africa. By 2012, no fewer than 65% of social grant recipients in rural areas were being paid their grants electronically, which helps account for as many as 48% of adults aged 16+ living in south Africa's rural areas ('formal' and 'tribal') being 'banked' in 2010. There is evidence that state social grants have fuelled both informal savings and credit activity and agricultural production/income in some low-income rural communities. This, in turn, has helped fuel the savings flowing into SCGS, thereby setting up a virtuous circle of development. However, it is sometimes argued that the grants have a disincentive effect on recipients' willingness to engage in economic activity, though solid evidence to support this and to assess the impact on labour force participation is rare.

Masiyandimay et al., (2017) conducted a study on the financial inclusion and quality of livelihood in Zimbabwe. The study used a survey method. The study established that income, financial literacy and the geographical presence of financial institutions are the major determinants of financial inclusion. With regard to the link between financial inclusion and livelihood indicators, the study established that greater financial inclusion promotes access to basic income, food, health and education for households for the country, with the differential effect of inclusion becoming wider when banking instead of total inclusion is considered. The study recommends that the country needs aggressive financial inclusion strategies to reduce access vulnerabilities and poverty.

Awunyo-vitor et al., (2014) examined the impact of formal financial market participation on farm size and expenditure on variable farm inputs focusing on maize farmers in Ghana. A multistage sampling method was used in selecting 595 maize farmers from the seven districts in Ashanti and Brongahafo regions of Ghana. A structured questionnaire and interview schedule

were used to elicit information from the respondents. The impact of formal financial market participation on farm size and expenditure on variable inputs was estimated using Propensity Score Matching (PSM) method. The results from the logit model indicate that farmers' socioeconomic characteristics such as education, previous year's maize income, engagement in off-farm income generating activities, and farm size significantly influence their formal financial market participation positively. Thus improvement in the farmers' income levels through off-farm income generating activities and stable producer prices for maize would encourage farmers' participation in formal financial market or use of formal financial services. Farm income improvement policy in terms of adequate remunerations for farmers (stable producer prices) is also an important policy option for increasing formal financial market participation. Also, farm size expansion and a maize commercialization policy will improve farmers' participation in financial services.

Furthermore, availability of formal financial institution and use of friendly operational modalities will improve formal financial market participation by farmers. Thus, formal financial institutions should adapt their savings and lending modalities to the needs of the farmers (i.e., making it less cumbersome). The results of the PSM analysis showed that farmers who participated in the formal financial market tended to spend more on variable inputs than nonparticipants. They also had higher farm sizes as compared with nonparticipants (albeit not statistically significant). Therefore, formal financial market participation should be encouraged through education and promotional programmes by formal financial institutions.

A study in Cameroon by Chenaa et al., (2018) sought to investigate the impact of the determinants of access to credit on the performance of smallholder farmers in the Kumba Municipality. The study concluded that the determinants (cost of credit facilities, collateral security, knowledge/awareness of financial procedures by farmers and demographic factors such as age, gender, level of education and farm sizes) influence access to credit by smallholder farmers. Cost of credit facilities and collateral securities influenced access to credit to a great extent whereas, knowledge/awareness of financial procedures influenced access to a lower extent. This affects the performance of the farmers and has implications for development. Consequently, for Cameroon to develop considering that agriculture is the backbone of the

economy, financial institutions need to channel their resources to smallholder farmers who account for more than 80 percent of the population in the agriculture sector. Availability of bank credit to smallholder farmers will enhance their efficiency and boost their performance through acquiring new technological tools, knowledge, and skills regarding the modern farming system. Therefore, it was found that despite the fact that smallholder farmers are the major producers in the agricultural sector, a sector that acts as an effective instrument in offering employment, alleviating poverty and enhancing food security, they have very limited access to credit from banks which are also the major suppliers of finance in the economy.

Nyaga and Nzulwa (2017) sought to evaluate the strategic factors that affect access to credit facilities by Smallholder Dairy Farmers (SDFS) in Githunguri Sub-County, Kiambu County in Kenya. A descriptive research design was applied while the target population comprised of SDFS in Githunguri Sub-county who rear not more than 10 dairy animals which are milked to raise income from the sale of milk. This study employed stratified random sampling technique in determining the sample size of 365 respondents from a total of 7423 SDFS selected based on the county assembly wards. Primary data was collected from the farmers using self-administered semi structured questionnaires. Based on the research findings, the study concludes that collateral requirement affects access to credit facilities by SDFS in Githunguri Sub-county, Kiambu County. The value of land and farm machinery owned as assets, the amount of capital injected into the business and membership in a financial group all affect access to credit facilities by SDFS in Githunguri Sub-County, Kiambu County.

Additionally, the study found that financial information awareness affects access to credit facilities by SDFS in Githunguri Sub-County, Kiambu County. The study established that awareness of availability of finances and various credit products open for consumers, interest and other finance charges related to credit facilities and the loan processing procedures affect access to credit facilities by SDFS. The study also established that the farmer's managerial competency affects access to credit facilities by SDFS in Githunguri Sub-County, Kiambu County. The study noted that the farmer's years of experience, level of education as well as the nature of farmer's management practices all affect access to credit facilities. Finally, the study established that credit requirements spelt out by lending institutions affect access to credit facilities by SDFS in

Githunguri Sub-county, Kiambu County. The period of operation from the inception of the farm business, previous credit experiences and availability of financial statements, reports and other relevant farm records are all aspects of credit requirements that affect access to credit facilities by SDFS in Githunguri Sub-County, Kiambu County.

Kiplimo et al., (2015) carried out a study on determinants of access to credit financial services by smallholder farmers in Kenya. The study affirmed policies that are geared towards the development of effective training programs that would include; insurance to mitigate the risks in farming, financial literacy programs to familiarize smallholder farmers with the skills required to effectively understand, assess and utilize credit financial services to enhance their agricultural activity. This is because education and salaried employment positively influenced credit financial services access. This implies that those with less level of education could not have access to fulltime employment and therefore, such financial and savings literacy programs can be incorporated into school curricula to help overcome the underlying barriers to accessing credit at an early age and put both gender at an equal footing. The logistic regression results indicated that, the marginal effects of education level, occupation and access to extension services were statistically significant with positive effects on access to credit financial services. However, total annual household income and the distance to the credit source were statistically significant with negative influence on access to credit financial services. In addition, there is need to sensitize smallholder farmers to adopt modern technologies such as m-banking to address the distance to the market challenges. Finally, the establishment of credit/loans offices close to farmers and operated by bank officials who would be familiar with farmers in the area would reduce lending procedures, risks and educate them on perceptions on loan repayment.

Meeme (2013) conducted a study on factors influencing access to formal credit by small scale women tea farmers in Thika District, Kiambu County Kenya. The research study used a descriptive research design approach. The population of the study was small scale women farmers holding a green leaf number. The sample size of the study was 117 of the population at the time of the study. The data was collected using a questionnaire and an interview schedule as the only data collection tools. Quantitative data collected by using a questionnaire was analysed by the use of descriptive statistics using the Statistical Package for Social Sciences (SPSS) and

presented through percentages, and frequencies. On farmer characteristics, the study established that most of the women tea farmers had acquired good education having reached college level and had enough knowledge on issues related to tea farming. Besides, respondents indicated that they preferred the institutions of their choice on grounds that; they received better customer care services, they got less interest loan (Saccos), they got time extensions on repayments, they were trained on the usage of the formal credits, they received bonuses on early repayments while others said that the institutions were always free to handle their budgets. This implies that not all who applied for the formal credit got an equivalent amount as indicated in their applications.

The main reason for application of a loan being rejected was due to; default of previous loans, poor timing of application, incomplete application forms, credit history, non-guaranteed application. Majority of the respondents were also in agreement that the main description of women's social situation in the village is that they are never equal to men, women are not entitled to any collaterals as a title deed. It was the sole role of the husband to control the tea farm, which most women were in total control of their tea farm and that like some do not have any bargaining access to the necessary resources in their land. On collateral requirements majority of the respondents' access. The study established that house and house goods was the most popular, animals, land, vehicles and agricultural equipment household goods as well as the animals in the farm forms the highest part of collaterals to access formal credit. On the extent of the effect majority of the respondents said that; guarantors, car log books, good credit history, copy of business license, KRA pin, land title and household goods are required by financial institutions to a very great extent on matters regarding formal credit access respectively.

Atieno (2001) in a study used mainly primary data from individual entrepreneurs and farmers receiving credit from both formal and informal credit institutions as well as those who did not in the rural areas of five districts of western Kenya: Kisumu, Siaya, Vihiga, Bungoma and Kakamega. The researcher used random sampling and systematic random sampling to pick 334 respondents. The respondents were also asked to identify the available informal sources of credit from which they had benefited. The study suggested that even though large numbers of potential borrowers generally do not seek credit. It does not mean that they do not need credit, suggesting that the lack of supply creates lack of demand, displayed by the low demand. The automatic

consequence is credit rationing by both the formal and informal credit markets and the creation of a credit gap in the market. The lending terms and conditions are considered a stumbling block that prevent borrowers from seeking credit.

Specifically, for the formal sector the terms focus on concerns with default risk and high transaction costs while for the informal sector, tailor made credit packages required by specific borrower categories are lacking. The accessibility of small-scale enterprises to credit could be highly improved if the major formal sectors with wider coverage would offer the tailor made services. Although informal finance credit has easier access, informal credit is generally confined to specific activities and at lower levels of income, thus limiting its use. Therefore, the nature of credit markets in developing countries depict lending units that are unable to meet the needs of borrowers interested in certain types of credit. To analyse satisfactorily the socioeconomic determinants of demand and supply factors of access, Beck and De La Torre (2006) pointed out the distinction between access, the possibility to use and the actual use of financial services. Access is not identical to use because economic agents might have access to financial services, but might decide not to use them.

2.2.4 Product Differentiation and Utilisation of Formal Financial Services

Product differentiation is a positioning strategy that many firms use to distinguish their products from those of competitors (Lamb et al., 2004). Product differentiation is pervasive in markets. It is at the heart of structural empiricism and it smoothes jagged behaviour that cause paradoxical outcomes in several theoretical models. Firms differentiate their products to avoid ruinous price competition. Representative consumer, discrete choice, and location models are not necessarily inconsistent, but performance depends crucially on the degree of location of competition. With (symmetric) global competition, rents are typically small and market variety near optimal. With local competition, profits may be protected because entrants must find profitable niches (Shafiwu & Mohammed, 2013). A company's physical product offering may be highly differentiated on features not provided by competitors in the same industry, some also differentiate their product on performance with basis on power, professional credibility etc. On the other hand, companies may differentiate their physical product on attributes such as innovation, consistency, durability, reliability and reparability. In addition to differentiating the physical product, the image of the

product can also be differentiated. The established image should convey a singular and distinguished message that will communicate the product's main benefit and positioning.

In the differentiation strategy, an organization seeks to be unique in its industry in certain areas. It therefore focuses on one or more attributes that buyers in the industry perceive as important and position itself uniquely to meet those needs. Differentiation can be based on the product itself, the delivery system or its marketing approach. The organization must be truly unique at something in order to be perceived as different. One way of achieving competitive advantage is through competence based approaches in which an organization tries to build differentiation as its core competence, which if peculiar to the organization will be difficult for competitors to imitate (Johnson & Scholes, 2009). According to Kotler (2009), sellers may face abundance of differentiation possibilities including form, features, customization, performance quality, conformance quality, durability, reliability, reparability and style and when a physical product cannot easily be differentiated, the key to competition success may lie in adding valued services and improving their quality. The main service differentiation is ordering, ease delivery, installation, customer training, customer consulting, maintenance and repair.

Differentiation builds competitive advantage by making customers more loyal, less price sensitive and less willing to consider other product alternatives. According to Rao (2011), the firm pursuing a high differentiation strategy along some key product's attribute or buyer need, can earmark its own strategic group within the industry in such a scenario, destructive price war can be avoided. Product quality helps the firm build its own reputation and demand that often gets translated into higher market share as well differentiation arises and competition increasingly occurs on the bases of product augmentation which also leads the marketer to look at the user's total consumption system, the way the users performs the tasks of getting and using products and related services. Each augmented adds cost, however and augmented benefits soon become expected benefits and necessary points of panty. For example, today's hotel guests expect cable, satellite television with a remote control and high speed internet access or two phone lines, this means competitors must search for these other features and benefits (Jaquier, 2010).

Kim et al., (2001) examined endogenous product differentiation in credit markets specifically seeking to determine what borrowers pay for. Using a panel of data covering Norwegian banks between 1993 and 1998, the study found empirical support for the ability at avoiding losses measured by the ratio of loss provisions as such a variable. Borrowers in the market for credit line loans may discipline banks into avoiding losses. The study also found evidence that banks pass on parts of increases in their operating costs to credit line borrowers. However, the study did not find any strong evidence for the use of high capital ratio as a strategic variable that borrowers are willing to pay for. This implies that strategic competition does not lead banks to hold more capital than their cost minimizing level. However, the study was done in a foreign context and did not address how product differentiation among the lenders increased utilisation of formal financial services among small holder farmers.

Kavale et al., (2016) investigated the effects of product differentiation strategy on corporate growth in selected microfinance institutions in Kenya. The study used descriptive and quantitative research designs to establish the effects of differentiation strategy on the growth of MFIs' in Kenya (Creswell, 2013). The target population was 57 firms (55 MFI's which are five years of age and above with operations in Mombasa County and two regulators, CBK and AMFI). Data was analyzed both quantitatively and qualitatively. Descriptive statistics were generated. T-test, regression analysis, and Anova were generated. The study found out that product differentiation strategy has significant effects on corporate growth in MFI's in Kenya. Basically, with an improvement in use product differentiation strategy, corporate growth increases profusely. It, therefore, concluded that increased deployment of product differentiation strategy increases corporate growth in MFI's in Kenya. The study's focus was, however, not on small holder farmers and also did not look at how the clients (such as small holder farmers) responded to product differentiation in the MFI's.

Sheikh (2015) carried out a study on the realization of sustainable competitive advantage through product differentiation in commercial banks using the first community bank in Kenya as case study. The study used a census of the managers in the bank and data was analyzed by use of thematic and content analysis. Analysis of the findings shows that differentiation strategies are greatly used by commercial banks in Kenya to remain competitive. This can be attributed to the

changes in business focus from being cost leaders to being customer focused. The greatly used strategies are broad differentiation involving maintaining strong relationship with customers, identifying needs of customers, and improved customer service, offering professional services to customers among others. Many of these strategies focus on the customer because it is the key for any business success especially for first community bank.

The next greatly used strategies were those of narrow differentiation involving improved customer service, identifying needs of customers, reputation on quality and service, and offering professional service to customer. From the findings, it was established that a differentiation strategy is based upon persuading customers that a product is superior in some way to that offered by competitors. The respondents were requested to indicate the challenges facing first community bank during implementation of product differentiation strategies. From the findings, lack of sufficient resources, regulations from CBK and lack of skills and knowledge on how to develop product that suits the market were the main challenges to effective implementation of product differentiation. The study was non-quantitative in nature and as such could not be inferred to the general population. Further, the study did not relate product differentiation and utilisation of formal financial services among groups such as small holder farmers.

Seem (2011) examined product differentiation as a strategy for sustainable competitive advantage in banks issuing credit cards in Kenya. The study used a descriptive survey approach in collecting data from the respondents. The number of the respondents was 44 staff working in all the 11 commercial banks who are credit card issuers. A questionnaire which was drop and pick administered was used in gathering of primary and secondary data. Quantitative and qualitative techniques were used to analyse both primary and secondary data. The content analysis was used to analyse the respondents' views. From the findings the study established that commercial banks need to recognize visa and master credit cards and identify its appropriate market for processing payments methods as a product differentiation to achieve sustainable competitive advantage. From the findings, the study concluded that commercial banks in Kenya need to adopt a number of best practices when trying to create differentiation through credit card which include focusing on strengths, developing a strong marketing campaign, a unique logo and brand, and a unique image in order to have sustainable competitive advantage. The study,

however, failed to correlate product differentiation with utilisation of formal financial services among small holder farmers in the country.

Mbugua (2013) investigated factors determining access to credit facilities for farmers in Cherangany constituency in Trans- Nzoia County. Descriptive survey research design was adopted for the study that also used a target population was 50 farmers in Cherangany constituency. The study used the regression analysis to assess the determinants of access to credit. The main factors explaining inaccessibility to credit were found to be security for the applied credit, strict loan policies for applicants in the agriculture sector, high interest rates charged on loans, proximity to financial institutions and lack of proper and accurate information on available credit. The study results show that farming has limited access to credit services in Cherangany, a situation which has constrained the agricultural development in this expanse. The findings indicate that lending institutions have inadequate products for meeting credit needs of the farming society since the yardstick they use to assess their creditworthiness is same with all applicants from other sectors. Commercial banks were found to have no specific products designed for farmers and above all, most of the credit conditions are too difficult for farmers to meet. Interest rates charged by the banks and collateral requirements largely restricted them from seeking loans from these sources. These findings no doubt show that farmers have inadequacy in accessing credit and other financial services, and therefore it becomes a concept that must be looked in to and ways developed to address the challenges facing farmers.

Involuntary exclusion may be as a result of a range of factors such as low incomes or high risk, discrimination, contractual and informational framework to price or the kind of products provided (Claessens, 2006). Price or product features**:** price of financial services may be prohibitively high or the features of the product being offered may not be suitable for certain population groups. For example, micro-entrepreneurs might be unwilling to take out loans that require them to pledge their personal assets as collateral, as it is commonly done in most developing countries. Conversely, Kempson (2006) outlines different underlying reasons or typologies of financial exclusion. These include access barriers such as identity requirements, the terms and conditions of bank accounts, levels of bank charges, physical access problems brought about by bank branch closures and psychological and cultural barriers that are all important.

Interest rates regulations are used by regimes for a variety of political and economic reasons, commonly to provide support to a specific industry or area of the economy. Common examples are loans to the agricultural sector to boost agricultural productivity (as in Bangladesh) and loans to credit constrained SMES (as in Zambia). It is also often argued that interest rate ceilings can be justified on the basis that financial institutions are making excessive profits by charging exorbitant interest rates to clients. This is the usury argument (OFT, 2010), and is essentially one of the market's failures: government intervention is required to protect vulnerable clients from predatory lending practices. The argument, which is predicated on an assumption that demand for credit at higher rates is price inelastic, postulates that financial institutions are able to exploit information asymmetry (and in some cases short run monopoly market power) to the detriment of clients' welfare. Aggressive collection practices for non-payment of loans have exacerbated the image of certain lenders. Economic theory suggests that market imperfections will results from information asymmetry and the inability of lenders to differentiate between safe and risky borrowers.

The work of Capera and Estrada (2011) found a negative association between restrictive limits on interest rates and financial depth in 18 countries in Latin America for the period between 1980 to 2008. In Nicaragua for instance, the use of an interest ceiling caused microfinance institutions to reduce lending and prompted a number of such institutions to leave rural areas, due to high operational costs and risks. In light of those negative findings on interest rate caps, the study by Stiglitz and Weiss (1981) suggested some policy recommendations that could help reduce interest rates on loans over the long run, protect consumers and increase access to finance: measures that enhance competition and product innovation, improve financial consumer protection frameworks, increase financial literacy, promote credit bureaus, enforce disclosure of interest rates, and promote microcredit products. Such measures should be implemented in an integrated manner (Maimbo & Gallegos, 2014).

The primary intention of interest regulations is to protect the consumers who cannot afford the high interest rates offered by formal and informal financial institutions. The matter that interest rate restrictions attempt to address is one of social welfare: how to enable low-income families to obtain access to finance at a price that is acceptable to society. If the placing of restrictions on

interest rates in microfinance is not the best means of enhancing social welfare by enabling low-income families to obtain finance at a reasonable price, then what is? The simplistic economist's answer to this involves economies of scale, which can work in one of three ways. First, by increasing loan size, it should then be possible to bring down the average price of loans. Secondly, economic theory suggests that by expanding the amount of activity it should be possible to bring average costs down. Another way of reducing costs and/or squeezing the margin earned by MFIs and consumer finance organizations would be to promote competition (ADB, 2016).

Peacock et al., (2004) states that, while more recently micro-finance institutions have taken financial services to millions of previously un-bankable clients due to innovative instruments, they have so far largely failed to reach poorer rural areas and/or smallholder agricultural producers whose livelihoods are characterized by highly seasonal investments, risks, and returns. Financing could be by way of enterprise challenge fund which is aimed at providing incentives for firms to take pro-poor investment decisions, and thereby facilitate changes in corporate strategy(Davies & Elgar, 2014). Under such an arrangement, major new partnership was launched with equity bank to provide smallholder farmers and small agricultural enterprises with the needed financing to break out of poverty and build viable businesses. The alliance for a Green Revolution in Africa (AGRA), the equity bank, the International Fund for Agricultural Development (IFAD) and the Kenya ministry of agriculture established a loan facility of USD 50 million (3 billion Kenyan shillings) to accelerate access to affordable financing for 2.5 million farmers and 15,000 agricultural value chain members such as rural input shops, fertilizers and seed wholesalers and importers, grain traders, and food processors. This loan facility was to operate parallel to a USD 5 million cash guarantee fund from AGRA and the IFAD, which was to reduce part of the risk of lending by the equity bank.

Chandio et al.,(2018) sought to evaluate the impact of Short-Term Loan (STL) compared with Long-Term Loan (LTL) on wheat productivity of small farms in Sindh, Pakistan. The study used econometric estimation based on cross-sectional data collected in 2016 from 18 villages in three districts, i.e. Shikarpur, Sukkur and Shaheed Benazirabad, Sindh, Pakistan. The sample data set consist of 180 wheat farmers. The collected data were analysed through different econometric

techniques like cobb–Douglas production function and instrumental variables (two-stage least squares) approach. The study findings reconfirmed that agricultural credit has a positive and highly significant effect on wheat productivity, while the short-term loan has a stronger effect on wheat productivity than the long-term loan. The reasons behind the phenomenon may be the significantly higher usage of agricultural inputs like seeds of improved variety and fertilizers which can be transformed into the wheat yield in the same year. However, the LTL users have significantly higher investments in land preparation, irrigation and plant protection, which may lead to higher wheat production in the coming years. However, the study was limited to only those wheat farmers who had obtained agricultural loans from formal financial institutions like Zaraitaraqiati Bank Limited and Khushhali Bank. However, in the rural areas of Sindh, Pakistan, a considerable proportion of small-scale farmers take credit from informal financial channels. Therefore, future researchers should consider the informal credits as well.

Muricho (2015) pointed out that Kilimo Biashara under the ministry of agriculture is an initiative aimed at promoting the culture of farming as a business among smallholder farmers by availing credit and as a way of easing output market access constraints. According to World Bank (2009) Kilimo Biashara Scheme, was launched in 2008 as part of the input subsidy program together with equity bank and the Alliance for A Green Revolution in Africa (AGRA). This provided farmers with loans at a 10-12 percent interest rate (compared to a standard bank rate of 14 per cent) and aimed to reach 2.5 million farmers. Curtis (2013) cites some challenges associated with the kilimo biashara program which include the requirements to access credit provided through equity bank. The security requirements of logbook or land titles, the cost of credit including appraisal fee was more than 13% hence hindrance to most smallholder farmers. The study by (Muema, 2015) recommends that for such a program to be effective there is need for financial management training programme which is likely to increase credit uptake.

The Njaa Marufuku Kenya (NMK) programme - translated as eradication of hunger from Kenya or ban hunger from Kenya - was inaugurated in late 2004, to fight food insecurity through supporting the up-scaling private sector food security innovations through public-private partnerships covering a period of 10 years from 2005-2015 (Nduta, 2012). Njoroge et al.,(2013) sought to examine the implementation of Njaa Marufuku Kenya intervention in Kajiado County, and the implications for food security. Their findings showed that all the three NMK

interventions, the NMK farmer training and empowerment, community agricultural development initiatives and agricultural productivity interventions had a positive influence on food security in Kajiado County. Nduta (2012) also found that, capacity building and the level of implementers' income were great influences of the programmes' implementation.

2.2.5 Informal Financing and Utilisation of Formal Financial Services

Informal finance has been defined as contracts or agreements conducted without reference or recourse to the legal system to exchange cash in the present for promises of cash in the future Schreiner (2001). Historically, this was seen as highly exploitative (Sanderatne, 2003). Some factors such as high transaction costs, institutional barriers, and numerous bureaucratic requirements endear formal financial seekers to opt for informal finance (Aryeetey & Hyuha, 1990). It is also sometimes believed that most of the urban demand for savings and credit facilities from informal financial organizations substitutes for demand from formal sources, elements of complementarity may also influence the relationship (Aryeetey & Gockel, 1990).

Akin (2010) conducted a study on the role of the informal sector in economic development. This study was based on surveys conducted in Dhakka for the purpose of assessing the informal sector's potential in employment and income generation. It provides a comprehensive appraisal of the activities of this sector, its principal characteristics and its role in the process of industrial development. The study concluded that the informal sector offers income earning opportunities to large members of disadvantaged people, and that it has a major role to play in expanding the capacity of the non-agricultural sector to absorb labour and facilitating the eventual industrial transition of the economy. It calls for an end to legal regulatory impediments and review of government policies regarding the informal sector. However, the study focused on informal finance but without specific details about sources of informal finance.

Degryse and Ongena (2014) conducted a study on informal or formal financing or a blend of the two with evidence on the co-funding of Chinese firms. Using unique survey data, the study found that informal finance is associated with higher sales growth for small firms and lower sales growth for large firms. The study identified a corresponding effect between informal and formal finance for the sales growth of small firms, but not for large firms. Informal finance offers

informational and checking advantages, while formal finance offers comparatively inexpensive funds. Co-funding, the concurrent use of formal and informal finance, is the best choice for small firms. The study was limited to Chinese firms.

Fridell (2007) explored the roles of informal, formal and semi-formal micro credit in Jordan credit. The study used the survey method, finding that accessibility and low application costs are the key advantages of informal credit, while these are often perceived to be disadvantages of formal credit. Informal finance was found to be very flexible since the dominant source of informal credit seems to be family, friends, neighbours, it may not be so surprising that most informal loans were interest free and that many do not agree that interest rates are higher for informal lending in general. The informal financial sector was also seen to be disadvantaged by credit ceilings, while the formal sector had reliable funds available. The study concluded that the key method of enhancing credit access to business and individuals and hence reduce the financial exclusion was by encouraging development of informal financial sector. The reduced costs and flexibility was found to enhance credit access which in turn led to increased business performance. However, the contextual focus of this study is Jordan, an economy which is significantly different from Kenya, in terms of macro-economic fundamentals.

De Klerk et al., (2013) study in South Africa also established that informal microfinance institutions are widespread, both in urban and in rural communities. These include at least 11 000 ‘stokvels’ – popular rotating savings and credit associations (ROSCAS) – village savings and loans associations (VSLAS) and burial societies. Some stokvels extend credit to members; some invest in assets that can generate income for the members, while some are used only to save funds towards a particular event such as the beginning of the school year. VSLAS, modelled along accumulating Savings and Credit Association (ASCA) lines, are now playing an increasingly important role. The Savings and Credit Groups (SCGS) promoted by save act in Kwa-Zulu Natal and the Eastern Cape are good examples. Typically, about two thirds of the savings of these groups is mobilized into loans at any moment. They are a particularly important source of capital for subsistence farmers: in many instances SCGS time the annual distribution of savings and interest to coincide with the beginning of the summer crop planting season, thereby providing the funds necessary to purchase seed and fertilizer, without having to borrow for this

high-risk purpose and without needing to generate a flow of cash income to service and repay a loan.

Atieno (2001) explored on the formal and informal institutions' lending policies and access to credit by small-scale enterprises in Kenya. The study found that credit rationing is significantly higher in the formal financial markets as compared to the informal and semi-formal financial sectors in Kenya. She found that the concern with the loan repayment among formal lenders determines the amount credit a borrower gets while in the informal financial sector, the main determinant is their limited resource base. She concluded that lending terms imposed by the formal financial sector (emphasizing collateral security) ration a large number of borrowers out of the credit market leaving only a few who can afford the required collateral. In contrast, some of the borrowers do not get what they want from the informal sector due to the limited resource base creating a credit gap in the rural markets in Kenya. However, the limitation of this study is that it focused on the Kenyan informal financial sector landscape in separate geographical areas.

Fadiga and Fadiga-Stewart (2004) conducted a study on collective action and informal financial institutions: an empirical examination of Rotating and Savings Credit Associations (ROSCAS) in Senegal. This study models cooperation among members as well as the financial performance and sustainability of associations using data collected from field research conducted in Dakar, Senegal in 2001. The results show that factors such as homogeneity of individuals within an association, how long the association has existed, how defaults are covered, and rules such as residency requirements, individual contributions, and rotation order are to various degree critical to the financial performance and sustainability of ROSCAS and to the fostering of cooperation among members of these associations.

Ostrom (1999) explored on the context and collective action. The study argued that ROSCAS have been able to avoid many of the high transaction costs associated with formal financial institutions. For example, ROSCAS through various monitoring and sanctioning mechanisms can minimize the costs of screening new borrowers by capitalizing on local information about individuals' past behaviour. In addition, reputations and the self-selection of members help these institutions reduce adverse selection and moral hazard problems. High rates of interaction,

proximity and effective mechanisms such as first, second, and third-party enforcement make it easier for mutual monitoring among members to occur and helps ensure that the benefits of cooperating minimize the temptation to default. Social capital such as shared norms, networks of relationships, and trust are important factors that explain how these institutions have been able to remain sustainable. With respect to the impact of group size on collective action, a critical mass of individuals and how associations affect social capital requires further investigation to offer solid conclusions. However, the limitation of this study is that it only considered ROSCA.

Khandker (2000) explored the study on the savings, informal borrowing, and microfinance in Bangladesh. The study used the survey method, and found that enhanced access to formal finance reduces the incidence of borrowing from informal sources. However, the study was limited to microfinance institutions; only critical review of studies on the effect of informal finance sources on performance of small firms reveals both conceptual and methodological knowledge gaps. For instance, it failed to address other forms of finance and in addition the study was as conducted in the Asian state of Bangladesh which is in a different social-economic cluster and geographical location from Kenya

Kinyua (2014) identified the factors affecting the performance of SMES in Nakuru town of Kenya. The research employed a survey research design and employed a stratified random sampling. In his study, he found that performance of SMEs was influenced by finance, management skills, macro-environment, and infrastructure. The findings indicated that access to finance had the potential to positively affect performance of SMES. Similar studies by Nabintu (2013) found that performance of SMEs was influenced by access to finance among other factors such as technological input in the payment system, and availability of management experience. The findings indicated that there is a positive correlation or relationship between financial performance of SMES and access to finance. However, the study was limited to Nakuru County and the sector studied was SME.

Ghate (1992) explored the research on the interaction between the formal and informal financial sectors in Kiambu County. The study which used a survey method indicated that a shortage of working capital was cited as the primary reason for 25 percent of the Kenyan microenterprises that terminated operations. Informal finance remains the most important source of finance

throughout the business cycle. However, the study only focused on a different geographical and sectoral segment of the SMES whereas the study being undertaken will be focusing on smallholder farmers.

Daniels et al., (2005) conducted a study on the role of small enterprises in Africa. The study used a survey method and found out that almost 95 percent of the interviewed entrepreneurs used family savings as the primary source of working capital. However, it failed to focus on all the sources of informal finance. Again, the macroeconomic and social environments of the two economies differ from the Kenyan economy. The present study sought to fill the gaps by uncovering the sources of informal patronized by the small holder farmers.

Johnson and Arnold (2012) also found out that informal services in the form of Rotating Savings and Credit Associations (ROSCAS) are more widely used than banks, and had remained so in between 2006 and 2009. Their use is positively biased towards women and those with their own phones and own businesses and is intriguingly now more biased towards those who are educated to secondary level than it was in 2006. This suggests that informal services are, to a degree, complementary to rather than competing with formal and semi-formal services at this stage of financial-sector development. Atieno (2001) in her study also concluded that informal credit sources provide easier access to their credit facilities for small and microenterprises. The main reasons explaining this scenario are the lending terms and conditions reflected in collateral, application procedure and repayment period. However, given that different segments serve specific credit markets, their ability to meet the credit needs of certain enterprises, especially those requiring large amounts of credit as they grow, is limited.

Wachira and Kihiu (2013) in their study further established that distance of separation from a bank continues to pose a big challenge on access to formal financial services. Households have been observed to shift their preference from formal and semi-formal financial services towards informal services. How then can Kenya achieve a more financial inclusive society? Policy makers must first be aware of the implicit factors explaining the huge financial exclusion in most developing countries and the benefits that greater inclusiveness have on development agenda.

However, there is a wide gap particularly in Kenya and Africa in general concerning access constraints and implicit socio-economic factors driving financial exclusion.

2.3 Theoretical Literature Review

A theory is a reasoned statement or a group of statements, which are supported by evidence, meant to explain phenomena. A theory is a systematic explanation of the relationship among phenomena. Theories provide a generalised explanation to an occurrence. Therefore a researcher should be conversant with the theories applicable to his area of research (Kombo,& Tromp, 2009; Smyth, 2004). According to Trochim (2006), a theoretical framework guides research, determining what variables to measure, and what statistical relationships to look for in the context of the problems under study. Thus the theoretical literature helps the researcher see clearly the variables of the study; provides a general framework for data analysis; and helps in the selection of applicable research design. This study was anchored on the theories discussed hereunder;

2.3.1 Theory of Planned Behaviour

The theory of planned behaviour (Ajzen, 1991) was developed by Ajzen. This theory postulates that intention is the best predictor of human behaviour. The theory focuses on the constructs that are concerned with individual motivational factors as determinants of the likelihood of performing a specific behaviour. The main basis of the theory is that when a person plans to do something then there is a more likelihood to do it. According to this theory, intention is composed of three different processes; behavioural attitudes, subjective norms and perceived behavioural control. The theory of planned behaviour is an extension of the theory of reasoned action (Fishbein & Ajzen, 1975). The significance of this theory is to predict and understand human behaviour. According to the theory of reasoned action, a person's behaviour is determined by her/his behaviour intention. Further, intention is determined by this person's attitude toward the behaviour.

This theory was known as reasoned action. However, could not adequately predict behaviour (Ajzen & Fishbein, 1980). Later, the component of perceived control was added to the model to determine the behaviour intention and was renamed the model as the theory of planned

behaviour (Ajzen, 1991). The theory of planned behaviour focuses on factors that influence and determine individuals' actual behavioural choices. According to this theory, three factors influence behavioural intention: the positive or negative valence of attitudes about the target behaviour, subjective norms and perceived behavioural controls. In turn, behavioural intention influences one's actual behavior (Ajzen, 1991). An attitude toward a behavior is recognized as a person's positive or negative evaluation of a relevant behaviour and is composed of a person's salient beliefs regarding the perceived outcomes of performing a behavior. A subjective norm refers to a person's perception of whether significant referents approve or disapprove of behaviour.

To capture non-volitional aspects of behaviour, the theory of planned behavior incorporates an additional variable—perceived behavioral control, which is not typically associated with traditional attitude-behavioral models (Fishbein & Ajzen, 1975). The perceived behavioral control describes the perceived difficulty level of performing the behavior—reflecting both past experience and anticipated barriers. Generally, the more favorable the attitude toward performing a behavior, the greater the perceived social approval, and the easier the performance of the behavior is perceived to be, the stronger the behavioral intention will be. In turn, the greater the behavioral intention, the more likely the behavior will be performed. In addition, the perceived control may affect the behaviour directly (Ajzen, 1991). The theory of planned behavior and its former version, the theory of reasoned action, have been applied in many subject areas.

Several studies have applied the theory of planned behavior to consumer behavior in financial services such as investment decisions, mortgage use, and credit counselling. The theory investigated investment decisions with data from sampled British consumers. The results show that the influence of friends and relatives (subjective norm) and the importance of easy access to funds (perceived control) strongly contribute to the investment decision (East, 1993). Researchers have also applied the theory of planned behavior to investigate how college students form financial behaviors regarding cash, credit, and saving management (Shim, Xiao, Barber, & Lyons, 2009; Xiao et al., 2011). The theory of planned behavior has also been applied to consumer behaviour in the setting of e-commerce, such as online shopping (Lim & Dubinsky, 2005; Shim, Easlick, Lotz, & Warrington, 2001).

The theory of planned behaviour has been adopted for this study because the uptake of formal financial services is a deliberate action that entails careful consideration and planning in order to maximize on the financial products. Therefore, it is the fact the variables under investigation are directly related to the three processes of intention that makes the theory relevant to this study.

2.3.2 Financial Intermediation Theory

This study was embedded in financial intermediation theory developed by Raymond goldsmith in 1969. Raymond goldsmith postulated that during the period of economic development of a country, the financial system grows faster than the wealth of the nation. Thus, the size of the financial system in a country depends on the saving and investment among the various units in the economy (Goldsmith, 1969). The financial intermediation is considered as the extent to which financial institutions bring together the surplus spending units and deficit spending units (Ndebbio, 2004). Proponents of this theory argued that banks are able to effectively monitor borrowers and thus play the role of delegated monitoring(Diamond, 1984).

Hence, the theory advances that intermediaries provide services by issuing secondary financial assets to buy primary financial assets and if an intermediary provided no services, investors who buy the secondary securities issued by the intermediary might as well purchase the primary securities directly and save the intermediary's costs. This resulted into financial market frictions which have been critical mechanism for generating continual income inequality or poverty traps (Aduda & Kalunda, 2012). These market frictions include information asymmetry and transaction costs that play a central role, influencing key decisions regarding human and physical capital accumulation and occupational choices. Financial inclusion attempts to reduce these market frictions.

According to Chandrasekhar (2010) the most prominent arguments for financial inclusion effectively assume that there is a universal relationship between developments in financial markets and broader economic development. As recently put by the World Bank, empirical evidence at the micro and macro levels shows that inclusive financial systems are an important component to economic and social progress on the development agenda. The evidence cited in support of this claim very much reflects its own "universalist" tenor (Kvangraven & Dos Santos, 2016).

However, there is argument that there is no reason to expect that all financial-intermediation services will have the same, universal impact on all economies, regions, or socio-economic strata. For instance, while credit extension can immediately improve the economic condition of borrowers and their regions, the durability and distribution of those gains depend not only on rates of interest, but also on purposes to which credit is put, particularly on whether it supports productive, speculative, or consumption undertakings. Empirical evidence presented by (Sarma & Pais 2011).

Moreover, according to the financial intermediation theory, banks should strive to ensure that there is efficient allocation of the resources to avoid low uptake of formal financial services by focusing on the financial inclusion factors which enhances uptake of formal financial services. The theory has had a significant impact on the financial inclusion over time. It was used by Otiato (2016) in the study that assessed the determinants of financial inclusion and performance of small and medium enterprises in Nairobi City County and by Kalu et al., (2018) in the study that investigated financial inclusion in the agricultural sector in Nigeria.

Determinants of financial inclusion and its elements of demographic factors, socio-economic factors, technological factors, institutional and product differentiation factors are essential in influencing uptake of formal financial services in general and affect directly the high or low uptake of formal financial services by the smallholder farmers. It is the fact the variables under investigation are directly related to financial intermediation theory that makes the theory relevant to this study.

2.3.3 Life Cycle Theory

The life cycle savings model, though developed to explain household saving patterns, is a prescriptive theory that assumes a household will maximize expected lifetime utility from consumption. The theory was developed by Modigliani (1986). The life cycle model is built on several assumptions about human behavior. The lifecycle model hypothesizes that individuals are forward looking in choosing how much of the resources that they will receive over their lifetime they will consume in each period of their life. This incorporates four powerful assumptions about people: they are forward-looking across the span of their lifetimes; they can predict the financial resources they will have over their lifetime (i.e. lifetime income); they

understand something about the financial resources they will need in successive periods of their lives; they make informed choices about the use of their financial resource. The simplest life cycle consumption theory posits that consumers save so as to transfer resources life stages where the marginal utility of consumption is highest. Given concavity of the utility function, consumers will seek to transfer resources from periods of their lives where they earn substantial income, to periods where they earn less. These income paths are estimated separately for workers prior to age 65 and retirees age above 65; education groups refer to household heads having completed less than a high-school education, high-school graduates, and those with at least some college.

The life cycle model is concerned with maximizing utility from consumption over a lifetime. Medical expenses typically are much higher in retirement, so a household might want to plan for higher total spending in retirement to maintain the quality of life. There are many complexities to applying the life cycle model to analysis of the adequacy of retirement savings, but the standard approach is used by Engen et al., (2005; 39), who noted, "A household that is saving adequately is defined as one that is accumulating enough wealth to be able to smooth its marginal utility of consumption over time." The implications of this approach depend on various assumptions, but in general, a household should try to plan so that basic spending does not have to drop substantially after retirement.

Research indicates life cycle pattern of financial satisfaction shows a U-shape that is different from income's life cycle pattern being hump shaped. A researcher explores the determinants of this life course financial satisfaction pattern, taking into account not only income but also the possible impact of assets and liabilities. Results based on data from the US National Survey of Families and Households show that while income has the expected positive relation, increasing financial satisfaction at older age can be partly explained by decreases in liabilities and increases in financial assets (Plagnol, 2011). The findings are consistent with a Norwegian study of older consumers where financial circumstances such as levels of assets and debts affect financial satisfaction (Hansen et al., 2008).

Both normative and positive research in saving use the life cycle hypothesis to help understand when individuals are most likely to save, and to build models that estimate optimal savings

behaviour given expected lifetime earnings and consumption preferences. Two articles that provide excellent introductions to life cycle theory are Hanna et al. (1995) and Yuh and Hanna (2010). Hanna et al. (1995) show how the expected growth in earnings, risk tolerance, and real interest rates impact optimal saving at different ages. In a simple normative model, the article explains how life cycle theory does not necessarily imply a smooth consumption path. A high real interest rate, for example, induces households to spend less in the present and more in the future (and can explain why young households in a low interest rate environment are saving less).

Yuh and Hanna (2010) provide a clear explanation of how to build an empirical model based on life cycle theory. The article is particularly useful at guiding expectations of direction of effect in an empirical model (for example, those with higher education expect higher future earnings and should save less early in life), and also illustrates the ways in which the normative life cycle theory doesn't match up with observed savings behaviour (for example, homeowners should save less for retirement, but in reality they save more). Another excellent basic overview of life cycle theory is provided by Bodie et al., (2007) who introduce uncertain asset returns and uncertain shocks to income, wealth, or consumption to the basic life cycle model. The authors explain how hedging instruments such as insurance or other financial products allow a household to smooth consumption by pooling the risk of uncertain events.

Borrowing is negative saving, so life cycle models provide a useful framework for explaining when it is rational to pull financial resources from the future into the present. Generally, this occurs when earnings temporarily dip below permanent income or early in the life cycle when a household is investing in human capital and durable goods. Normative research can include optimal mortgage refinancing (Agarwal et al., 2013) Positive research on borrowing can provide insight into factors that increase consumer debt and self-control problems that lead to excessive borrowing. Among the most interesting theories that explain self-control problems is the hyperbolic consumption model (Angeletos et al., 2001). Highly present-oriented consumers will rationally borrow heavily, resulting in downward-sloping life cycle consumption. Most of us, however, prefer a smooth or upward-sloping consumption path but have a hard time resisting the temptation to borrow. The application of high discount rates in the short run (myopia) and high

discount rates in the long run leads to borrowing mistakes such as simultaneously revolving a positive credit card balance while holding a large emergency fund and saving for retirement.

Other studies investigated credit mistakes that are clearly the result of a lack of financial sophistication, such as the failure to refinance a mortgage when current rates fall well below a consumer's current mortgage rate (Campbell, 2006). Understanding how low financial literacy and common behavioral biases affect credit behaviour is essential when developing consumer counselling and planning techniques that hope to improve credit outcomes. Household Portfolios A number of recent normative studies have been published on optimal household portfolios. These include optimal asset allocation given a range of time horizons and risk tolerance (Campbell & Viceira, 2002), Positive research in household portfolios focuses on factors that predict investment choice among households. For example, Yilmazer and Lyons (2010) investigate the impact of spousal bargaining power on the percentage of risky assets in the portfolios of men and women. Many of the differences in asset allocation decisions among demographic groups can be traced to wide variation in attitudes toward risk among more financially knowledgeable individuals (Grable, 2000). Campbell (2006) also found that equity allocation is much lower among households than normative theory would predict, and represents a significant welfare loss particularly among wealthier households that choose not to invest.

Risk Management Kunreuther and Pauly (2005) provide an over-view of insurance theory that describes when it is optimal for households to purchase a financial instrument in order to pool the risk of loss to wealth. For most young households, their most valuable asset is human capital. Products like dis-ability and life insurance protect against a sudden, unexpected loss in the value of future earnings to the household. As households age, they accumulate other financial and non-financial assets and exposures to liability risk. These risks can be hedged through property and liability insurance. Older households are exposed to health risks and the risk of outliving assets. Examples of normative research include Brown and Finkelstein (2011), who estimate optimal purchase of long-term care insurance for men and women given varying costs of protection, and Ibbotson et al., (2007), who estimate optimal annuitization for households with varying bequest motives and levels of risk tolerance.

Positive studies estimate household demand for insurance products. As in other financial planning topics, gaps between normative and actual insurance demand can often be attributed to knowledge and risk preferences. Among the most important behavioral determinants of insurance demand are related to prospect theory (Kahneman & Tversky, 1979), which predicts that household will over insure against small risks and underinsurance against large ones. Consumers will over-pay for insurance against small losses such as the possibility of a $60 phone repair (Cicchetti & Dubin, 1994) while avoiding insurance that protects against a much larger loss such as long-term health care expenses (Brown & Finkelstein, 2011). Consistent with the hypothesis that knowledge impacts demand for insurance, Finke et al., (2009) find that households who rely on the expertise of a comprehensive financial planner are far more likely to own an adequate amount of life insurance. Other areas of financial planning include investigations of the value of financial advice, financial literacy (and its relation to the topic areas described above), retirement (a component of saving), business ownership, charitable giving, and bequests.

In theory, as long as people are earning more than is required to meet basic needs, they may choose to transfer funds from periods of high income to periods of low income. This so called smoothing of lifetime income is probably the most commonly understood reason for contributing to a pension during employment (Davis, 2005). It is based on the idea that it is easier to save when there is more money from which a contribution may be put aside. Davis (2005) suggests that this idea is important because there is a less than perfect correlation between people's expenditure and their income.

This theory is relevant to smallholder farmers at both ends of the adult life cycle, comparatively low incomes are topped up through borrowing in younger years, and by drawing on savings, pensions and investments in later years of life. It is the fact that the variables under investigation are directly related to life cycle theory that makes the theory relevant to this study.

2.3.4 Household Production Theory

This theory was formulated by (Becker, 1965). The theory of household production states that families are both producers and consumers of goods. In an effort to maximize utility, families

attempt to efficiently allocate time, income, and the collection of goods and services they both use and produce (Rogerson & Wallenius, 2007). Household production theory is simply the study of household production, consumption and household time allocation. The basic concepts that are consistent across several different definitions of household production theory are household production, consumption and time allocation. Household production relates to all the output that a household products including production related to work (Keng & Lin, 2005). Household consumption includes all things that are consumed by a household including things like food, sleep, and leisure (Huffman, 1991).

The main assumption of household production theory is that consumers act as rational actors. The overall theory's goal is to explain the interactions and relationships between consumption, production and time. Consumption theory is often predicated on the idea of diminishing marginal utility. This idea implies that we will diversify our consumption because increased consumption of the same good will give us less utility after a certain point (Kerkhofs & Kooremen, 2003). Time allocation introduces the basic concept of opportunity cost, explaining that every minute we allocate to one activity, by definition, cannot be allocated to any other activity (Huffman, 2008).

Becker (1965) is best known for modelling household decisions and resource allocation in a model where a household is both a producing and consuming unit. Output that is produced by the household is consumed directly and not sold in the market. Becker claimed the productive household model was a major advance in understanding household behaviour relative to models that treated households as purely consuming units (Varian, 1992). Reid (1934) provided an early description of household production behavior, and her work is an important antecedent to becker's formal modelling of the productive household. And in the early 1960s, Mincer (1963) became convinced of serious misspecification of empirical household demand functions for food, transportation services, and domestic services; the opportunity cost of the homemaker's or traveler's time and household non-labor (or full-) income were omitted variables. He also showed that using cash income as an explanatory variable was inappropriate because it reflected a variety of household decisions, including a decision on how many hours to work for pay. Food economic studies over the past four decades have largely overlooked the potential of household production theory and models in demand analysis.

A study by Hamermesh (2007) builds on household production theory in his empirical study of demand for food-at-home and away-from-home and time allocated to eating by married couples in 1985 and 2003. Key explanatory variables are husband's and wife's wage rates and a household's non-labor income. He finds that a higher wage rate for the husband and wife increase the demand for food-away-from-home significantly. Although the estimated effect of the husband's and wife's wage rates on the demand for food-at-home are negative, only the estimated coefficient for wife's wage is significantly different from zero. In the 1985 data, he found that non-labor income has a significant positive effect on the demand for food-at-home but a negative effect on the demand for food-away-from-home. However, in the 2003 data, income effects are reduced and much weaker than in the 1985 data.

Other food demand studies that incorporate household production theory are by Kinsey (1983), Keng and Lin (2005), Park and Capps (1997) and Sabates et al. (2001). Although Kinsey (1983) lays out a beckerian model of household production in a study of the demand for households' purchases of food away from home, her empirical analysis she does not follow through. For example, she claims that the wage rates of working women do not vary much and then excludes women's price of time from a household's demand for food-away-from- home. In contrast, labor economists have made a working individual's wage the target of frequent empirical investigations, and predicted wage rates are regularly included in models explaining labor supply, demand for children and migration (Card 1999, Tokle & Huffman 1991, Blundell & Macurdy 1999, Huffman & Feridhanusetyawan, 2007).

Keng and Lin (2005) show that as women's labor market earnings increase their household's demand for food-away-from-home increases. In addition, a few other studies have included the education of the household manager, a rough proxy for her opportunity cost of time, as an independent variable in food demand equations. For instance, Park and Capps (1997) found that the probability a household purchases ready-to-eat or ready-to-cook meals increases with the education of the household manager, but education was not included in the expenditure equation for ready-to-cook meals. In new research, Andrews and Hamrick (2009) argue that "eating requires both income to purchase food and time to prepare and consume it." Their focus is on

income effects: “food spending tends to rise with a household’s income. However, the opposite is true for time devoted to preparing food.” Their research does not focus on price effects.

The basic theory of household production has a strong level of internal consistency; however, the definitions and measurement of utility seem to be different for different researchers (Greene, 2003). The overarching theory is based on standard economic principles that have been used for hundreds of years. The concepts of marginal utility, supply and demand, and the production possibilities curve are all applied aspects of economic theory. The main utility of household production utilizes the interaction of all variables to maximize efficiency and provide the greatest ‘happiness’ given to an individual’s or family’s set of constraints. The inclusion of production, consumption and time, allows economists to create models that examine the correct allocation of goods and services (Andrews & Hamlick, 2009).

This theory is relevant in the current study since it elucidates how people allocate their time and resources which is a fundamental concept in consumer economics. By utilizing household production theory, the study is able to identify and examine how smallholder farmers behave. On a personal level, the theory of household production can be used to identify all the variables in the lives of smallholder farmers and determine the exact combination of resources that they need to maximize their happiness (Greenwood et al., 2005). The introduction of the time constraint makes the analysis fundamentally more useful because the variable is fixed and its allocation is consistent across every single smallholder farmer.

2.3.5 Task Technology Fit (TTF) Theory

It is recorded that positive impact on individual performance is more likely if the capabilities of information communication and technology (ICT) match the tasks that the user must perform as propounded by (Goodhue & Thompson, 1995). The factors of interest in measuring task-technology fit include floatability, authorization, and compatibility, eases of use/training, production timeliness, systems reliability and relationship with users. Figure 1 depicts a task technology fit model, whereby, the success of an information system is dependent on the fit between task and technology. This success could be individual performance (Goodhue & Thompson, 1995) or group performance (Zigurs & Buckland, 1998). Task-technology fit has

been shown to be generally relevant for mobile information systems (Gebauer & Shaw, 2004) make reference to figure 1 here

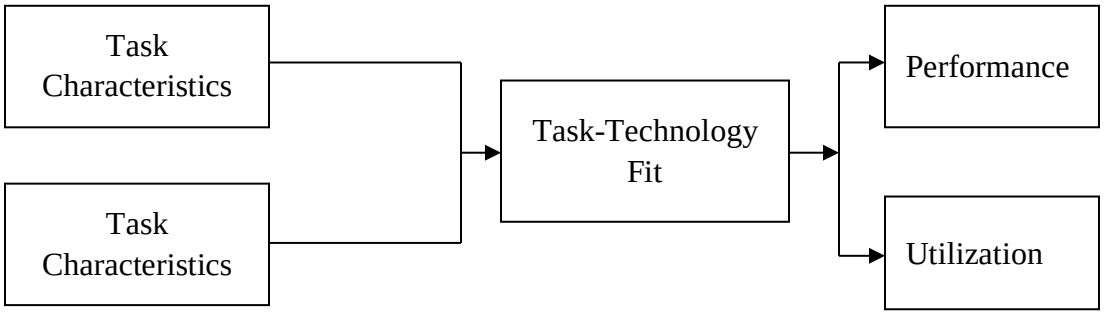


Figure 1: Task-technology Fit diagram/schematic of Theory

Source: Goodhue and Thompson (1995)

Studies on mobile information system technology have focused mainly on the functionality that is provided by the technology, paying less attention to the context in which the technology is being used (Perry *et al.,* 2001). Non-functional features, such as weight and size, play a more prominent role in mobile than in non-mobile use contexts (Gebauer & Ginsburg, 2006; Turel, 2006), while functional requirements may shift depending on whether the business context is mobile or non-mobile (Gebauer & Shaw, 2004; Perry *et al.,* 2001; Zheng & Yuan, 2007). Observable changes of business tasks with respect to technology requirements, require the assessment of the applicability of the theory of task-technology fit to mobile technologies and mobile use contexts, and careful determination of the needs for theory adjustments and extensions (Jungles & Watson, 2006; Lystinen & Yoo, 2002).

Kirui et al., (2012) in their study found a very high awareness of mobile phone-based money transfer services among the smallholder farmers and also established that there is predominant use of remitted funds for agricultural related purposes (purchase of seed, fertilizer for planting and topdressing, farm equipment/implements, leasing of land for farming, wages for labour). The study however, concludes that there is need to expand the coverage of MMT services in rural areas since it resolves an idiosyncratic market failure that farmers face namely access to financial services. Salami, Kamara, and Brixiova (2010) show that the share of commercial banks' loans to agriculture has been very low compared to manufacturing, trade, and other services sectors,

hence affecting expansion and technology adoption. This study will therefore consider the impact of technology on utilization of formal financial services by the small holder farmers

2.3.6 Porter General Competitive Strategies (Differentiation)

Porter (1980) was the first to introduce common strategies and suggested that through them the Organisation could achieve competitive advantages. This was a total cost-cutting, segmentation, and market niche (or focus). According to this view, cost management makes the company a low-cost producer in its industry. If a company can achieve and maintain total cost leadership, then it will be a top manufacturer in its industry. However, the sources of revenue are different and depend on the structure of the industry. It can include the pursuit of scale economics, related technologies, special access to resources and more. The low-cost producer must acquire and use all sources of revenue. The company's strategic plan seeks to differentiate itself from its industry in accordance with the size that consumers value most. It selects one or more qualities that most consumers in the industry consider important and sets them apart in order to meet those needs. The difference refers to the broader market that includes the production of products or services that are considered throughout its industry as unique.

The current lesson is separation; therefore, the focus will be on the divorce strategy. With a divisive strategy, the Organisation seeks to differentiate its industry in certain areas. It therefore focuses on one or more of the consumers in the industry that they consider important and are particularly committed to meeting those needs. The difference can be based on the product itself, the delivery system or its marketing method. An Organisation must be different in that it looks different. Another way to gain competitive advantage is to use creative methods where an Organisation tries to make a difference as its core strength, which when it is different from the Organisation makes it difficult for competitors to imitate (Johnson & Scholes, 2009). According to Kotler (2009), retailers can face a wide range of segmentation opportunities including form, features, customisation, performance quality, compliance quality, durability, reliability, retrieval and style and where body product can be easily distinguished, the key to competitive success lies in adding value and performance services and improve their quality. The main differences of service are ordering, easy delivery, installation, customer training, customer consultation, maintenance and repair.

The difference creates a competitive advantage by making customers more reliable, less prone to price and less willing to consider alternative product options. According to Rao (2011), a company that pursues a high classification strategy based on a particular product quality or consumer demand, can place its strategic group within the industry in such a situation, a war of destructive prices can be avoided. Product quality helps a company to build a reputation and demand that is often translated into higher market share as differences arise and increasing competition on the basis of product additions also leads the retailer to look at a complete user experience, how users perform and acquire and use related products and services. Each addition adds to the cost, but the additional benefits simply become the expected benefits and the necessary paint points. For example, today's hotel guests are expecting cable, satellite television with remote and fast internet access or two telephone lines, which means competitors must seek these other features and benefits (Jaquier, 2010).

The differentiation approach is relevant in the present study and is designed to provide insight into how financial services firms use their products in diversification not only to gain market competitive advantage but also to build customer base by meeting their specific needs. This is so because product diversity is important in today's financial situation. It allows a smallholder farmer to compare the financial products of various financial institutions with competing products in the market and choose the financial products with unique features that stand out.

2.4 Summary of Literature Review

Most of the powerful studies reviewed show that many academics have focused on investing in the use of legal financial services but with a focus on human factors, technology, socioeconomic factors, product classification and illegal financial services. The review indicated the use of legal financial services to determine the actual use of financial services and is subject to financial inclusion. The review receives a large amount of documentation from investment associations and access to, use, and procedures for the use of legal financial services. However, many studies focus on developed markets in contrast to emerging markets where there has been an increase in the adoption of investment strategies. In addition, studies conducted on the role of investment in the use of legal financial services have revealed a negative, or positive, trend that shows inconsistent results.

A good example is a study by Grohmann et al. (2017) on the effect of financial learning on financial inclusion at the cross-country level. The study used a descriptive method. However, this study was limited to secondary data and did not address the key data used for this study. Research has shown that financial information remains closely related to high investment and that is revitalisation supports causal interpretations. Research has also shown that the median impact of financial literacy on investment is often greater in low-income countries, the underdeveloped financial sector, and fewer bank branches (Bierman, 1999). These findings are in contrast to those of Kaiser and Menkhoff (2017) who point out that financial education is less effective for low-income customers and for low- and middle-income economies. The proposed study will fill the gap by determining the outcome of financial studies in the financial inclusion of formal financial services.

A study by John and Mary (2016), on the financial inclusion of small and wealthy farmers in the kerala banking sector in India, used an investment indicator as a measure of the use of legal financial services. This study is going to fill the gap because it proposes to conduct a separate analysis of financial inclusion among other sections of society (Nakuru, Busia and Kirinyaga) and uses the financial disclosure index as a measure of usage. Besides, Kerala in India has a different financial situation compared to Kenya. The study by Atieno (2001) made extensive use of key data from individual entrepreneurs and farmers who received credit from both formal and informal credit institutions and those who did not travel to rural areas in five regions of western Kenya: Kisumu, Siaya, Vihiga, Bungoma and Kakamega. The study looked at not only the correct debt but also one of the drivers of investment and access achieved, which differs from spending as indicated (Beck, & De La Torre, 2006). Access is possible to use while usage means actual use of financial services. Access is not the same as use because economic agents may be able to access financial services, but they may decide not to use them. This proposed study will look at the use of legal financial services and will work with all investment drivers to determine the level of spending

In addition, there are limited studies on the role of investment in the use of legal financial services by smallholder farmers, especially among smallholder farmers in Kenya. However, such information is needed to identify appropriate investment strategies and strategies for the

development of legitimate resources used by smallholder farmers, which can also translate into productivity growth in the agricultural sector and thus enhance national and rural development. This study aims to provide this information.

2.5 Summary of Knowledge Gaps

Literature indicates various knowledge gaps in relation to determinants of financial inclusion and their effect on utilisation of formal financial services by smallholder famers in Kenya. These gaps reveal themselves in conceptual, contextual, and methodological aspects. Conceptual gaps relate to those found in literature regarding the relationship between variables being studied. Contextual gaps on the other hand relate to the smallholder farmers in Kenya while the methodological include gaps in research design, population, sampling method, sample size, and data analysis. Table 4 provides a summary of previous studies (empirical studies) and knowledge gaps.

Table 4: Previous Studies and Knowledge Gaps

Author (s)	Focus of study	Specification models used	Key findings	Knowledge gaps	How the current study addressed the Gaps
Zakaria and Sabri (2013)	Financial capability	Multiple linear regression was used in the study.	The study found the lowest financial capability is among the young people who are under 45 years old, women, married or living with a partner, those on low income and low levels of education, literacy and numeracy	The study focused on financial capability with a particular focus on four main areas: managing Money, staying informed, choosing products and planning a head.	This study focussed on utilisation of formal financial services by small holder famers in Kenya
Paaskesen and Angelow (2015)	Youth Financial Inclusion In Kenya: Co-Creating A Way Forward	Content analysis method was used to analyse the data	usage of financial services for economic benefits differed across different demographics	The study covered only the youths between the age brackets of 12 to 18 years in Nakuru and Gilgil with smata savings accounts at Post bank.	This study covered the smallholder farmers of different age brackets operating different bank account across the counties of Busia, Nakuru and Kirinyaga.

Ardic et al., (2013)	The relevance of financial access on broader financial architecture.	Linear regression model was used	The access to finance services was different across different Countries	The study focused on access of financial services and also analysed market dynamics and linkages to broader financial sector and economic growth indicators across different countries.	This study focussed on the determinants of financial inclusion and their effect on utilisation of formal financial services among the smallholder farmers.
Mwangi (2012)	comparative analysis of the role played by individual characteristics on access to credit from various strands in 2006 and 2009	The study used multinomial probit regression models	There was variance in access and usage of financial services for economic purposes alongside demographic characteristics	The study considered the determinants of Access to Credit by Individuals in Kenya based on the survey reports of 2006 and 2009.	This study considered the determinants of financial inclusion on utilisation of formal financial services by small holder farmers based on primary data from the Counties of Busia, Nakuru and Kirinyaga.
Clamara and Tuesta(2014)	Factors that matter for financial inclusion, evidence	Probit model was used to analyse the link	That factors such as being a woman, living in a rural area or having a low	The study shed light on the link between Financial Inclusion and individual socio economic	This study covered determinants of financial inclusion and

	from Peru	between financial inclusion and some variables of interest.	income and educational level may reduce the likelihood of being included in formal financial system	characteristics of household and enterprises from Peru.	their effect on the usage of formal financial services by small holder farmers in Kenya.
Johnson and Arnold (2012)	Investigated the capacity of the mobile technology in their ability to cause transformational shift in the Kenyan market	Probit regressions was based on two main models. One which included the poverty proxies and the second which includes the cash expenditure variable.	The M-Pesa was reportedly perceived not as a substitute but as more of a complementary service to core banking services	The study focussed on the analysis of mobile technology, socio-economic, demographic and geographic factors associated with financial service access across formal, semi-formal and informal financial services in Kenya between 2006 and 2009.	This study focussed on the effect of demographic, socio-economic, product differentiation, Institutional and financial literacy factors influencing the use of formal financial services by smallholder farmers.
Sorensen (2015)	Established the effect of agency banking on financial inclusion	Multiple linear regression	The research found that the levels of financial inclusion are low and that there is a notable gap not	The study established the effect of agency banking on financial inclusion.	This study considered impact of technology factors on formal usage of financial

	in Kenya		bridged by formal banking framework		services by small holder farmers in Kenya.
Oumaet al. (2017)	Mobile financial services and financial inclusion: Is it a boon for savings mobilisation?	Logit model was used...	The Findings revealed that availability and usage of mobile phones to provide financial services promotes the likelihood of saving at the household level	The study sought to establish the linkage between pervasive use of mobile telephony and provision of financial services as a boon for savings mobilisation in selected countries in sub-Saharan Africa	This study showed the effect of determinants of financial inclusion on use of formal financial services by the small holder farmers in Kenya.
Agufa (2016)	Sought to determine the effect digital finance on financial inclusion in banking industry in Kenya	The study used multiple linear regression	The Findings of the study found an insignificant negative relationship between agency banking measured in term of the number of agents, mobile banking measured by the number of mobile banking transactions and internet banking	The study determined the effect of digital finance on financial inclusion in the banking industry	This study sought to examine the impact of technological factors on utilisation of formal financial services among small holder farmers.

Kabakova and Plaksenkov (2018)	Carried out an ecosystem analysis of factors affecting financial inclusion in Russia	Ordinary least Squares modelling which is an econometric method.	Two combinations of factors affecting financial exclusion are the absence of social and economic factors in the presence of political and technological development	The study carried out an ecosystem analysis of factors affecting financial inclusion in Russia	This study sought to establish the effect of determinants of financial inclusion on use of formal financial services by the small holder farmers in Kenya.
Li (2018)	Investigated the role of relative income on financial inclusion and poverty	Logit regressions based on of household application for bank credits on determination.	The study found that concern with relative income significantly stimulated poor households to apply for bank credit	The study investigated the role of relative income on financial inclusion and poverty.	This study considered farm income as one of the determinants of financial inclusion and its impact on the utilisation of formal financial services
Park and Mercado (2015)	Conducted a study on Financial Inclusion, Poverty and Income Inequality in developing Asia	The study used three logit regression models.	The study suggested that per capita income, rule of law, and demographic characteristics significantly affect financial inclusion in	The study was done on Financial Inclusion, Poverty and Income Inequality in developing Asia.	This study was undertaken among the small holder farmers comprising the low income groups in Kenya.

			developing Asia		
Salazar-Cantúet al. (2015)	Conducted a study on the Financial Inclusion and Income Inequality in Mexican municipalities	The study used multiple linear regression model- OLS regression technique.	The findings, suggested the need for more regional approaches, rather than national, in the public policy on the complex social problem of income inequality	The study was undertaken on Financial inclusion and income inequality in Mexican municipalities.	This study focused on the financial inclusion in Kenya.
Masiyandima et al. (2017)	Conducted a study on the Financial Inclusion and Quality of Livelihood in Zimbabwe	Logit model	The study established that income, financial literacy and the geographical presence of financial institutions are the major determinants of financial inclusion	The study was done on Financial inclusion and quality of livelihood in Zimbabwe	This study considered financial inclusion determinants and their effects on the uptake of formal financial services by small holder famers in Kenya.
Awunyo-Vitor et al. (2014)	Examined the impact of formal financial market participation on farm size and	Logit model was used in this study.	The results from the logit model indicate that farmers' socioeconomic characteristics such as education, previous year's	The study was an examination of the impact of formal financial market participation on farm size and expenditure on variable farm inputs focusing on maize farmers	This study considered financial inclusion determinants and their effects on the uptake of formal financial

	expenditure on variable farm inputs focusing on maize farmers in Ghana		maize income, engagement in off-farm income generating activities, and farm size significantly influence their formal financial market participation positively. Farm size expansion and a maize commercialisation policy will improve farmers' participation in financial services.	in Ghana	services by small holder famers in Kenya.
Chenaa et al. (2018)	Sought to investigate the impact of the determinants of access to credit on the performance of smallholder farmers in the	Multiple linear regression model was used to predict the impact of determinants of access to credit.	The study concluded that the determinants (cost of credit facilities, collateral security, knowledge/awareness of financial procedures by farmers and demographic factors such as age,	The study investigated the impact of the determinants of access to credit on the performance of smallholder farmers in the Kumba municipality	This study sought to investigate the effects of determinants of financial inclusion on usage and not just access of formal financial services among smallholder

	Kumba municipality		gender, level of education and farm sizes) influence access to credit by smallholder farmers.		farmers in Nakuru, Busia and Kirinyaga counties in Kenya.
Nyaga and Nzulwa (2017)	Sought to evaluate the strategic factors that affect access to credit facilities by Smallholder Dairy Farmers (SDFs) in Githunguri Sub-County, Kiambu County in Kenya	The study used multiple linear regression	The study concluded that collateral requirement affects access to credit facilities by SDFs in Githunguri Sub-County, Kiambu County. The value of land and farm machinery owned as assets, the amount of capital injected into the business and membership in a financial group all affect access to credit facilities by SDFs in Githunguri Sub-County, Kiambu County.	The study evaluated the strategic factors that affect access to credit facilities by Smallholder Dairy Farmers (SDFs) in Githunguri Sub-County, Kiambu County in Kenya	This study considered usage of formal financial services across three counties.

Kiplimo et al. (2015)	carried out a study on determinants of access to credit financial services by smallholder farmers in Kenya	Multivariate probit model was used in this study.	The results indicated that, the marginal effects of education level, occupation and access to extension services were statistically significant with positive effects on access to credit financial services	The study was carried out on determinants of access to credit financial services by smallholder farmers in Kenya	. This study considered financial inclusion determinants and their effects on the uptake of formal financial services by small holder famers in Kenya.
Meeme (2013)	conducted a study on factors influencing access to formal credit by small scale women tea farmers in Thika District, Kiambu County Kenya	Content analysis	The study established that house and household goods were the most popular, animals, land, vehicles and agricultural equipment household goods as well as the animals in the farm forms the highest part of collaterals to access formal credit	The study was carried out on factors influencing access to formal credit by small scale women tea farmers in Thika District, Kiambu County Kenya	This study considered financial inclusion determinants and their effects on the uptake of formal financial services by small holder famers in Kenya.

Atieno (2001)	study used individual entrepreneurs and farmers receiving credit from both formal and informal credit institutions as well as those who did not in the rural areas of five districts of western Kenya	Categorical methods ad t-test methods were used in this study.	Although informal finance credit has easier access, informal credit is generally confined to specific activities and at lower levels of income, thus limiting its use. Therefore, the nature of credit markets in developing countries depict lending units that are unable to meet the needs of borrowers interested in certain types of credit.	The study was done on individual entrepreneurs and farmers receiving credit from both formal and informal credit institutions as well as those who did not in the rural areas of five districts of western Kenya	This study considered financial inclusion determinants and their effects on the uptake of formal financial services by small holder famers in Kenya across three counties
Kim et al. (2001)	examined endogenous product differentiation in credit markets specifically	The study used logistic regression model	the study found empirical support for the ability at avoiding losses measured by the ratio of loss provisions as such a variable	The study examined endogenous product differentiation in credit markets specifically seeking to determine what borrowers pay for	This study examined the product differentiation factors and their significance in the utilisation of formal financial

	seeking to determine what borrowers pay for				services by the smallholder farmers.
Kavale et al. (2016)	investigated the effects of product differentiation strategy on corporate growth in selected microfinance institutions in Kenya	The study used the multiple liner regression model	The study found out that product differentiation strategy has significant effects on corporate growth in MFIs in Kenya	The study investigated the effects of product differentiation strategy on corporate growth in selected microfinance institutions in Kenya	This study investigated the product differentiation factors and their significance in the utilisation of formal financial services by the smallholder farmers
Sheikh (2015)	study on the realisation of sustainable competitive advantage through product differentiation in commercial banks using the First	Thematic and content analysis were used.	Analysis of the findings shows that differentiation strategies are greatly used by commercial banks in Kenya to remain competitive	The study was carried on the realisation of sustainable competitive advantage through product differentiation in commercial banks using the First Community Bank in Kenya as case study	This study focused on the influence of product differentiation on the utilisation of formal financial services by the smallholder farmers.

	Community Bank in Kenya as case study				
Seem (2011)	examined product differentiation as a strategy for sustainable competitive advantage in banks issuing credit cards in Kenya	Content analysis	The study established that commercial banks need to recognise visa and master credit cards and identify its appropriate market for processing payments methods as a product differentiation to achieve sustainable competitive advantage	The study examined product differentiation as a strategy for sustainable competitive advantage in banks issuing credit cards in Kenya	This study focused on the influence of product differentiation on the utilisation of formal financial services by the smallholder farmers using Multinomial logistic regression model.
Mbugua (2013)	investigated factors determining access to credit facilities for farmers in Cherangany Constituency in Trans- Nzoia County	Linear regression analysis	The findings indicate that lending institutions have inadequate products for meeting credit needs of the farming society since the yardstick they use to assess their creditworthiness is same	The study investigated factors determining access to credit facilities for farmers in Cherangany Constituency in Trans- Nzoia County	This study investigated the determinants of financial inclusion and their effects on the utilisation of formal financial services in Nakuru, Busia and

			with all applicants from other sectors		Kirinyaga counties.
Kostov et al. (2015)	Access to financial services: The case of the 'Mzansi' account in south Africa	Binary logistic regression model was used in the dependent variable with binary options.	The findings discover that customers come to Mzansi for financial literacy.	The study was on access to financial services: The case of the 'Mzansi' account in south Africa	The study sought to determine the access to formal financial services indirectly.
Gupte et al. (2012)	The determinants that measure the extent of financial inclusion and focuses on the computation of the index that would comprehensively cover the impact the multi-dimensional variable with	Formulas Dimension index, min-max method, Financial Access Index (FAI)	The findings in this study show that Sarma estimates may be overestimates compared to other studies in the past years. Thus adding ease and cost of transactions has helped to view financial inclusion holistically compared to other studies.	The study was conducted on the determinants that measure the extent of financial inclusion and focuses on the computation of the index that would comprehensively cover the impact the multi-dimensional variable with specific reference to India	This study considered the determinants of financial inclusion and computed the financial inclusion index that was used to determine the utilisation of financial services in Kenya

	specific reference to India				
Iqbal and Sami (2017)	The study aimed at determining the impact of financial inclusion on growth of the economy over a period of seven years. Role of banks in financial inclusion in India	The study used multiple linear regression to determine role of banks in financial inclusion in India.	The study findings indicate that the financial sector plays an important role economic development	The study sought to determine the impact of financial inclusion on growth of the economy over a period of seven years. Role of banks in financial inclusion in India	This study considered financial inclusion determinants and their effects on the uptake of formal financial services by small holder famers in Kenya.
Arun and Kamath (2015)	The focus of this study is the policies and practices of financial inclusion in India, South Africa and Australia.	The correlation analysis was used to obtain the relationship between the variables of study.	The findings of this study highlight the cultural distinctiveness of indigenous money and set the context of an exploration of how culture and money are inter-correlated.	The study focussed on the policies and practices of financial inclusion in India, South Africa and Australia.	This study considered financial inclusion determinants and their effects on the uptake of formal financial services by small holder famers in Kenya.

Kim, et al. (2018)	This study examined the relationship between financial inclusion and economic growth in Organisation of Islamic Cooperation (OIC) countries.	The study used the logit regression model.	The study results indicate that the macroeconomic variables such as information, population, Trade and Unemployment were significant in each model. The findings also indicate that the financial inclusion has a positive relationship with the economic growth	The study examined the relationship between financial inclusion and economic growth in Organisation of Islamic Cooperation (OIC) countries.	This study considered financial inclusion determinants and their effects on the uptake of formal financial services by small holder famers in Kenya.
Fungacova, Weill(2015)	The study focused on understanding financial inclusion in China	The study explored the probit regression modelling technique.	The findings of this study reveal that education does not have a significant relationship with formal credit. Income influences the choice between formal and informal borrowing. A non-linear relationship is observed in all dependent variables	The study focused on understanding financial inclusion in China	This study mainly focused on the utilisation of formal financial services by smallholder farmers in Kenya.

			except for borrowing from a private lender.		
Zins and Weill (2016)	The study was carried out to determine the determinants of financial inclusion in Africa	Probit regression model was used to analyse the data	The findings of this study put it that informal finance is not a substitute for formal finance in all aspects of financial inclusion in Africa. It also indicates that mobile banking is driven by the same determinants of financial inclusion and as such can be a substitute for financial inclusion for the groups of populations.	The study sought to determine the determinants of financial inclusion in Africa	This study considered financial inclusion determinants and their effects on the uptake of formal financial services by small holder famers in Kenya.

2.6 Conceptual Framework

Financial inclusion indicators were conceptualized as demographic factors, social-economic factors, institutional factors, technological and product features; and utilisation is considered in terms of savings, credit/loan, insurance services, investment, and custodian of vital documents and efficiency of formal financial services. A conceptual framework for this study, based on these conceptualizations could be constructed as shown in Figure 2.

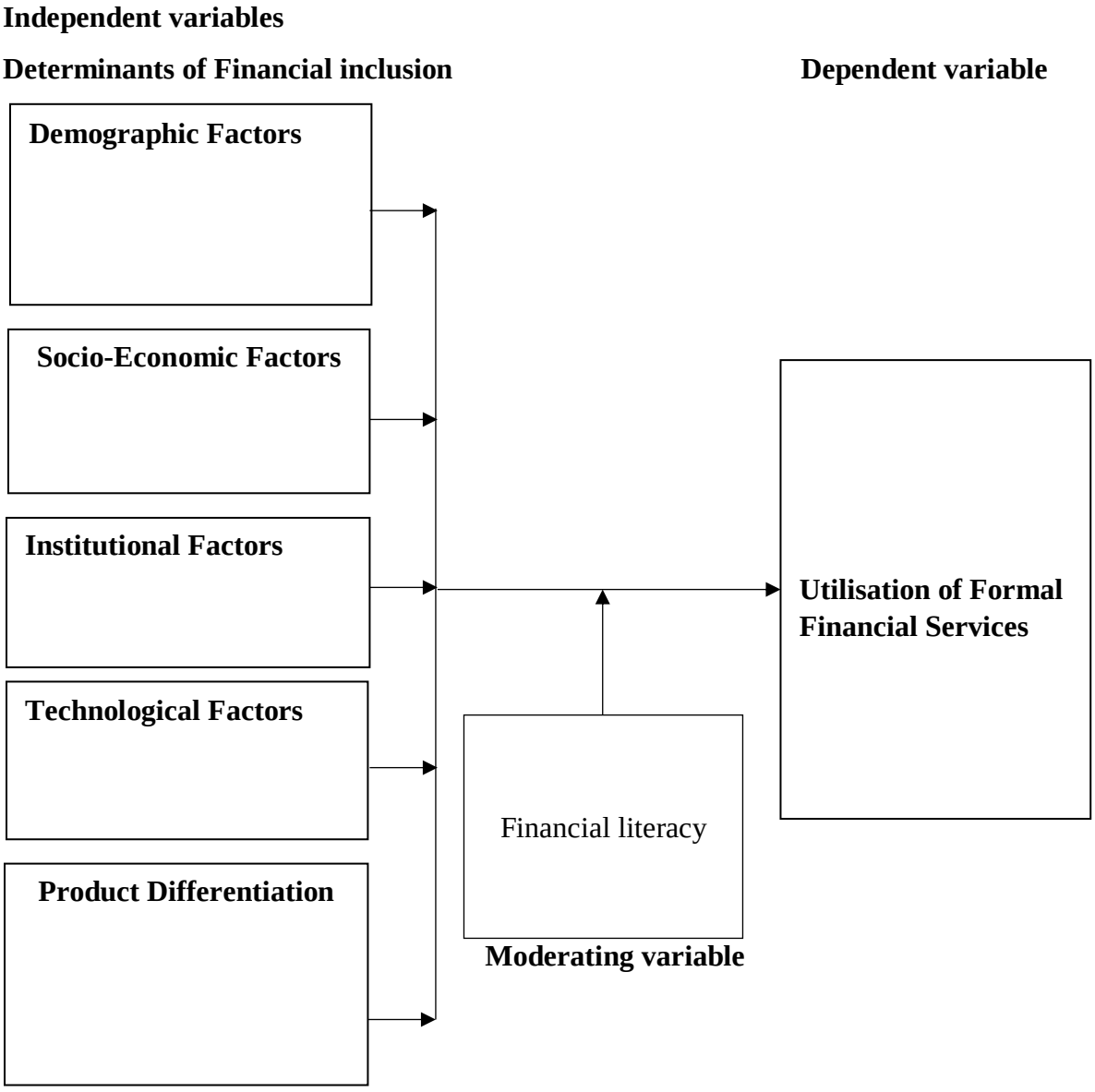


Figure 2: Conceptual Framework

Source: Author's conceptualization (2020).

The conceptual framework depicted in figure 2 is a visual presentation of the relation between determinants of financial inclusion and utilisation of formal financial services. Financial inclusion indicators include demographic factors, social-economic factors, institutional factors, technological and product features; and utilisation is considered in terms of savings, credit/loan, insurance services, investment, and custody of vital documents of formal financial services. The framework postulates demographic factors, social-economic factors, institutional factors, technological and product features influence savings, credit/loan, insurance services, investment, and custody of vital documents of the formal financial services by the smallholder farmers. Therefore, if a formal financial institution considers gender, has embraced technology, has a financial literacy programme, caters for various income levels and have good product features then players among the small holder farmers would utilise more of savings, credit/loan, insurance services, investment, and custodian of vital documents and would be motivated by efficiency of the formal financial services. In other words, they would utilise more of the formal financial services. But the influence of financial inclusion indicators on utilisation of formal financial services by the small holder farmers may be modified by financial literacy.

2.7 Operationalisation of Variables

Table 5: Summary of Measurement Scales and Operationalising the Study Variables

No	Variables measurement	Measurement	Level of measurement	Operational definition
1	Utilisation of formal financial services (dependent variable y)	Was obtained using the weighted means formula	Utilisation of formal financial services = ordinal	Utilisation of formal financial services is evidenced by: i. Savings/deposit account ii. Credit/loan iii. Insurance services iv. Financial literacy v. Investment vi. Custody of vital documents
2	Demographic factors (independent variable x_1)	Age was obtained using discrete values, gender was also categorised into two groups, education was ordered into categories.	Age = interval Gender = nominal Education = ordinal Marital status = nominal	Demographic factors were evidenced by: • Age • Gender • Education • Marital status
3	Socio-economic factors(independent variable x_2)	Income was estimated within an interval of 10,000, land size was obtained from ordered discrete values and occupation was obtained	Income = interval Land size = ordinal Occupation = nominal	Socio-economic factors are evidenced by: • Land size • Household income • Occupation

		from different categories.		
4	Institutional factors (independent variable x_3)	Group membership was measured using a five point likert scale. Household size was measured in an interval of 5 Households	Group membership = nominal Household size = interval	Institutional factors are evidenced by: • Group membership
5	Technological factors (independent variable x_4)	Were measured into categories using a five point likert scale	Technological factors = nominal	Technological factors are evidenced by: • Ownership of mobile phone
6	Product differentiation (independent variable x_5)	Was obtained using a five point likert scale	Interest rates= nominal Collateral = nominal Repayment grace period = nominal Term of loan = nominal	Product differentiation is evidenced by: • Interest rates • Collateral • Repayment grace period. • Term of loan
7	Financial literacy (moderating variable)	Financial literacy index was obtained using geometric mean formula of a five point likert scale financial literacy indicators	Financial knowledge= nominal Financial attitude = nominal financial skill = nominal	Financial literacy is evidenced by • Financial knowledge • Financial attitude • Financial skill

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the methodology that was used in data collection and analysis. It includes the research design, location of the study, population of the study, sampling procedure and sample size, instrumentation, data collection procedure, and data analysis. Zikmund et al. (2010) describe a research methodology as a part that must explain technical procedures in a manner appropriate for the audience. It achieves this by addressing the research and sample designs used for the study, the data collection and fieldwork conducted for the study and analysis done to the collected data. Dawson (2009) describes research methodology as the basic rules or philosophy that governs research. Kombo and Tromp (2009) opine that research methodology deals with the description of the methods applied in carrying out the research study.

3.2 Research Design

The research paradigm was positivist that subscribe to the conviction that there is real nature of things and that this truth can be described and explained correctly by using symbols. This paradigm shows the real nature of things where researchers compare and contrast their propositions and ascertain truth. The basic relationship depicting the trend between cause and effect is assumed to forecast and provide feedback for controlling the real world situations ultimately determining these patterns and trends (Armstrong, 2009). This positivism philosophy addressed a wide range of situations at the same time and may be relevant to policy decisions if statistical data is summed in large samples (Easterby-Smith, et al., 1991).

As observed by Valentine (2006), a positivist perspective has dominated mainstream management research and theory. A broad view concerning the goals and practices of management is assumed. Management is purely an instrumental process, objective, neutral and simply concerned with methods to ensure control and efficiency in Organisations thus supporting positivism. The positivist approach was adopted in order to examine true facts by depending on the responses of smallholder farmers to generate correct information this follows adherence to protocols that research is objective to aid decision making.

A descriptive cross-sectional survey research design was adopted in this study to gather facts to ascertain clarify and describe incidences, distribution, or inter-relationship among the independent, dependent and moderating variables to fully explain the phenomenon involved. The cross-sectional survey research design was utilised since it collects data from several cases at the same time and it ensures that a variety of views over the same issue are captured in a short time increasing the external validity of the study (Wimmer, & Dominick, 2014). The design was used to explain the effect of financial inclusion on utilisation of formal financial services by smallholder farmers in Kenya.

3.3 Location of the Study

The study covered smallholder farmers from Nakuru, Kirinyaga and Busia counties (appendix iii). These locations are within the same livelihood zones although they have different poverty indices. Livelihood zones are areas within which people share broadly the same pattern of livelihood, that is, the same production system - agriculture or pastoralist as well as the same patterns of trade and exchange (Lawrence et al., 2011). The three counties were selected randomly on the basis of the poverty index.

Nakuru County has high yields, with elevation ranging between 1600-2900 meters and has a population of 2,162,202 people (KNBS, 2019). The county is one among those that harbour many different cropping and livestock activities and is viewed as the bedrock of food security in Kenya. An estimated 80% of residents depend on agriculture for their livelihoods, with major farm enterprises among smallholder farmers being maize, beans, Irish potatoes, pyrethrum, vegetables, zero grazed dairy cows, sheep, and goats. It serves as a representative cosmopolitan agricultural county.

Kirinyaga County has a population of 610,411 (KNBS, 2019), covers an area of 1,205.4 km2 (IEBC, 2016) and poverty level of 25.2 per cent The County's Agricultural economy is a mix of agro and livestock farming. Busia County is the gateway to Kenya from neighbouring Uganda. The county spans 1,695 sq. Km (IEBC, 2016) with an average temperature of 22c and rainfall between 750mm to 1,800mm per annum (Busia County CIDP, 2018 - 2022). The county borders Uganda to the north, north-east and west, Lake Victoria to the south west, Siaya to the south and south-east, and Kakamega and Bungoma to the east. Busia County has a population of 893,681 people (47.7% male and 52.3% female) according to the latest 2019

national census. The County's main economic activity is agriculture which practised among the small scale farmers, with production of maize, beans, groundnuts, cassava, sorghum, vegetables and fruits.

3.4 Population of the Study

In this study, the population includes small holder farmers from three counties in Kenya. The target population of 3,666,294 comprised smallholder farmers from Nakuru, Kirinyaga and Busia counties.

3.5 Sampling Procedure and Sampling Size

3.5.1 Sampling Procedure

This section encompasses all the methodological and Organisational aspects of the survey and describes how decisions about these aspects were carried out. This study adopted a survey approach with multistage sampling, which entailed two stages of random sampling based on the hierarchical structure of clusters within the population (Sedgwick, 2015). A survey has been preferred to a census mainly for cost, time and quality benefits (Levine, et al., 2008). The study population was stratified at the national level across counties and at county levels across sub-counties. The counties were grouped across three broad spectrums of poverty indices namely "High", "Medium" and "Low" (Appendix X). This is based on the report on wellbeing in Kenya showing Overall poverty estimates per individual counties (KIHBS, 2017).

Simple random sampling was then done on each county spectrum within the County strata using the lottery method. This resulted into selection of Nakuru, Kirinyaga and Busia counties across the spectrum. At the second stage, two sub-counties were randomly selected within each of the drawn samples. A total of 560 smallholder farmers were then selected using convenience sampling procedure with the guidance of agricultural officers from each of the wards. Convenience sampling is a type of sampling where the first available primary data source was used for the research without additional requirements (Christensen, & Johnson, 2012; Palinkas, et al., 2013). In the present study, the farmers were identified through the agricultural officers from each of the wards. The guiding principle was the smallholder farmers with less than 5 acres of land.

3.5.2 Sample Size

The quality of the sample for quantitative studies depends on how typical or representative, the sample is from the population with respect to the variables of concern in the study. The required sample size was determined using the Kathuri and Pals's (1993) formula following and using the CBK-Fin Access (2016) estimate on utilisation of formal financial services among farmers as 30percent for farmers in the rural areas, thus:

$$n = \frac{\chi^2 Npq}{\sigma^2(N-1) + \chi^2 pq}$$

Where; n = required sample size

N = the given population size

P = population proportion, assumed to be 0.5 (of utilisation of formal financial services)

q = 1- *p*

σ^2 = the degree of accuracy whose value ≤ 0.05

χ^2 = table value for chi-square one degree of freedom at 95% confidence level, that is, 3.841

Thus we obtained as the sample size 560 respondents as the required sample size for smallholder farmers.

Table 6: Sample Size and Distribution

County	Population	Proportion (%)	Sample size
Nakuru	2,162,202	58.97	320
Kirinyaga	610,411	16.65	93
Busia	893,681	24.38	147
Total	3,666,294	100	560

3.6 Instrumentation

The study used questionnaires to obtain both quantitative and qualitative data for analysis. In designing and choosing an appropriate response format, the researcher was guided by the nature of information needed which was specific and technical. The amount of information needed was much but relatively less detailed. The target respondents needed guidance to respond to the questionnaire. The closed-ended questions in the questionnaires were used to generate statistics. The researcher compared different groups with regard to utilisation of

formal financial services by the smallholder farmers; hence the structured questionnaire was essential. It also facilitated consistency of responses among respondents.

The questionnaire required respondents to place certain factors that had been determined as relevant in a particular order according to the criteria indicated. The participants were to make relative judgments against similar characteristics by comparing two or more objects to make a choice among them. As a result, a judgment was made and the ranking of each item was summed up across participants on group rank order. The respondents then graded each statement in the survey-questionnaire using a five point Likert scale. Open-ended questionnaires were used to find out what smallholder farmers think about the formal financial service.

3.6.1 Pilot Study

The pilot study was carried out in Rongai Sub-County within Nakuru County. Kombo and Tromp (2009) and Kothari (2004) describe a pilot test as a replica and rehearsal of the main survey. According to Polit and Beck (2003), a pilot study or test is a small scale version, or trial run, done in preparation for a major study. Dawson (2002) states that pilot testing assists researchers to see if the questionnaire is to obtain the required results.

In addition, Polit and Beck (2003) states that the purpose of a pilot test is not so much to test the research hypotheses, but rather to test protocols, data collection instruments, sample recruitment strategies, and other aspects of a study in preparation for a larger study. The rule of the thumb is that 10% of the sample should constitute the pilot test (Creswell, 2003: Gall, & Borg, 2007). The Pilot test was within the acceptable recommendation. After the pilot study was undertaken, changes were integrated in the questionnaire. The income brackets were increased to accommodate the various income levels of farmers. Some questions not addressing the objectives were also dropped. A pre-test of the questionnaire with 56 respondents was used to establish the validity and reliability of the questionnaire.

3.6.2 Validity of the Instrument

The content validity of a questionnaire, showing to extent to which the items listed in a questionnaire actually address the purpose, objectives, questions and hypotheses of the study was established by expert judgment through the jury technique. The experts in the research

area of interest were asked to assess the relevance of each item in the questionnaire to the study objectives and to rate each item. The rating of all the experts was then pooled and validity of the questionnaire determined through content validity ratio and a value of at least 0.70 was accepted as valid. To ensure that there was face validity, the researcher made the general design and outlook of the questionnaire appealing to smallholder farmers. To control findings based on invalid data, the researcher Standardised the questionnaire, data collection procedures and use of the same data collectors.

The content validity of the document was also calculated through Lawshe's (1975) formula;

$CVR = (Ne – N/2)/ N/2$

Where;

CVR = Content Validity Ratio

Ne = Number of experts evaluated the item essential

N = Number of experts (8 in this case),

Table 7: Validity of the Instrument

Items	Ne	CVR	Interpretation
Demographic factors	6	0.50	Retained
Socio-economic factors	7	0.75	Retained
Institutional factors	6	0.50	Retained
Technological factors	8	0.99	Retained
Product differentiation factors	8	0.99	Retained
Informal financial services	3	-0.25	Removed
Financial literacy	6	0.50	Retained
Utilisation of formal financial services	8	0.99	Retained

Ne= Number of experts evaluated the item essential

N= Number of experts (8 in this case), the items with the CVR bigger than 0.49 remained at the instrument and the rest eliminated

Six out of seven variables were retained while one variable was removed. The content validity ratio is a ratio that assesses the representativeness of the variables in a tool as they relate to the entire range of the questions asked and is important in eliminating or retaining variables and is globally accepted as a method of estimating content validity (Wilson et al., 2012). The content validity index is the average of the content validity ratio of the variables included in the tool for data collection (DeVon, et al., 2007). The variables to be included or excluded are rated according to whether they are rated as essential or not essential by the panellists. When consensus is not reached on a particular variable or item then issues may come up.

Content validity is high if the items in an instrument are representative in type and proportion of the topic of the study. If an instrument focuses on issues which are not related to the title then it is not appropriate or when it ignores certain important issues, or unduly emphasises other issues as compared to others then it is not comprehensive thus hence lacks content validity Lawshe (1975). The item not rated by any of the experts as important and essential has content validity ratio of zero.

According to Zamanzadeh et al. (2015), items with content validity ratio of0.5 to 0.78 can be retained and revised while Polit et al. (2007) suggest that content validity is said to be good if items have 0.78 or higher content validity ratio and have been rated by three or more experts.

The threshold for content validity ratio is 0.5 where an item is retained otherwise removed from the final instrument. Principal component factor analysis was also conducted and the items sought to be validated are those that survived both validity testing and factor analysis.

3.6.3 Reliability of the Instrument

Mugenda and Mugenda (2003) indicate that research instruments are expected to yield the same results with repeated trials under similar conditions. The researcher used Cronbach coefficient alpha (α) to determine the reliability of the instrument. The overall Cronbach coefficient alpha values for the variables were within the acceptable Range α=0.7445. A Cronbach alpha (α) value of 0.6 or less generally indicates unsatisfactory internal consistency reliability. In the social sciences, acceptable reliability estimates above 0.70 (Cram et al., 2014). The demographic factors were not included since they are not perceptual factors.

Table 8: Reliability of the Instrument

Variable	No. of items	C.alpha value
Socio-economic	9	0.581
Institutional	6	0.833
Technology	10	0.663
Product differentiation	7	0.677
Financial Literacy	3	0.776
Utilisation of formal financial services	9	0.697
Overall Alpha	35	0.7445

3.6.4 Factor Analysis

The study performed confirmatory factor analysis using communalities and Eigen values to establish the specific elements that measure the variables of the study, while avoiding highly correlated variables. This process helped to increase the reliability of the research instrument. According to Shenoy and Madan (1994), not all variable factors are statistically important in a research. Factor analysis, therefore, is used to determine the substantive importance of a given variable to the factor, and also to identify and remove hidden constructs or variable items that do not meet the objectives of the study but may not be apparent through direct analysis (Ledesma, & Valero, 2007). On the other hand, communalities were used to indicate the substantive importance of variable factors and convergence, where as a rule of thumb a

loading value of 0.7 is considered satisfactory, but due to the seemingly intractable difficulties of meeting the 0.7 threshold, a loading of up to 0.5 levels is acceptable (Rahim, & Magna, 2005).

3.7 Data Collection Procedures

The researcher obtained the introduction letter from the institute of postgraduate studies, Kabarak University which was used to process the research permit from National Commission for Science, Technology and Innovation (NACOSTI). The researcher was then referred by Nacosti to liaise with respective county commissioners of Nakuru, Kirinyaga and Busia to obtain cover letters from the County Commissioners authorising the administration of the questionnaire. The county commissioners also instructed the officers in the county to provide any necessary assistance to the researcher. This is a major requirement in educational research because it shows that the exercise had been authorised.

Given that, the research conducted was under the oversight of the Ministry of Agriculture and Livestock Development, docket, authority was obtained from the director of agriculture of each county who then referred the researcher to the sub-county directors of agriculture. The sub-county directors of agriculture then introduced the researcher to agricultural extension officers at the ward level who had information regarding the smallholder farmers in the respective wards. Research assistants were also engaged to assist in the administration of the questionnaires. However, before undertaking the actual study, a pilot study was conducted in Rongai sub-county among 56 respondents to pre-test the questionnaire's reliability and validity before final data collection.

A cover letter explaining the purpose of the study was given to the respondents before commencing with data collection. The data was collected using both structured and semi-structured questionnaires which was administered to the small holder farmers through the assistance of agricultural extension officers. The household (smallholder farmer) was taken as the unit of reference because it is by far the chief unit, through which a population anywhere operates for production, sharing of income and consumption Otolo (2013).in an unstructured questionnaire the respondents filled in blanks or wrote their responses to the items in the spaces provided in their own self-constructed words assisted by the research assistants while

in structured fixed-response formats, respondents react in predetermined patterns that portray their feelings on prescribed specific statements.

3.8 Data Analysis

Data was analysed using content analysis of information collected through the questionnaire. Content analysis method was adopted in this research for the open ended questions because it allows qualitative data to be codified in order to derive quantitative scales of various levels of disclosure (Amiruddin, 2007). Content analysis provides a low-cost form of analysis, and data can be measured in an objective, reliable and systematic manner (Amiruddin, 2007). Descriptive analysis was conducted to present the main characteristics of the sample in form frequency distributions. Inferential statistics was employed to test the level of significance of the predictor variables.

To test hypothesis, regression analysis was computed to determine expected relationships between demographic factors, socio-economic factors, institutional factors, technological factors, product differentiation factors and utilisation of formal financial services' variables. Regression analysis provided estimated equation to predict the magnitude of dependent variable and provide the values for the estimated parameter regression coefficients in the regression model.

Correlation analysis was to show the nature and strength of the relationship between the variables. Coefficient of determination was used to measure the amount of variation between the predictor variables and the dependent variable. The researcher used SPSS statistical software in coming up with the statistical analyses for this study. SPSS is one of the most widely available and powerful statistical software packages that covers a broad range of statistical procedures, and allows a researcher to summarise data, determine whether there are significant differences between groups (e.g. ANOVA), examine relationships and associations among variables (e.g., correlation, regression), goodness of fit (e.g. Chi-Square) and graph results (e.g., Bar Charts, Histograms, Normal P-P Plots) (Kirkpatrick, & Feeney, 2003).

3.8.1 Obtaining the Financial Inclusion Index

Utilisation of formal financial services is the measure of financial inclusion. In order to measure financial inclusion index, a comprehensive index was constructed by combining (savings, credit/loan, insurance services, investment, custodian of vital documents) parameters of usage of formal financial services. The responses were captured regarding the usage of various identified financial inclusion indicator variables. The financial inclusion index was then calculated by first converting categorical scores into percentages[1]and obtaining the weighted values. The weighted values were computed by multiplying the individual parameters with the total number of indicators of utilisation of formal financial services which were five (savings, credit/loan, insurance services, investment, custodian of vital documents) as shown below.

$$\text{Financial inclusion index } (Y_i) = \sum_{i=1}^{n} \left(\frac{GiWi}{n}\right)*100 = [(g_1*5+\ldots+g_{10}*5)*100]/n$$

Where;

G_i represents the individual variables index, w_i= the weighted values and n= the total number of variables.

5 represent the total number of indicators of utilisation of formal financial services.

To determine the level of utilisation of formal financial services, the financial inclusion index obtained above was further grouped into four categories as adopted and modified from (Sarma, 2010).

0 = complete formal financial exclusion

1≤low utilisation of formal financial services ≤30

31≤moderate utilisation of formal financial services ≤ 60

60≤high utilisation of formal financial services ≤100

3.8.2 Model Specifications

3.8.2.1 Objective One

The aim of the study was to determine the outcome of the utilisation of formal financial services in four levels (complete formal financial exclusion, low, moderate, high) with the demographic factors. The multinomial logistic regression model was used to analyse the effect of demographic characteristics on the utilisation of formal financial services. The

[1] For Example, if a respondent selected 2 from the Likert scale then the percentage is 2/5x100=40%

model used was appropriate since the dependent variable had more than two categories with several independent variables. The response variable in this study had more than two categories that is complete formal financial exclusion, low formal financial utilisation, moderate and high formal financial utilisation and four independent variables in demographic factors that is age, gender, level of education and marital status Hoshmer and Lemeshow (2000).

The multinomial logistic regression is used in analysis where the response variable is nominal with more than two categories and the predictors are continuous or nominal. It uses the maximum likelihood estimation method to evaluate the capability of the categorical membership (Garson, 2006; Mertler, & Vannatta, 2002; Pedhazur, 1997). The model assumes that there is no normality, linearity or homoscedasticity, the response variables is assumed to be independent from one another in the categories. Also, there should be a linear relationship between the odds ratio and the independent variable and there should not be presence of any outliers in the model (Starkweather, & Amanda, 2002). The multinomial logistic regression model makes use of the odds ratios which are estimators of the predictor variables (Hosmer, &Lemeshow, 2000).

Many researchers have carried out studies on demographic factors and financial inclusion (Ellis et al., 2010).

The study adopted the following logistic regression model;

$$\text{Log}\frac{P(Y4)}{P(Y1)} = \beta_0 + \beta_1 X_1 + \cdots + \beta_4 X_4 + e$$

$$\text{Log}\frac{P(Y3)}{P(Y1)} = \beta_0 + \beta_1 X_1 + \cdots + \beta_4 X_4 + e$$

$$\text{Log}\frac{P(Y2)}{P(Y1)} = \beta_0 + \beta_1 X_1 + \cdots + \beta_4 X_4 + e$$

Where

Y_1 $Y_{2,}$ $Y_{3}$and $Y_{4,}$ = utilisation of formal financial services (zero, low, moderate, and high utilisation of formal financial services)

$X_{1...}X_{4}$ = demographic factors (age, gender, marital status and education level)

β represents the multinomial regression coefficients associated with the Hypothesised explanatory variables i.e. demographic factors.

The procedure for multinomial logistic regression normally makes the last category of the dependent variable as the reference category which in the case of this study is the complete formal financial exclusion with is coded as 0. To begin with the low financial utilisation is regressed with complete formal financial exclusion as the reference category, secondly the medium and thirdly the high formal financial utilisation respectively compared to the complete financial exclusion (Biju, 2016). The statistical significance of the coefficients of the predictor variables was tested using the Wald statistic which is the standard for logistic regression unlike the p-values in linear regression and other statistical tests.

3.8.2.2 Objective Two

This study sought to determine the effect of socio-economic factors as a predictor in this case to utilisation of formal financial services. To achieve this objective, a continuous dependent variable was used hence the multiple linear regression model was appropriate to predict the uptake of formal financial services with income, occupation and land size as our predictors. The model is adopted as used by (Zakaria, & Sabri, 2013).

$$Y_{i=} \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e \dots \dots \dots \dots \dots (ii)$$

Where;

$Y_i$represents the financial inclusion variable, β represent the regression coefficients and X_1 is the income, X_2 represents the occupation and X_3 is the land size and these are the socio-economic variables.

In analysis for the multiple linear regressions, the coefficients of regression are estimated using the ordinary least squares method technique (OLS) (Field, 2009). The beta coefficients of the explanatory variables were important in explaining the significance of the independent variables in predicting the utilisation of formal financial services. It is also important to note that significant difference between the variables under this study will be tested using the Analysis of Variance, F-Values and the degree of association of the predictors and the dependent variables were tested using the chi-square test of association. Furthermore, to test

the individual significance of each of the independent variable in predicting the utilisation formal financial services, student's independent t-test was appropriate. R-squared was important in explaining the extent of variance accounted for in the linear regression model.

3.8.2.3 Objective Three

Using the financial inclusion index as scalar dependent variable and the group membership as the predictor variables, the study used simple linear regression model to predict how the institutional factors determine the uptake of formal financial services using the financial inclusion index (Mung'atu, et al.., 2014) and (Sorensen 2015) The model is as presented below; -

$Y=\beta_0 + \beta_1 X_1 + e \ldots\ldots\ldots\ldots\ldots\ldots\ldots (iii)$

Where;

Y represents the financial inclusion index, β are the regression coefficients and X_1 is the group membership and is the predictor.

e = the standard normal error.

3.8.2.4 Objective Four

To examine the impact of technological factors in the utilisation of formal financial services, a multiple linear regression was used. The multiple linear regression model is used since the financial inclusion index was continuous and the independent variable that is the technological factors are ordinal and measured in a five point Likert scale. The model is as follows as used (Biju, 2016; Agufa, 2016).

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + e \ldots\ldots\ldots\ldots\ldots\ldots (iv)$$

Where

Y represents the financial inclusion

B represent the regression coefficients

X's represent the predictor variables

e represents the standard normal error with a mean zero and a constant variance.

We assume the input variables are uncorrelated from one another.

3.8.2.5 Objective Five

To determine the extent at which product differentiation influences the uptake/utilisation of formal financial services the multinomial regression model was appropriate. The multinomial logistic regression model is appropriate since the response variable has more than two outcomes with several independent variables. In this study, the dependent variable has more than two categories that is complete formal financial exclusion, low formal financial utilisation, moderate and high formal financial utilisation We grouped the utilisation of formal financial services into complete formal financial exclusion, low, medium and high utilisation of formal financial services categories in this objective determination with regard to the product differentiation which were the interest rates, collateral, repayment grace period, and terms of loan measured on nominal levels.

The multinomial logistic regression is used in analysis where the response variable is nominal with more than two categories and the predictors are continuous or nominal. It uses the maximum likelihood estimation method to evaluate the capability of the categorical membership, (Garson, 2006; Mertler, & Vannatta, 2002; Pedhazur, 1997). The model assumes that there is no normality, linearity or homoscedasticity, the response variables is assumed to be independent from one another in the categories. Also there should be a linear relationship between the odds ratio and the independent variable and there should not be presence of any outliers in the model (Starkweather, & Amanda, 2002). The multinomial logistic regression model makes use of the odds ratios which are estimators of the predictor variables. (Hosmer, &Lemeshow, 2000).

The model is as shown below;

$$\text{Log}\frac{P(Y4)}{P(Y1)} = \beta_0 + \beta_1 X_1 + \cdots + \beta_4 X_4 + e$$

$$\text{Log}\frac{P(Y3)}{P(Y1)} = \beta_0 + \beta_1 X_1 + \cdots + \beta_4 X_4 + e$$

$$\text{Log}\frac{P(Y2)}{P(Y1)} = \beta_0 + \beta_1 X_1 + \cdots + \beta_4 X_4 + e$$

Y_1, Y2, Y3 andY_4, =utilisation of formal financial services that is, low, moderate, and high utilisation of formal financial services, with low utilisation of formal financial services as the reference category.

$X_{1...}X_4$ = product differentiation that is interest rates, collateral, repayment grace period and terms of loan.

B represents the multinomial regression coefficients associated with the Hypothesised explanatory variables i.e. product differentiation factors.

Since the study is focused on determining the significance of product differentiation predicting the utilisation of formal financial services in four levels of outcome, complete financial exclusion, low, medium and high financial inclusion, the study adopted the multinomial logistic regression model which normally takes the first category as the reference category and hence complete financial exclusion which was coded as 0 was used as the reference category in this case. First, the low financial inclusion in regressed with independent variables with complete financial exclusion as the reference category. Secondly, the medium and high financial inclusion is regressed with complete formal financial exclusion as the reference category respectively.

3.8.2.6 Objective Six

To determine the effect on financial literacy as a moderating variable between the predicting variables and the utilisation of formal financial services. The moderating variable in this case financial literacy was applied in each variable in pursuit to achieve every objective. Financial literacy indicators in this study are financial attitude, financial knowledge and financial behaviour measured on a five-point Likert scale (1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree). Using the three indicators of financial literacy, a composite financial literacy index was computed using the geometric mean formula as shown below.

$(\prod W_i)^{1/n} = \sqrt[n]{W_1 * W_2 * \ldots * W_q}$

Where $\prod$ is the product factor, W_i is the weight of each indicator for i=1, 2, q

The model adopted for the moderating variable is as follows as used by (Fall, 2016)

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_1 X_2 + e \ldots\ldots\ldots\ldots (i)$For multiple linear regression models

$\text{Log}\frac{P(Y4)}{P(Y1)} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_1 X_2 + e \ldots\ldots\ldots\ldots\ldots$(ii) for logistic regression models.

Where Y is the utilisation of formal financial services, X_1 is the independent variable for main effects, X_2 is the moderating variable, financial literacy, and X1X2 is the interaction factor between the predictor and financial literacy. This study adopted a macro process by Andrew Hayes for moderation where the mean centering and the standardization of variables are computerised (Hayes, 2015).

3.8.3 Significance for the Model Assumptions

Diagnostic tests help in verifying the nature of the data and specifying the model applicable for the study in order to ensure that the regression results are unbiased, consistent and efficient (Yihua, 2010). This study carried out relevant diagnostic tests before model estimation. The diagnostic tests will be designed to check the assumptions regarding the ordinary least squares (OLS) for the regression model. In this study statistical procedures were performed to determine whether the regression assumptions hold. According to Williams et al. (2013), the assumptions include normality, homoscedasticity and multi-collinearity. The multinomial logistic regression model adopted the following assumptions that the dependent variable is dichotomous, there are no outliers, linear relationship between the odds ratio and independent variable.

3.8.4 Test for Normality

An assumption of the ordinary least square regression model that impacts the validity of all tests is that residuals behave normal, Oscar (2007). This study used the Shapiro wilk test, a non-graphical test for normality and the normal p-p plots and histograms with superimposed normal curve to graphically test for the normality of the residual errors. The shapiro wilk test was used to test the null hypothesis that the distribution of the residuals was not normal (Oscar, 2007). If the p-value of the test is greater than the significance level,0.05 i.e. ($p>0.05$), the study rejected the null hypothesis that the residual errors are not normally distributed at 95% level of significance and therefore concluded that the residuals were normally distributed. The visual impression of the normality of the residual errors using normal p-p plot showed that the residual errors are normal if the data points are close to the line of best fit.

3.8.5 Test for Multi-collinearity

This study conducted multi-collinearity test to check whether there is a correlation among independent variables. Multi-collinearity occurs when two or more independent variables in a regression model are highly, but not perfectly correlated. The greater the multi-collinearity between two variables, the less precise is the estimates of individual regression parameters (Rubinfeld, 2010). The study employed the VIF and tolerance factor to test for multi-collinearity. The tolerance statistics values of below 0.10 (1/VIF< 0.10) would indicate a problem with multi-collinearity (Oscar, 2007). The study also employed the reciprocal of tolerance also known as variance inflation factor (VIF) to check for multi-collinearity. The variance inflation factor shows how much the variance of the coefficient estimate is being inflated by multicollinearity (Belsley, et al., 1980). Therefore, a variance inflation factor more than 10 would indicate extreme presence of multi-collinearity that is the variables are more collinear therefore translating a large standard error of OLS estimators making it difficult to arrive at the true value of the estimator.

3.8.6 Test for Heteroscedasticity

This is a test for variance of residuals in the models to be used. Heteroscedasticity refers to the condition where the dependent variable has unequal level of variability for each of the values of the independent variables (Williams *et al.,* 2013). It causes the standard errors of the estimators to be biased. It is a situation where the variance of the residuals is not constant across all the observations. Ordinary least squares inference is generally faulty in the presence of heteroscedasticity since standard errors will be biased resulting to biased inference. Presence of heteroscedasticity violates the OLS homoscedasticity assumption which may translate to large confidence interval levels an implication that t-test will result to inaccurate and misleading statistical inference. The study employed Levene test.

3.8.7: Data Analysis and Test of Hypotheses

Table 9: Study Hypotheses and Analytical Models

No	Objective	Hypothesis	Analytical model	Interpretation of output of the analytic method
1	To determine the influence of demographic (age, gender, education and marital status) factors among small holder farmers on utilisation of formal financial services	H_{01}: there is a significant relationship between demographic factors and utilisation of formal financial services	To use multinomial regression model $\text{Log}\frac{P(Y4)}{P(Y1)} = \beta_0 + \beta_1 X_1 + \cdots + \beta_4 X_4 + e$ $\text{Log}\frac{P(Y3)}{P(Y1)} = \beta_0 + \beta_1 X_1 + \cdots + \beta_4 X_4 + e$ $\text{Log}\frac{P(Y2)}{P(Y1)} = \beta_0 + \beta_1 X_1 + \cdots + \beta_4 X_4 + e$ Where: Y_1, Y_2, Y_3, Y_4 = utilisation of formal financial services (uffs) in four categories of complete formal financial exclusion, low utilisation of formal financial services, moderate utilisation of formal financial services and high utilisation of formal financial services β are the multinomial regression coefficients X_1= age X_2 = gender X_3 = education X_4= marital status	Goodness of fit tests for the data fitness, if p-value >0.05 the model does fit well Model fitting information explains whether the full model statistically significantly fits and predicts the dependent variable better than the intercept alone. Likelihood ratio test, the effect column of the independent tests how they are statistically significant. Parameter estimates which represents the coefficient of the model has dummy variables

2	To determine the effect of socio-economic factors among small holder farmers on utilisation of formal financial services	H_{02}:socio-economic factors have a significant effect on formal utilisation of financial services	To use multiple regression analysis; $Y_{i=} \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e$ Where Y = utilisation of formal financial services (uffs) β_0 intercept constant β_1= regression coefficient of social-economic factors X_1, X_2, X_3= composite index of social economic factors e = error term	R^2 to assess how much of the dependent variable variation is due to its relationship with independent variable F-test(Anova) to assess the overall significance of the model T-test to determine individual significance of the relationship Chi-square to test the degree of association between the variables 2-tailed correlation to test the relationship between the variables in a normal distribution.
3	To determine the effect of institutional factors among smallholder farmers on utilisation of formal financial services	H_{03}:there is no significant effect of institutional factors on utilisation of formal financial services	To use simple regression analysis $Y=\beta_0 + \beta_1 X_1 + e$ Where Y = utilisation of formal financial services (uffs) β_0=intercept constant β_1 = regression coefficient of institutional factors X_1.....X_4 = Group membership e = error term	R^2 to assess how much of the dependent variable variation is due to its relationship with independent variable F-test(Anova) to assess the overall significance of the model T-test to determine individual significance of the relationship Chi-square to test the degree of association between the variables 2-tailed correlation to test the

				relationship between the variables in a normal distribution.
4	To examine the extent of technological factors among small holder on utilisation of formal financial services	H_{04}: there is no significant relationship between technological factors and utilisation of formal financial services	To use multiple regression analysis $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + e$ Where Y = utilisation of formal financial services (uffs) β_0 intercept constant $\beta_{1\ldots}$ β_5 = regression coefficient of technological factors $X_{1\ldots}X_5$ = composite index of technological factors e = error term	R^2 to assess how much of the dependent variable variation is due to its relationship with independent variable F-test(Anova) to assess the overall significance of the model T-test to determine individual significance of the relationship Chi-square to test the degree of association between the variables 2-tailed correlation to test the relationship between the variables in a normal distribution.
5	To determine the influence that product differentiation has on the utilisation of formal financial services among small holder farmers.	H_{05}: product differentiation influences the uptake of formal financial services	To use multinomial regression analysis $\text{Log}\frac{P(Y4)}{P(Y1)} = \beta_0 + \beta_1 X_1 + \cdots + \beta_4 X_4 + e$ $\text{Log}\frac{P(Y3)}{P(Y1)} = \beta_0 + \beta_1 X_1 + \cdots + \beta_4 X_4 + e$ $\text{Log}\frac{P(Y2)}{P(Y1)} = \beta_0 + \beta_1 X_1 + \cdots + \beta_4 X_4 + e$ Where Y = utilisation of formal financial services (uffs)	Goodness of fit tests for the data fitness, if p-value >0.05 the model does fit well Model fitting information explains whether the full model statistically significantly fits and predicts the dependent variable better than the intercept alone. Likelihood ratio test, the effect column of the independent tests how

			β_0= intercept constant β_{1-} β_4 = regression coefficient of product differentiation X_1 - X_4 = composite index of product differentiation e= error term	they are statistically significant. Parameter estimates which represents the coefficient of the model has dummy variables
6	To determine the moderating influence of financial literacy on the utilisation of formal financial services among small holder farmers.	H_{06}: Financial literacy has no moderating influence on the uptake of formal financial services	$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_1 X_2 + e$ Where Y is the utilisation of formal financial services, X_1 is the independent variable, X_2 is the moderating variable, financial literacy, and X1X2 is the interaction factor between the predictor and financial literacy.	Goodness of fit tests for the data fitness, if p-value ≤0.05 the model does have a moderating effect on the independent variable

Table 10: Hypothesised effects of Explanatory Variables on Utilisation of Formal Financial Services

Variable	Definition and units	Supporting Literature	
Household characteristics (xi)	.		Effects/expected sign
Age	Age of small holder farmer in years (continuous)	Ellis et al., (2010),	(+/-)
Gender	Gender of the small holder farmer nominal (male = 1, female =2)	(Elissa, 2006).	(+/ -)
Education level	Education level of the small holder farmer, categorical (1=no school 2=primary 3=secondary 4=tertiary 5=university)	Johnson and Arnold (2012	(+)
Marital status	Marital status of small holder farmer, categorical 1=Married living with spouse 2=Divorced 3=Separated	Wachira and Kihiu (2012)	(+/ -)

	4=Widow/Widower 5=Never Married		
Household size	Household size in numbers (continuous)	(Kumar, et al. 2018).	(+)
Financial literacy	Training of small holder famer, logical (1=yes 2=no)	Carpena et al. (2011) (Van Rooij et al., 2011a).	(+/-)
Income	Source of Income	Chithra and Selvam (2013) Park and Mercado (2015)	(+)

The Hypothesised effects of explanatory variables on utilisation of formal financial services (Table 10) are in line with studies carried out. Ellis et al., (2010), using 2009 survey data observed that age had a positive statistical significant relationship with access to credit from banks and Saccos whereas other studies give conflicting results. Studies have shown that gender is positively or negatively correlated to the use of formal financial services. The study found that factors such as being a woman, living in a rural area or having a low income and educational level may reduce the likelihood of being included in formal financial system. On education, Johnson and Arnold (2012) noted that education was strongly associated with the likelihood of bank use.

Wachira and Kihiu (2012) established that there is a positive coefficient showing that a married person has higher probability of accessing financial services than a non-married person, indicating that there is a low probability of a married person remaining financially excluded. Studies have also indicated that the sizes of households with low level of education are financially excluded (Kumar, et al 2018). The smallholder farmers that earn more income can access formal finance. This is in line with the study by Park and Mercado (2015) who found out that per capita income affects financial inclusion. It is also clear from Carpena et al. (2011) that financial education does not help individuals to interpret advanced financial information. However, studies also depict that there is a positive relationship between financial literacy and planning and saving for retirement. (Van Rooij, et al., 2011a).

3.9 Ethical Considerations

The study was conducted while considering the rights and welfare of the participants. The researcher provided participants with information on the purpose of the research so that they understood the nature of the study and its likely impact on them, on the expected duration of participation in the study, and on the procedure followed in the study. Voluntary informed consent was sought from each individual respondent for consent for research participation. The respondents were given adequate information and implication of the study through the introduction letter to make informed decision as to whether to participate in the research or not. This was to ensure that the principle of autonomy and respect for persons was adhered to. Also under informed consent the researcher provided information on any benefits that may accrue to the subjects or participants from the study. As regards privacy and confidentiality

the respondents were assured that information provided and data collected will not be passed to a third party unless with their express permission.

CHAPTER FOUR
DATA ANALYSIS, PRESENTATION AND DISCUSSION

4.1 Introduction

This chapter presents the findings and discusses the results with reference to specific research objectives. The study sought to establish the effect of financial inclusion on utilisation of formal financial services by smallholder farmers in Kenya. The specific objectives were to determine the influence of demographic (age, gender, education and marital status) factors, socio-economic (household income) factors, institutional (group membership) factors, technological factors and product differentiation on utilisation of formal financial services among small holder farmers. The data was collected from smallholder farmers in Busia, Nakuru and Kirinyaga counties. Descriptive analysis conducted presented the main characteristics of the sample. Inferential statistics were employed to test the level of significance of the predictor variables. The results were tabulated and conclusions made either to reject or accept the null hypotheses at 5% significance level.

4.1.1 Response Rate and Distribution

The response rate 88.57percent indicates that the distribution is given in the Table 11.

Table 11: Response Rate among Respondents

County	Target	Achievement	% Achievement
Busia	127	113	76.87%
Nakuru	320	292	91.25%
Kirinyaga	93	91	97.85%
Total	560	496	88.57%

The initial sample for the study was 560 small holder farmers. However, a total of 496 respondents were interviewed across the three agrarian counties of Nakuru 91.25percent Busia 76.87percent and Kirinyaga 97. 85percent.Ideally, the target sample comprised of 560 small holder farmers and these results indicate 88.57%achievement rate, which is within acceptable limits (Table 11). The response rate of a survey, which is the percentage of people invited to the survey who actually completed the interviews meaningfully, provides an indication of how respondents perceive the study to be beneficial to them. On the other hand, the higher the response rate the more minimal the non-response bias. Non-response bias

implies the error resulting from distinct differences between respondents to a survey and those who did not respond (Fosnacht, et al., 2017).

This high response rate could be attributed to good logistical preparations prior to and during the field work by the research team, which enhanced social acceptability of the enumerators by potential respondents and facilitated their movement in the study sites. From both overt and covert field observations, this study was of remarkable relevance to the respondents. As such, it aroused much interest and expectations among many potential respondents to participate in the study.

4.2 Descriptive Statistics

Descriptive statistics of the population and variables under investigation were first computed in order to obtain a general glimpse of the data trends.

4.2.1 Demographic Factors and Utilisation of Formal Financial Services

4.2.1.1 Age Groups of Small Holder Farmers

The study sought to determine the demographic characteristics of the respondents so as to establish the basic features of the sample. Demographic variables for the study included age, gender, marital status, education level and household size. The results on age are presented in Table 12.

Table 12: Age Groups of Small Holder Farmers

		County			Total	
		Busia	Nakuru	Kirinyaga		%
Age group	18-30 years	9	37	0	46	9.3%
	31-40 years	22	63	21	106	21.4%
	41-50 years	29	75	24	128	25.8%
	51-60 years	31	54	18	103	20.8%
	> 60 years	22	63	28	113	22.8%
Total		113	292	91	496	100.0%

The modal age group of respondents which was involved in small holder farming was 41-50 years (Table 12). The modal age group varied across the counties considerably. In Busia, farmers were mostly in the 51-60 years' age group; in Nakuru, 41-50 years' age group was the most prominent; whilst in Kirinyaga a majority of small holder farmers interviewed were above 60 years of age. In Kenya, the main method of land acquisition is inheritance. It is the

culture of most Kenyan communities to bequeath their male offspring land (mostly agricultural land), either at the demise of his father or upon attaining middle age (about 35-50 years), and especially with a family.

This could explain the reason why the younger age group of 18 -30 years commanded a dismal sample proportion of only 9.3percent (Table 12). Further, the exhibited modal class represents the real case, where most farmers begin to implement gainful agriculture upon formal acquisition of land. Land ownership, whether formal (evidenced by a title deed) or informal facilitates the realisation of property usage rights. A land owner can access credit facilities better (collateral effect), implement long term investments on the land (security or investment effect) or transfer land to more productive producers (factor mobility or transaction effect).

4.2.1.2 Gender Distribution of the Respondents

Apart from age, respondents also indicated their gender. Results are presented in Table 13.

Table 13: Gender of Respondents across Counties

		County			Total	
		Busia	Nakuru	Kirinyaga		%
Gender	Male	45	172	61	278	56.0%
	Female	68	120	30	218	44.0%
Total		113	292	91	496	100.0%

Fifty-six percent (56%) of the small holder farmers in the sample were male whilst the rest were females (Table 13**)**. Whereas nationally there are more women (22,498,000) than men (21,870,000), our sample shows that fewer women than men engage in small holder farming, which is the mainstay of most Kenyans in the three counties. This result is in line with national statistics on wage employment in the agricultural sector which indicates male dominance at 66% (KNBS, 2017). Gender distribution across the counties also varied significantly (Table 4.3). There was male dominance across the counties sampled with the exception of Busia where females comprised 60.2% of respondents. Gender distribution is an important socio-cultural construct that brings to fore the differences in roles, functions, entitlements and deprivation of men and women.

The level of financial inclusion of women in agriculture is directly correlated to their level of participation in this sector. Intensive small holder faming in Kenya is less mechanized hence highly laborious. This aspect puts women at a disadvantage compared to men owing to their unique physiological make up. In addition, most women in Kenya are not culturally entitled to land inheritance limiting their access to and rightful ownership of farming land. Whereas gender equity, which implies equal access to resources and benefits by women and men, is always desirable it remains a vision in the context of small holder agriculture. It would be prudent for the moment to advance marital status equity in small holder farming, which refers to equivalence in the outcomes for women and men while recognizing roles, need and interests. This could be achieved by mainstreaming marital status aspects in agricultural policies and activities and building capacity and accountability at each level of operation. It has been shown in other studies that women out-perform men with regards to uptake of micro-financial products (Elissa, 2006). In theory, this would imply that if women were more than men among small holder farmers then uptake of micro-financial services would relatively increase.

4.2.1.3 Marital Status of the Respondents

Another demographic characteristic for the study was marital status of respondents. Results on marital status is presented in Table 14 below.

Table 14: Marital status among small holder farmers

		County			Total	
		Busia	Nakuru	Kirinyaga		%
Marital status	Married living with spouse	86	229	75	390	78.6%
	Separated	2	6	4	12	2.4%
	Widow/widower	23	41	9	73	14.7%
	Single	2	16	3	21	4.2%
Total		113	292	91	496	100.0%

Most respondents (78.6%) were married and living with their spouses. Whereas there was no incidence of divorce among respondents, 2.4percent described themselves as separated from their spouses. Widow(er) hood was second to marriage with a significant overall proportion of 14.7%. Research has shown that marital status plays a crucial role in financial access

(Ololade, & Olagunju, 2013). When respondents are separated according to their respective counties, the results show that the highest proportions of the married and separated were within Kirinyaga county, the highest proportion of the widowed within Busia county, while most single persons' proportion was in Nakuru county. The strong family integration witnessed could be attributed to prevailing indigenous African culture and religious beliefs which are pro-family and to which many Kenyans subscribe. Marital status is very prominent in tenancy, employment applications and practices and membership of Organisations or associations. A family that stays together in a stable relationship can easily mobilize their resources and improve their welfare much better than a disintegrated or single family. Studies have shown that married people have a significant social wellbeing advantage over non-married cohabiters (Adam & Corey, 2008). The fact that more respondents were married could imply an advantage on social well-being which can lead to better management and utilisation of mobilized financial resources through existing institutions and channels.

4.2.1.4 Highest Level of Education of the Respondents

Table 15: Highest Level of Education of Household Head

		Frequency	Valid percent	Cumulative percent
Education Level	No school	62	12.5	12.5
	Primary	227	45.8	58.3
	Secondary	158	31.9	90.1
	Tertiary college	43	8.7	98.8
	University	6	1.2	100
	Total	496	100	

A majority (45.8%) of respondents had various levels of basic (primary) education with 12.5% completely illiterate. Only 1.2percent of small holder farmers were university graduates. There were very minimal variations in education levels across the counties. In all the counties, primary education was the modal level for all respondents. Nationally, the median number of years of schooling completed is 6.3 years for males and 5.8 years for females; which translates. In Kenya, education is often perceived as a ladder towards white collar jobs because these jobs require particular levels of literacy or standards of education. Majority of Kenyans possess basic formal education or no education at all; there is minimal presence of small holder farmers as you progress up the education ladder. The years of

education and the quality of education are key determinants of lifestyle and social status in a society (KDHS, 2014). By extension, education has been seen to increase prospects for gainful employment, decrease poverty and increase innovations (Richard, 2013; Eaea, 2010). When financial education is integrated in the learning process, studies have shown an improvement in uptake of financial services (OECD, 2006). In line with this, the low educational level among small holder farmers is apt to result into low uptake or access to financial of services.

4.2.1.5 Household Size of the Respondents

The household refers to a group of people who make common provision of food, shelter and other essentials for living (UN, 2017). The household is a very important socio-economic unit since decisions on the number of children, education, health care, consumption, labour, migration and savings and investments occur at this level. The household size and composition therefore influences key economic outcomes and characteristics of families and could provide an indication of the dependency ratio.

Table 16: Household Size

Size of House Hold				
	1-5	6-10	11-15	Total
Busia	62	50	1	113
Nakuru	212	78	2	292
Kirinyaga	73	17	1	91
Total	347 (69.96%)	145 (29.23%)	4 (8.06%)	496 (100%)

The mean household size in our sample was 4.57. This implied about 5 members living together and it ranged from a minimum of 1(one) to a maximum of 15 persons. Nationally, the mean household size is 4.0 (DHS, 2014) and it has been observed to be declining over the years since 1969 when Kenya had an average household size of 5.3 persons. Across the three counties the modal household size ranged between 1 and 5 people in a family in this study with an average percentage of 69.96percent while Nakuru had the highest number (212) followed by Kirinyaga (73) and Busia (62). Studies indicate that the sizes of households with low level of education are financially excluded (Kumar, et al., 2018).

4.2.2 Socio Economic Factors and Utilisation of Formal Financial Services

The study also sought to evaluate the effect of socioeconomic factors on utilisation of formal financial services. The socioeconomic variables for the study include land size and income.

4.2.2.1 Descriptive Data for Socioeconomic Factors

The socioeconomic variables for the study, land size and income were evaluated for the selected farmers across the three counties and their results presented in Table 17.

Table 17: Household Land Tenure

County	Household land tenure	Frequency	Percent
Busia	Communal	5	4.4
	Self-owned	107	94.7
	Leased	1	0.9
	Total	113	100
Nakuru	Communal	9	3.1
	Self-owned	192	65.8
	Leased	91	31.2
	Total	292	100
Kirinyaga	Communal	32	35.2
	Self-owned	50	54.9
	Leased	9	9.9
	Total	91	100

Results show that majority of respondents (94%) in Busia County owned the land as opposed to, 65.8percent 54.9percent in Nakuru and Kirinyaga counties. Busia County had the least number of respondents who leased land whilst Nakuru County had the highest number of respondents. Communal land ownership exhibits itself more in Kirinyaga County. These findings suggest that most respondents in Kirinyaga are not able to use ownership documents as security for loan. Studies show that land is used as collateral for formal credit (Migheli, 2016).

Since the focus of the study is on financial utilisation by small holder farmers, the respondents were asked to indicate their income sources. The results are presented in Table 18

Table 18: Average Annual Income

County	0 = not applicable	<=20,000	20,001-30,000	30,001-40,000	40,001-50,000	Total
Busia	0	110	3	0	0	113
Nakuru	7	247	32	4	2	292
Kirinyaga	0	71	17	2	1	91
Total	7	428	52	6	3	496

The results show that majority of the respondents earn less than Ksh. 20,000 from food crops, cash crops, livestock, fish and business. Economic activities for Nakuru and Kirinyaga counties are mainly food and cash crops whilst Busia County's economic activity is fish farming. Cash crop farming brings in more revenue compared to both food crop and livestock farming. In fact, 45.3% of the respondents earn more than Ksh. 60,000 from cash crop farming. The respondents who earn income from employment receive over Ksh. 60,000. Income from business is also over Ksh. 60,000 and this is mainly in Nakuru and Kirinyaga counties. The implication of this is that smallholder farmers that earn more income can access formal finance. This is in line with the study by Park and Mercado (2015) who found out that per capita income affects financial inclusion.

We noticed that levels of income are very significant in predicting the utilisation of formal financial services as per the descriptive statistics. The higher the income level the higher the potentiality of accessing the formal financial services and this implies for instance that famers who earn above Ksh 60,000 obtain their income from business and employment hence have a consistent cash flow thus have more ability for accessing the formal financial services.

4.2.3 Institutional Factors influencing the Utilisation Formal Financial Services

The study also sought to evaluate the influence of institutional factors such as group membership and the household size on utilisation of formal financial services.

4.2.3.1 Descriptive Data for the Institutional Factors

The respondents were asked to indicate if they belonged to any farmers group. The results are presented in Table 19.

Table 19: Membership in Farmer Group(s) by County

			County				
			Busia	Nakuru	Kirinyaga	Total	Chi-Square (P-value)
Do you belong to any farmer group	Count	Yes	75	117	14	206	
	Perc (%)		66.4	40.1	15.4	41.53	
	Count	No	38	175	77	290	
	Perc (%)		33.6	59.9	84.6	58.47	54.591
Total	Total		113	292	91	496	(0.000)
Do you belong to any other group if not farmers' group	Count	Yes	36	85	7	128	
	Perc (%)		48	72.6	50	62.1	
	Count	No	39	32	7	78	
	Perc (%)		52	27.4	50	37.9	12.473
Total	Total		75	117	14	206	(0.002)

The results in Table 19 suggest that overall, majority 290 (58.47%) of the small holder farmers did not belong to any particular farmers group. However, of the 206 (41.53%) who belonged to a farmers' group, majority (66.6%) were from Busia County and Nakuru County (59.9%). However, in comparison, majority (84.6%) of the small holder farmers in Kirinyaga County did not belong to farmers' groups. The results in Table 4.16 also indicate that majority (62.1%) of the farmers were members of other groups that were not necessarily farming related. The findings in both instances were significant ($p = 0.000$). However, curiously, the study also established that majority (62%) of the farmers who reported belonging to at least one farmer group incidentally held membership in other non-farmer affiliated group(s) as shown in Table 20.

Table 20: Membership to Farmers Groups on Non-Farmer Groups

		Do you belong to any other group if not farmers' group		Total
		Yes	No	
Do you belong to any Farmer(s) group	Frequency	128	78	206
	Percentage (%)	62	38	100
	Total	128	78	206
	Chi-Square	44.113	P-Value	0.000

It was also important to establish whether group membership was related to other demographic and socioeconomic factors of the farmers. The results are given in Table 21.

Table 21: Group(s) Membershipby Demographics and Socio-Economic Factors

		Do you belong to any farmer group		Total	Chi-Square (P-value)
	Category	Yes	No		
Gender	Male	110	168	278	1.005
	Female	96	122	218	(0.316)
Age group of respondent	18-30 years	8	38	46	
	31-40 years	34	72	106	
	41-50 years	54	74	128	
	51-60 years	55	48	103	23.311a
	> 60 years	55	58	113	(0.000)
Marital status of the household head	Married	157	233	390	
	Separated	5	7	12	
	Widow/Widower	40	33	73	9.921a
	Single	4	17	21	(0.019)
Education level	Illiterate	23	39	62	
	Primary	92	135	227	
	Secondary	70	88	158	
	Tertiary	18	25	43	1.275a
	University	3	3	6	(0.866)
Land Size in acres (Acres)	One	84	137	221	
	Two	62	59	121	
	Three	34	41	75	
	Four	14	23	37	14.037a
	Five	12	30	42	(0.041)
Household land tenure	Communal	12	34	46	
	Self-owned	173	176	349	31.696a
	Leased	21	80	101	(0.000)

The results in Table 21 suggests that membership to farmers' groups was significantly ($p \leq 0.05$) related to age group, marital status, land size and household land tenure. However, gender and education level did not significantly influence subscription to farmer's groups (p

> 0.05). Further, it was evident that farmers were significantly inclined to join farmers' groups as they grew older - 41 years and above. Also more married farmers than unmarried were more likely to join farmers' groups. Farmers also tended to significantly decrease their affiliation to farmers' groups as their acreage increased. Finally, farmers with self-owned land tenures were significantly likely to join farmers' groups than those whose tenure was on communal or leasehold basis.

These findings agree with Asante et al. (2011) who found that several factors such as age and farm size contributed to the decision of farmers to join farmers' groups in Ghana. They also agree with Kimutai and Chepchumba. (2016) who found out that marital status and size of farm under cultivation were significant determinants of small scale farmer's decision to join farmer based Organisations. However, they disagree with Asante et al. (2011) who found that income influenced farmers' group membership and also disagree with Kimutai and Chepchumba. (2016) who established that education level and gender significantly contributed to farmers' decision to join farmers' groups. Consequently, the study sought to find out the groups which they subscribed to apart from farmers' groups. The results are given in Table 22.

Table 22: Non-farmer's Groups Subscribed to by Farmers

Group	Gender of Respondents				Total		Chi-Square (P-value)
	Male		Female				
	Freq	Perc (%)	Freq	Perc (%)	Freq	Perc (%)	
Chama	12	17.1	3	5.2	15	11.7	
Elders' group	4	5.7	0	0.0	4	3.1	
Self-help group	48	68.6	39	67.2	87	68.0	16.870
Volunteer group	0	0.0	1	1.7	1	0.8	(0.05)
Welfare group	3	4.3	4	6.9	7	5.5	
Women's group	0	0	10	17.2	10	7.8	
Youth group	3	4.3	1	1.7	4	3.1	
Total	70	54.7	58	45.3	128	100.0	

The results in Table 22 indicate that the gender of the farmers was significantly ($p \leq 0.05$) related to their subscription to non-farmer group membership. In particular, more males (54.7%) than females (45.3%) tended to be affiliated to non-farmer membership groups. Majority (68%) of the small holder farmers subscribed to self-help groups that were not necessarily affiliated to farming. The other non-farmer groups commonly subscribed to by the farmers were *Chamas* (11.7%) and women's groups (7.8%) respectively. The study also

sought to find out the services they received from the groups and, hence, the respondents were also asked to rate the services they received from farmer groups.

Table 23: Services Received from Farmers' Groups

Service(s)	Never	Seldom	Sometimes	Often	Always	X^2	P-value
Knowledge in farming	3.4	2.4	25.7	36.9	31.6	106.72	0.000
Table banking/ Merry - go- round	20.4	4.4	10.2	43.7	21.4	93.08	0.000
Group guarantee for loans	54.4	1.5	16.5	20.4	7.3	175.02	0.000
Financial literacy training	24.3	10.7	36.9	26.2	1.9	77.79	0.000
Market information and access	32	17.5	23.8	24.8	1.9	52.98	0.000
Bulk purchase of inputs	55.3	7.3	10.7	23.3	3.4	183.76	0.000

From the results in Table 23 it is evident that majority (68.5%) of the small scale farmers benefited from table banking/merry-go-round facilities in their farmers' groups more often than any other facility. However, most of the farmers' groups also often provided their members with knowledge on farming (65.1%) and financial literacy training (28.1%). Other benefits included group guarantee of loans (27.7%), market information and access (26.7%) and bulk purchase of inputs (26.7%). These findings, interestingly suggest that access to credit/loan facilities were not necessarily the prime motivators for farmers joining the farmers' groups as compared to other benefits derived from membership to farmers' groups in the three counties.

These results failed to agree with those of Asante et al., (2011) who found out that, farmers join famer based Organisations to access to credit/loans through the same farmers based Organisation which increases production and income. The findings that membership to farmers' groups enabled farmers to make bulk purchases of inputs, however, concurs with Asante et al. (2011) finding that farmers joined farmer based Organisations if they can access to machinery services.

4.2.4 Technological Factors Influencing the Utilisation of Formal Financial Services

It was also important to evaluate the influence of technological factors on utilisation of formal financial services. Technological factors evaluated were; mobile phone ownership, use

of mobile phones to access formal financial services and perceived benefits of technology in to access formal financial services

Table 24: Mobile Phone Ownership among Respondents

		Frequency	Percent	Valid percent	Cumulative percent
Valid	Yes	475	95.8	95.8	95.8
	No	21	4.2	4.2	100
	Total	496	100	100	

The respondents were asked if they own a mobile phone. The results show that 95.8percent of the respondents own a mobile phone. This falls within the same range of 96percent by the communication commission of Kenya (CCK, 2015). Those without a mobile phone are 4.2percent

Table 25: Ownership of Mobile Phone across Demographic Patterns

		Do You Have A Mobile Phone		Total	Chi-Square
Demographic	Category	Yes	No		(P-value)
Gender	Male	273	5	278	9.252a
	Female	202	16	218	0.002
Age Group of	18-30 years	43	3	46	
Respondent	31-40 years	103	3	106	
	41-50 years	126	2	128	17.431a
	51-60 years	102	1	103	0.002
	> 60 years	101	12	113	
Marital Status of	Married	379	11	390	
The Household	Separated	11	1	12	10.576a
Head	Widow/Widower	65	8	73	0.014
	Single	20	1	21	
Education Level	Illiterate	49	13	62	
	Primary	219	8	227	
	Secondary	158	0	158	52.252a
	Tertiary	43	0	43	0
	University	6	0	6	
County	Busia	103	10	113	
	Nakuru	283	9	292	7.823a
	Kirinyaga	89	2	91	0.02

The high levels of mobile phone ownership led to study to seek to establish whether the farmers used their mobile phones to receive communication on formal financial services (banks, mobile money, microfinance Sacco). The results are given in Table 26.

Table 26: Use of Mobile Phones to Access Formal Financial Services

	Never	Seldom	Sometimes	Often	Always
Use	Freq (%)	Freq (%)	Freq (%)	Freq (%)	Freq (%)
Depositing	39(8)	32(7)	157(32)	175(35)	72(15)
Withdrawals	31(6)	13(3)	147(30)	206(42)	78(16)
Paying for utilities like electricity, water	261(53)	6(1)	39(8)	149(30)	20(4)
Buying goods	197(40)	17(3)	81(16)	165(33)	15(3)
Paying school fees	425(86)	6(1)	18(4)	12(2)	14(3)

The results in Table 26 indicate that majority of the farmers used their mobile phones for paying school fees for their children (86%). The mobile phones were also largely used for paying for utilities like electricity, water (53%) and purchase of goods (40%). Most farmers seldom used their mobile phones for formal banking services like depositing and withdrawals.

Table 27: Demographic Use of Mobile Phones to Access Formal Financial Services

Demographics	Use of Mobile Phones for Access of Formal Financial Services				
	Deposits Chi-Square (P-value)	Withdrawals Chi-Square (P-value)	Utilities Chi-Square (P-value)	Purchases Chi-Square (P-value)	Paying Fees Chi-Square (P-value)
Gender	12.007a 0.017	8.953a 0.062	8.298a 0.081	32.555a 0.000	7.309a 0.12
Age group of respondent	37.988a 0.002	23.225a 0.108	31.325a 0.012	35.168a 0.004	19.833a 0.228
Marital status of the household head	26.269a 0.01	5.384a 0.944	16.552a 0.167	27.214a 0.007	8.446a 0.749
Education level	49.656a 0.000	31.117a 0.013	62.905a 0.000	40.190a 0.001	28.452a 0.028
Household Size	49.946a 0.249	50.556a 0.231	71.797a 0.005	61.380a 0.043	69.537a 0.008
County	202.138a 0.000	214.738a 0.000	95.892a 0.000	146.095a 0.000	49.623a 0.000

It is evident from Table 27 that the use of mobile phones to access formal financial services was significant across the demographics of the farmers. In particular, mobile phones were significantly used to access formal financial services across the three counties ($p \leq 0.05$) and also across the education levels ($p \leq 0.05$). However, there were variations regarding the use of mobile phones to access financial services across the other demographics; mobile phone use for access to financial services was across gender of the farmers was significantly associated with deposits, purchases and payment of fees ($p \leq 0.05$). Across the age groups, the use of mobile phones was significantly associated with deposits, utilities and purchases ($p \leq 0.05$) while in terms of marital status; mobile phone use was significantly associated with deposits

and purchases ($p \leq 0.05$). Household size mobile phone use was significantly associated with utilities, purchases and payment of bills ($p \leq 0.05$).

An analysis of a survey of mobile phone ownership and usage across Kenya in 2009 showed that distinct regional, gender-associated, and socioeconomic variations existed with mostly low ownership among rural communities and poor people (Wesolowski, et al., 2012). The most recent studies have shown that the gap between those with mobile phones and those without seems to have narrowed in Kenya as compared with other regions. - global findex data, (2017) suggest that mobile phones could go a long way toward helping to surmount some of the barriers that hinder unbanked adults from accessing financial services. The implication of having a mobile phone is beneficial since it brings within reach a wider range of financial services through mobile based money platforms.

Table 28: Perceived Benefits of Technology

Response (%)	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Chi-square	P-values
Technology is good for making life easy	0.4	0.4	2.8	58.5	37.9	111.14	0.000
Technology changes too quickly for me to keep up	5.8	25	26.8	37.3	5	53.79	0.000
I do not like learning how to use new technology	32.9	40.9	18.1	6	2	75.11	0.000
I like to learn about new ways technology is being used	1.4	5	19.4	46.4	27.8	115.77	0.000
I would feel disconnected without technology	2.8	3	4.8	50.2	39.1	54.41	0.000
Using technology is one of my favourite things to do	1.8	8.3	30.4	42.5	16.9	123.41	0.000
Technology enables me keep in touch with my friends and family	1.4	0.8	2.4	46.6	48.8	74.42	0.000
Technology makes me worry about the privacy of my information	16.5	15.9	17.3	38.1	12.1	56.21	0.000
Technology makes it easy for me to easily access information regardless of where I am	1	1.6	5.4	50.6	41.3	78.33	0.000
Technology has had little impact in my life	71.2	17.1	6.5	3.8	1.4	96.52	0.000

The findings in Table 28 indicates that although majority of respondents (58.5%) agree that technology is good for making life easy at the same time, 37.5percent agree that it is changing too quickly for them. 40.9percent of respondents seldom do not like learning on how to use new technology. Similarly, 46.4percent of the respondents often like to learn about new ways technology is being used. Whereas 50.2percent of respondents would often feel disconnected without technology, 42.5percent of the respondents often prefer using technology as one of their favourite things to do. 46.6% of the respondents indicate that technology often enables them keep in touch with their friends and family 38.1percent of the respondents said that technology makes them worry about the privacy of their information 50.6percent of the respondents' technology makes it easy for them to easily access information regardless of where they are. 71.2 percent of the respondents pointed strongly disagree that technology has had little impact in their lives. These findings suggest that respondents embraced the use of technology to enhance utilisation of formal financial services.

4.2.5 Product Differentiation Factors and Utilisation of Formal Financial Services

The fourth objective of the study was to examine how product differentiation factors influenced the utilisation of formal financial services. The findings are presented and discussed as follows.

Table 29: Ownership of Account with Banks of Formal Financial Institutions

County	Response	Frequency	Percent	Chi-square (p-values)
Busia	Yes	38	33.6	
	No	75	66.4	99.48
	Total	113	100	(0.000)
Nakuru	Yes	156	53.4	
	No	136	46.6	149.49
	Total	292	100	(0.000)
Kirinyaga	Yes	70	76.9	
	No	21	23.1	87.12
	Total	91	100	(0.000)

Respondents from Kirinyaga County seem to embrace usage to formal financial services more compared to Busia and Nakuru counties. This variation in account ownership is attributed to different income groups (Demirguc-Kunt, et al., 2018). The unbanked in Busia, Nakuru and Kirinyaga counties were reported to be 66.4percent 46.6percent and 23.1percent respectively. These findings imply that majority of the farmers in the areas were still unbanked and as such had limited access to banking services. The findings, consequently, agree with a study by Mbugua (2013) factors determining access to credit facilities for farmers in Cherangany constituency in Trans- Nzoia County which found that farmers in the area had limited access to credit services, a situation which has constrained the agricultural development in this expanse.

The findings, further, indicated that lending institutions have inadequate products for meeting credit needs of the farming society since the yardstick they use to assess their creditworthiness is same with all applicants from other sectors. Commercial banks were found to have no specific products designed for farmers and above all, most of the credit conditions are too difficult for farmers to meet. Interest rates charged by the banks and collateral requirements largely restricted them from seeking loans from these sources. The most common type of bank account held by the small holder farmers was the savings account as shown in Table 30. This is collaborated by the findings in the study by Ouma, et al. (2017) which showed that lower income earners and the poor who have mobile phones are likely to save more.

Table 30: Types of Bank Accounts Used by Farmers

Account type	Frequency	Percent	Chi-square	P-values
Current account	19	7.2	45.44	0.000
Savings account	244	92.4	103.66	0.000
Fixed account	1	0.4	4.42	0.461
Total	264	100		

The study first sought to establish the formal financial services used mostly by the small holder farmers. The results are given in Table 31.

Table 31: Formal Financial Services Frequently Used by Small Holder Farmers

Source	Frequency	Percent (%)	Chi-square	P-values
Bank-ATM	157	31.7	111.14	0.000
Bank-teller/counter	243	49	53.79	0.000
Mpesa	472	95.2	75.11	0.000
Airtel money	26	5.2	11.67	0.423
Bank agent	191	38.5	54.41	0.000
Mobile money agent	451	90.9	123.41	0.000
Sacco	83	16.7	74.42	0.000
Microfinance	10	2	115.77	0.000
Internet banking	10	2	0.912	0.332

It is evident from the results in Table 31 that the most commonly used formal financial service by the small holder farmers in the country was mobile money service Mpesa (95.2%) and their agents (90.9%). Other commonly used formal financial services were over the counter bank transactions (49%) and bank agents (38.5%). These findings show the preference of smallholder farmers to use digital platforms. This is supported by Ozili (2018) in his study which portray that digital finance is preferred because as opposed to manual paperwork and bank hall queuing.

4.2.6 Financial Literacy as a Moderating Effect Variable

Financial literacy was measured in terms of the following determinants; financial training and the benefits of the training. Following Andrew Hayes Macro process for moderation Hayes (2015), the study adopted mean centre for the variables to reduce the effect of multi-collinearity and the multiplicative effect (the interaction effect) of financial literacy variable and the predictor variable was used to determine the effect of the moderating variable in the utilisation of formal financial services by the predicting variables.

4.2.6.1 Descriptive Statistics on Financial Literacy

The study first sought to establish whether the small holder farmers had received financial training. The results are given in Table 32.

Table 32: Financial Training

		Frequency	%	Mean	Std dev.
Training	Yes	200	40.3	1.60	0.491
	No	296	59.7		
Total		496	100		

The findings in Table 32 reveal that 40.3% of the respondents obtained financial literacy training compared to the 59.7% of the respondents who did not get any financial training. The study shows that a larger percentage and frequency that is of small holder farmers across Busia, Nakuru and Kirinyaga counties have not received any financial training.

Table 33: Benefits of Financial Training

	Frequency	%	Mean	Std. dev
Increased awareness of bank products	67	33.5	1.97	0.873
Learnt new methods of farming	81	40.5		
Learnt about using new technology	46	23.0		
Learnt about how to market the produce	3	1.5		
Others	3	1.5		
Total	200	100		

Table 33 indicates that 33.5% of the small holder farmers who obtained financial literacy training portrayed increased awareness of bank products, 40.5% learnt new methods of farming from the financial literacy training, 23% learnt about using new technology while 1.5% both learnt about how to market the produce and others respectively. From the distribution of the valid percentage it's evident that most farmers benefited by learning new methods of farming followed by having increased awareness of bank products and then closely followed by learning about new technology.

4.2.7 Utilisation of Formal Financial Services Offered by Banks

The respondents were also asked to rate their levels of utilisation of formal financial services offered by their banks. The results are presented in Table 34.

Table 34: Utilisation of Formal Financial Services Offered by Banks

Purpose of Utilisation	Most frequently	Frequently	Moderate	Seldom	Never
Deposits	10.6	45.8	36.7	6.4	0.4
Cash withdrawals	9.1	43.9	36	10.6	0.4
Accessing loans	1.1	4.2	18.9	7.6	68.2
Input loan	1.9	5.3	1.9	90.9	0
Insurance	0.4	2.3	1.1	2.3	93.9
Financial literacy	0.4	2.7	6.8	1.9	88.3
Investment opportunities	0.8	1.9	4.5	2.7	90.2
Safe documents	0	0.4	1.5	3	95.1
Pension	1.1	2.3	0.8	0.8	95.1

Majority of the respondents who utilise formal financial services prefer deposit and savings as opposed to accessing loans. In fact, over 50percent of respondent's deposit and savings compared to about 1percent who use the services for accessing loans. Overall, savings accounts for low income households demonstrate strong potential to improve client welfare. Often the beneficial impacts of savings accounts require account features that help people overcome behavioural biases such as fortifying willpower and memory (Dupas, & Robinson, 2013a). Another interesting finding is that majority of the smallholder farmers do not use the other indicators of financial inclusion like insurance, financial literacy, investment opportunities, safekeeping of documents and pension.

The respondents who never use insurance services are 93.9%, this is in line with the study by Karlan et al. (2016) which argued that despite the potential of insurance products to provide a "risk floor" for farmers and encourage higher productivity investments and behaviour, uptake at market prices is extremely low so micro insurance is not at scale anywhere except when heavily subsidized by the government. Since majority of respondents have primary education, they do not have documents for safe keeping in banks. Their education level also inhibits their ability to seek loans for investment opportunities other than farming. Additionally, the respondents earn an income of less than ksh 20,000 and this income prohibits them from contributing to pension scheme. With family sizes about 5 members, an income of about Ksh. 20, 000 is only sufficient to support family livelihood.

4.2.8 Satisfaction with the Financial Services Offered by Banks

The study also sought to establish whether the respondents were satisfied with the financial services offered by their banks. The results are given in Table 35.

Table 35: Respondents' Satisfaction with Financial Services Offered by their Banks

County	Response	Frequency	Percent
Busia	Yes	27	70.8
	No	11	29.2
	Total	38	100
Nakuru	Yes	116	74.3
	No	40	25.7
	Total	156	100
Kirinyaga	Yes	61	86.8
	No	9	13.2
	Total	70	100

The results in Table 35 suggest that majority of the respondents in all the three counties were satisfied with the financial services offered by their banks. Kirinyaga county, in particular, had the most respondents (86.8%) indicating that they were satisfied with services offered by the bank. These findings agree with Levesque and Mcdougall (1996) who pointed out that customer satisfaction and retention are critical for retail banks. Customer satisfaction in the banks was determined as service quality dimensions (e.g. Getting it right the first time), service features (e.g. Competitive interest rates), service problems, service recovery and products used. However, service problems and the bank's service recovery ability have a major impact on customer satisfaction and intentions to switch.

Those that were not satisfied were asked what the bank should do to improve its services. The reasons that they gave are; financial literacy, improve on customer care, increase amount to be borrowed, increase bank products, lengthen repayment period, reduce the long queues, reduce account maintenance, reduce collateral, reduce interest rate on credit and simplify loan application procedures.

4.2.9 Level of Difficulties in Using of Formal Financial Services

The respondents were asked to rate some of the reasons giving them difficulties in using formal financial services. The results are summarised in Table 36.

Table 36: Level of Difficulties in Using of Formal Financial Services

Response	Very great	Great	Moderate	Small	Not at all
Repayment period	27.82	27.82	20.16	17.94	6.25
Not aware of services	22.18	11.9	18.55	40.73	6.65
Fear of failure	64.52	15.12	6.45	11.9	2.02
Distance in accessing financial institutions	5.85	12.5	17.74	57.46	6.45
Source income	9.88	13.1	26.81	37.9	12.3
Gender preferences	0.4	0	3.83	93.35	2.42
Unsuitable bank products	11.29	4.23	8.06	72.58	3.83
Document requirements	19.56	9.07	6.05	62.9	2.42

The results in Table 36 indicate that majority (55.64%) of the respondents perceived the repayment period as too restrictive to allow them to obtain financial services such as loans. However, it was evident that most of the respondents were quite aware of the services available in the financial institutions (47.32%), therefore, indicating that information access was not presenting a barrier. The findings also indicate that majority (79.64%) feared failure to access the products probably due to their inability to meet the financial institutions requirements for the products such as collateral. Distance in accessing the financial institutions, however, did not present a challenge to most respondents (63.91%). Other findings indicate that majority (50.2%) were of the view that their sources of income did not hold them back from accessing financial services while gender preferences (95.77%) did not present difficulties in accessing financial services. Majority (76.41%) acknowledged that the financial products was not a hindrance to them while accessing financial services, similarly, 65.32percent reported that providing the required documents did not hinder them from accessing the services.

From the findings it is evident that the perceived the repayment period and uncertainty over their eligibility for the financial services were the major difficulties the respondents had in accessing the financial services while the other reasons only presented minimal difficulties at best in accessing the services. These findings disagree with Fin Mark Trust (2016) whose study in the SADC region established that gender affects financial inclusion even after controlling for individual characteristics suggesting existence of gender biases in the region. The results also disagree with Masiyandimay et al. (2017) whose study in Zimbabwe

established that income, financial literacy and the geographical presence of financial institutions are the major determinants of financial inclusion. The findings also fail to concur with Kempson (2006) who outlines barriers such as identity requirements, the terms and conditions of bank accounts, levels of bank charges, physical access problems underlying reasons or typologies of financial exclusion.

4.2.10 Usage of Loans from Formal Financial Institution

There was also need to establish whether the respondents had received any loans from formal financial institution in the last three years. The results are given in Table 37.

Table 37: Loans from Formal Financial Institution

	Frequency	Percent (%)
Yes	85	17.1
No	411	82.9
Total	496	100

The results in Table 37 indicate that majority (82.9%) of the farmers had not received any loans from formal financial institution in the last three years. This was attributed to several reasons as indicated in Table 38.

Table 38: Reasons for not Procuring Loans from Formal Financial Services

Reasons	Frequency	Percent (%)
Alternative sources	31	6.3
Farming is risky	5	1
Fear of loss of property	70	14.1
High interest rate, fear of loss of property	6	1.2
High interest rates	26	5.2
Lack of collateral	22	4.4
Loans are too risky	5	1
No bank account	31	6.3
No project to finance	39	7.9
Not applied for loan	46	9.3
Not aware of bank products	24	4.8
Not aware of bank products, fear of loss of property	5	1
Not interested	21	4.2
Short repayment period	6	1.2
Unstable income	16	3.2
Others	143	28.9
Total	496	100

The most common reason for not procuring loans from formal financial services according to most farmers was fear of loss of property as indicated by 14.1% of the respondents. Other common reasons were failure to apply for loans (9.3%) and having no project to finance (7.9%). Still, there were some who did not have any bank account and hence could not get bank loans (6.3%).

Table 39: Training Service Provider

	Frequency	%	Mean	Std. deviation
Commercial banks	50	10.1	3.76	1.884
SACCOs	18	3.6		
MFIs	7	1.4		
AFCs	2	0.4		
Government agents	101	20.4		
NGOs	22	4.4		
Total	200	40.3		

The results in Table 39 show that 20.4percent of the small holder farmers were trained by government agents like agricultural extension officers, followed by 10.1percent of the farmers who were trained by commercial banks, 4.4percent were trained by the NGOs, 3.6percent of the farmers were trained by the SACCOs, 1.4percent were trained by the Microfinance institutions and finally 0.4percent received training from Agricultural finance corporations.

4.3 Inferential Statistics

The study sought to establish the degree of strength or strength of association between the independent variables; demographic factors, socio-economic factors, institutional factors, technological factors, product differentiation and informal financial services and the dependent variable, that is, utilisation of formal financial services in the counties under study influenced by financial inclusion. The study sought to find the significance of the predictor variables in determining the dependent variable. This is done with respect to the multinomial regression model and multiple linear regression model used in achieving each objective of the study as per the independent variable.

4.3.1 Diagnostic Tests of the Multiple Regression Models

4.3.1.1 Test for Normality

This study adopted Shapiro-Wilk and Kolmogorov-Smirnov methods. Table 40 presents results of Shapiro-Wilk, and Kolmogorov-Smirnov tests and the graphical normal p-p and normal q-q plots for the visual impression of the normality of the residuals.

Table 40: Normality Test

	Shapiro-Wilk test		Shapiro-Francia	
Variable	P-value	Z-value	P-value	Z-value
Financial utilisation	0.0000	9.963	0.0000	9.121
Age	0.3286	0.444	0.4025	0.247
Gender	0.9994	-3.245	1	-60.509
Marital status	0.0000	5.990	0.0153	2.161
Household size	0.0000	6.543	0.0000	5.748
Education	0.0022	2.845	0.3689	0.33517
Occupation	0.1139	1.206	0.0000	-
Income	0.0000	7.487	0.0000	6.845
Land size	0.0000	7.237	0.0000	6.445
Institutional	0.0000	7.083	0.0000	4.892
Technology	0.0000	4.518	0.0000	4.328
Product differentiation	0.0006	3.237	0.0026	2.783

The data presented in Table 40 reveal that the Shapiro-Wilk and Shapiro-Francia statistics for most of the study variables were greater than 0.5 hence the distribution is normal.

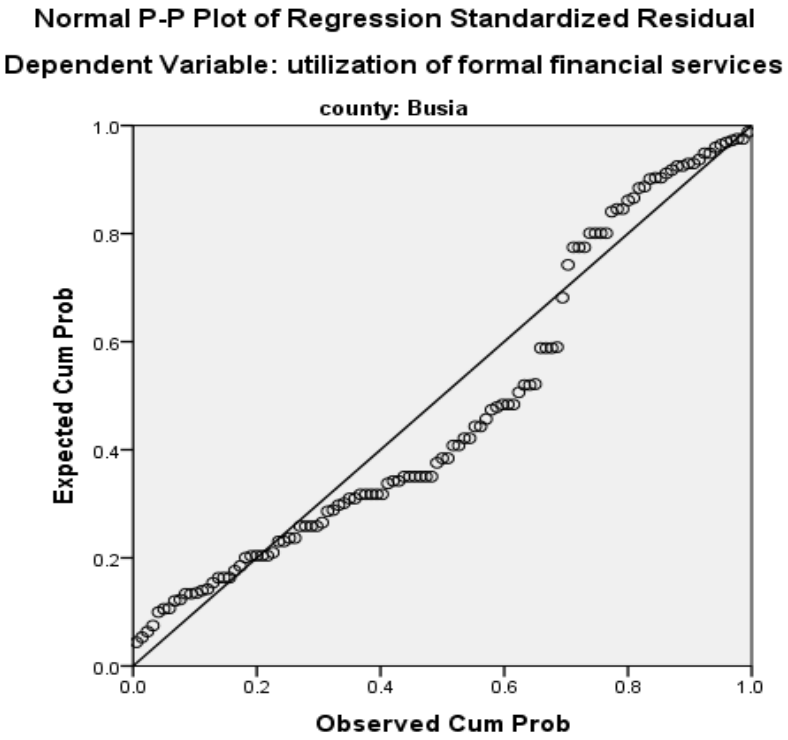


Figure 3: Normal P-P Plot of Regression Residual for Utilisation of Formal Finance
Source :(SPSS output)

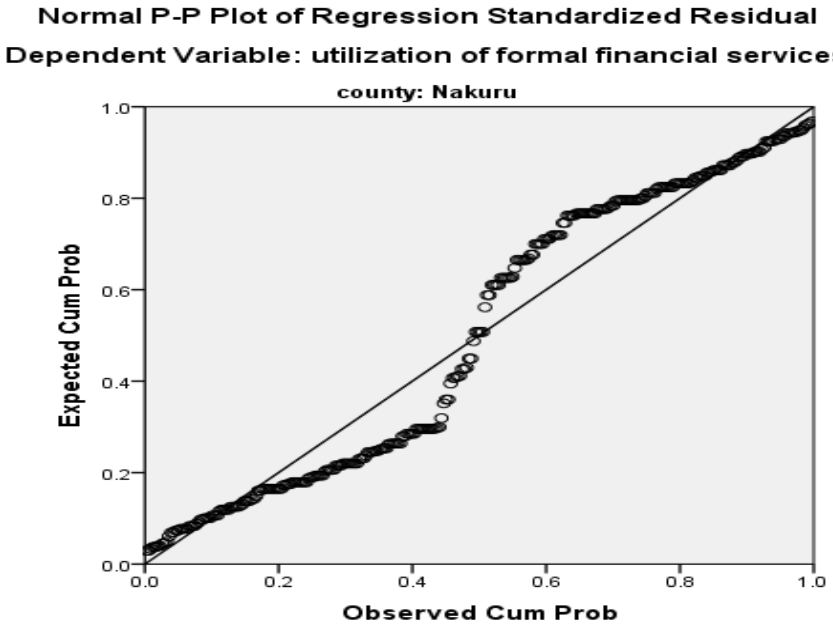


Figure 4: Normal P-P Plot of Regression Residual for Utilisation of Formal Finance

Source :(SPSS output)

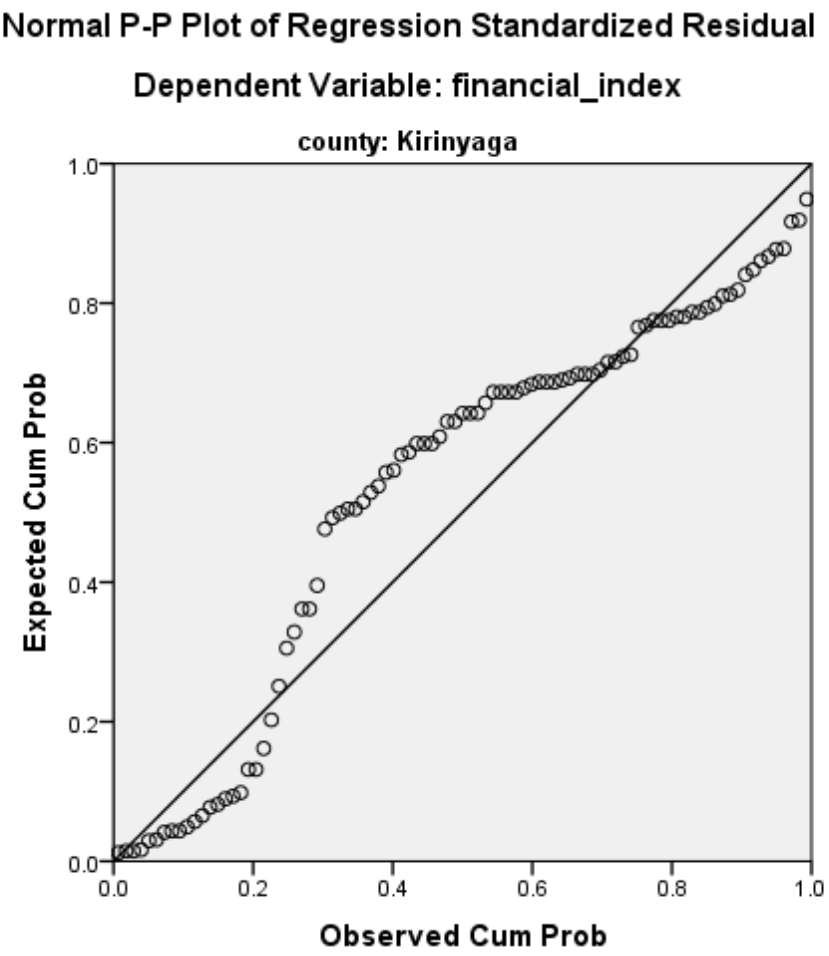


Figure 5: Normal P-P Plot of Regression Standardised Residual for Utilisation of Formal Finance
Source :(SPSS output)

The figures 3 to 5 above for the normal p-p plots show that the residuals are normally distributed for Busia, Nakuru and Kirinyaga counties respectively since the data points are close to the line of best fit hence the assumption that e ~ n (0, constant variance).The skewness and kurtosis test for the distribution of demographic factors in appendix (IX) revealed that age, gender and education were approximately symmetric with skewness value of -0.115, 0,244 and 0.408 respectively which falls in the range of -1/2 and +1/2 hence age, gender and educated were approximately normally distributed. However, marital status was skewed to the right with a value of 1.541 thus it is highly skewed since it is greater than 1. For a normal distribution the kurtosis = 3 and excess kurtosis = 0. Kurtosis is used to explain the tail of the distribution and since the distribution of the demographic factors in the study is approximately normal, the interpretation lies that the tails of the distribution are shorter and thinner and the central peak is lower and broader, Bowmath (2016).

4.3.1.2 Homogeneity of Variance

Homoscedasticity (homogeneity of variance) is based on the assumption that the dependent variable exhibits similar amounts of variance across the range of values for an independent variable (hair, et al., 1998). To test for homoscedasticity, a Levene test for equality of variance recommended by Levene (1960) was computed using one-way ANOVA procedure.

Table 41: Homogeneity of Variance

Variable	Levene statistic	Df1	Df2	Sig.
Age	5.672	4	491	0
Gender	2.733	1	494	0.099
Marital status	3.55	3	492	0.014
Education level	41.319	4	491	0
Land size	18.296	4	487	0
Average annual income	6.324	17	466	0
Group services	8.973	20	184	0
Technology index category	82.43	3	492	0
Product differential index	60.733	8	486	0
Financial literacy	10.872	1	494	0.001

The Levene values for the independent variables tested against the dependent variable (utilisation of formal financial services) were statistically significant except gender. This shows that the variances between the independent variables and independent variables are equal.

4.3.1.3 Multi-collinearity

The study undertook multi-collinearity test by means of variance inflation factor (VIF) subsequent to checking of the tolerance values. A tolerance value of more than 0.1 for all the independent and dependent variables indicates no multi-collinearity while a VIF of more than 10 (VIF = 10) indicates a problem of multi-collinearity (Field, 2009).

Table 42: Multi-collinearity

Variable	Collinearity statistics	
	Tolerance	VIF
Age	0.852	1.174
Gender	0.741	1.349
Marital status	0.768	1.303
Education level	0.697	1.434
Land size	0.917	1.09
Average annual income	0.757	1.32
Group services	0.93	1.075
Technology index category	0.749	1.334
Product differential index	0.236	4.229
Financial Literacy	0.296	3.375

All the variables had a variance inflation factor of less than 10 and a tolerance value greater than 0.1, ruling out the possibility of multi-collinearity (field, 2009). The results, therefore, implied non-existence of a multi-collinearity problem among the variables and hence the level of multi-collinearity in the model could be tolerated.

4.3.2 Correlation Analysis

Cohen (1998) interprets coefficients less than 0.5 to be weak correlation and coefficients above 0.5 to be strongly correlated. However, coefficients of 1.00 shows perfect correlation

Table 43: Correlation Matrix for Demographic Factors, Socio-Economic Factors, Institutional Factors, Technological Factors and Financial Literacy

Variable	Age	Gender	Marital status	Education	Income	Occupation	Land size	Group membership	Security of info.	Technology impact	Financial literacy	Financial inclusion
Age	**1**											
Gender	-.037	**1**										
Marital status	.095*	.281**	**1**									
Education	-.226**	-.213**	-.178**	**1**								
Income	-0.110*	-0.153**	-0.119**	0.272**	**1**							
Occupation	0.084	-0.114*	-0.048	-0.017	.036	**1**						
Land size	0.035	-0.014	-0.029	0.053	.087	.021	**1**					
Group membership	0.147**	0.072	0.027	0.038	-0.062	0.062	0.066	**1**				
Security of info.	-0.030	-0.024	0.013	0.154**	0.116**	-0.125**	-0.049	0.001	**1**			
Technology impact	-0.087	0.016	-0.004	-0.014	0.193**	0.016	0.105*	-0.067	.007	**1**		
Financial literacy	-0.082	-0.027	0.000	0.090*	-0.221**	-0.033	-0.045	-0.074	0.047	-0.039	**1**	
Financial inclusion	**.112***	**-.208****	**-.181****	**.360****	**.317****	**-.146****	**.085**	**-.094***	**.102***	**-.085**	**0.047**	**1**

Generally, there is weak significant correlation between age and the utilisation of formal financial services. Gender and the utilisation of formal financial services are weakly correlated while marital status has a weak negative relationship with the utilisation of formal financial services as well as education.

The correlation analysis for the socio-economic factors show that average income is significantly weakly correlates with the utilisation of formal financial services. Other occupation of the farmers has significant negative weak correlation with the utilisation of formal financial services which means utilisation of formal financial services for agricultural purposes decreased among those who had alternative occupations apart from farming. There is insignificant weak correlation between land size and utilisation of formal financial services for the general model.

Further, the findings depict that there is a significant weak correlation between the group membership and utilisation of formal financial services. Moreover; the findings indicate that there is a significant weak positive correlation between technology quality and the utilisation of formal financial services. On the other hand, there is a weak insignificant correlation between the impact of technology and the utilisation of formal financial services.

Table 44: Correlation Matrix for Product Differentiation Factors

	Interest Rate	Collateral	Payment Period	Not Aware Services	Fear Failure	Distance Accessing	Source Income	Gender Preferences	Unsuitable Bank Products	Documentation Requirement	Utilisation of formal financial services
Interest Rate	**1**										
Collateral	.521**	**1**									
Payment Period	.567**	.518**	**1**								
Not Aware Services	-.197**	-.045	-.022	**1**							
Fear Failure	.459**	.432**	.463**	.088	**1**						
Distance Accessing	-.074	-.004	.148**	.406**	.220**	**1**					
Source Income	-.001	-.011	-.018	-.179**	-.142**	-.140**	**1**				
Gender Preferences	-.017	.051	.006	.030	.035	.071	.164**	**1**			
Unsuitable Bank Products	.247**	.332**	.350**	-.166**	.161**	-.140**	.266**	0.212**	**1**		
Documentation Requirement	.206**	.403**	.281**	-.121**	.226**	-.187**	.247**	0.133**	0.651**	**1**	
Utilization of formal financial services	.060	-.054	-.024	-.123**	-.044	.060	.030	-0.107*	-0.168**	-0.137**	**1**

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

The correlation matrix in Table 44 show that there were insignificant weak positive correlations between interest rates, distance accessing and source income respectively with the utilisation of formal financial services. Collaterals, payment method, fear failure had insignificant weak negative correlations with the utilisation of formal financial services respectively. Further, there were significant weak negative correlations between not aware services, gender preferences and unsuitable bank products and the utilisation of formal financial services respectively.

4.3.3 Factor Analysis

The factor analysis for technological factors results are presented in Table 45

Table 45: Technological Factors

Factor loading of technological factors		
	Initial	Extraction
Technology Good	1.000	.494
Technology Changes	1.000	.195
Don't Like Learning technology	1.000	.674
Learning Technology	1.000	.679
Technology Disconnected	1.000	.617
Technology Favourite	1.000	.630
Technology Friends	1.000	.578
Technology on Privacy	1.000	.795
Extraction Method: Principal Component Analysis.		

In the independent variable, technological factors, the variable indicator with highest factor loading was Privacy resulted to increased utilisation of formal financial services" with factor loading of 0. 795. While the item with the lowest factor loading was changes in technology with factor loading of 0.195. This item was dropped from the analysis. The remaining items were therefore retained for further analysis.

4.3.4 Regression Analysis

The regression results have the R^2 which is interpreted as the coefficient of determination as refers to the amount of variance explained by the predictor variables in the model. The F-

values used to test the overall significance of the model and the t-values that test individual significance of the independent variables. The p-values are the basis of rejection of the null hypothesis at 0.05 level of significance. The regression coefficients of each of the independent variables estimated by the ordinary least squares method.

4.3.4.1 Multi-nomial Logistic Regression for Demographic Factorson Utilisation of Formal Financial Services

The study sought to determine the influence of the demographic factors on utilisation of formal financial services. The demographic factors were measured in terms of age, gender, marital status and level of education. The response variable in this case utilisation of formal financial services was categorised into four levels; 0 = complete financial exclusion, 1 $\leq$low utilisation of financial services $\leq$33, 34 $\leq$moderate utilisation of financial services $\leq$ 66 and 67 $\leq$ high utilisation of financial services $\leq$100. The complete financial exclusion was used as the reference category in this regard.

To test the relationship, the following null hypothesis was formulated;

H_{01} = there is no significant relationship between demographic factors and utilisation of formal financial services by the small holder farmer.

Table 46: Results for Multinomial Logistic Regression

		Busia	Nakuru	Kirinyaga	Overall
Age		0.019	0.151**	-0.017	0.112*
Gender		-0.297**	-0.121*	-0.171	-0.208**
Marital status		-0.259**	-0.122*	-0.275**	-0.181**
Education		0.378**	0.367**	0.343**	0.360**
Model	Intercept	104.647	202.440	64.123	305.472
	Final	50.524	135.310	41.932	181.456
χ^2		16.645*	59.414*	17.925*	71.358*
Total		113	292	91	496

A. Dependent variable is utilisation of formal financial services.

*B. *, ** and *** represent the significance at 95%, 99%and 90% levels respectively*

The results in Table 46, model fitting information show that the final model statistically significantly fits over the intercept only model implying that it predicts the dependent variable better than the intercept only model since the predictor variables are specified. It is

therefore worth concluding that the demographic factors combined significantly predict the utilisation of for financial services hence the null hypothesis that demographic factors have no significance effect in the utilisation of formal financial services is rejected on this merit. The chi-square test is a likelihood ratio done to determine the goodness of fit for the data. It was tested with the p-values against the 0.05 significance level, if p-value is less than 0.05 the model does not fit well and vice versa. The overall model fitted well implying that the proposed model is appropriate in the predicting the utilisation of formal financial services.

4.3.4.2 Low Utilisation of Formal Financial Services Relative to Total Financial Exclusion

The findings in Appendix IX depict that evaluating all the predictors in the model to zero the multinomial logit estimate for the low utilisation of formal financial services relative to the total financial exclusion decreases by 2.790. A unit change in the value score for age results in a 0.391 increase in the low utilisation of formal financial services relative to the total financial exclusion when all the other predictors in the model are held constant. Moreover, holding other predictors in the model constant, unit change in the score of value for gender leads to 0.411 decreases in the low utilisation of formal financial services relative to the total financial exclusion. A unit change in the score of value of the marital status results to 0.205 decreases in the low utilisation of formal financial services relative to the total financial exclusion given the laws of generality are applied on the other predictors in the model. Finally, a unit change in the score of value of the education level led a 0.949 rise in the level of low utilisation of formal financial services relative to the total financial exclusion.

The Wald statistics in the parameter estimates table in appendix (IX) provide the basis of the significance of the parameter estimates, the results show that age, marital status and education are all significant in the low utilisation of formal financial services compared to the total financial exclusion except for the gender of the farmers which is not significant. The odd ratios or the relative risks for obtaining the regression coefficients is presented in the exp[B]column. From the regression coefficients estimates it is clearly evident that the demographic factors have a significant effect on the utilisation of the formal financial services.

4.3.4.3 Moderate Utilisation of Formal Financial Services Relative to Total Financial Exclusion

Since the model in the study is found significant in predicting the utilisation of formal financial services, appendix (IX), the results tables for the multinomial logistic regression shows that when all the predictors in the model are evaluated at zero the intercept which is the multinomial logit estimate for the moderate utilisation of formal financial services relative to the total financial exclusion (or the no formal financial inclusion) decreases by 5.201. A unit change in the value score of age leads to 0.479 increase in the moderate utilisation of formal financial services relative to the total financial exclusion, a unit change in the score value for gender results to a 0.498 decrease in the moderate utilisation of formal financial services relative to the total financial exclusion, a unit change in the marital status leads to a 0.185 decrease in the moderate utilisation of formal financial services relative to the total financial exclusion and finally a unit change in the score value of education results into a 1.475 increases in the moderate utilisation of formal financial services relative to the total financial exclusion provided all the other predictors in the model are held constant for each of the cases mentioned above. The Wald statistics tests for the significance of each of the predictor variable in the moderate utilisation of formal financial services provided in appendix Vii indicates that all except gender and marital status are significant in predicting the moderate utilisation of formal financial services relative to the total financial exclusion since their p-values are less than 0.05 level of significance.

These findings agree with Kalunda (2014) who conducted a study on the level of financial inclusion in terms of access and usage and its impact on small scale tea farmers in Nyeri county, Kenya. The study established that gender and age significantly influenced the demand and use of financial services and further that the level of inclusion is high and usage in terms of credit access is also high. The findings also support those of Zakaria and Sabri (2013) whose study found that financial capability differs across different demographic characteristics. In particular, it was indicated that younger people, women, those on low income and low levels of education, literacy and numeracy were identified to lack financial capability. The findings also reflect those of Paaskesen and Angelow (2015) who found that usage of financial services for economic benefits differed across different demographics. Further, the study agreed with multinomial probit models by Mwangi (2012) which indicated that, there was variance in access and usage of financial services for economic purposes

alongside demographic characteristics. Clamara and Tuesta (2014) also found that factors such as being a woman, living in a rural area or having a low income and educational level may reduce the likelihood of being included in formal financial system.

Theoretically, the findings fail to concur with Sarma and Pais (2011) on the Financial Intermediation theory that there is no reason to expect that all financial-intermediation services will have the same, universal impact on all economies, regions, or socio-economic strata. However, consistent with the financial intermediation theory, the findings imply that formal financial institutions should strive to ensure that there is efficient allocation of the resources to avoid low uptake of formal financial services by focusing on the financial inclusion factors which enhances uptake of formal financial services.

Previous studies using probit models found variations on demographic patterns influencing the utilisation of formal financial services, however, the present study was able to take this further and to establish the variation usage from low to moderate. The study, nevertheless did not explore the high utilisation construct against demographic patterns. All demographic factors were found to be significant predictors of low utilisation of financial services, though in the case of moderate utilisation, gender alone was found to be insignificant in predicting utilisation of formal financial services.

4.3.4.2 Multiple Linear Regression on Socioeconomic Factors and Utilisation of Financial Services

This study aimed at determining the significance of the socio – economic factors on utilisation of formal financial services among small holder farmers. The socio-economic factors that are being tested in the study are the income of the small holder farmers, alternative occupation of the small holder farmers and size of land owned by the small holder farmers in relation to the utilisation of the formal financial services. The null hypothesis formulated to test this relationship is; -

H_{02}= *Socio-economic factors have no significant effect on formal utilisation of financial services by the small holder farmers*

Table 47: Results of Multiple Linear Regression

	Busia	Nakuru	Kirinyaga	Overall
Constant	127.028	58.571	26.284	58.384
	(4.140)*	(4.968)*	(1.135)	(5.896)*
Income	-43.691	4.025	13.680	5.615
	(-1.733) *	(0.791)	(1.789) *	(1.312)
	0.132	0.306**	0.237*	0.317**
Occupation	-21.781	-18.560	10.372	-14.304
	(-2.231) *	(-3.418) *	(1.067)	(-3.265) *
	-0.220*	-0.194**	0.055	-0.146**
Land size	1.470	3.591	3.446	2.891
	(0.582)	(1.789) *	(1.275)	(2.052) *
	0.051	0.100	0.133	0.085
F-values	3.014*	5.040*	1.680	5.502*
R^2	0.277	0.223	0.234	0.180
Adjusted R^2	0.077	0.050	0.055	0.032
Observations	113	292	91	496

A) the dependent variable is the utilisation of formal financial services

B) t-values are in parenthesis

*C) *, **, *** - asterisk, double asterisks, three asterisks indicate significant Pearson's moment correlation coefficient at 95% and 99% and 90% level respectively.*

The results in Table 47 show that the overall coefficient of determination (R^2) for socio-economic factors on utilisation of formal financial services is 18.0%. The adjusted R^2 change is 0.032 thus the model is stable. This implies that the independent variables, income, occupation and land size account for 18percent variability. However, the variability was not wide across the three counties of Busia, Nakuru and Kirinyaga as shown by their coefficients of determination 27.7per cent22.3percent and 23.4percent respectively.

The relationship between income, occupation and land size is statistically significant in the overall model ($F_{3, 492}$= 5.502; p = 0.001 < 0.05). This implies that socio-economic factors influence the utilisation of formal financial services. Specifically, socio-economic factors had statistically significant relationship to the utilisation of formal financial services in Busia ($F_{3, 109}$= 3.014; p = 0.033 < 0.05) and Nakuru ($F_{3, 288}$= 5.040; p = 0.002 < 0.05) counties respectively while in Kirinyaga ($F_{3, 87}$ = 1.680; p = 0.177 > 0.05) there was no statistically significant relationship between the socio-economic factors and the utilisation of formal financial services.

In this study, t-values were used to indicate the individual significance of the independent variable in the model in predicting the utilisation of formal financial services. Occupation of the small holder farmers and the size of land owned by the small holder farmers were found to be statistically significant in predicting the utilisation of formal financial services. The t-values for the significance of the independent variables in Busia County shows that income of the small holder farmers and the alternative occupation has a negative significance effect in predicting the utilisation of formal financial services, while the size of land owned by the small scale farmers is not statistically significant. However, in Nakuru County, the occupation of the farmers and the size of land owned by the small scale famers are statistically significant while the income earned by the farmers is not significant in predicting the utilisation of formal financial services. In Kirinyaga County, the income of the farmers is significant while the occupation of the small scale farmers and the size of land owned by the small holder farmers are not statistically significant in predicting the utilisation of formal financial services.

When the predictors in the model are evaluated at zero, the utilisation of the formal financial services increases by a factor of 58.384. Holding occupation and land size constant in the

model, a unit change in the aggregate income level of the small holder farmers across Busia, Nakuru and Kirinyaga did not lead to significant uptake of formal financial services by the farmers. However, assuming laws of generality in the model, a unit change in the other occupation of the small holder farmers resulted to a 3.265 decline in the utilisation of formal financial services. This meant that farmers with alternative occupation generally tended to utilise less formal financial services for their farming activities. Finally, a unit change in the size of land owned by the small holder farmers across the three counties led to a 2.052 increase in the uptake of formal financial services. Therefore, it is evident that land size was the most influential socioeconomic variable predicting the utilisation of formal financial services. This was followed by aggregate income levels of the small holder farmers and the other occupations of the farmer respectively. The null hypothesis which states that;

> *$H0_2$: Socio-economic factors have no significant effect on formal utilisation of financial services by the small holder farmers*

It was therefore, rejected since the t-values were significant ($p < 0.05$). Consequently, we adopt the view that socio-economic factors, other occupation and land size, were important considerations that needed to be made when assessing the utilisation of formal financial services by the small holder farmers.

Land in Kenya still remains an important factor of production as it can be used for developing of an enterprise and as collateral. As collateral it is especially important as financial institutions easily consider it as valuable immovable collateral that can be used to secure finance (Nyaga, & Nzulwa, 2017). In more urbanised counties like Nakuru, the value of land is high and most of them have title deeds, hence, can be used to secure significant amount of finance. Thus, farmers in the county with title deeds can easily attach their title deeds to secure finance from formal financial institutions. Also, as evidenced by the findings, income aggregated from other non-farming activities significantly influenced utilisation of formal financial services in Busia and Kirinyaga Counties possibly due to fact that it was an important ability-to pay determinant which was usually considered when applying for formal financial services. In the case of farmers having alternative occupations, it was expected that the alternative occupations were their main source of income and, hence, financing for the farming projects was largely sourced from their other occupations (Meeme, 2013).

These findings imply that socio-economic factors (annual income) were positively related to formal utilisation of financial services by the small holder farmers. The findings are in support of the assertion by Wachira and Kihiu (2012) and Grohmann and Menkhoff (2017) that households' access to financial services in Kenya was based on among other things income levels. However, they disagree with FinMark Trust (2016) study which found that employed people have better access to bank accounts, credit and savings irrespective of their income. Theoretically, the findings concur with Mincer (1963) view of the household production theory where he argued that using cash income as an explanatory variable was inappropriate because it reflected a variety of household decisions, including a decision on how many hours to work for pay. The present findings suggest that having alternative household income was significantly related to uptake of opportunities in the financial sector which could increase the household income when well utilise d.

This study has established important insights into the effect of land size in financial theory where land has traditionally been seen as a factor of production and as collateral. The present study broke new grounds with additional insights suggesting that land size can also be a predictor of financial behaviour where it influences the client's decisions to uptake formal financial services as opposed to land being demanded as collateral by the lenders. Previous studies have also linked access to finance with income levels, the present study, however, shows that not only is access influenced by income levels, utilisation too of financial services is influenced by the income levels. In other words, higher incomes could lead to higher utilisation of formal financial services. The study, nevertheless, was not able to provide evidence whether this translated to better utilisation of formal financial services as well especially in the informal sector like small holder farming.

4.3.4.3 Multiple Linear Regression for Institutional Factors

This study seeks to determine the significance of the institutional factors in the utilisation of formal financial services. A simple linear regression was used to examine the relationship between the group membership and utilisation of formal financial services and the hypothesis were postulated as follows;

$H0_3$ = There is no significant effect of institutional factors on utilisation of formal financial services by the small holder farmers

Table 48: Multiple Regression of Institutional Factors on Formal Finance Utilisation

	Busia	Nakuru	Kirinyaga	Overall
Constant	0.753	0.703	0.814	0.738
	(6.607)*	(12.302)*	(14.532)*	(17.855)*
Group membership	-0.036	-0.073	-0.010	-0.060
	(-0.607)	(-1.805)	(-0.139)	(-2.098) *
	0.058	0.105	0.015	0.094*
F – values	0.545	0.072	0.890	0.036*
R^2	0.003	0.011	0.00	0.009
Adjusted R^2	-0.006	0.008	-0.011	0.007
Observations	113	292	91	496

A) the dependent variable is the utilisation of formal financial services

B) t-values are in parenthesis

*C) *, **, *** - asterisk, double asterisks, three asterisks indicate significant Pearson's moment correlation coefficient at 95% and 99% and 90% level respectively.*

The findings in Table 48 show that the overall coefficient of determination (R^2) is 0.9percent with a negligible R^2 change of 0.007 showing the model is stable. Group membership accounts for 0.9percent of the model while 99.1percent is accounted for by other external factors.

Further, the overall significance of the model tested using the F-values indicated that the overall model was significant in predicting the utilisation of formal financial services, ($F = 0.036$; $p = 0.000<0.05$). The study adopted the OLS (ordinary least squares) technique to estimate the regression coefficients and the findings show the overall model constant 0.738 implies that when all the independent variables predicting institutional factors in the model are evaluated at zero, the utilisation of formal financial services stands at 42.238. On the

other hand, holding other factors in the model constant, a unit change in the score value for group membership results to 0.060 decreases in the utilisation of formal financial services.
The t-values results for testing the significance of the group membership, show that group membership of the small holder farmers are significant in predicting the utilisation of formal financial services. The results hence imply that institutional factors have significance in the utilisation of formal financial services thus the null hypothesis is rejected.

> *H_{03} = there is no significant effect of institutional factors on utilisation of formal financial services by the small holder farmers*

Our conclusion holds that the institutional factors have significant effect in the utilisation of formal financial services among the small holder farmers. These findings suggest that group services encouraged the small holder farmers to use alternative financial services. This observation agrees with Ostrom (1999) whose findings argue in favour of group services showing that groups have been able to avoid many of the high transaction costs associated with formal financial institutions.

The findings also reflect those of Nyaga and Nzulwa (2017) whose study factors that affect access to credit facilities by Smallholder Dairy Farmers (SDFS) in Githunguri Sub-County, Kiambu County revealed that the period of operation from the inception of the farm business, previous credit experiences and availability of financial statements, reports and other relevant farm records are all aspects of credit requirements that affect access to credit facilities by the SDFS. The findings also support those of Meeme (2013) whose study on factors influencing access to formal credit by small scale women tea farmers in Thika District, Kiambu County Kenya revealed that the women preferred the institutions of their choice on grounds that; they received better customer care services, they got less interest loan (Saccos), they got time extensions on repayments, they were trained on the usage of the formal credits, they received bonuses on early repayments while others said that the institutions were always free to handle their budgets.

Theoretically, the findings imply that behavioural intentions to subscribe to an institution were significant based on the perceived benefits. Therefore, the findings support the theoretical premises of the theory of planned behaviour by Ajzen (1991) which postulated that intention is the best predictor of human behaviour. The main premise of the theory is that when a person plans to do something then there is a more likelihood to do it. According to

this theory, intention is a product of three different processes; behavioural attitudes, subjective norms and perceived behavioural control. Further, intention is determined by this person's attitude toward the behaviour, the subjective norm, and the relative importance between the attitude and the subjective norm. Therefore, the higher the perceived benefits the more likely the small holder farmers would subscribe to an institution and the financial institutions could leverage on this to introduce their products to the farmers in a way they perceived they could benefit and, hence, increase their utilisation of the financial services. Hence, from a theoretical perspective, it can be argued that inclusion was a deliberate choice of the actors and was significantly dependent on institutional factors.

Compared to other previous studies, the present study provides a strong case for group membership as an institutional factor in utilisation of formal financial services. It suggests that group membership in both affiliated and non-affiliated groups created some behavioural heterogeneity among the members which influenced their financial behaviours. Respondents belonging to one group, that is, the farmers group and those not affiliated to any other group showed less diversity in the utilisation of formal financial services than those who belonged to more than one group.

4.3.4.3 Multiple Linear Regression for the Technological Factors

The study aimed at testing for significance of the technological factors in predicting the financial utilisation. This study is however interested in technological factors and their benefits such as included technology goodness, changes, information, privacy, friends and technology life in the utilisation of formal financial services. The following hypothesis is to be tested; -

H_{04}: there is no significant relationship between technological factors and utilisation of formal financial services by smallholder farmers.

To test for statistical importance of the technological factors analysis was done on the technological factors to reduce the dimension of the factors. After the factor loading and extraction was done in this study two components were extracted. The first component had 5 variables that is good technology, don't like learning technology, learning technology, feeling disconnected from technology, favourite technology and technology friends while the second component had only technology privacy as the variable. From the components, two new variables were created to suit the analysis of the data obtained from the factor analysis,

technology quality and technology impact are the two new variables formed and hence a multiple linear regression was conducted with security of information and technology impact as the independent variables predicting the utilisation of formal financial services.

Table 49: Sampling Adequacy Results for Technological Factors

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.837
Bartlett's Test of Sphericity	Approx. Chi-Square	1277.099
	Df	28
	Sig.	.000

From Table 49, the technological factors were found to be reliable and adequate.

Table 50: Results for Multiple Linear Regression

	Busia	Nakuru	Kirinyaga	Overall
Constant	-110.944	6.955	-8.480	-13.435
	(-1.961)	(0.341)	(-0.202)	-0.770
Technology Quality	7.855	0.554	3.041	1.672
	(3.316)*	(0.642)	(1.569)	(2.250)*
Technology impact	-3.017	6.726	1.964	6.946
	(-0.584)	(3.911)*	(0.501)	(4.705)*
F-values	6.095*	7.878*	1.862	13.673*
R^2	0.100	0.052	0.041	0.053
Adjusted R^2	0.083	0.045	0.019	0.049
Observations	113	292	91	496

A) the dependent variable is the utilisation of formal financial services

B) t-values are in parenthesis,

*C) *, **, *** - asterisks represent significance at 95% and 99% and 90% level respectively.*

The coefficient of determination (R^2) was 5.3percent implying the proportion of the variance in the utilisation of formal financial services that can be accounted for by the technological factors while 94.7percent was explained for by other external factors. The small R^2 change of 0.049 implies that the model is stable. There is statistically significant relationship observed between the technological factors and the utilisation of formal financial services, [$F_{2, 493}$=13.673; p=0.000 <0.05], this implies that the overall model was significant in predicting the utilisation of formal financial services. Thus we reject the null hypothesis and conclude that technological factors have significance in the utilisation of the formal financial services.

The study used the OLS technique to find parameter estimates of the variables technology quality and technology impact. The results indicated that when all the technological factors are zero utilisation of formal financial services reduces by 13.435. A unit change in the technology security of information results in 1.672 increase in the uptake of the formal financial services holding other technological factors in the model constant. A unit change in the value for technology impact leads to 6.946 increase in the utilisation of formal financial services when all the other factors in the model are held constant.

The t-values test for individual predictors' significance in the utilisation of formal financial services, the results showed that security information and technology impact significantly predict the utilisation of formal financial services. This finding disagree with Michelle (2014) whose study concluded that digital finance does not have any correlation on financial inclusion in banking sector in Kenya since banking institutions adopt digital financial services to lower operating costs associated with opening and operating branches to improve their profitability and financial performance and not to foster financial inclusion. The findings on technology factors in the model can also be explained by Simiyu et al. (2012) who observed that access to MMT has had both negative and positive implications for gender roles and the former may prove a social cost to innovation. Theoretically, the findings support the central argument of the Task-technology fit that individual performance is more likely if the capabilities of information communication and technology (ICT) match the tasks that the user must perform (Goodhue, & Thompson, 1995). Such factors include floatability, Authorisation, and compatibility, eases of use/training, production timeliness, systems reliability and relationship with users.

The uniqueness of the current study from the previous studies on the effect of technology on the utilisation of formal financial services is that it was able to track financial technology utilisation preferences across demographic patterns and also model how the security of information and impact of technology affected utilisation of formal financial services among the smallholder farmers. It shows that high levels of technology usage in formal financial services utilisation could be achieved if the two aspects of security of information and impact were emphasised by the financial services providers.

4.3.4.4 Multinomial Logistic Regression for the Product Differentiation Factors

The study sought to determine the influence of product differentiation on utilisation of formal financial services. The product differentiation factors were measured in terms of interest rate, collateral, payment period, not aware services, fear of failure, distance accessing, source income, gender preference, unsuitable bank products and documentation requirement. The response variable in this case utilisation of formal financial services was categorised into four levels; 0 = complete financial exclusion, 1≤low utilisation of financial services ≤33, 34≤moderate utilisation of financial services ≤ 67 and 68≤low utilisation of financial services≤100.the complete financial exclusion was used as the reference category in this regard.

The relationship was tested using the formulated hypothesis below;

H_{04} = there is no significant relationship between product differentiation and utilisation of formal financial services by the small holder farmers

Table 51: Results of the Multinomial Logistic Regression

		Busia	Nakuru	Kirinyaga	Overall
Constant					
Interest rate		0.080	0.033	0.164	0.060
Collateral		0.165	-0.006	-0.193	-0.054
Payment period		0.195**	-0.015	-0.142	-0.024
Not aware of services		-0.077	-0.092	-0.284**	-0.123**
Fear of failure		-0.049	-0.007	-0.035	-0.044
Distance in accessing services		0.107	0.009	-0.117	0.060
Source income		0.007	-0.003	0.297**	0.030
Gender preference		-0.067	-0.129**		-0.107**
Unsuitable bank products		-0.005	-0.052		-0.168**
Documentation requirement		-0.057	0.050	0.035	-0.137**
Model	Intercept	141.930	395.945	94.734	675.344
	Final	109.005	384.202	63.309	611.446
X^2		47.485*	294.043*	18.162*	446.041*
Observations		113	292	91	496

A) the dependent variable is the utilisation of formal financial services

*B) *, **, *** - asterisks represent significance at 95% and 99% and 90% level respectively.*

The findings in Table 51 showed that the full model statistically significantly fits thus predicts the utilisation of formal financial services better than the intercept only model. Similarly, the model fitted well with significant chi-square statistic at 0.05 level of significance. The proposed model therefore implies that all the product differentiation factors are significant in predicting the utilisation of formal financial services.

4.3.4.4.1 Low Utilisation of Formal Financial Services Relative to the Complete Financial Exclusion

The results in appendix (IX) indicate when all the predictors in the model are evaluated at zero, the low utilisation of formal financial services relative to the complete financial exclusion increases, implying that omitting the predictors in the model there is a decrease of 0.208. A unit change in the value for the interest rate results to 0.178 increases in the low utilisation of formal financial services relative to the complete financial exclusion when all the other predictors in the model are kept constant. Further a unit change in the score value for payment period results to 0.138 increase in the low utilisation of forma financial services compared to total financial exclusion and finally a unit change in the unsuitable bank products value leads to 0.248 increase in the low utilisation of formal financial services compared to total financial exclusion. However, a unit change in the score value for the collateral, not aware services, gender preferences, and documentation requirement respectively result to decrease in the prediction of low utilisation of formal financial services relative to the complete financial exclusion with score values 0.167, 0.274, 0.321 ,0.266 respectively assuming laws of generality. Furthermore, a unit change in the distance accessing, fear of failure, unsuitable bank products and source income values results to 0.015, 0.16, 0.248 and 0.220 increase in the low utilisation of formal financial services relative to the complete financial exclusion holding the other predictors in the model constant.

4.3.4.4.2 Moderate Utilisation of Formal Financial Services Relative to the Complete Financial Exclusion

Further in appendix IX indicate that when all the predictors in the model are evaluated at zero, the moderate utilisation of formal financial services relative to the complete financial exclusion reduces by 0.403. Holding the other predictors in the model constant, a unit change in the interest rate results to 0.356 increase in the moderate utilisation of formal financial services relative to the complete financial exclusion. Furthermore, a unit change in the score

value for collateral leads to 0.217 decreases in the moderate utilisation of formal financial services relative to the complete financial exclusion holding all the other predictors constant in the model. Further, a unit change in the period of payment of the loans for instance results to 0.086 decrease in the moderate utilisation of formal financial services relative to the complete financial exclusion holding the other predictors in the model constant.

In addition, a unit change in the score value for being not aware of the services leads to 0.411 decrease in the moderate utilisation of formal financial services relative to the complete financial exclusion provided that the predictors in the model are held constant. Moreover, a unit change in the value score of fear of failure leads to 0.292 decrease in the moderate utilisation of formal financial services relative to the complete financial exclusion, distance of access unit change results to 0.022 increase in the moderate utilisation of formal financial services relative to the complete financial exclusion and a unit change in source of income leads to 0.340 increase. Moreover, when a unit change is seen in gender preferences there was 0.078 decrease in the moderate utilisation of formal financial services relative to the complete financial exclusion. Further, a unit change in the value score for unsuitable bank products and documentation requirement result to 0.589 increase and 0.331 decrease in the moderate utilisation of formal financial services relative to the complete financial exclusion respectively provided that all the other predictors in the model are held constant.

However, the Wald statistics which the test for the significance of the specific predictors showed interest rate, not aware of the financial services, the famers' fear of failure, unsuitable ban products and documentation requirement statistically significantly predict the moderate utilisation of formal financial services relative to the complete financial exclusion. However, collateral, payment period, distance accessing, source income and gender preference has no significance in predicting the moderate utilisation of formal financial services relative to the complete financial exclusion.

4.3.4.4.3 High Utilisation of Formal Financial Services Relative to the Complete Financial Exclusion

In addition, evaluating all predictors in the model to zero, there is 183.640 decrease in the high utilisation of formal financial services in relation to the total financial exclusion. Further a unit change in the score value for interest rate, not aware services, fear failure, distance

accessing, source income and documentation requirement resulted in 4.004, 5.993, 9.752, 0.311, 24.159 and 13.232 increase respectively in the high utilisation of formal financial services relative to the total financial exclusion. However, a unit change in the vale for collateral, payment period, gender preferences and unsuitable bank products led to 9.058, 0.635, 19.602 and 15.583 decreases respectively in the high utilisation of formal financial services relative to the total financial exclusion.

Further the Wald statistics for testing the individual significance of the predictor variables indicated that there was no statistical significance of the predictor variables implying that the predictor variables do not significantly predict the high utilisation of formal financial services.

Finally, product differential index was found to be a significant financial inclusion variable in the model, this was expected. These findings support those of Barwa (2015) whose study concluded that the innovative financial products and services designed by banks have opened up financial services. Theoretically, the findings agree with Porter (1980) on the significance of differentiated products on the product subscription by consumers. In differentiation strategy a firm seeks to be unique in its industry along some dimensions that are widely valued by buyers. It selects one or more attributes that many buyers in an industry perceive as important and uniquely positions it to meet those needs. Differentiation is aimed at the broad market that involves the creation of a product or services that is perceived throughout its industry as unique. According to Kotler (2009), sellers may face abundance of differentiation possibilities including form, features, customisation, performance quality, conformance quality, durability, reliability, reparability and style and when a physical product cannot easily be differentiated, the key to competition success may lie in adding valued services and improving their quality. The main service differentiation is ordering, ease delivery, installation, customer training, customer consulting, maintenance and repair. This study, therefore, underscores the theoretical fact that the more uniquely a product meets a client's need, the higher the likelihood that he/she will continue subscribing to it.

In comparison to previous studies, the current study's uniqueness lies in the fact that it has been able to explore the differentiation of financial services and subsequent utilisation of these services using a hierarchical model where the response variable-utilisation- was

examined through low utilisation to high utilisation. However, only low and moderate utilisation could be predicted by the model. This was important as it enables the development other models for prediction of financial services utilisation behaviour among smallholder farmers.

4.3.4.5 Moderating Effect of Financial Literacy on the Predictors

Table 52: Financial Literacy Index

	Frequency	%	Mean	Std. deviation
Low literacy	1	0.002	2.15	3.279
Moderate literacy	490	98.8		
High literacy	5	0.01		
Total	496	100		

Table 52 findings for the categories of financial literacy measured under low, moderate and high literacy indicate that 98.8% of the small holder farmers have moderate financial literacy followed by high literacy, 0.01 and low literacy, 0.002 respectively. This explains that 98.8% of the small holder farmers in the three counties are moderately financially literate. The moderating effect of financial literacy is tested by the interaction effect between financial literacy and the independent variables in the study. The significance of the interaction term is tested against 0.05 level of significance. There is moderation effect of financial literacy if $p < 0.05$.

Table 53: Financial Literacy Influence on the Demographic Factors

	Chi –square	P-values
Age *literacy	0.0189	0.8907
Gender *literacy	0.0321	0.8579
Marital status*literacy	0.000	1.000
Education *literacy	0.0932	0.7602

The interaction between the demographic factors and financial literacy measured on chi-square 1 degree of freedom are not significant. This implies that there is no moderation done in the demographic factors by financial literacy of the respondents in the utilisation of formal financial services.

Table 54: Interaction between Financial Literacy and Socio-Economic Factors

	R-squared change	F-value
Income * literacy	0.0117	5.8316* (0.0161)
Occupation *literacy	0.000	0.0107 (0.9178)
Land size *literacy	0.000	0.004 (0.9850)

The results in Table 54 show that financial literacy has a moderating effect in predicting the utilisation of formal financial services measured at [$F_{1,492}$ = 5.8316; p = 0.0161 < 0.05] showing that the interaction between income and financial literacy is significant with a negligible R^2 change. Thus, income was moderated by financial literacy. However, there was no moderation in occupation and size of land owned by the farmers in the utilisation of formal financial services.

Table 55: Interaction between Financial Literacy and Institutional Factors

	R –squared change	F-values & p-values
Group membership *literacy	0.0037	1.8079(0.1794)

The findings in Table 55 indicate that there was no moderation in the utilisation of formal financial services predicted by the institutional factors represented by the group membership. This is shown by the insignificant interaction between group membership and financial literacy.

Table 56: Interaction between Financial Literacy and Technological Factors

	R-squared change	F-values & p-values
Sensitivity of information * financial literacy	0.0075	3.8951* (0.0490)
Technology impact * financial literacy	0.0011	0.5939 (0.4413)

The results in Table 56 show that there was statistically significant interaction between security of information/financial literacy [$F_{4,\ 491}$=3.8951; p= 0.0490<0.05], R^2 change=0.0075, while there was no significance in the interaction of technology impact on life /financial literacy [$F_{4,\ 491}$= 0.5939; p = 0.4413 > 0.05], R^2 change = 0.0011. This implied that there was moderation effect of financial literacy on security of information translated by

the significant F-value of the interaction term. However, financial literacy did not have any moderation effect on the impact if technology, this is seen by the insignificance if the interaction term between the impact of technology and financial literacy and the negligible R^2 change of 0.0011. From the findings, it is evident that financial literacy had a moderating effect on the security of information of the small holder farmers while it had no moderation effect on the impact of technology.

Table 57: Interaction between Financial Literacy and Product Differentiation Factors

	Chi-square	P-values
Interest rate* literacy	0.0000	1.000
Collateral *literacy	0.0000	1.000
Payment period *literacy	0.0000	1.000
Not aware of services *literacy	0.0014	0.9697
Fear failure*literacy	0.0001	0.9928
Distance accessing*literacy	0.0000	1.0000
Source income *literacy	0.0104	0.9189
Gender preferences *literacy	0.0000	1.000
Unsuitable bank products*literacy	0.0000	1.000
Documentation requirement *literacy	0.0000	1.000

The findings in Table 57 depict that there is no moderation in the utilisation of formal financial services by the product differentiation factors. This is supported by the insignificant interactions between the product differentiation indicators; interest rate, collateral, payment period, not aware services, fear failure, distance accessing, source income, gender preferences, unsuitable bank products and documentation requirement and financial literacy

The null hypothesis;

H_{06}: there is no moderating effect between financial literacy on the demographic factors, socio-economic factors, institutional factors, technological factors and product differentiation factors in the utilisation of formal financial services

Is therefore rejected. Some of the small holder farmers may not have trusted on the financial literacy training providers and thus the influence of financial literacy on the uptake of formal financial services not successful. It is also believed that some of the small holder farmers are diehards of their traditional ways of doing things for instance savings among others. These findings suggest that financial literacy was an important moderating factor in utilisation of formal financial services. The results agree with Wachira and Kihiu (2012) that the

probability of a financially illiterate person remaining financial excluded is significantly high calling for increased investment in financial literacy programs to reverse the trend. However, Wachira and Kihiu (2012) revealed that households' access to financial services is not based on levels of financial literacy but rather on factors such as income levels, distance from banks, age, marital status, gender, household size and level of education. Ooko (2017) similarly found that financial literacy has a significant relationship with demographic factors.

Also, Amadhila (2016) study on financing agricultural small- and medium-scale enterprises in Namibia revealed that there is a mismatch between the demand for and supply of funds. The mismatch between demand and supply is caused by loan default and insufficient information provided by farmers (on the supply side) and lack of satisfying financing requirements and low supply of funds (on the demand side). Theoretically, the findings are in support of Financial literacy theory of financial inclusion underscore the fact that financial inclusion should be achieved through education which increases people's willingness to participate in the formal financial sector. The education increases awareness of financial products and services that are available to people and enables them to take advantage of other benefits in the formal financial sector such as investment and mortgage products. Thirdly, financial literacy can also help people become self-sufficient and can help them have some stability in their personal finance by helping them distinguish between needs and wants, helping them to create and manage a budget, teaching them to save so that they can pay bills when due, and to plan for retirement.

The current study has been able to show through its findings that there is changing perception of financial literacy among small holder farmers. These could be attributed to the high modal age (41 – 50 years) of the farmers and observed the fact that levels of formal literacy among the farmers are increasing significantly, hence, more openness in their information seeking behaviour. Therefore, future financial utilisation models could factor in the aspect of financial literacy as a moderating rather than an explanatory variable.

CHAPTER FIVE
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the findings of the study in relation to the set objectives and the statistical analysis undertaken to test the research hypothesis. It also includes conclusions, policy recommendations and suggestions for further research.

5.2 Summary

In Kenya, the utilisation of formal financial services by the agricultural sector in Kenya is low. The factors underlying the lack of inclusion among the small holder farmers in Kenya, however, remained largely unknown. It is on this basis that the present study sought to establish the financial inclusion determinants and their effect on utilisation of formal financial services of smallholder farmers in Kenya. The specific objectives were; to determine the effect of demographic factors on utilisation of formal financial services among small holder farmers; to evaluate the effect of socio-economic factors on utilisation of formal financial services among small holder farmers; to determine the effect of institutional factors on utilisation of formal financial services among smallholder farmers; to examine the extent of technological factors on utilisation of formal financial services among small holder farmers; to determine the influence of product differentiation on the utilisation of formal financial services among small holder farmers, and finally; to determine the moderating effect of financial literacy on utilisation of formal financial services among small holder farmers. The following is a summary of the findings on these objectives.

The first objective was to determine the influence of demographic factors on utilisation of formal financial services among small holder farmers. The results indicated that the younger age group of the smallholder farmers commanded a dismal sample proportion of those that own land while males were the majority among the respondents, showing that fewer women than men engage in small holder farming. Majority of respondents had basic (primary) level of education with a very small proportion having attained university education. The findings also revealed that demographic factors significantly influenced the utilisation of formal financial services. Of these demographic factors, the age group, marital status and education levels of the respondents were established as the significant financial inclusion variables that affect formal financial usage in the three counties.

The second objective was to establish the effect of socio-economic factors on utilisation of formal financial services among small holder farmers. The findings revealed that compared to the other two counties in the study, smallholder farmers in Busia County owned the land as opposed to, 65.8per cent54.9per centin Nakuru and Kirinyaga counties where most land was being leased by small holder farmers. In the case of Kirinyaga county, communal land ownership was more common and this made it difficult to use it as collateral to secure finance. These findings suggest that most respondents in Kirinyaga are not able to use ownership documents as security for loan. Annual income was also found to be significant in influencing their utilisation of formal financial services. These could be explained by the observation that smallholder farmers that earn more income are likely to subscribe to formal financial services that safeguards their income and in the process become eligible to access other formal financial services. As such, the study found that socio-economic factors were a significant predictor of utilisation of formal financial services and could not be ignored.

The third objective was to examine the effect of institutional factors on utilisation of formal financial services among smallholder farmers. The results revealed that Institutional factors were also found to be significant in influencing their utilisation of formal financial services. However, it was observed that farmers' subscriptions to the groups varied across the three counties with the highest being Busia county followed by Nakuru and Kirinyaga counties in that order. The findings, however, revealed that affiliation to the groups did not necessarily translate to access to formal financial services such as access to and guarantee for loans and services on bulk purchase of inputs from farmers' group. This could perhaps explain why there was a negative group services coefficient. Smallholder farmers primarily join farmers' groups with a view to accessing financial services such as loans, access to bulk purchases, table banking, and knowledge in farming and training on financial literacy.

The fourth objective was to determine the impact of technological factors on utilisation of formal financial services among small holder farmers. The results show that a high number of the respondents own a mobile phone although most farmers seldom used their mobile phones for formal banking services like depositing and withdrawals. Technology utilisation was, however, found to be significant in in respect to information security and impact of technology. Descriptive results had revealed that majority of the respondents appreciated the

use of technology albeit at a low pace. In addition, majority of the respondents were old and hence had a challenge in adopting new technologies.

The fifth objective was to assess the influence of product differentiation on the utilisation of formal financial services among small holder farmers. The findings also revealed that product differentiation was very influential when it came to utilisation of formal financial services among small holder farmers in the country. This was specifically in two counties namely Busia and Nakuru counties. This meant that development of better and more inclusive financial products would significantly increase the rates of inclusion among small holder farmers. Majority of the respondents in all the three counties were satisfied with the financial services offered by their banks. This could perhaps explain the significance of the variable in the model compared to other variables. Those that were not satisfied cited lack of financial literacy, improved customer care, increased amount to be borrowed, increased bank products. They also cited need to lengthen repayment period, reduce the long queues, reduce account maintenance, reduce collateral, reduce interest rate on credit and simplify loan application procedures.

Finally, the sixth objective was to determine the moderating effect of financial literacy on utilisation of formal financial services among smallholder farmers. The findings revealed that the financial literacy had a moderating effect on utilisation of financial services among the small holder farmers. This was evidenced by the observation that security of information and income levels were significantly altered by the introduction of financial literacy as a moderating variable.

5.3 Conclusions

Financial inclusion is very critical to utilisation of formal financial services. In this study; the researcher examined the financial inclusion determinants and their effect on utilisation of formal financial services of smallholder farmers in Kenya. The following conclusions were arrived at based on the findings of the study.

Demographic factors were found to significantly influence utilisation of formal financial services among small holder farmers. Hence, demographic factors contribute to the utilisation of formal financial services in the country and must, therefore, be factored in the financial inclusion models.

Socio-economic factors were found to positively and significantly influence the utilisation of formal financial services among small holder farmers. Therefore, the study concludes that average annual income of the farmers cannot be ignored when considering utilisation of formal financial services among small holder farmers.

Institutional factors were found to contribute negatively to utilisation of formal financial services among smallholder farmers. This means the design of group services in the financial institutions was not yielding the desired effect.

Technological factors were found to have significant effect on utilisation of formal financial services among small holder farmers. The farmers appreciated the impact of technology but were concerned with security of information.

The study established that product differentiation significantly affected the utilisation of formal financial services among small holder farmers in the country. Therefore, it can be inferred that product differentiation significantly was a very important variable in the utilisation of formal financial services among small holder farmers.

Finally, financial literacy was found to have a moderating effect on utilisation of formal financial services among small holder farmers. Therefore, the study concludes that the financial literacy levels would moderate the utilisation of formal financial services among small holder farmers in the country especially owing to its perceived effect on income and security of information.

Overall, the findings established that that all the financial inclusion factors under investigations significantly influenced utilisation of formal financial services among small holder farmers. Small holder farmers faced challenges in accessing loans. The unbanked were highest in Busia County and majority of the respondents in the three counties who utilise formal financial services prefer deposit and savings as opposed to accessing loans. In fact, over half of the respondent make deposits and savings compared to a small number who use the services for accessing loans

5.4 Recommendations

The current research established financial inclusion determinants and their effect on utilisation of formal financial services of smallholder farmers in Kenya. The moderating role of the financial literacy was also explored. The study results present the following policy recommendations and recommendations for further research:

5.4.1 Policy Recommendations

i) Based on findings of objective one, Demographic factors were found to be significant to the utilisation of formal financial services among small holder farmers; it is recommended that the financial institutions develop products specifically targeting the segments of the small holder farmers so as to increase their levels of inclusivity and utilisation of formal financial services among small holder farmers. At the national level, policy makers should also consider reviewing policies that present obstacles to financial inclusion along demographic lines and address them so as to increase utilisation of formal financial services.

ii) Recommendation based on the second objective is that Socio-economic factors were found to be an important determinant of utilisation of formal financial services among small holder farmers. The study, therefore, recommends that financial services firms should come up with microfinance products that encourage utilisation of formal financial services by the farmers. The national policy makers should also encourage small holder farmers by way of incentives to disclose their annual income so as to improve their chances of accessing formal financial services that can expand their enterprises.

iii) Based on findings of the third objective, concerning institutional factors (group membership) and utilisation of formal financial services among smallholder farmers, it is recommended that the small holder farmers be encouraged to join more established and well-structured groups that make it easier for them to obtain credit and bulk inputs for their farms. In this vein, financial services providers and their technological intermediaries such as mobile service providers like Safaricom, Telkom and Airtel should revise their product strategies to encourage subscription from small holder farmers.

iv) Based on findings of the fourth objective, it emerged from the findings that the farmers' appreciation of technology for financial services was low. This was due to the fact that technology was evolving rapidly and they could not keep pace. Therefore, the study recommends that the financial technology (Fintech) firms come with simplified applications that are relatively stable over a long time and that are easy to migrate to so as to encourage farmers to subscribe to them. At the national level policy makers should encourage more investment in the digitalization of small scale farming activities so as to encourage more technology adoption.

v) Based on findings of the fifth objective, Product differentiation was found to be the most influential financial inclusion variable affecting the utilisation of formal financial services among small holder farmers. Therefore, the study recommends that the financial institutions in the country develop more friendly and accessible products with features that encourage not only their uptake but also integrate into other financial services. Specifically, the main areas of emphasis should be to reduce collateral demands as most lacked fixed assets, reduce interest rate on credit and simplify loan application procedures.

vi) Based on findings of the sixth objective, the moderating effect of financial literacy on utilisation of formal financial services among small holder farmers was established. The study therefore recommends that the formal financial institutions develop products that enhance information security. The financial institutions should also develop long term products for low income earners so as to improve their financial profile and enable them to subscribe to more financial products.

5.4.2 Recommendations for Further Research

i) This study has several suggestions for possible areas of further research. The results of this study are based on self-reported data of the smallholder farmers. Though they are reliable, information that is generated by respondents is not the only source of information that can explain their levels of utilisation of formal financial services. At the same time questionnaire and interview schedules though good tools for data collection, panel data could yield more information.

ii) The undertakings by smallholder farmers have long term effects that can only be evaluated through a study for the same smallholder farmers for a long period of time. As this study used a onetime response on the questionnaire to assess their perspective of the issues under study, a longitudinal study on the impact of the utilisation of formal financial services would yield more results.

iii) The social aspects of culture, societal norms and religious beliefs although not studied could affect the utilisation of formal financial services in the county. Hence, this study recommends that this variable be included for further research.

iv) Majority of small holder farmers in Busia were women. This disagrees with known literature hence this is an area for further research.

REFERENCES

Acharya, V. V., & Subramanian, K. V. (2009). *Bankruptcy Codes and Innovation.* Review of Financial Studies, 22, 4949-4988.

ADB. (2016). *Sustainable Development Working Paper Series No. 45*: Impact of Restrictions on Interest Rates in Microfinance. Mandaluyong City, Philippines: Asian Development Bank.

Aderonke, A. A., & Charles, K. A. (2010). An Empirical Investigation of the Level of Users, Acceptance of E-Banking in Nigeria. *Journal of Internet Banking and Commerce* 15 (1), 1-3

Aduda, J., & Kalunda, E. (2012). Financial Inclusion and Financial Sector Stability with Reference to Kenya: A Review of Literature. *Journal of Applied Finance and Banking*, *2* (6), 95, 110-120.

Afc. (2005). *Afc Strategic Plan, 2005-2010*.

Agarwal, S., Driscoll, J. C., & Laibson, D. I. (2013). Optimal mortgage refinancing: A closed-form solution. *Journal of Money Credit and Banking, 45 (4)*, 591–622.

Agufa, M.M. (2016). *The Effect of Digital Finance on Financial Inclusion in the Banking Industry in Kenya.* (Unpublished Thesis), University of Nairobi, Nairobi, Kenya.

Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behaviour*. Englewood Cliffs, NJ: Prentice-Hall.

Ajzen, I. (1991). The theory of planned behaviour. *Organisational Behaviour and Human Decision Processes*, 50 (2), 179–211.

Akudugu, M. A. (2013). The Determinants of Financial Inclusion in Western Africa: Insights from Ghana. *Research Journal of Finance and Accounting, 4*(8), 1-9.

Al-Azzam, M., Mimouni, K., & Ali, M. A. (2012). The Impact of Socioeconomic Factors and Financial Access on Microfinance Institutions. *International Journal of Economics and Finance, 4*(4), 1 - 14.

Allen, F., Carletti, E., Cull, R., Qian, J. Q., Senbet, L., & Valenzuela, P. (2014). The African Financial Development and Financial Inclusion Gaps. *Journal of African Economies*, 23(5), 614-642.

Allgood, S., &Walstad, W. (2013). Financial literacy and credit card behaviours: A cross-sectional analysis by age. *Numeracy*, 6(2), 1-26.

Amadhila, E.M. (2016). *Financing Agricultural Small- And Medium-Scale Enterprises in Namibia.* (Unpublished Dissertation), Stellenbosch University, Cape Town, South Africa.

Ambrose, J. (2012). Savings Mobilisation for Growth of Women-Owned Entrepreneurial Ventures in Kenya (An Empirical Review of the Constraining Factors). *International Journal of Business and Social Science, 3*(15).

Amiruddin, M. S. (2007). Environmental Disclosure and Performance Reporting in Malaysia. *Asian Review of Accounting, 15*(2), 185 - 199.

Amiruddin, M. S. K. Y. A. M. (2007). "Environmental Disclosure and Performance Reporting in Malaysia. *Asian Review of Accounting,* 15(12),185 - 199.

Andrews, M., & Hamlick, K. (2009). Shopping for, Preparing, And Eating Food: Where Does the Time Go? *Amber Waves* 7:4.

Angeletos, G., Laibson, D., Repetto, A., Tobacman, J., & Weiberg, S. (2001). The hyperbolic consumption model: Calibration, simulation and empirical evaluation. *Journal of Economic Perspectives, 15 (3)*, 47–68.

Argwings-Kodhek, G. (2004). Tegemeo Institute of Agricultural Policy and Development. Feast and Famine: Financial Services for Rural Kenya *Working Paper 12.*

Arun, T., & Kamath, R. (2015). Financial inclusion: Policies and practices. *IIMB Management Review, 27*(4), 267-287.

Aryeetey, E.,& M. Hyuha, (1990)."*The Informal Financial Sector and Markets in Africa: An Empirical Study",* Presented at the*Ibrd Africa Economic Issues Conference*, Nairobi, 4-7 June.

Asante, B. O., Afarindash, V., & Sarpong, D. B. (2011). Determinants of Small Scale Farmers Decision to Join Farmer Based Organisations in Ghana. *African Journal of Agricultural Research, 6*(10), 2273-2279.

Atieno, R. (2001). *Formal and Informal Institutions' Lending Policies and Access to Credit by Small-Scale Enterprises in Kenya: An Empirical Assessment* (Vol. 111): African Economic Research Consortium Nairobi.

Awunyo-Vitor, D, Al-Hassan, R.M., & Sarpong, D.B. (2014). Impact of Formal Financial Market Participation on Farm Size and Expenditure on Variable Farm Inputs: The Case of Maize Farmers in Ghana. *Isrn Economics, 2, 1*-9

Ayyagari, M., Demirgüç-Kunt, A., & Maksimovic, V. (2011). Firm Innovation in Emerging Markets: The Role of Finance, Governance, and Competition. *Journal of Financial and Quantitative Analysis,* 46(6), 1545-1580.

Bateman, M. (2010). *Why Doesn't Microfinance Work? – The Destructive Rise of Neoliberalism*, Zed Books. London: Zed Books Ltd., Indian Publisher: Books for Change, Bangalore.

Bateman, M. (2013). '*Latin America's Tragic Engagement with Microcredit,' The Americas Blog. Center for Economic and Policy Research.* Http://Cepr.Net/ Blogs/The-Americas-Blog/Latin-Americas-Tragic-Engagement-With-Microcredit.

Beck, & Demirgüç-Kunt, A. (2007). *Small and Medium Enterprises across the Globe:* A New Database. Small Business Economics 29 (4): 415–34.

Beck, T., & De La Torre, A. (2006). *The Basic Analytics of Access to Financial Services.Working Paper Series4026.*

Beck, T., Demirguc-Kunt, A., & Martinez Peria, M. S. (2007). 'Reaching Out: Access to and Use of Banking Services Across Countries,'*Journal of Financial Economics* 85: 234-266.

Beck, T., & Maimbo, S. M. (Eds.). (2012). *Financial Sector Development in Africa:* Opportunities and Challenges. World Bank Publications.

Becker, G. (1965). A theory of the allocation of time. *Economic Journal*, 75, 493–517.

Becker, G.S. (1981). A Treatise on the Family. Cambridge, Ma: Harvard University Press

Belsley, A., Edwin. K., &Roy, E. (1980). *Regression Diagnostics: Identifying Influential Data and Sources of Collinearity*. New York: John Wiley and Sons.

Berglund, H., Hellström, T., & Sjölander,S. (2007. "Entrepreneurial Learning and the Role of Venture Capitalists." Venture Capital 9(3), 165–181. doi:10.1080/13691060701324445.

Blundell, R., & Macurdy, T. (1999). *Labor Supply: A Review of Alternative Approaches*." In Handbook of Labor Economics, Vol. 3a, O.C. Ashenfelter and D. Card, Eds., New York, Ny: Elsevier, Pp. 1560-1623.

Bodie, Z., Treussard, J., & Willen, P. (2007). The theory of life-cycle savings and investing. *Federal Reserve Bank of Boston Research Paper*7-3.

Brown, J., & Finkelstein, A. (2011). *Insuring long term care in the US* (No. w17451). National Bureau of Economic Research.

Campbell, J. Y., & Viceira, L. M. (2002). *Strategic asset allocation: Portfolio choice for long-term Investors.* New York: Oxford University Press.

Campbell, J. Y. (2006). Household finance. *The Journal of Finance, 61 (4),* 1553–1604.

Capera, L., & Estrada, A. M. D. (2011). *Efectos De Los Lımites a Las Tasas De Interés Sobre La Profundización Financiera*.

Card, D. (1999). The Casual Effect of Education On Earnings, In O.C. Ashenfelter and D. Card, Eds., *Handbook of Labor Econ*., Vol. 3a. New York, Ny. Elsevier, Pp. 1802-1864.

Carpena, F., Cole, S., Shapiro,J., & Zia B., (2011). Unpacking the Causal Chain of Financial Literacy. *Policy Research* Working Paper.

Causin, B. (2010). W*hat Is A 'Smallholder'?Class-Analytic Perspectives On Small-Scale Farming And A Grarian Reform In South Africa*https:// Www.Africaportal. Org/Dspace/Articles/What-Smallholder - Class-Analytical Perspectives - Small-Scale-Farming-And-Agrarian

CBK, (2016). Central Bank of Kenya. *Quarterly Report on Development in The Kenyan Banking Sector For The Period Ended 31st December 2016,* Retrieved from Www.Centralbank.Go.Ke/DownloadsBK, (2009), *Central Bank of Kenya Annual Report 2009*, Nairobi, Kenya

Central Bank of Kenya (Cbk) and Fsd Kenya (2013).*Finaccess National Survey* 2013: Profiling Developments in Financial Access and Usage in Kenya, Nairobi.

Central Bank of Kenya (Cbk) And Fsd Kenya (2016), *Finacess National Survey* 2016: Profiling Developments in Financial Access and Usage in Kenya, Nairobi.

Cgap, (2009). *Measuring Access to Financial Services around the World',* Washington Dc: Cgap.

Cgap. (2004). *Scaling Up Poverty Reduction:* Case Study for Microfinance. World Bank Financial Sector Network. Washington, D.C.

Chaia, A., Dalal, A., Goland, T., Gonzalez, M. J., Morduch, J., & Schiff, R. (2009). Retrieved fromHalftheworldisunbanked.Com/Resource/Practitionersguidetohea/2%20livelihood%20zoning.Pdf.

Chamberlin, J. (2008). *Its Small World After All: Defining Smallholder Agriculture in Ghana*, *823*: Intl Food Policy Res Inst.

Chandio, A.A., Jiang, Y., Wei, F., & Guangshun, X. (2018). Effects of Agricultural Credit On Wheat Productivity of Small Farms in Sindh, Pakistan: Are Short-Term Loans Better? *Agricultural Finance Review, 78*(5), 592-610.

Chandrasekhar, C. P. (2010). Development Banks: Their Role and Importance For Development, Retrieved July 2, 2017, From Www.Networkideas.Org

Chenaa, T.A., Maria, A.G., & Teno, M.N. (2018). Determinants of Access to Credit and Performance of Smallholder Farmers in Kumba Municipality, South West Region of Cameroon. *Asian Journal of Agricultural Extension, Economics & Sociology*, *25*(1), 1-12.

Chikalipah, S., & Chikalipah, S. (2017). What Determines Financial Inclusion in Sub-Saharan Africa? *African Journal of Economic and Management Studies, 8*(1), 8-18.

Chithra, N., & Selvam, M. (2013). *Determinants of Financial Inclusion:* An Empirical Study on the Inter-State Variations in India. Lap Lambert Academic Publishing,Germany.

Cicchetti, C. J., & Dubin, J. A. (1994). A microeconomet-ric analysis of risk aversion and the decision to self-insure. *Journal of Political Economy, 102 (1),* 169–186.

Claessens, S. (2006). *Access to Financial Services: A Review of the Issues and Public Policy Objectives.*The World Bank Research Observer, 21(2), 207–240.

Clamara, N. P. X., and Tuesta, D. (2014). Factors that matter for financial inclusion: Evidence from Peru.

Communications Commission of Kenya, Annual Report forthe Financial Year 2014–2015; Www.Ca.Go.Ke/Index.Php/ Annual-Reports.

Creswell, J. W. (2003). *Research Design: Qualitative, Quantitative and Mixed Methods Approaches (2nd Ed.)* Thousand Oaks, Ca: Sage Publications India Pvt. Ltd. India.

Curtis, M. (2013). Supporting Small Farmers: The Need for Change in Kenya's Agriculture Budget. Improving African Agriculture Spending: Budget Analysis of Burundi, Ghana, Zambia, Kenya and Sierra Leone, *Curtis Research Independent Development Policy Analysis 81*.

Davies, R., & Elgar, K. S. (2014). *Enterprise Challenge Funds for Development:* Rationales, Objectives, Approaches. *Development Policy Centre Discussion Paper No. 36.*

Dawson, C. (2002). *Practical Research Methods: A User Friendly Guide to Research.* How to Books Ltd, 3 Newtee Place, United Kingdom.

Dawson, C. (2009). *Introduction to Research Methods: A Practical Guide for Anyone Undertaking a Research Project*: Hachette UK.

De Klerk, M., Fraser, F., & Fullerton, K. (2013). The Status of Agricultural and Rural Finance in South Africa. Finmark Trust, March 2013.

De Long, J. B. (2000). The Triumph of Monetarism? *Journal of Economic Perspectives 14*(1), 83-94.

Degryse, H., Lu, L., & Ongena, S. (2014). *Informal or Formal Financing? Or Both? First Evidence on the Co-Funding of Chinese Firms. First Evidence on the Co-Funding of Chinese Firms.* Bofit Discussion Papers 14/2013 .

Demirguc-Kunt, A., & Levine, R. (2009). *Finance and Inequality: Theory and Evidence:* National Bureau of Economic Research: 15275.

Demirguc-Kunt, A., & Klapper. (2012). M*easuring Financial Inclusion: The Global Findex Database,* World Bank Policy Research Working Paper: 6025.

Demirguc-Kunt, A., & Leora, K. (2012). 'Financial Inclusion in Africa – An Overview,'*World Bank Policy Research Working Paper* 6088.

Demirgüç-Kunt, A., & Klapper, L. (2013). Measuring Financial Inclusion: Explaining Variation in Use of Financial Services across and Within Countries. B*rookings Papers On Economic Activity, 2013*(1), 279–340.

Demirguc-Kunt, A, Klapper,L, Singer,D, & Peter V,. (2015). "The Global Findex Database 2014: Measuring Financial Inclusion around the World." Policy Research Working Paper 7255, World Bank, Washington, Dc.

Demirguc-Kunt, A., Klapper, L., Singer, D., Ansar, S., & Hess, J. (2018). *The Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution*: The World Bank.

Dev, S. M. (2006). *Financial Inclusion: Issues and Challenges. Economic and Political Weekly,* 4310–4313.

DeVon, H. A., Block, M. E., Moyle-Wright, P., Ernst, D. M., Hayden, S. J., Lazzara, D. J., & Kostas-Polston, E. (2007). A psychometric toolbox for testing validity and reliability. *Journal of Nursing scholarship*, 39(2), 155-164.

Dinesh, V., & Mhlanga, O. (2015). Influence of Demographic Factors on Business Performance in Small to Medium Tourism Enterprises. *African Journal of Hospitality, Tourism and Leisure, 4*(2), 7.

Dirisu, J. I., Iyiola, O., & Ibidunni, O. S. (2013). Product Differentiation: A Tool of Competitive Advantage and Optimal Organisational Performance (A Study of Unilever Nigeria Plc. *European Scientific Journal, 9*(34), 258-251.

Drama Bhg, Yao S (2010). „ The Demand for Money in Cote D"Ivoire: Evidence from the Cointegration Test". *International Journal of Economics and Finance,* 3(1): 188-197Https://Openknowledge.Worldbank.Com/Handle/10986/3562.

Duncombe, R. (2012). An Evidence-Based Framework for Assessing the Potential of Mobile Finance in Sub-Saharan Africa. *The Journal of Modern African Studies,* 50(03), 369–395.

Dupas, P., & Robinson, J. (2013). Savings Constraints and Microenterprise Development: Evidence from a Field Experiment in Kenya. *American Economic Journal: Applied Economics, 5*(1), 163-192.

Fadiga, M. L., & Fadiga-Stewart, L. A. (2004). *Collective Action and Informal Financial Institutions: An Empirical Analysis of Rotating and Savings Credit Associations (Roscas) In Senegal.* In Presentation at the American of Agricultural Economics Association Annual Meeting, Denver, Colorado, August (Pp. 1-4).

Economic outcomes (No. 18412). NBER Working Paper. Cambridge, MA: National Bureau of Economic Research. Retrieved from http://www.nber.org/papers/w18412.pdf.

Engen, E. M., Gale, W. G., & Uccello, C. E. (2005). *Lifetime earnings, Social Security benefits, and the adequacy of retirement wealth accumulation*. Social Security Bulletin, 66(1), 38–57.

FAO. (2013). *A Policymakers' Guide to Crop Diversification: The Case of Potato in Kenya.* Rome: Food and Agriculture Organisation of the United Nations.

Fin Mark Trust. (2016). Gender and Financial Inclusion analysis of Financial Inclusion of Women in The Sadc Region. *Journal of the European Economic Association*, 3(2-3), 268-278.

Finacess National Survey (2016). *The 2016 Finances Household Survey on Financial Inclusion.* Nairobi, Kenya.

Finke, M., Huston, S., & Waller, W. (2009). *Do contracts impact comprehensive fi nancial advice?Financial Services Review*, 18 (2), 177–193.

Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research*. Reading, MA: Addison-Wesley.

FLEC. (2011). *Promoting financial success in the United States: National strategy for financial literacy*. Retrieved from http://www.treasury.gov/resource-center/financial-education/Documents/NationalStrategyBook_12310%20%282%29.pdfFINRA

Forbes Insights. 2010. *"Small and Medium Sized Enterprises: Rebuilding a Foundation for PostrecoveryGrowth."*Retrievedfromhttp://images.forbes.com/forbesinsights/StudyPDFs/SME_RebuildingAFoundation.pdf.

Fosnacht, K., Sarraf, S., Howe, E., & Peck, L. K. (2017). How important are high response rates for college surveys? The *Review of Higher Education*, 40(2), 245-265.

Fridell, M. (2007). Exploring the Roles of Informal, *Formal and Semiformal Medium Credit in Jordan.* Lund University School of Economics and Management. University Press 97/1, Pages: 10 – 16.

FSD Kenya. (2019). *Inclusive Finance? Nairobi*, Kenya: FSD Kenya.

Fungáčová, Z., & Weill, L. (2015). Understanding financial inclusion in China. *China Economic Review*, *34*, 196-206.

Gall, M. D., Gall, J. P., & Borg, W. R. (2007). *Educational Research: An Introduction. Boston* Pearson Education. Boston.

Garner, E., & De La O Campos, A. P. (2014). *Identifying the"Family Farm".* An Informal Discussion 0f the Concepts and Definitions.

Gebauer, J., & Shaw, M. J. (2004). Success Factors and Impacts of Mobile Business Applications: Results from a Mobile E-Procurement Study. *International Journal of Electronic Commerce.* 8(3) 19-41.

Gebauer, J., & Ginsburg, M. (2006). Exploring the Black Box of Task-Technology Fit. *Communications of the Acm.*52 (1), 130-135.

Germain, R. D. (2001). Global Financial Governance and the Problem of Inclusion. *Global Governance*, (7) 411-426.

Ghate, B. (1992). *Interaction between the Formal and Informal Financial Sectors:* The Asian Experience. World Development.20(6), 859-872.

Ghosh, J. (2013). Microfinance and the Challenge of Financial Inclusion for Development. *Cambridge Journal of Economics,* 37(6), 1203-1219.

Goodhue, D. L., & Thompson, R. L. (1995). Task-Technology Fit and Individual Performance. *Mis Quarterly*, 213-236.

Grable, J. E. (2000). Financial risk tolerance and additional factors that affect risk taking in everyday money matters. *Journal of Business and Psychology,* 14 (4), 625–630.

Greene, W.H. (2003). *Econometric Analysis.* 5rd Ed., New York, Ny: Macmillan Publishing Co.,

Greenwood, J., Seshadri, A., & Yorukoglu, M. (2005). Engines of Liberation. *Review of Economic Studies, 72,*109-133.

Grohmann, A., & Menkhoff, L. (2017). *Financial Literacy Promotes Financial Inclusion in Both Poor and Rich Countries.* Diw Economic Bulletin, 7(41), 399-407.

Grohmann, A., Klühs, T., & Menkhoff, L. (2017). Does Financial Literacy Improve Financial Inclusion? Cross Country Evidence. *Diw Berlin Discussion Paper No*. 1682.

Gupte, R., Venkataramani, B., & Gupta, D. (2012). Computation of financial inclusion index for India. *Procedia-Social and Behavioural Sciences*, *37*, 133-149.

Hall, J., & Lavrakas, P. (2008). *Cross-Sectional Survey Design.*Encyclopaedia of Survey Research Methods, 173-174.

Hamermesh, D. (2007). Time to Eat: Household Production under Increasing Income Inequality, *American Journal of Agricultural Economics, 89*, 852-893.

Hanna, S., Fan, J. X., & Chang, Y. R. (1995). Optimal lifecycle savings. Financial Counselling and Planning, 6, 1–15.

Hannig, A., & Jansen, S. (2010). *Financial Inclusion and Financial Stability: Current Policy Issues.* Working Paper No.259. Tokyo: Asian Development Bank Institute.

Hansen, T., Slagsvold, B., & Moum, T. (2008). Financial satisfaction in old age: A satisfaction paradox or a result of accumulated wealth? *Social Indicators Research,* 89 (2), 323–347.

Hansen, H., & Rand, J. (2014). Estimates of Gender Differences in Firm's Access to Credit in Sub-Saharan Africa. *Economics Letters, 123*(3), 374-377.

Hastings, J. S., Madrian, B. C., & Skimmyhorn, W. L. (2012). Financial literacy, fi nancial education and economic outcomes. *Annual Review of Economics*, Vol. 5:347-373.

Hayes, A. F. (2015). An index and test of linear moderated mediation. Multivariate behavioral research, 50(1), 1-22.

Heyer, A.,& King, M. (Eds). (2015). *Kenya's Financial Transformation in The 21st Century.* Nairobi, Kenya: Fsd Kenya.

Hilgert, M., J. Hogarth, and S. Beverly. 2003. "'Household Financial Management: The Connection between Knowledge and Behaviour'."*Federal Reserve* Bulletin 89 (7): 309–322.

Huffman, W.E. & Feridhanusetyawan, T. (2007). Migration, Fixed Costs and Location-Specific Amenities: A Hazard Rate Analysis for A Panel of Males, *Amer. J. Agri. Econ. 89*, 368-382.

Huffman, W.E. (1991). *Agricultural Household Models: Survey and Critique*," In Multiple Jobholding among Farm Families in North America. Milton Hallberg, Et Al., Ed., Iowa State University Press, Pp. 79-111.

Huffman, W.E. (2008). U*nderstanding Post-War Changes in U.S*. Household Production: A Full Income Demand-System Perspective. Iowa State University, Department of Economics Working Paper #06036.

Hung, A.A., Parker, A. M., & Yoong, J.K. (2009) Defining and measuring financial literacy (WR-708). RAND Labor and Population Working Paper Series. Retrieved from http://www.rand.org/content/damrand/pubs/workingpapers/2009/RAND_WR708.pdf.

Huston, S. J. (2010). Measuring Financial Literacy. *Journal of Consumer Affairs, 44*(2), 296-316.

Ibbotson, R., Milevsky, M., Chen, P., & Zhu, K. (2007). *Lifetime fi nancial advice*: Human capital, asset allocation, and insurance. Chicago: CFA Institute.

International Finance Corporation (2014). *Access to Finance for Smallholder Farmers Learning from the Experiences of Microfinance Institutions in Latin America*. Washington D.C: International Finance Corporation

Iqbal, B. A., & Sami, S. (2017). Role of banks in financial inclusion in India. *Contaduría y Administración*, *62*(2), 644-656.

Jack, W., & Suri, T. (2011). *Mobile Money: The Economics of M-pesa* (No. W16721). National Bureau of Economic Research.

Jaquier, B. (2010). Http://Www.Ecofine.Com/Strategy/Differenciation%20stategy.Htm. Http://Www.Ecofine.Com.

John, B., & Mary, J. (2016). *Financial Inclusion of the Small and Marginal Farmers by the Banking Sector in Kerala* (Doctoral dissertation, Cochin University of Science and Technology).

Johnson, G., & Scholes, K. (2009). *Exploring Corporate Strategy*, 6th Ed. Chennai, India: Prentice Hall.

Johnson, S., & Arnold, S. (2012). *Inclusive Financial Markets: Is Transformation Underway in Kenya?* Development Policy Review, 30(6), 719-748.

Johnson, S., & Upadhyaya, R. (2015). *Transformation of Kenya's Banking Sector 2000 2012*. Retrievedfrom.Http://Www.Google.Com/Url?Sa=T&Rct=J&Q=&Esrc=S&Source Web&Cd=1&Cad=Rja&Uact=8&Ved=0ahukewiitc2swqvxahxjhqqkhxb_Bxkqfggm maa&Url=Http%3a%2f%2fopus.Bath.Ac.Uk%2f48797%2f&Usg=Aovvaw2znksffb ywsijsp4qsiz2

Kabakova, O., &Plaksenkov, E. (2018). Analysis of factors affecting financial inclusion: Ecosystem view. *Journal of business Research*, 89, 198-205.

Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. Econometrica, 47 (2), 263–291.

Kaiser, T., & Menkhoff, L. (2017). *Does Financial Education Impact Financial Literacy and Financial Behaviour, And If So, When?* The World Bank Economic Review, 31(3), 611-630.

Kalu, u. I., omeje, a. N., & mba, a. J. (2018). Financial inclusion in the agricultural sector in Nigeria: an index of penetration. *International journal of economics and financial issues*, *8*(5), 35.

Kalunda, E. (2014). Financial Inclusion Impact on Small-Scale Tea Farmers in Nyeri County, Kenya. *World Journal of Social Sciences 4(1)*, 130-139.

Karlan, D., & Zinman, J. (2009). Expanding Credit Access: Using Randomized Supply Decisions to Estimate the Impacts. *The Review of Financial Studies*, 23(1), 433-464.

Karlan, D., Kendall, J., Mann, R., Pande, R., Suri, T., & Zinman, J. (2016). *Research and Impacts of Digital Financial Services* (No. W22633). National Bureau of Economic Research.

Kathuri, N. J., & Pals, D. A. (1993). *Introduction to Educational Research*.

Kavale, S., Mugambi, F., & Namusonge, G. (2016). The Effects of Product Differentiation Strategy on Corporate Growth in Selected Microfinance Institutions in Kenya. *International Journal for Research in Business, Management and Accounting*, *2*(6), 13 -28.

Kempson, E. (2006). Policy Level Response to Financial Exclusion in Developed Economies: Lessons for Developing Countries, Paper Presented at The Conference, Access to Finance: Building Inclusive Financial Systems, World Bank, Washington, Dc. *Government of India: Economic Survey (Various Years), Government of India New Delhi*. *Financial Inclusion an Abiding Virtue, the Hindu Monday*.

Kempson, E., Atkinson, A., & Pilley, O. (2004). Policy Level Response to Financial Exclusion in Developed Economies: Lessons for Developing Countries. *Report of Personal Finance Research Centre*, University of Bristol.

Keng, S.H., & Lin, C.H. (2005). Wives' Value of Time and Food Consumed Away from Home in Taiwan. *Asian Economic Journal, 19*,319-334.

Kenya Institute for Public Policy Research and Analysis (KIPPRA). (2017). *Kenya Economic Report.*

Kerkhofs, M., & Kooremen. P. (2003). Identification and Estimation of a Class of Household Production Models. *Journal of Applied Econometrics, 18*, 337-369.

Khan, S., A Mehotra, L. Anthony and D. Kuijpers (2015), Agent Network Accelerator Survey: Kenya Country Report 2014, Nairobi: The Helix Institute of digital Finance Retrieved from Http://Www.Helix-Institute.Com/Sites/Default/Files/Publications/Agent%20network%20accelerator%20survey%20-%20kenya%20country%20report%202014_0.Pdf.

Khandker, S. R. (2000). Savings, Informal Borrowing, and Microfinance. *The Bangladesh Development Studies, (8)* 49-78.

Kibaara, B. (2007). *Moving Results into Policies and Practice Moving Results into Policies and Practice. Tegemeo* Institute of Agricultural Policy and Development Working Paper No 20/2006.

Kibaara, B., & Nyoro, J. (2007). *Expanding the Agricultural Finance Frontier: A Kenyan Case.* Paper Presented at The Aaae Ghana Conference, 20–22 August, Institute of Agricultural Policy and Development, Nairobi.

Kikulwe, E. M., Fischer, E., & Qaim, M. (2014). *Mobile Money, Smallholder Farmers, and Household Welfare in Kenya. Plos One,* .122(3), 879–924.

Kim, M., Kristiansen, E.G., Vale, B. (2001). Endogenous Product Differentiation in Credit Markets: What Do Borrowers Pay for? *Journal of Financial Intermediation, 9*, 7—25.

Kim, D. W., Yu, J. S., & Hassan, M. K. (2018). Financial inclusion and economic growth in OIC countries. *Research in International Business and Finance*, *43*, 1-14.

Kimutai, B. D., & Chepchumba, R. (2016). Determinants of Small-Scale Horticulture Farmers' Decision to Join Farmer-Based Organisations in Nandi County, Kenya. *International Journal of Economics, Commerce and Management*, *4*(4).

Kinsey, J. (1983) "Working Wives and the Marginal Propensity to Consume Food Away from Home. *American Journal of Agricultural Economics, 65*, 10-19.

Kinyua, A. N. (2014). Factors Affecting the Performance of Small and Medium Enterprises in The Jua Kali Sector in Nakuru Town, Kenya. *Journal of Business and Management 16(1) 80-93.*

Kiplimo, J.C., Ngenoh, E., Koech, W., & Bett, J.K. (2015). Determinants of Access to Credit Financial Services by Smallholder Farmers in Kenya. *Journal of Development and Agricultural Economics, 7*(9), 303-313.

Kirkpatrick, L. A., & Feeney, B. C. (2003). *A simple guide to SPSS for windows: For versions 8.0, 9.0, 10.0, and 11.0.* Wadsworth Publishing Company.

Kirui, O. K., Okello, J. J., & Nyikal, R. A. (2010). *Awareness and Use of M-Banking Services in Agriculture: The Case of Smallholder Farmers in Kenya.* Paper Presented at The 2010 Aaae Third Conference/Aeasa 48th Conference.

Kirui, O. K., Okello, J. J., & Nyikal, R. A. (2012). Awareness of Mobile Phone-Based Money Transfer Services in Agriculture by Smallholder Farmers in Kenya. *International Journal of Ict Research and Development in Africa (Ijictrda), 3*(1), 1-13.

KNBS. (2017). *Economic National Survey.* Nairobi: Kenya National Bureau of Statistics.

Kombo, D., & Tromp, D. (2009). *Introduction to Proposal Writting.* Nairobi: Pauline Publications.

Kostov, P., Arun, T., & Annim, S. (2015). Access to financial services: The case of the 'Mzansi' account in South Africa. *Review of Development Finance*, *5*(1), 34-42.

Kothari, C. R. (2004). *Research Methodology: Methods and Techniques*. New Age International.

Kotler, P. (2009). *Marketing Management.* Usa: Printile Hall.

KPDS (2011). *Kenya Population Data Sheet. The 2011 Population Reference Bureau, Gok.* Retrieved fromHttp://Www.Prb.Org/Pdf11/Kenya-Population-Data-Sheet-2011.Pdf.

Kumar, A., Pal, R., & Pal, R. (2018). Usage of Formal Financial Services in India: Demand Barriers or Supply Constraints? *Economic Modelling.*

Kundu, D. (2015). Addressing the Demand Side Factors of Financial Inclusion. *Journal of Commerce and Management Thought*, *6*(3), 397.

Kunovskaya, I. A., Cude, B. J., & Alexeev, N. (2014). Evaluation of a Financial Literacy Test Using Classical Test Theory and Item Response Theory. *Journal of Family and Economic Issues*, 35(4), 516-531.

Kunreuther, H., & Pauly, M. (2005). Terrorism losses and all perils insurance. *Journal of Insurance Regulation*,23 (4), 3.

Kvangraven, I. H., & Dos Santos, P. L. (2016). *Financial Inclusion and Its Discontents*. RetrievedfromHttp://Www.Google.Com/Url?Sa=T&Rct=J&QWeb&Cd=1&Cad=Rja&Uact=8&Ved=0ahukewio4s6v86rxahuqlfakhquibicqfggmmaa&Url=Http%3a%2f%2fprivatedebtproject.Org%2fviewarticles.Php%3ffinancialinclusionanditsdiscontents16&Usg=Aovvaw0xjazi2wijqwp3jrj7qnz.

Lagarde, C. (2014). *Empowerment through Financial Inclusion*. Paper Presented at The International Forum for Financial Inclusion. Mexico City. Mexico.

Lawrence, M., King, A. & Holt, J. (2011). T*he Practitioners Guide to Household Economy.* Approach. Retrieved from: Http://Www.Feg-Consulting.

Lawshe, C. H. (1975). A quantitative approach to content validity. Personnel psychology, 28(4), 563-575.

Ledesma, R. D., & Valero-Mora, P. (2007). *Determining the number of factors to retain in EFA: An easy-to-use computer program for carrying out parallel analysis.* Practical assessment, research, and evaluation, 12(1), 2.

Leeladhar, V. (2006). *Taking Banking Services to the Common Man: Financial Inclusion. Reserve Bank of India Bulletin*. Retrieved October 19, 2017, From: Http://Rbidocs.Rbi.Org.In/Rdocs/Bulletin/Pdfs/68236.Pdf.

Levene, H. (1960). I*ngram Olkin, Harold Hotelling, Et Alia*, Ed. Contributions to Probability and Statistics: Essays in Honor of Harold Hotelling. Stanford University Press. 278–292.

Levesque, T., & Mcdougall, G. H. (1996). Determinants of Customer Satisfaction in Retail Banking. *International Journal of Bank Marketing*, *14*(7), 12-20.

Li, L. (2018). Financial inclusion and poverty: The role of relative income. China Economic Review, 52, 165-191.

Lim, H., & Dubinsky, A. J. (2005). *The theory of planned behaviour in e-commerce: Making a case for interdependencies between salient beliefs*. Psychology & Marketing, 22, 833–855.

Lusardi, A. (2011). *American's financial capability* (No.18412). NBER Working Paper. Cambridge, MA: National Bureau of Economic Research. Retrieved from http://www.nber.org/papers/w17103.pdf.

Lusardi, A. 2012. *"Financial Literacy or Financial Capability?*" Financial Literacy and Ignorance, 4 October. Accessed December 5, 2014. http://annalusardi.blogspot.co.uk/2012/10/financial-literacy-orfinancial.html.

Lusardi, A., Mitchell, O. S., & Curto, V. (2013). *Financial literacy among the young: Evidence and implications for consumer policy* (No. 15352). Cambridge, MA: National Bureau of Economic Research. Retrieved from http://www.nber.org/papers/w15352.pdf.

Maimbo, S. M., & Henriquez, G. (2014). Interest Rate Caps Around the World: Still Popular, But A Blunt Instrument. *World Bank Policy Research Working Paper No. 7070*.

Masiyandima, N., Mlambo, K., & Nyarota, S. (2017). *Financial Inclusion and Quality of Livelihood in Zimbabwe Retrieved fromhttp://Scholar.Google.Com/Scholar_Url?Url=Https%3a%2f%2f2017.Essa.Org .Za%2ffullpaper%2fessa_3578.Pdf&Hl=En&Sa=T&Oi=Ggp&Ct=Res&Cd=0&Ei*

Mbugua, I. (2013). *Factors Determining Access to Credit Facilities for Farmers in Cherangany Constituency in Trans- Nzoia County.* (Unpublished Thesis), University of Nairobi, Nairobi, Kenya.

Meeme, B.M. (2013). *Factors Influencing Access to Formal Credit by Small Scale Women Tea Farmers in Kenya: A Case of Thika District, Kiambu County*. (Unpublished Thesis), University of Nairobi, Nairobi, Kenya.

Meyer, R. L. (2011). *Subsidies as an Instrument in Agriculture Finance*: A Review. World Bank, Washington, Dc. © World Bank. Https://Openknowledge.Worldbank.Org/Handle/10986/12696 License: Cc by 3.0 Igo."

Michael, K. (2012) "*Comparative Financial Inclusion in Sub-Saharan Africa and Frontiers of Financial Inclusion Research*", Presentation at Iiis, Trinity College Dublin. Retrieved from Http://Michaelking.Ie/Wp-Content/Uploads/2012/12/Colloquium-Presentation-December-2012-Final.Pdf.

Migheli, M. (2016). *Land Ownership, Access to Informal Credit and It's Cost in Rural Vietnam* (No. 201619). University of Turin.

Mincer, J. (1963). Market Prices, Opportunity Costs, and Income Effects. In *Measurement in Economics,* C. Christ, Ed. Stanford, Ca: Stanford University Press, Pp. 66-82.

Mitton, L. (2008). *Financial Inclusion in the Uk: Review of Policy and Practice*. York: Joseph Rowntree Foundation.

MOALF. (2016). *The National Potato Strategy (2016-2020).* Nairobi: Agricultural Information Resource Center (Airc).

Modigliani, F. (1986). Life cycle, thrift, and the wealth of nations. American Economic Review, 76(3), 297–313.

Muchiri, S., & Kamau, M. (2011). Models of Production. *Study Paper for Eastern African Farmers Federation (Eaff), Nairobi*.

Muema, A. N. (2015). *Effect of Equity Bank's Financial Management Training Programme on Small-Scale Farmers' Uptake of Credit in Makueni County* Retrievedfromhttp://Repository.Seku.Ac.Ke/Handle/123456789/1054.

Mugenda, O., & Mugenda, A. (2003). *Research Methods: Quantitative and Qualitative Approaches.*

Muricho, G. S. (2015). *Determinants of Agricultural Commercialization and Its Impacts on Welfare among Smallholder Farmers (*Doctoral Dissertation University of Nairobi.).

Mutsonziwa, K., & Maposa, O. K. (2016). Mobile Money-A Catalyst for Financial Inclusion in Developing Economies: A Case Study of Zimbabwe Using Fin Scope Survey Data. *International Journal of Financial Management*, 6(3), 45-56.

Mwangi, G. N. (2012). The effect of credit risk management on the financial performance of commercial banks in Kenya (Doctoral dissertation).

Nabintu, N. (2013). *Factors Affecting the Performance of Small and Micro Enterprises (Smes).* Traders at City Park Hawkers Market in Kiambu County, Kenya (Doctoral Dissertation).

Nagarajan, G., & Meyer, R. L. (2005). Rural Finance: Recent Advances and Emerging Lessons, Debates, and Opportunities. *Retrieved from*Http://Aede.Osu.Edu/Resources/Pubs.Php.

Nduta, N. R. N. (2012). *Socio-Economic Factors Influencing Implementation of Njaa Marufuku Kenya Programme for Sustainable Food Security in Makuyu Division, Murang'a County*. Unpublished Project Report) Nairobi University.

Njoroge, K., Ombati, J., & Oywaya-Nkurumwa, A. (2013). Implementation of Njaa Marufuku Kenya Intervention in Kajiado County and the Implications for Food Security. *Academia Journal of Agricultural Research*, *1*(7), 122-130.

Nkwede, F. (2015). Financial Inclusion and Economic Growth in Africa: Insight from Nigeria. *European Journal of Business and Management*, 7(35), 71-80.

Nyaga, J., & Nzulwa, J. (2017). Assessment of Strategic Factors Affecting Access to Credit Facilities by Smallholder Dairy Farmers in Githunguri Sub-County, Kiambu County, Kenya. *The Strategic Journal of Business & Change Management, 2* (49), 865 – 888.

Paaskesen, L., &Angelow, W. (2015). Youth financial inclusion in Kenya: Co-creating a way forward. Available at SSRN 2584413.

Park, C. Y., & Mercado, R. (2015). *Financial Inclusion, Poverty, and Income Inequality in Developing Asia.*

Park, J.L.,& Capps, O. (1997). Demand for Prepared Meals by U.S. Households. *American Journal of Agricultural Economics 79,* 814-824.

Peacock, C., Jowett, A., Dorward, A., Poulton, C., & Urey, I. (2004). Reaching the Poor: A Call to Action. Investment in Smallholder Agriculture in Sub-Saharan Africa. *London: Farm-Africa*.

Perry, M., O'hara, K., Sellen, A. Brown, B. & Harper, R. (2001). Dealing with Mobility: Understanding Access Anytime, Anywhere. Acm Transactions on*Computer-Human Interaction*, 8, 4, 323-347.

Perry, V. G., & Morris, M. D. (2005). Who is in control? The role of self-perception, knowledge, and income in explaining consumer financial behavior. *Journal of Consumer Affairs, 39 (2)*, 299–313.

Pikkarainen, T., Pikkarainen, K., Karjaluoto, H., & Pahnila, S. (2004). Consumer Acceptance of Online Banking: An Extension of the Technology Acceptance Model. *Emerald Research, 14*(3), 224-235.

Plagnol, A. C. (2011). Financial satisfaction over the life course: The infl uence of assets and liabilities. *Journal of Economic Psychology, 32 (1),* 45–64.

Polit, D., & Deck, C. (2003). *Nursing Research: Principles Of Methods*, 7th Edition, Lippincott,Williams& Wilkins, United States Of America.

Porteous, D. (2007). Just How Transformational Is M-Banking. *Commissioned by Finmark.*

Pulver, C., Jack, W., & Suri, T. (2009). The Performance and Impact of M-Pesa. *Fsd Kenya*.

Office of Fair Trading (Oft), (*2010*)*Price Controls: Evidence and Arguments Surrounding Price Control and Interest Rate Caps for High-Cost Credit*. London.

Okpara, G. C. (2009). A Synthesis of the Critical Factors Affecting Performance of the Nigerian Banking System. *European Journal of Economics, Finance and Administrative Sciences, 3*(17), 35-42.

Olkin, I. (1991). *A Conversation with W. Allen Wallis.* Statistical Science, 6 (2), 121-140.

Ololade, R. A., & Olagunju, F. I. (2013). Determinants of Access to Credit Among Rural Farmers in Oyo State, Nigeria. *Global Journal of Science Frontier Research Agriculture and Veterinary Sciences, 13*(2), 16-2.

Oscar, T. (2007). *Panel Data Analysis Fixed and Random Effects Using Stata (V. 4.2)*. Princeton University: Data and Statistical Services.

Ostrom, E. (1999). Context and Collective Action: Four Interactive Building Blocks for a Family of Explanatory Theories. *Paper Presented at the Workshop On Political Theory and Policy Analysis,* Indiana University,

Otiato, E. H. (2016). Determinants of Financial Inclusion and Performance of Small and Medium Enterprises in Nairobi City County. *International Journal of Finance and Accounting*, 1(3), 62-78.

Otolo, J. R. W. J. (2013). Factors Influencing Livelihood Zonation in Kenya. *International Journal of Education*, 1(12), 1-10.

Ouma, S.A., Odongo, M.T., &Were, M. (2017). Mobile financial Services and financial Inclusion: Is It a Boon for Savings Mobilisation? *Review of Development Finance, 7,* 29 – 35.

Ozili, P. K. (2018). Impact of Digital Finance on Financial Inclusion and Stability. *Borsa Istanbul Review*, *18*(4), 329-340.

Pedhazur, E. J. (1997). *Multiple regression in behavioral research: Explanation and prediction.* Thompson Learning. Inc: New York, NY.

Quinn, S., Patterson, T., & Vaux, G. (2008). Financial Inclusion–Don't Go Banking On It! Benefits: *The Journal of Poverty & Social Justice*, *16(2).* Retrieved from Http://Search.Ebscohost.Com/Login.Aspx?Direct=True&Profile=Ehost&Scope=Site&Authtype=Crawler&Jrnl=09627898&An=32767239&H=Wpsgcdopjmjbh26ii4igc2%2bfr83ndp4n6gdunawzoe7wxchsa0piqcdvhbknb1ocv8afawpvaiapaezoamggfa%3d%3d&Crl=C.

Rahim, M., &Magner, R. (2005). Confirmatory Analysis of the Styles of Handling Interpersonal Conflict. First-Order Factor Model and its Inter-Variance across Groups. *Journal of applied psychology*, 80.

Rao, V. S. (2011). *Strategic Business Management*. Durban: Excel Learning Pty.

Reich, C. M., & Berman. J. S. (2015). "Do Financial Literacy Classes Help? An Experimental Assessment in a Low-income Population."*Journal of Social Service Research 41*: 193–203.

Reid, M.D. (1934). *The Economics of Household Production*. New York, Ny: J. Wiley & Sons.

Remund, D. L. (2010). Financial literacy explicated: The case for a clearer defi nition in an increasingly complex economy. *Journal of Consumer Affairs, 44 (2), 276–295.*

Rogerson, R., & Wallenius, J. (2007). Micro and Macro Elasticities in a Lifecycle Model with Taxes. *Nber Working Paper* 13017.

Sabates, R., Gould, B.E., & Villarreal, H.J. (2001). Household Composition and Food Expenditures: A Cross Country Comparison. *Food Policy 26*, 571-586.

Salami, A., Kamara, A. B., & Brixiova, Z. (2010). *Smallholder Agriculture in East Africa: Trends, Constraints and Opportunities*: African Development Bank Tunis.

Salazar-Cantú, J., Jaramillo-Garza, J., & Álvarez-De La Rosa, B. (2015). Financial Inclusion and Income Inequality in Mexican Municipalities. *Open Journal of Social Sciences, 3(12), 29.*

Sanderatne, N. (2003). *Informal Finance in Transition.Sri Lanka Economic Journal*, 4(2), 31-57.

Sarma, M. (2010)" Index of Financial Inclusion"*Indian Council for Research on International Economic Relations,*Working paper no.215

Sarma, M. (2010). *Discussion Papers in Economics. Discussion Paper* No.10-05. New Delhi: Jawaharlal Nehru University.

Sarma, M., & Pais, J. (2011). Financial Inclusion and Development. *Journal of International Development*, 23(5), 613–628.

Schreiner, M. (2001). *Informal Finance and the Design of Microfinance.* Development in Practice, 11(5), 637-640.

Schwartz, A. J. (2004). Why A Monetary History Has Had a Long Life? *Cato Journal*, 23 (3), 353-355.

Sedgwick, P. (2015). *Meta-analyses: what is heterogeneity? Bmj*, 350, h1435.

Seem, O.D. (2011). *Product Differentiation as A Strategy for Sustainable Competitive Advantage in Banks Issuing Credit Cards in Kenya.* (Unpublished Thesis), University of Nairobi, Nairobi, Kenya.

Shafiwu, A.B., & Mohammed, A. (2013). The Effect of Product Differentiation on Profitability in the Petroleum Industry of Ghana. *European Journal of Business and Innovation Research, 1*(4), 49-65.

Sheikh, A. (2015). *Realisation of Sustainable Competitive Advantage through Product Differentiation in Commercial Banks in Kenya: A Case Study of First Community Bank.* (Unpublished Thesis), University of Nairobi, Nairobi, Kenya.

Shenoy, G. V., &Madan, P, L. (1994). Statistical methods in business and social sciences. Macmillan India.

Sherraden, M. S. (2013). Building blocks of financial capability. In J. Birkenmaier, M. Sherraden, & J. Curley (Eds.), financial capability and asset development: *Research, education* (pp. 1–73). New York/Oxford: Oxford University Press.

Shim, S., Easlick, M. A., Lotz, S. L., & Warrington, P. (2001). An online prepurchase model: The role of intention to search. *Journal of Retailing, 77,* 397–416.

Shim, S., Xiao, J. J., Barber, B., & Lyons, A. (2009). Pathway to life success: A conceptual model of financial well-being for young adults. J*ournal of Applied Developmental Psychology, 30*, 708–723.

Simiyu, W., Stevie, M. N., & Benson, A. M. (2012). Gender Empowerment and Access to Financial Services in Machakos County, Eastern. *Journal of Modern African Studies*, Vol. 30(1), 163-175.

Smyth, R. (2004). Exploring the Usefulness of a Conceptual Framework as a Research Tool: A Researcher's Reflections. *Issues in Educational Research, 14*(2), 167.

Stango, V., & Zinman, J. (2009). Exponential growth bias and household finance. *The Journal of Finance*, 64 (6), 2807–2849.

Starkweather, J., & Amanda. M. K. (2002). *Multinomial Logistic Regression.*

Stiglitz, J. E., & Weiss, A. (1981). Credit Rationing in Markets with Imperfect Information. *The American Economic Review, 71*(3), 393-410.

Swamy, V. (2014). Financial Inclusion, Gender Dimension, and Economic Impact on Poor Households. *World Development*, 56, 1–15.

Tokle, J.G., & Huffman, W.E. (1991). Local Economic Conditions and Wage Labor Decisions of Farm and Rural Nonfarm Couples. *Am. J. Agr. Econ. 73*,652-670.

Triki, T., & Faye, I. (2013). Financial Inclusion in Africa. *Tunisia: African Development Bank*.

Trochim,W.M.(2006).*Units of Analysis. Retrieved from* Https://Www.Google.Com/Url?Sa=T&Rct=J&Q=&Esrc=S&Source=Web&Cd=1&Cad=Rja&Uact=8&Ved=0ahukewio4mwuikvxahuqfWkhujhdvmqfggrmaa&Url=Https%3a%2f%2fwww.Socialresearchmethods.Net%2fkb%2funitanal.Php&Usg=Aovvaw2nr0jsns4ona8pmu2nq3_W.

Turel, O. (2006). Contextual Effects on the Usability Dimensions of Mobile Value-Added Services: A Conceptual Framework. I*nternational Journal of Mobile Communications*, 4(3,) 309 – 332.

Van Rooij, M., Lusardi. A.,& Alessie. R. (2011). "Financial Literacy and Stock Market Participation." *Journal of Financial Economics* 101 (2): 449–472.

Wachira, M. I., & Kihiu, E. N. (2012). Impact of Financial Literacy on Access to Financial Services in Kenya. *International Journal of Business and Social Science, 3*(19), 42-50.

Wesolowski, A., Eagle, N., Noor, A. M., Snow, R. W., & Buckee, C. O. (2012). Heterogeneous Mobile Phone Ownership and Usage Patterns in Kenya. *Plos One, 7*(4), E35319.

Wilson, R. (2007). Making Development Assistance Sustainable Through Islamic Finance. *Iium Journal of Economics and Management* 15, No. 2: 197-217.

World Bank. (2008). *Finance for All? Policies and Pitfalls in Expanding* Access. Washington, Dc: World Bank.

World Bank. (2012). *World Development Indicators 2012.* Washington, Dc: World Bank. Retrieved fromHttp://Databank.Worldbank.Org/Data/Home.Aspx.

World Bank. (2013). *Making sense of financial capability surveys around the world. Washington, DC*: Author. Retrieved from http://responsiblefinance.worldbank.org/~/media/GIAWB/FL/Documents/Misc/Financial-Capability-Review.pdf.

Xiao, J. J., Chen, C., & Sun, L. (2015). Age differences in consumer financial capability. *International Journal of Consumer Studies*, 39, 387–395.

Xiao, J. J., Tang, C., Serido, J., & Shim, S. (2011). Antecedents and consequences of risky credit behaviour among college students: Application and extension of the theory of planned behaviour. *Journal of Public Policy & Marketing, 30 (2)*, 239–245.

Yenkey, C. B., Doering, L., & Aceves, P. (2015). *Is Kenya's Digital Revolution Informalisingfinancialinclusion? Retrieved from* .Https://Www.Google.Com/Url?Sa=T&Rct=J&Q=&Esrc=S&Source=Web&Cd=2&Cad=Rja&Uact=8&Ved=0ahukewiigftw6vxahvoy1akhflzalkqfggsmae&Url=Https%3a%2f%2fpapers.Ssrn.Com%2fsol3%2fpapers.Cfm%3fabstract_Id%3d2562520&Usg=Aovvaw2zi7vqty6emgvbzcjbaq3k.

Yihua, Y. (2010). Determinants of Variations in State per Capita Personal Income: A Paneldata Approach. *Applied Economics Journal, 1(1)*, 1466-4291. Zingales, L., &Rajan, R. (1998). Power in A theory of the Firm.

Yilmazer, T., & Lyons, A. C. (2010). Marriage and the allocation of assets in women's defined contribution plans. *Journal of Family and Economic Issues, 31 (2)*, 121–137.

Yuh, Y., & Hanna, S. (2010). Which households think they save? J*ournal of Consumer Affairs, 44 (1)*, 70–97.

Zamanzadeh, V., Ghahramanian, A., Rassouli, M., Abbaszadeh, A., Alavi-Majd, H., &Nikanfar, A. R. (2015). Design and implementation content validity study: development of an instrument for measuring patient-centered communication. *Journal of caring sciences, 4(2)*, 165.

Zeller, M., & Sharma, M. (1998). *Rural Finance and Poverty Alleviation. Food Policy Report.* Washinton D.C.: International Food Policy Research Institute.

Zheng, W., & Yuan, Y. (2007). Identifying The Difference Between Stationary Office Support and Mobile Work Support: *A Conceptual Framework", International Journal of Mobile Communications*, Vol. 5, No. 1, Pp. 107 – 122.

Zigurs, I.,& Buckland, B. K. (1998). *"A Theory of Task-Technology Fit and Group Support System Effectiveness', Management Information System Quarterly*, 22 (3), 313 – 334.

Zikmund, G. W., Babin, B. J., Carr, C. J. & Griffin, M. (2010). *Business Research Methods 8th Ed.* South-Western, Cengage Learning.

Zins, A., & Weill, L. (2016). The determinants of financial inclusion in Africa. *Review of Development Finance*, *6*(1), 46-57.

Appendix I: Personal Letter of Introduction

Joseph Masinde Wabwire

Kabarak University, School of Business & Economics,

Private Bag Nakuru, Kenya

10th February, 2018.

Dear Sir/Madam,

RE: FINANCIAL INCLUSION DETERMINANTS AND THEIR EFFECT ON UTILISATION OF FORMAL FINANCIAL SERVICES BY SMALLHOLDER FARMERS IN KENYA.

I am Doctor of Philosophy Candidate in the School of Business and Economics, Kabarak University., a student from Kabarak University. To complete my Studies, I am required to undertake an academic research on a relevant topic. I am conducting a research study onfinancial inclusion determinants and their effect on utilisation of formal financial services by smallholder farmers in Kenya. You have been selected to participate in this study and your response to this questionnaire is strictly confidential and will be used solely for the purpose of the study. You are therefore kindly requested to provide genuine responses that will be used in this study. Thank you for your contribution and support for the study.

Yours Sincerely,

Joseph Masinde

Email:bethmasinde@gmail.com

Mobile No: 0724817366

Appendix II: Questionnaire
Respondent's questionnaire

Questionnaire number	
Date interviewed	
Name of the interviewer	
County	
Sub-county	
Ward	
Is the area of residence urban or rural?	

SECTION A: DEMOGRAPHIC INFORMATION

1. Age of household head in years (years) **tick appropriate**	1	18-30 years
	2	31-40 years
	3	41-50 years
	4	51-60 years
	5	>60 years
2. Gender of the household head	1	Male
	2	Female
3. Marital status of the household head	1	Married living with spouse
	2	Divorced
	3	Separated
	4	Widow/widower
	5	Never married
4.size of household(dependants)		
5. Highest level of education of the household head	1	No school
	2	Primary
	3	Secondary
	4	Tertiary college
	5	University

6.do you have any other occupation other than farming		Yes [ ] No [ ]				
7.to what extent are you directly involved in farming		High	Mode rate	Low	Very low	Very low
8. Have you received any training on financial literacy (tick appropriately)	1	Yes [ ]				
	2	No [ ]				
9. If yes, who offered the training?	1	Commercial banks				
	2	Saccos				
	3	MFIs (micro finance institutions)				
	4	AFC (agricultural finance corporation)				
	5	Government agents like agricultural extension officers				
	6	Ngos (non-governmental organisations)				
	7	Others , specify_____				
10. How did you benefit from the training?	1.increased awareness of bank products 2.learnt new methods of farming 3.learnt about using new technology 4.learnt about how to market the produce 5.other specify_____					

SECTION B: SOCIO-ECONOMIC INFORMATION

11. What is the total land size of the household used for farming? (acres)				
12.household land tenure	1			Communal
	2			Owned
	3			Leasing
		14. What is your estimated average annual income for the last 2 years in ksh (tick)		

Enterprises	**<20 000**	**20001-30,000**	**30,001 – 40,000**	**40,001 – 50,000**	**50,001-60,000**	**>60,001**
Income from food crops						
Income from cash crops						
Income from livestock						
Income from fish production						
Employment(teacher, police etc.)						
Business						
Any other(specify)						

SECTION C: INSTITUTIONAL INFORMATION

13. Do you belong to any farmer group? **(tick appropriately)**

Yes [ ]

No [ ]

14. If yes, what is your position in the group? **(tick appropriately)**

Official [ ]

Member [ ]

15. Do you belong to any other group if not farmers' group? **(tick appropriately)**

Yes [ ]

No [ ]

16.If yes, which other group do you belong to if not farmer's group_____

_____

17. What services do you get from the farmers group? Rank in order of usage. Where 1= never, 2= seldom, 3= sometimes, 4= often, 5= always

	Never	Seldom	Sometimes	Often	Always
(1) knowledge on farming					
(2) Table banking/merry go round/chama					
(3) group guarantee for loans					

(4) financial literacy training					
(5) market information and access					
(6) bulk purchase of inputs					
Others specify					

SECTION D: TECHNOLOGICAL INFORMATION

18. Do you have a mobile phone? **(tick appropriately)**

Yes [ ]

No [ ]

19. If yes, what do you use it for in relation to formal financial services (banks, mobile money, microfinance sacco)? **Rank in order of usage. (where 1= never, 2= seldom, 3= sometimes, 4= often, 5= always)**

	Never	**Seldom**	**Sometimes**	**Often**	**Always**
Depositing					
Withdrawals					
Paying for utilities like electricity, water					
Buying goods					
Paying school fees					

20. If not through mobile banking, how do you access financial services from formal financial institution?

……

……

…….

21. How much do you agree or disagree with the following statements

(strongly disagree = 1, disagree = 2, neutral = 3, agree = 4, strongly agree = 5). Tick appropriately

		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1.	Technology is good for making life easy					
2.	Technology changes too quickly for me to keep up					
3.	I do not like learning how to use new					

	technology					
4.	I like to learn about new ways technology is being used					
5.	I would feel disconnected without technology					
6.	Using technology is one of my favourite things to do					
7.	Technology enables me keep in touch with my friends and family					
8.	Technology makes me worry about the privacy of my information					
9.	Technology makes it easy for me to easily access information regardless of where i am					
10.	Technology has had little impact in my life					

Section e: product differentiation information

22. Which formal financial services do you use?

(**tick appropriately)**

Bank-Atm	
Bank-teller/counter	
Mpesa	
Airtel money	
Bank agent	
Mobile money agent	
Sacco	
Microfinance	
Internet banking	
Other, specify	

23. Do you have a bank account with a formal financial institution? **(tick appropriately)**

Yes [ ]

No [ ]

24. If ‘yes’ which type of account do you hold? (**tick appropriately)**

Current account	
Savings account	
Fixed deposit account	

25. If yes in number 24 above, what type of financial services do you access through the bank? Rank in order of preference. (**tick appropriately) where 5 = most frequent, frequent= 4, moderate= 3, seldom= 2, 1= never**

	Never	**Seldom**	**Moderate**	**frequent**	**Most frequent**
Savings/deposits					
Withdrawals					
Credit/loans					
Input loans					
Insurance					
Financial literacy					
Investment opportunities					
Safe custody of vital documents					
Pension					
Others, specify					

26. If you do not have a bank account, how do you access financial services?

Family	
Friends	
Chama	
Shylocks	
Others, specify	

27. How does each element in question 26 help you financially.

……

……

……

……

28. Are you satisfied with the financial services offered by your bank?

Yes [ ]

No [ ]

29. If satisfied, what is the level of satisfaction? (**tick appropriately)**

Highly satisfied	
Somehow satisfied	
Neither	
Somehow dissatisfied	
Very dissatisfied	

30.if not satisfied, what should your bank do to improve its services?

……

……

……

…….

31. To what extent do the following difficulties influence the use of formal financial services? 1 = to a small extent 2 = to some extent 3 = to a moderate extent 4 = to a great extent 5 = to a very great extent (**tick appropriately)**

	Small	Some	Moderate	Great	Very great
High interest rates					
Lack of collateral					
Short repayment grace period					
Not aware of available services					
Fear of failure to repay and hence lose property to the financial institution					
Distance in accessing					
Presence of other sources of income (informal/grants)					
Gender preference					
Unsuitable bank products					

Documentation requirements					
Any other reasons-----					

32. Did you receive any loan from formal financial institution in the last three years? (**tick** (√) **appropriately)**

Yes [ ]

No [ ]

33. If no, what were the reasons for not getting the loan?

……

……

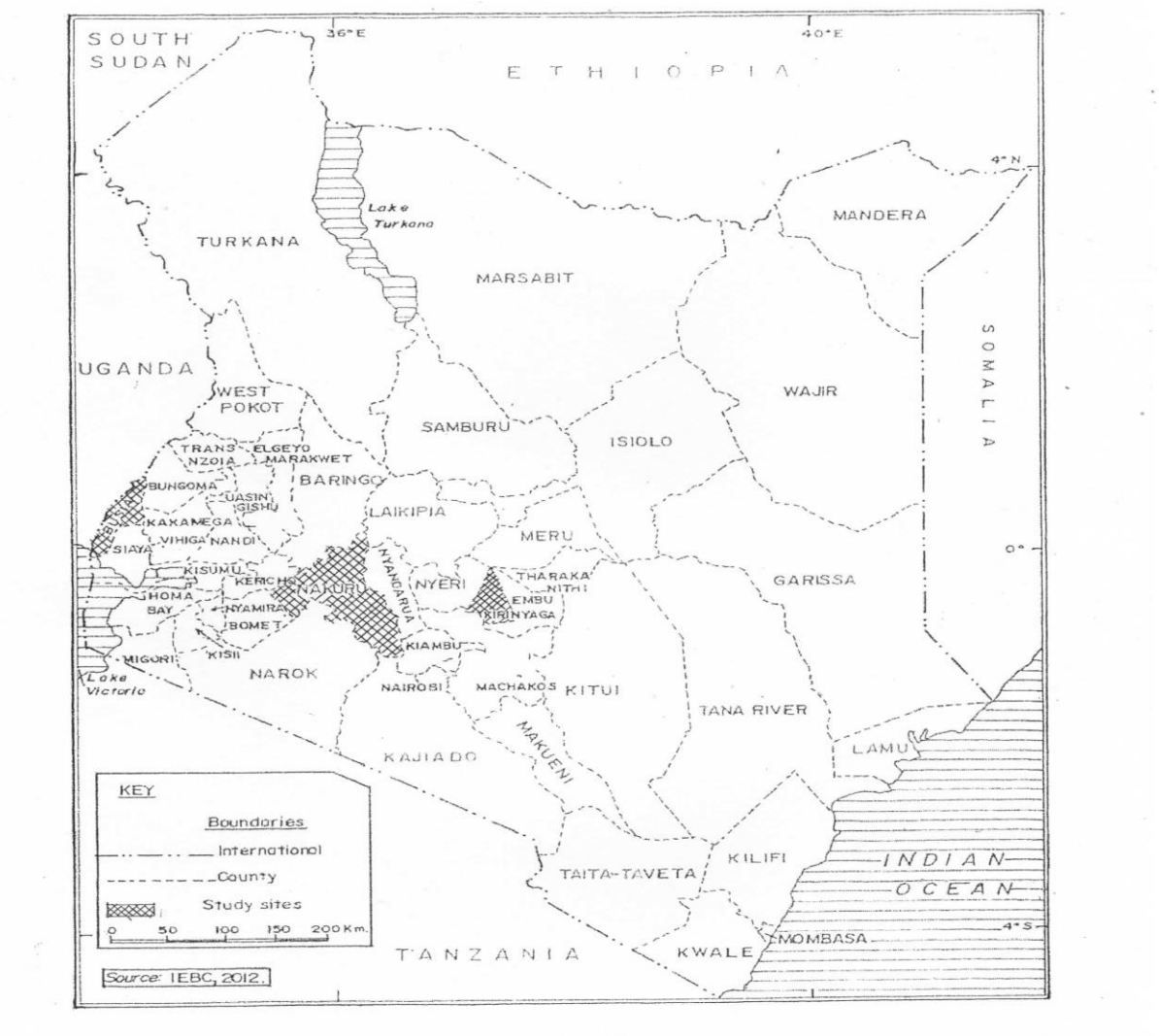
……

……

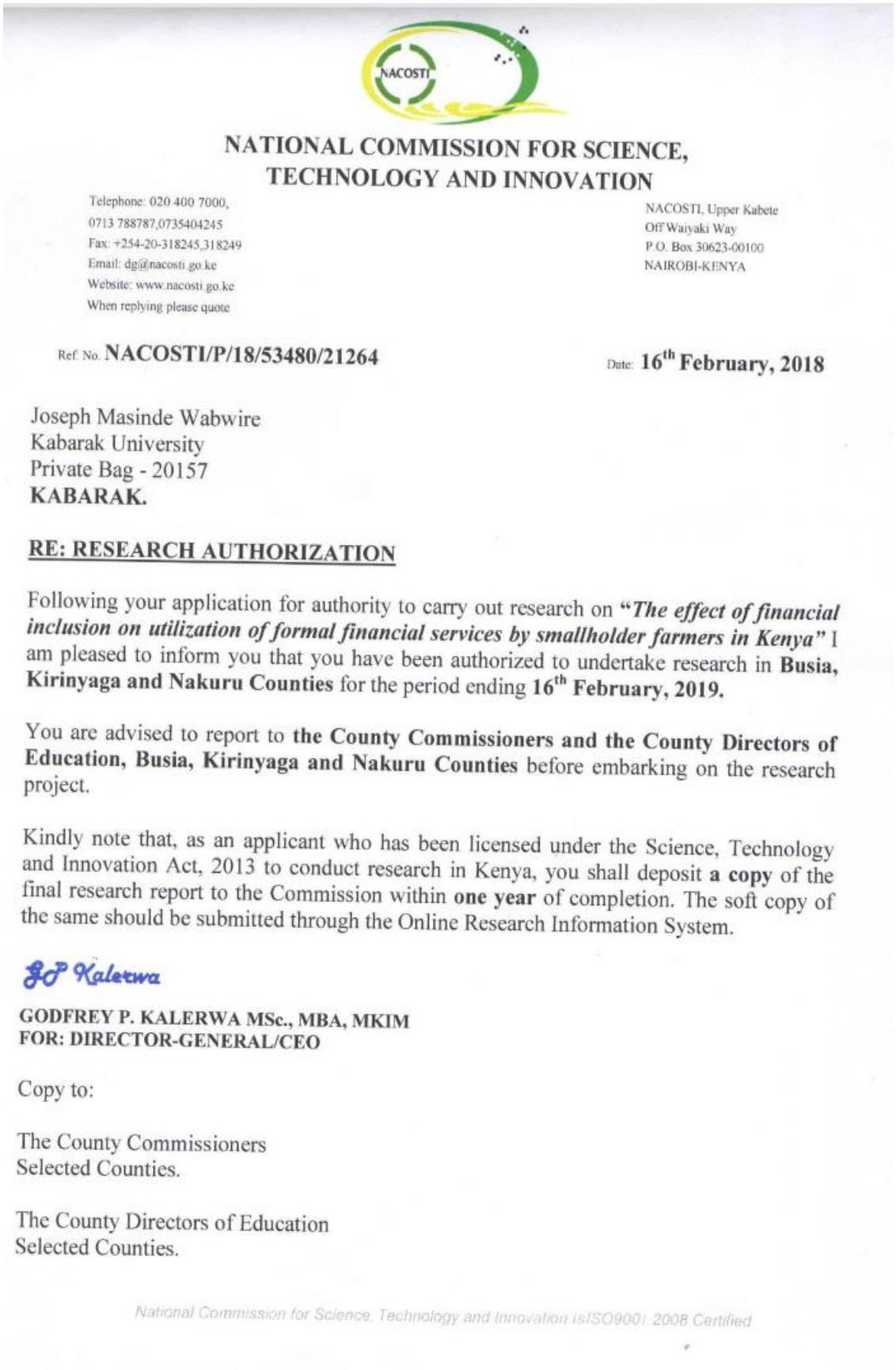
34. If loan received, what did you use as security/collateral? (**tick** (√) **appropriately)**

Title deed	
Expected yields	
Log book	
Farm structures	
Others specify	

Appendix III: Study Area Map



Appendix IV: Research Authorisation from NACOSTI



NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone: 020 400 7000,
0713 788787,0735404245
Fax: +254-20-318245,318249
Email: dg@nacosti.go.ke
Website: www.nacosti.go.ke
When replying please quote

NACOSTI, Upper Kabete
Off Waiyaki Way
P.O. Box 30623-00100
NAIROBI-KENYA

Ref. No. **NACOSTI/P/18/53480/21264**

Date: **16th February, 2018**

Joseph Masinde Wabwire
Kabarak University
Private Bag - 20157
KABARAK.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"The effect of financial inclusion on utilization of formal financial services by smallholder farmers in Kenya"*** I am pleased to inform you that you have been authorized to undertake research in **Busia, Kirinyaga and Nakuru Counties** for the period ending **16th February, 2019.**

You are advised to report to **the County Commissioners and the County Directors of Education, Busia, Kirinyaga and Nakuru Counties** before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit **a copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.

GP Kalerwa

GODFREY P. KALERWA MSc., MBA, MKIM
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioners
Selected Counties.

The County Directors of Education
Selected Counties.

National Commission for Science, Technology and Innovation is ISO9001: 2008 Certified

Appendix V: Research Permit from NACOSTI

THIS IS TO CERTIFY THAT:
MR. JOSEPH MASINDE WABWIRE
of KABARAK UNIVERSITY, 0-20107
NJORO,has been permitted to conduct
research in *Busia , Kirinyaga , Nakuru Counties*

on the topic: *THE EFFECT OF FINANCIAL INCLUSION ON UTILIZATION OF FORMAL FINANCIAL SERVICES BY SMALLHOLDER FARMERS IN KENYA*

for the period ending:
16th February,2019

.....
Applicant's Signature

Permit No : NACOSTI/P/18/53480/21264
Date Of Issue : 16th February,2018
Fee Recieved :Ksh 2000

GP Kaleewa

.....
Director General
National Commission for Science, Technology & Innovation

Appendix VI: Recommendation Letter from IPGS, Kabarak University

INSTITUTE OF POST GRADUATE STUDIES

Private Bag - 20157
KABARAK, KENYA
E-mail: directorpostgraduate@kabarak.ac.ke

Tel: 0773265999
Fax: 254-51-343012
www.kabarak.ac.ke

5th *February 2018*

Ministry of Higher Education Science and Technology,
National Council for Science, Technology & Innovation,
P.O. Box 30623 – 00100,

Dear Sir/Madam,

RE: RESEARCH BY MASINDE JOSEPH WABWIRE– GDB/M/1148/09/11

The above named is a student at Kabarak University taking PHD Degree in Business Administration.He is carrying out research entitled ." **The effect of financial inclusion determinants on utilization of formal financial services by smallholder farmers in Kenya.**"

The information obtained in the course of this research will be used for academic purposes only and will be treated with utmost confidentiality.

Please provide the necessary assistance.

KABARAK UNIVERSITY DIRECTOR POST GRADUATE STUDIES 05 FEB 2018 PRIVATE BAG -20157, KABARAK

Thank you.

Yours faithfully

Dr. Betty J. Tikoko
DIRECTOR - (POST-GRADUATE STUDIES)

Kabarak University Moral Code

As members of Kabarak University family, we purpose at all times and in all places, to set apart in one's heart, Jesus as Lord. (1 Peter 3:15)

Appendix VII: Research Authorisation From Nakuru County

THE PRESIDENCY
MINISTRY OF INTERIOR AND
CO-ORDINATION OF NATIONAL GOVERNMENT

Telegrams:" DISTRICTER", Nakuru
Telephone: Nakuru 051-2212515
When replying please quote

COUNTY COMMISSIONER
NAKURU COUNTY
P.O. BOX 81
NAKURU

Ref. No. ***CC.SR.EDU 12/1/2 VOL.III/27)***

19th February, 2018

TO WHOM IT MAY CONCERN

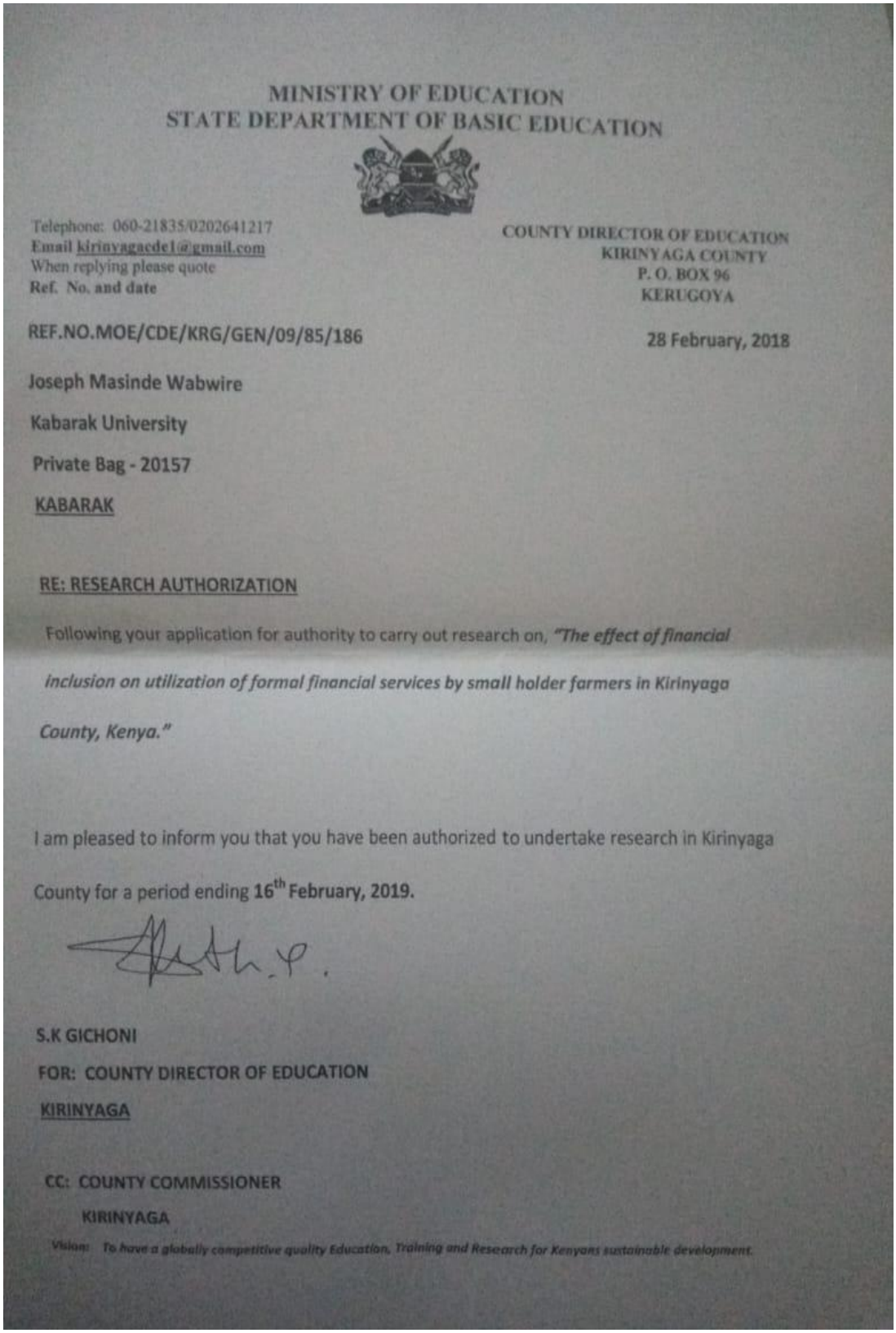
RE: RESEARCH AUTHORIZATION –JOSEPH MASINDE WABWIRE

The above named person has been given permission to carry out research on "**The effect of financial inclusion on utilization of formal financial services by smallholder farmers in Kenya**" in Nakuru County for the period ending **16th February, 2019.**

Please accord him all the necessary support to facilitate the success of his research.

JUDITH ONYANGO
FOR: COUNTY COMMISSIONER
NAKURU COUNTY

Appendix VIII: Research Authorisation from Kirinyaga County



MINISTRY OF EDUCATION
STATE DEPARTMENT OF BASIC EDUCATION

Telephone: 060-21835/0202641217
Email kirinyagacde1@gmail.com
When replying please quote
Ref. No. and date

COUNTY DIRECTOR OF EDUCATION
KIRINYAGA COUNTY
P. O. BOX 96
KERUGOYA

REF.NO.MOE/CDE/KRG/GEN/09/85/186

28 February, 2018

Joseph Masinde Wabwire

Kabarak University

Private Bag - 20157

KABARAK

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on, *"The effect of financial inclusion on utilization of formal financial services by small holder farmers in Kirinyaga County, Kenya."*

I am pleased to inform you that you have been authorized to undertake research in Kirinyaga County for a period ending **16th February, 2019.**

S.K GICHONI

FOR: COUNTY DIRECTOR OF EDUCATION

KIRINYAGA

CC: COUNTY COMMISSIONER

KIRINYAGA

Vision: To have a globally competitive quality Education, Training and Research for Kenyans sustainable development.

Appendix IX: Results tables
Attached tables for multinomial logistic regression

(a) Demographic factors.

Model Fitting Information				
Model	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	428.550			
Final	308.013	120.537	12	.000

Goodness-of-Fit			
	Chi-Square	Df	Sig.
Pearson	163.759	210	.992
Deviance	154.655	210	.998

Likelihood Ratio Tests				
Effect	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	350.704	42.692	3	.000
Age	333.510	25.497	3	.000
Gender	313.222	5.209	3	.157
Maritalstatus	314.518	6.505	3	.089
Education	388.524	80.511	3	.000
The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.				

Parameter Estimates									
Finacessindexa		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
								Lower Bound	Upper Bound
Low utilisation	Intercept	-2.790	.660	17.850	1	.000			
	Age	.391	.092	18.138	1	.000	1.479	1.235	1.771
	Gender	-.411	.226	3.321	1	.068	.663	.426	1.032
	Maritalstatus	-.205	.089	5.331	1	.021	.814	.684	.969
	Education	.949	.154	38.136	1	.000	2.584	1.912	3.492
moderate utilisation	Intercept	-5.201	.888	34.288	1	.000			
	Age	.479	.120	15.810	1	.000	1.615	1.275	2.045
	Gender	-.498	.304	2.683	1	.101	.608	.335	1.103
	Maritalstatus	-.185	.124	2.224	1	.136	.831	.652	1.060
	Education	1.475	.192	59.255	1	.000	4.373	3.004	6.367
High utilisation	Intercept	17.678	4624.068	.000	1	.997			
	Age	.064	.867	.005	1	.941	1.066	.195	5.826
	Gender	-18.310	.000	.	1	.	1.118E-008	1.118E-008	1.118E-008
	Maritalstatus	-7.609	4624.066	.000	1	.999	.000	.000	.b
	Education	1.386	1.209	1.314	1	.252	4.000	.374	42.810
a. The reference category is: Complete exclusion.									
b. Floating point overflow occurred while computing this statistic. Its value is therefore set to system missing.									

(b) Product differentiation factors

Model Fitting Information				
Model	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	957.197			
Final	830.635	126.562	30	.000

Goodness-of-Fit			
	Chi-Square	df	Sig.
Pearson	883.542	1248	1.000
Deviance	786.462	1248	1.000

Likelihood Ratio Tests				
Effect	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	831.013	.378	3	.945
Interest Rate	836.818	6.183	3	.103
Collateral	834.652	4.017	3	.260
Payment Period	834.201	3.566	3	.312
Not Aware Services	853.296	22.661	3	.000
Fear Failure	838.093	7.458	3	.059
Distance Accessing	830.673	.038	3	.998
Source Income	849.084	18.449	3	.000
Gender Preferences	832.500	1.865	3	.601
Unsuitable Bank Products	848.696	18.062	3	.000
Documentation Requirement	841.865	11.230	3	.011

The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.

Parameter Estimates									
Finances index		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
								Lower Bound	Upper Bound
Low utilisation	Intercept	-.208	.579	.128	1	.720			
	Interest Rate	.178	.119	2.226	1	.136	1.194	.946	1.508
	Collateral	-.167	.100	2.778	1	.096	.847	.696	1.030
	Paymet Period	.138	.105	1.703	1	.192	1.148	.933	1.411
	Not Aware Services	-.274	.074	13.653	1	.000	.760	.657	.879
	Fear Failure	.016	.106	.022	1	.882	1.016	.826	1.249
	Distance accessing	.015	.091	.025	1	.874	1.015	.848	1.213
	Source Income	.220	.086	6.551	1	.010	1.246	1.053	1.474
	Gender Preferences	-.321	.247	1.696	1	.193	.725	.447	1.176
	Unsuitable Bank Products	.248	.111	4.976	1	.026	1.281	1.031	1.593
	Documentation Requirement	-.266	.095	7.893	1	.005	.767	.637	.923
moderate utilisation	Intercept	-.403	.673	.359	1	.549			
	Interest Rate	.356	.150	5.656	1	.017	1.428	1.065	1.916
	Collateral	-.217	.127	2.927	1	.087	.805	.628	1.032
	payment Period	-.086	.132	.421	1	.516	.918	.709	1.189
	Not Aware Services	-.411	.107	14.641	1	.000	.663	.537	.818
	Fear Failure	-.292	.123	5.607	1	.018	.747	.586	.951

	Distance Accessing	.022	.140	.025	1	.875	1.022	.777	1.344
	Source Income	.340	.108	9.946	1	.002	1.406	1.138	1.737
	Gender Preferences	-.078	.255	.093	1	.760	.925	.561	1.524
	Unsuitable Bank Products	.589	.149	15.698	1	.000	1.803	1.347	2.413
	Documentation Requirement	-.331	.138	5.741	1	.017	.718	.548	.942
High utilisation	Intercept	-183.640	.000	.	1	.			
	Interest Rate	4.004	43983.141	.000	1	1.000	54.803	.000	.b
	Collateral	-9.058	31288.941	.000	1	1.000	.000	.000	.b
	payment Period	-.635	37638.887	.000	1	1.000	.530	.000	.b
	Not Aware Services	5.993	36315.059	.000	1	1.000	400.489	.000	.b
	Fear Failure	9.752	35304.268	.000	1	1.000	17185.887	.000	.b
	Distance accessing	.311	30414.867	.000	1	1.000	1.364	.000	.b
	Source Income	24.159	19175.838	.000	1	.999	31054943559.321	.000	.b
	Gender Preferences	-19.602	.000	.	1	.	3.067E-009	3.067E-009	3.067E-009
	Unsuitable Bank Products	-15.583	38950.335	.000	1	1.000	1.707E-007	.000	.b
	Documentation Requirement	13.232	17641.097	.000	1	.999	557742.095	.000	.b

a. The reference category is: Complete exclusion.

b. Floating point overflow occurred while computing this statistic. Its value is therefore set to system missing.

Total Variance of Technological factors Explained[a]

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.458	36.459	36.459	1.458	36.459	36.459
2	1.185	29.634	66.093	1.185	29.634	66.093
3	.763	19.079	85.171			
4	.593	14.829	100.000			

Skewness and kurtosis of demographic factors

Statistics					
		Age	gender	marital status	education
N	Valid	496	496	496	496
	Missing	1	1	1	1
Mean		3.26	1.44	1.66	2.40
Std. Deviation		1.280	.497	1.291	.859
Variance		1.637	.247	1.668	.738
Skewness		-.115	.244	1.541	.408
Std. Error of Skewness		.110	.110	.110	.110
Kurtosis		-1.083	-1.948	.600	.055
Std. Error of Kurtosis		.219	.219	.219	.219

Appendix X: Poverty Index Per County

SRNO.	**COUNTY**	**Poverty index**	Categorization
1	TURKANA	79.4	
2	MANDERA	77.6	High
3	SAMBURU	75.8	
4	**BUSIA**	**69.3**	
5	GARISSA	65.5	
6	MARSABIT	63.7	
7	TANA RIVER	62.6	
8	WAJIR	62.6	
9	WEST POKOT	57.4	
10	ISIOLO	51.9	
11	BOMET	48.8	
12	KITUI	47.5	
13	KWALE	47.4	Moderate
14	KILIFI	46.4	
15	LAIKIPIA	45.9	
16	ELGEYO MARAKWET	43.4	
17	VIHIGA	43.2	
18	KISII	41.7	
19	MIGORI	41.2	
20	UASIN GISHU	41	
21	KAJIADO	40.7	
22	BARINGO	39.6	
23	NANDI	36	
24	KAKAMEGA	35.8	
25	BUNGOMA	35.7	
26	**KIRINYAGA**	**34.8**	
27	MAKUENI	34.8	
28	NYANDARUA	34.8	
29	TRANSNZOIA	34	
30	KISUMU	33.9	

31	SIAYA	33.8	
32	HOMABAY	33.5	
33	NYAMIRA	32.7	
34	TAITA TAVETA	32.3	
35	KERICHO	30.3	
36	**NAKURU**	**29.1**	
37	LAMU	28.5	
38	EMBU	28.2	Low
39	MOMBASA	27.1	
40	MURANGA	25.3	
41	THARAKA NTHI	23.6	
42	KIAMBU	23.3	
43	MACHAKOS	23.3	
44	NAROK	22.6	
45	MERU	19.4	
46	NYERI	19.3	
47	NAIROBI	16.7	