THE EFFECT OF FINANCIAL LITERACY ON FINANCIAL RETURNS OF MIRAA FARMERS IN MERU COUNTY

MWAMBIA DOUGLAS KAILANYA

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DECLARATION

I, the undersigned, declare that this is my original work and has not been presented in any other institution or forum for any other award or favour prior to this declaration.

Signature:……Date……..

Douglas Kailanya Mwambia

D61/60412/2011

This research project has been submitted for Examination with my approval as the university supervisor:

Signature:……..Date:……..……

Nyamute Winnie

Department of Finance and Accounting

School of Business

University of Nairobi

DEDICATION

This research project is dedicated to my dear wife Linner, my son Colin, my daughter Celine, Mr Isaack Njeru for his wise console and being a genesis of my success. My late father in law Francis K. Arimi and my late mother in law Terisia.

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I am humbled as I thank God for bringing me this far in the academic hierarchy. Indeed God is the greatest for without Him I could not have reached this far. Honour and glory be to Him alone for this great achievement.

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LIST OF ABBREVIATION

GoK	Government of Kenya
INFE	Institute of Financial Education
KIPPRA	Kenya Institute for Public Policy Research and Analysis
OECD	Organization for Economic Cooperation for Development
PACFL	President's Advisory Council on Financial Literacy
ROC	Return on Capital
UNDP	United Nations Development Programme
WHO	World Health Organization

ABSTRACT

Meru County has very high poverty levels and approximately 75% of the households live below the poverty line. The high poverty levels in the county raises questions on the financial literacy levels of the farmers apply and financial management techniques applied by the farmers in ensuring that they increase their financial returns from Miraa farming. This study examined the influence of financial literacy on the financial returns of Miraa farmers in Meru County.

Descriptive research design was adopted by the study. The target population constituted the Miraa farmers in Igembe, the main Miraa growing area. The study adopted descriptive survey technique. The data collected was analysed using SPSS version 21 and the significance of the results tested at 95% using ANOVA, and other statistical inference techniques like Z-tests, T-test and F-tests. The study found that financial literacy levels remained low among the Miraa farmers.

The financial returns from Miraa farming were also found to be as high as 160% of the capital invested. The linear regression analysis between the dependent variable which was financial returns and independent variables which were financial literacy, capital invested and size of the land showed a positive relationship between the dependent and independent variables. The results of the linear regression revealed an R of 0.8639 and R^2 of 0.7463 indicating that there is a strong relationship between financial literacy, capital invested and size of land used in Miraa farming. P value was found to 0.0011 showing that the overall model was significant at 95% confidence. From the results, the study concluded that high levels of financial literacy, capital invested and size of land led to higher financial returns from Miraa farming. The study results were consistent with those of Lusardi and Mitchell (2011) who also found that financial literacy had significant effect on household income and locally to those of Mwambia (2011). The study recommends that; first, the county government to invest in instilling financial literacy knowledge to Miraa farmers through workshops and educating the farmers on how to increase their financial returns from Miraa farming as well as how to manage the money they make from Miraa farming. Secondly, the county government should come up with a financing program where Miraa farmers can be able to access cheap credit. This will provide them with the capital required to be invested and ensure that they maximise their financial returns. Finally, the farmers should be encouraged to farm Miraa in large scale so as to benefit from economies of scale.

CHAPTER ONE

INTRODUCTION

1.1 Background of Study

In recent years, governments in developed and developing countries have become more concerned about the level of financial literacy of their citizens (Alessie, Van, &Lusardi, 2011). This has stemmed in particular from shrinking public and private support systems, shifting demographic profiles including the ageing of the population, and wide-ranging developments in the financial marketplace (Gerardi, Goette & Meier, 2010). The concern has also been heightened by the 2007-08 financial crisis, with the recognition that lack of financial literacy was one of the factors contributing to ill-informed financial decisions and that these decisions could, in turn, have tremendous negative spill-over (OECD, 2009). As a result, financial literacy is now globally acknowledged as an important element of economic and financial stability and development (INFE, 2009).

Significant debate continues about the role of financial literacy on returns, the extent of the relationship, and the best way to address financial literacy challenges (Lusardi & Mitchell, 2011). This debate arises for several reasons: First, real knowledge gaps persist about fundamental relationships between financial literacy and returns partly because researchers lack the appropriate data. Few studies have been able to construct sophisticated measures of financial literacy and definitively establish causal links between financial literacy and returns (Hilgert, Hogarth & Beverly, 2003). Financial literacy has got more policy attention in many countries and more funding from all sources is being provided to assist in the development of financial education programs

initiatives and training in rural areas to equip households with financial knowledge (Cohen, 2010).

Rural poverty is one of the main challenges facing County governments and the Kenyan government today; and the causes include agriculture which is the most important economic activity in these areas. The type of agriculture rural population engage in is rain-fed agriculture, which they depend. Miraa farming is the economic backbone of the people of Meru and most depend on it for livelihood (Mwambia, 2011). Miraa farming being the key economic activity in Meru County especially in the rural areas plays a crucial role in poverty reduction (Njiru, Muluvi, Owuor & Langat, 2013). In the area of study residents almost wholly depends on Miraa farming which earn huge incomes for the households. Over the past decades, the economic importance and consumption of Miraa has increased dramatically from a custom practice only by certain social or ethnic groups in the parts of Africa and Arabian Peninsula where it is grown, to a widespread habit in the general population of the countries in the Diaspora and amongst the immigrants with Somalia, Yemen, Kenya and Ethiopia origin, all around the world (Odenwald, 2007) implying increased sales for Miraa farmers. However, poverty levels in Meru County remain high (KNBS, 2008) raising questions of the financial literacy levels of Miraa farmers and its effect on farmers returns.

1.1.1 Financial Literacy

Financial literacy skills enable people to make informed decisions about the immediate use and management of their money (INFE, 2009). The President's Advisory Council on Financial Literacy (PACFL, 2008), convened to "improve financial literacy among all Americans," defined financial literacy as the ability to use

knowledge and skills to manage financial resources effectively for a lifetime of financial well-being. They emphasized that financial literacy goes hand in hand with financial education which they defined as the process by which people improve their understanding of financial products, services and concepts, so they are empowered to make informed choices, avoid pitfalls, know where to go for help and take other actions to improve their present and long-term financial well-being, a definition also adopted by Organization for Economic Corporation for Development (OECD, 2009). A consolidation of various definitions given show that financial literacy is a specific form of knowledge, ability or skills to apply that knowledge, perceived knowledge, good financial behaviour, and even financial experiences (Mandell, 2008; Lusardi & Tufano, 2009; Moore, 2003).

Evidence suggests that large segments of the US population have low levels of financial literacy (Alessie, Van, & Lusardi, 2011). The less financially literate households may be more likely, unknowingly commit financial mistakes, less likely to engage in recommended financial practices, and less likely to be able to cope with sudden economic shocks (Lusardi and Mitchell, 2012). Financial literacy is especially important today for several reasons as highlighted by OCED (2009). Financially literate consumers can make more informed decisions and demand higher quality services, which will encourage competition and innovation in the market. They are also less likely to react to market conditions in unpredictable ways, less likely to make unfounded complaints and more likely to take appropriate steps to manage the risks transferred to them. All of these factors will lead to a more efficient financial services sector and potentially less costly financial regulatory and supervisory requirements. They can also ultimately help in reducing government aid (and taxation) aimed at

assisting those who have taken unwise financial decisions – or no decision at all (OCED, 2009).

1.1.2 Financial Returns

Financial returns refer to the profit on an investment and comprises of any change in value, and interest or dividends from the investment (Lusardi, Michaud, & Mitchell, 2012).A loss instead of a profit is described as a negative return. Rate of return is a profit on an investment over a period of time, expressed as a proportion of the original investment. The time period is typically a year, in which case the rate of return is referred to as annual return (Lusardi, Michaud, & Mitchell, 2012).

Farmers' financial returns are highly variable from year to year and are closely tied to the size and efficiency of the operation in the farms. It also depends on the amount of debt the farm is carrying. The rate of return on farm assets is quite variable. The average rate of return on farm equity measures how fast farm net worth is growing, excluding changes in land and machinery values (William, 2013). Highly leveraged farms may earn little or no return on equity when interest rates is high. On the other hand, if the farm's overall return on assets is higher than the cost of borrowed money, the return on equity may be quite high and net worth will grow rapidly Farms that hire or rent assets such as labour, land, or machinery usually will have a lower operating profit margin because operating costs are higher. However, they will also generate a larger gross and net income. Farms with owned or crop share rented land will have a higher operating profit margin because they have lower operating expenses (William, 2013).

1.1.3 Financial Literacy and Returns

Studies have confirmed the positive association between financial literacy and financial returns. Stango and Zinman (2007)show that those who are unable to correctly calculate interest rates out of a stream of payments (implying low financial literacy) end up borrowing more, having reduced financial returns and accumulating lower amounts of wealth. Households' financial returns generally decline as the level of financial literacy and education decreases (Mwabu, Masai, Gesami, 2000). Education and training equip households with knowledge which leads to better ways of increasing ones financial returns (UNDP, 1998a). As a result, a long-term remedy to alleviate rural poverty would be to invest in poor people, especially women, particularly in their education and training, and to bring them into the mainstream of development. Human poverty which has more effect on individual returns means that opportunities and choices most basic to human development are denied. It involves the denial of choices and opportunities most basic to human development to lead a long, healthy, creative life, acquire knowledge, and enjoys a decent standard of living, freedom, dignity, self-esteem and the respect of others (UNDP, 1998b).

Farmers obtaining low financial returns limit their ability to contribute more funds to the education of their children leading to high illiteracy levels let alone financial illiteracy. This in turns affects school enrolment and mostly enrolment of girls, as the demand for education is price sensitive in low-income households (Kabubo, and Kiriti, 2001). This implies that, in areas where people have low education levels, poverty is expected to be high as a result of reduced financial returns on farming and other economic activities. Where places in schools are limited and resources are scarce, girls are at a particular disadvantage. Parents may prefer to educate sons, both because expected benefits are higher due to better job prospects for sons and

dependence on sons in old life (Kiriti and Tisdell, 2003) and therefore literacy levels expected to be higher in women.

1.1.4 Miraa Farming in Meru County

Miraa farmers in Meru County are perceived to earn high financial returns from Miraa farming. This out of the economic importance attached to Miraa growing industry in Kenya which is considered valuable and contributing significantly to Kenyan export revenues (Maitai, 1996). According to USAID (2011), Miraa export contributed 13.7 and 54 percent of the volume and value of the National export respectively with a growth rate of 9.7 per cent value within the period 2006-2010.Kenya agricultural sector accounts for 24.2% of the GDP, over 60% of exports, 75% of the total labour force and over 80% of industrial raw materials (Owuor and Bebe 2009). Due to this, agricultural sector was identified as the engine for economic growth in Kenya's Vision 2030 (GoK, 2007) which aims to transform the economy into a newly industrialized economy by the year 2030. One of the contributing factors to low productivity is poor agricultural finance. This is because most financiers shy away from lending to the sector due to the risks related to rain-fed agriculture, non-linear relationship between inputs and outputs and turbulent input and output prices (Nyikal, 2007).

Miraa growing industry at times experience low prices due to price depression actions of middlemen and processors, high supply during harvest time when most peasant farmers sell their produce and low demand especially for starchy cereals (Bozic *et al*., 2009).Historically much of the effort has been focused on increasing productivity in the industry. However, productivity is looked at in terms of physical output rather than the monetary value. In looking at monetary value focus should shift from

extractive activities to post harvest (marketing) activities like transport, storage, breaking bulk and transformation to consumable products. Ghandhi *et al*. (2001) found that one of the constraints to Miraa growing industry development is lack of finance. Financial institutions are mainly geared to lending for fixed capital needs, while agro industries, have a large requirement of working capital.

Miraa consumption has a soothing and stimulating effect that is good and suitable; it is for this reason that, it is given to the family of the bride before the dowry negotiations commence. For Igembe people the bride is valued and so is her family. Over the past decades, the economic importance and consumption of Miraa has increased dramatically from a custom practice only by certain social or ethnic groups in the parts of Africa and Arabian Peninsula where it is grown, to a widespread habit in the general population of the countries in the Diaspora and amongst the immigrants with Somalia, Yemen, Kenya and Ethiopia origin, all around the world (Odenwald, 2007). Over reliance on Miraa production has hindered smooth education flow in Igembe and parts of Tigania because young boys and girls leave school at tender ages to indulge into the Miraa picking business(Ngeranwa, 2013).This has led to high illiteracy and poverty. Other areas which are semi-arid such as Buuri District and lower parts of Central and South Imenti and it is expected that once the County Governments establish fully they will seek to address these problems for the County to be equally developed.

1.2 Research Problem

Financial literacy is a precondition for maximising financial returns (Ferguson, 2002).However, significant debate continues about the role of financial literacy on financial returns, and the best way to address it. Real knowledge gaps persist about fundamental relationships between financial literacy, education and behaviour (Hung, Parker, Yoong, 2009). Furthermore, large discrepancies in measured financial literacy exist, potentially placing some economically vulnerable groups (the poor, the less-educated, and minority households) at further disadvantage. Meru County at large has very high poverty levels and approximately 75% of the households live below the poverty line. In addition only one in two (50per cent) children of school-going age are attending primary school and the net primary school attendance rate is 88 per cent, while that of secondary school stands at 31 per cent (KNBS, 2008). These findings by Kenya National Bureau of Statistics raises a number of questions; why is poverty level that high considering that the county is very rich in terms of agriculture (Miraa farming)? If education levels in the county are that low, then, financial literacy levels among the Miraa farmers are also low since the two are positively correlated. Could the low financial literacy levels in Meru County therefore be responsible for high poverty levels? These are key questions requiring a study to be carried out considering that Miraa export earns the country approximately Ksh.2 billion annually (Standard media, 2013) and this export product comes from Igembe North, Igembe Central, Igembe South and to a little extent from Tigania. We would therefore expect that the Miraa farmers in these areas will be very well off socially and economically. These questions have led to a number of studies in Meru County to find answers to some of the puzzles.

Njiru et al. (2013) studying "The effect of Miraa production on rural household's income in Meru" found that access to credit reduced possibility of participation in Miraa production by 25.49% and that Miraa production marginally affected households' income. Mwambia, (2011) studied "the influence of Miraa farming on levels of poverty: a case of Mutuati division of Igembe north, Meru county" and found that Miraa farming and related trade activities were the main economic activities in the area and that the returns from the farming were found to be fluctuating according to the seasons and consequently worsened the poverty levels. The finding by Mwambia (2011) raises a key question; how much are the farmers financial returns and what are their financial literacy levels? We would expect that the farmers would properly manage their hefty earnings from Miraa farming and trade during high seasons so that they will still be doing as good during the low seasons.

This study sought to answer the question; what is the influence of financial literacy on returns of Miraa farmers in Miraa growing areas of Meru County? The study contributed towards bridging the gap that existed in literature on the relationship between financial literacy and financial returns which has continued to be subject of debate. It provided more information on financial literacy and returns on Miraa farmers and rural households in general for which there is no research which has been conducted in Kenya that far irrespective of the much attention that has been paid on financial literacy and poverty reduction across the globe.

1.3 Objective of the Study

The objective of this study was to determine the influence of financial literacy on financial returns of Miraa farmers in Meru County.

1.4 Value of the Study

Financial literacy is very vital to all people regardless of their status and sources of incomes; therefore the findings of this study are beneficial to many parties including, the financial institutions, Meru county government, central government, Miraa farmers, the business community, the Non-governmental organizations, researchers and academicians. The farmers in the area of study benefited from the study since they were able to acquire certain level of financial understanding during data collection which will enable them to maximize their financial returns from Miraa farming which will go a long way in ensuring that they attain financial freedom and improve their livelihoods.

It is the Meru County and Central governments' role to ensure that the farmers in the Miraa growing areas maximize their financial returns from Miraa farming with an aim of reducing poverty levels in the county. The study will therefore help the two governments in making decisions on how best the farmers maximize their returns from Miraa farming in the area of study. The study has also exposed some of the key challenges facing the farmers in Miraa growing areas of Meru County which will go a long way in policy formulation of financial policies in the County.

To the financial institutions specifically retail banks and micro finance organization, the research will help them to improve the efficiency and quality of financial services offered since from the study they have the understanding of what the potential customers in the areas of study need. The institutions also stand to benefit since informed clients pose less risk and constitute a healthy potential and stable market for sustainable financial services. More financially literate consumers or customers increases the demand for, and responsible use of financial services, and help to

underpin financial market stability, and contribute to wider economic growth and development in the Meru County and the Country in general. To academicians and researchers**,** the study has broaden the existing knowledge on the effect of financial literacy on returns on Miraa farmers and social economic lives, irrespective of their sources of incomes and present opportunities for further research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The chapter focuses on theoretical and empirical literature. The chapter starts with section 2.2 on theoretical review, section 2.3 that has dealt with empirical review on financial literacy and returns, and ends with section 2.4onsummary.

2.2 Theoretical Review

The study will be guided by theories which have previous been developed and that have called for more research on the subject over the years. These theories include Exchange theory, Developmental Psychology Financial Literacy Theories, Psychosocial Financial literacy Theory and Learning Theories.

2.2.1 Exchange Theory

The theory was proposed by Robson and Ladner (2006) who used it to incorporate all dimensions of obtaining financial literacy knowledge. They argued that procedural, interactional, interpersonal, and informational factors were related to acquiring literacy skills. According to this theory, individuals' financial literacy level will depend on the mode of exchange of the knowledge, the level of interaction and the type of information and how it is obtained. The theory is also supported by Lusardi and Mitchell (2008) findings that financial literacy is also higher among those who are working, and in some countries among the self-employed, compared to those who do not work. This difference in literacy levels is explained in part as a result from financial education programs offered in the workplace and also be the effect of learning from colleagues or skills acquired on the job.

2.2.2 Developmental Psychology Theories

The theories seek to understand how individuals' personalities and behaviours develop over their lifespan. Although these theories acknowledge the importance of genetics in learning or acquiring skills, they primarily focus on mental processes, emotions, personal relationships, and social context. The theories argue that financial literacy is psychological and brought about by mental processes as opposed to learning. The major foundational theories in this category include psychoanalysis, psychosocial, and cognitive psychology. Psychoanalysis theory origin is credited to Sigmund Freud and argues that the unconscious has power over human behaviour and emotions, including behaviours associated with money transactions. Indeed, important insights from psychoanalysis derive from their observations about individuals' conflicting attitudes towards money. Following psychoanalysis theory, individuals are assumed to be pleasure seekers who face an unconscious conflict between instinctual urges and the barriers, including social norms, to acting on those urges (Hilgert et al, 2003).

Psychoanalysts observe that money is more than a means of exchange but also has unconscious associations with other qualities, such as 'fear and security,' 'acceptance and rejection,' and 'power and impotence' (King, and Levine, 1993). Fear of becoming poor led to a retentive personality traits in adults. Individuals will accept advice when making small financial decisions but will rely on their feelings when making large decisions. Jalilian ND Kirkpatrick (2001) posits that there are psychological consequences arising from how an individual defines enough, too much, or not enough money. They further argue that financial success comes at that cost of potential isolation, self-destruction, and narcissism. Two psychoanalysts, (King, and Levine, 1993) recognized an emotional sequence to stock market bubbles

that, they argued, was fuelled in part by the conflict individuals' faced between the pleasure and risk of investing.

2.2.3 Psychosocial Theory

The theory redefines the stages through which personality develops and explicitly considers the impact of social, cultural, and historical forces on behaviour. According to psychosocial theories, financial literacy, spending and investment behaviour will also be affected by individuals' social upbringing. The individual who finds organizations (financial institutions included) to be too controlling and complicated may not participate because he/she mistrusts them or fears losing autonomy, free will, or initiative (Erikson, 1980). A child who develops initiative is able to be '"more himself," more loving and relaxed, and bright in his judgment' (Erikson, 1980). As adults, those children who developed a sense of initiative are more likely to engage in the economic system (Erikson, 1980).

2.2.4 Learning Theory

The learning theory offers a methodical study of the observable influences of behaviour and how people acquire habits (Goldhaber, 2000). Pavlov, a founding behaviourist, documented that behaviour can be learned, modified, and extinguished by altering the conditions (including immediate stimuli) in which the behaviour occurs (Pavlov, 1960). Learning theory evolved most notably with the work of Skinner. Skinner determined that once the behaviour is associated with a consequence, whether to reinforce or punishment, the likelihood of the action continuing changes. Skinner argued that positive reinforcement and punishment are not equal; with the former providing longer lasting results and the latter having negative side effects (Skinner, 1953).

Therefore according to learning theories, financial literacy can be learned and hence support financial education programs. Going by the theory, educated people are expected to be more financially literate and will be motivated to take use financial services so as to make more money since money can promote behaviour, such as working, because it enables a higher standard of living (Skinner, 1969). On the other hand, loss of money has been found to be equally effective as a shock in deterring behaviours. Skinner found that time mattered that a lapse of even a few seconds affected the association between behaviour and the consequence (Skinner, 1954). Learning theory, intentionally or not, dominates many financial transactions. Undesirable financial behaviour, such as over drafting a bank account, is typically punished by fees and taking credit by interest, thus, if financial charges are high, according to learning theory, households will not use them.

2.3 Determinants of Individuals' Financial Returns

Literature on factors affecting financial returns has been scanty with most studies confirming the importance of education and financial literacy on individuals' financial returns. The independent importance of both schooling and cognitive functioning as financial returns' determinants is uncontroversial. Moreover, there is no longer much doubt that those with more education have higher financial returns substantially because they are educated, and not solely because schooling positively correlates with ability, parental social status and other traits rewarded in the labour market (Card, 1998). The main effect of education on individuals' financial returns is out of its effect on cognitive function of the individual enabling one to be able to identify and determine avenues of increasing financial returns (Heckman, Layne-Farrar and Todd, 1996).Because schooling increases financial returns and also imparts cognitive skills, many have supposed that the acquisition of cognitive skills is the mechanism whereby schooling increases returns.

Overconfidence has also been identified as a key factor affecting individuals' level of financial returns. Odean (1998) describes overconfidence as the belief that a trader's information is more precise than it actually is. Self-attribution bias is attributing successful outcomes to own skill but blaming unsuccessful outcomes on bad luck as discussed in Miller and Ross (1975). As discussed by Svenson (1981), better than average effect implies that people think they have superior abilities than on average. Hence, individuals tend to believe they are in the best class among peers. Overconfidence can lead to reduced financial returns where an individual takes substandard investment and vice versa. Graham et al. (2009) find that wealthier and highly educated investors are more likely to perceive themselves as competent, implying overconfidence. On the other hand, Ekholm and Pasternack (2007) confirm that investors with smaller portfolios are more overconfident compared to investors with larger portfolios as these investors are more experienced and wealthier.

2.4 Empirical Review

Empirical literacy on financial literacy is relatively new starting with Bayer, Bernheim and Scholz (1996) who concluded that employers tend to offer financial training on a "remedial" basis when financial participation among employees was considered to be too low. Further, Bernheim and Garrett (1996) found that employers provided education on stock variables (total net worth and total value of retirement assets) and flow variables (total savings and savings for retirement purposes); and that financial education had less impact on both the stock and the flow variables given that employers tend to provide financial education in remedial situations. Regression analysis revealed a strong positive and significant impact of employer provided that financial education and retirement wealth, total savings and retirement savings. Whereas the relationship between financial education and total wealth was positive,

the coefficient was not significant. Workplace financial education was found to be an important factor for the total savings rate, but not total wealth.

Levels of financial literacy across the world remain very low, although there is not much literature to support this assertion. Connolly and Hajaj (2001) state that low levels of financial literacy have been closely linked with financial and social exclusion, resulting in increasing levels of wealth inequality in society. Bernheim and Garrett (2003) established that high percent of consumer financial literacy programs started in the late 1990s or 2000. Lack of financial literacy and capability has particularly serious consequences for those on low incomes, for whom costly mistakes can have grave consequences.

Hilgert, et al. (2003) found a very strong and significant link between knowledge and behaviour across the range of personal finance activities. Further, the most effective ways to learn personal financial management skills were identified to be the media and video presentations, while informational seminars and formal courses were rated lowest. Personal experience, friends and family were the main sources of knowledge while formal education like high school education and educational sessions either to the job or outside of a school environment was rated lower across all financial practices and skill levels. Unfortunately, the study does not provide conclusive evidence that financial literacy leads to sound personal finance. Moore (2003) also shows that borrowers who took out high-cost mortgages display little financial literacy. Financial literacy is positively related to investment behaviour. Individuals who answer all three financial literacy questions correctly are more likely to have an investment related custody account and a voluntary retirement savings account. Financial literacy also relates positively to the incidence of a mortgage while we find no such relationship for consumer debt.

Campbell (2006) argues that with financial education that leads to financial literacy, poor financial decisions are likely to be reconciled with economic theory given that households have been found to make sub optimal decisions which deviate from what economic theory suggests. Campbell posits that households with higher education levels (high school, college, graduate school) are likely to be more active in capital markets due to reduced information asymmetry. Through regression evidence, higher education levels were found to be significantly related to equity ownership by households. He also found that the educated Swedish households were able to diversify their portfolios more efficiently than less educated households. The poorer and less educated households were found to have a higher probability of making mistakes than wealthier and better educated households. Dixon (2006) refers to this as 'the motivation gap', where there is a difference between 'what people say is important and their actual behaviour'. Dixon (2006) identifies two main approaches in motivating financial capability. The first and most common approach is financial education, advice and guidance. The second relates to infrastructure, which involves 'providing the best possible structures to make it easier for people to act in more financially capable ways, thereby [enabling them to become] more engaged and interested in improving their financially capability' (Dixon, 2006).

Lusardi and Mitchell (2007) observed that households with low levels of financial literacy tend not to plan for retirement, acquire fewer assets, borrow at higher interest rates (Lusardi &Tufano, 2008); Stango & Zinman (2006), and participate less in the formal financial system relative to their more financially literate counterparts (Alessie et al., 2007). Studies have confirmed the positive association between financial literacy and financial returns. Stango & Zinman (2007) show that those who are unable to correctly calculate interest rates out of a stream of payments end up borrowing more, having reduced financial returns and accumulating lower amounts of

wealth. Lyons et al. (2008) emphasizes the critical importance of basic financial management skills, particularly for low-income households. He however warns that while keeping track of finances is particularly important for those on low income, people on higher incomes can also experience difficulties in 'making ends meet' and, proportionately, are equally inclined as individuals on lower incomes to run out of money before payday. Although individuals express concern about financial matters, they often lack the motivation to build their personal financial capability.

Empirical findings indicate that financial literacy differs by population subgroup (Lusardi & Mitchell, 2008). Age patterns are notable, in that financial knowledge follows an inverted U-shaped pattern, being lowest for the young and the older groups, but peaks in the middle of the life cycle. In addition, the study found that in most cases, women have are less financially knowledge than men. The study by Lusardi & Mitchell (2008) further found that in all countries studied, higher educational attainment was strongly correlated with financial knowledge, but even at the highest level of schooling, financial literacy tended to be low and hence concluded that education was not a good proxy for financial literacy. When they included education and financial literacy in a multivariate regression models, both tended to be statistically significant, indicating that financial literacy had an effect above and beyond education. Financial literacy was also found to be higher among those who are working, and in some countries among the self-employed, compared to those who were not working. This difference was in part due to financial education programs offered in the workplace and also as an effect of learning from colleagues or skills acquired on the job.

Lusardi & Tufano (2008) find that those who severely underestimate the power of interest compounding are more likely to experience difficulties repaying debt. Cohen et al (2008) showed that financial mistakes are most prevalent among the young and

the elderly demographic groups that display the lowest levels of financial knowledge and cognitive ability. Hilgerth, Hogarth, & Beverly (2003) also document a positive link between financial knowledge and financial behaviour. Campbell (2006) further demonstrates that many investors failed to refinance their mortgages during a period of falling interest rates. This finding is consistent with lack of financial literacy, as those who failed to refinance were disproportionately investors with low education. Those investors also seem less likely to know the terms of their mortgages, including the interest rates they pay (Bucks and Pence, 2006 and Moore, 2003).

Financial capability, which is as a result of financial literacy, has featured increasingly in both academic and policy debates over the past 5 to 10 years. In the United States, it has been part of the policy agenda for longer, although it has tended to deal with the much narrower concept of financial literacy, focusing on knowledge and skills rather than behaviour (Dixon, 2006). O'Donnell and Keeney (2009) on the study carried out in late 2007 and early 2008 revealed that people are generally competent in managing their money on a day-to-day basis. However, almost half the population exhibits some weaknesses in relation to financial capability, particularly with regard to planning ahead, choosing financial products, and staying informed. Among the most vulnerable groups were those on lower incomes and those with lower levels of education.

Studies carried out in Meru and Miraa farming are numerous and have presented interesting results. Njiru at al. (2013) found that the main occupation of the household head in Meru had influences on the decision to produce Miraa at 1 percent significance level. This has an implication that households' financial decisions are probably done by men. Having access to credit services was found to decrease the possibility of households' participation in Miraa production by 25.49%. This indicates that as households' access credit, there is likelihood that they will not to participate in Miraa production and instead engage in off farm activities. These results are however

in line with findings by Reardon et al. (1998) that households that received credit facility diversify their income sources out of the agricultural sector. Agricultural based enterprises in the Meru area are predominantly rain fed and their success depends on the reliability of the weather patterns. Hence farmers would rather diversify to non-farm activities to mitigate on the fluctuation of returns that is prevalent in farm enterprises. Some of the highlighted sources of credit by participants include banks, self-help groups, and micro finance institutions. However, farmers highlighted some challenges to credit access including; inability to pay back, insufficient collateral and lack of awareness on sources of credit as well as illiteracy on loan requirement (Njiru at al., 2013).

Mwambia (2011) found that Miraa farming and related trade activities were the main economic activities in the study area. It was established that those involved in Miraa farming activities were mainly men making it a men's only affair. Good harvests were only realized during rainy seasons with poor harvest being recorded during dry seasons which affected Miraa prices; a demonstration that Miraa prices were sensitive to seasonal variations. The season variations lead to fluctuations in prices and consequently worsening the poverty levels. Land size was also identified as major challenge in the study area with majority of the farmers cultivating Miraa.

Study conducted by Mwangi & Kihiu (2012) established that distance of separation from a bank continued to pose a big challenge on access to formal financial services. Households had been observed to shift their preference for formal and semi-formal financial services towards informal services. Age was found to exhibits a quadratic relationship on access to financial services in all strands except in the excluded category where at advanced age; access to financial services appeared to start gaining momentum. They found formal and semi-formal financial institutions not to factor in marital status when designing their financial services and products. They found

informal services providers to rely heavily on marital status given that married persons appear to have higher levels of responsibility hence are more trusted. This was explained by the positive coefficient which implied that a married person had a 3.48% higher probability of accessing financial services than a non-married person. On the same note, the probability of a married person remaining financially excluded reduces by 4.40%.

In terms of gender, women in Kenya have been found to have a 10. 09% higher probability and a 5.08% lower probability of accessing financial services from the informal and semi-formal strands respectively compared to their male counterparts (Mwambia, 2011). Increase in household size has a tendency of locking households from access to financial services. This is rationalised by the reduced probability when household size increases by one person of 1.8% and 0.18% in semi-formal and informal strands respectively. Having a large family increases the probability of a household remaining financially excluded by 1.40% while probability of seeking financial services from the informal strand increases by 0.60%. Increase in income is highly significant in explaining access to financially services in all strands. Regression results portray a positive relationship between increase in income and formal and semi-formal access to financial services while a negative relationship exists for informal access and the excluded category. Someone whose income increases by Ksh.1 is highly likely to substitute informal services with formal or semi-formal services given that they are in a better position to raise any collateral that may be required. A shilling increase in income reduces the probability of an individual remaining financially excluded by 0.03% (Mwangi & Kihiu, 2012).

2.5 Summary of the literature review

In Kenya, agricultural sector supports the livelihoods of about 80 percent of the rural population and accounts for 24 percent of the country's Gross Domestic Product (GDP) and about 19 percent of the formal wage employment. Agricultural sector employs 70 percent of the national labour force through forward and backward industrial linkages, thus providing food and incomes to individuals and households (Omiti et al., 2009). Just like most of the other Counties in Kenya, Meru County at large has very high poverty and education levels and approximately 75% of the households live below the poverty line.

Stango & Zinman (2007) show that those who are unable to correctly calculate interest rates out of a stream of payments end up borrowing more, having reduced financial returns and accumulating lower amounts of wealth. Lusardi and Mitchell (2008) find that financial literacy is also higher among those who are working, and in some countries among the self-employed, compared to those who do not work. In addition, financial literacy differs according to population subgroup (Lusardi & Mitchell, 2008). The study by Lusardi and Mitchell (2008) further found that in all countries studied, higher educational attainment was strongly correlated with financial knowledge, but even at the highest level of schooling, financial literacy tended to be low and hence concluded that education was not a good proxy for financial literacy. The study therefore sought to bridge the gap existing by finding out whether financial literacy could have been the reason behind Miraa farmers' low income and standard of living irrespective of high earnings from Miraa farming.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The chapter focuses on the research design and methodology that was employed to gather data for the study. It has discussed research design in section 3.2, Population in section 3.3, sampling design in section 3.4, and data collection techniques, section 3.5 and data analysis in section 3.6.

3.2 Research Design

The study adopted a descriptive survey design. A descriptive research design determines and reports the way things are (Mugenda & Mugenda, 2003). Creswell (2003) observes that a descriptive research design is used when data are collected to describe persons, organizations, settings or phenomena. The design also has enough provision for protection of bias and maximized reliability (Kothari, 2008). Descriptive design uses a pre-planned design for analysis (Mugenda and Mugenda, 2003). In this study, inferential statistics and measures of central, dispersion and distribution were applied.

3.3 Population

Mugenda & Mugenda (2003) defines population as an entire group of individual or objects having common observable characteristic. It should be ensured that population selected is representative and that everyone has an equal chance to be included in the final sample that is drawn according to Mugenda & Mugenda (2003). The target population under the study was all the households in Igembe, Meru County;

approximately 54,600 households. For data collection purpose, the target population was divided according to divisions in the area.

3.4 Sample

The sampling plan describes how the sampling unit, sampling frame, sampling procedures and the sample size for the study. The sampling frame describes the list of all population units from which the sample will be selected (Cooper & Schindler, 2011). A stratified sampling technique based on location was used in identifying a sample of 100 households to be studied. The sample was obtained from the readily willing farmers who were in a position to give credible information required for the study.

3.5 Data Collection

The study data was obtained from primary sources by use of questionnaire so as to collect the required data (Cooper & Schindler, 2011). The questionnaire consisted of a list of structured questions, un-structured questions and Likert rating scales relating to the field of inquiry with space provided for selection of choices and explanatory answers. Close ended questions have the advantage of collecting viable quantitative data while open-ended questions allow the respondents freedom of answering questions and the chance to provide in-depth responses (Mugenda & Mugenda, 2003). Questionnaire is preferred because it is efficient, cheap and easy to be administered.

The questionnaires were administered through drop and pick to identify respondents with a brief explanation on their purpose and importance. The questions in the questionnaire were short and precise so the respondents could have no challenges in filling them. The questionnaires mainly captured both quantitative and qualitative data

relating to farmers returns information and financial literacy. Farmers approximate financial returns for previous five years were used collected. Financial literacy levels were determined by administering financial literacy questions, the higher the respondent's correct answers, the higher the financial literacy levels.

3.5.1 Data Validity and Reliability

The reliability of an instrument refers to its ability to produce consistent and stable measurements. Bagozzi (1994) explains that reliability can be seen from two sides: reliability (the extent of accuracy) and unreliability (the extent of inaccuracy). The most common reliability coefficient is the Cronbach's alpha which estimates internal consistency by determining how all items on a test relate to all other items and to the total test internal coherence of data. In this study to ensure the reliability of the instrument Cronbach's Alpha was used which is widely used to verify the reliability of the construct.

3.6 Data Analysis

Before processing the responses, the completed questionnaires were edited for completeness and consistency. The data was then be coded to enable analysis of the responses. A descriptive analysis was employed to analyse data. This included the use of table, charts, graphs, percentages and frequencies. Multiple regressions were be used to measure the quantitative data which was analysed using the Statistical Package for Social Sciences (SPSS) version 21.

Tables and other graphical presentations as appropriate were used to present the data collected for ease of understanding and analysis. Cooper & Schindler (2011) notes that the use of percentages is important for two reasons; first they simplify data by reducing all the numbers to range between 0 and 100. Second, they translate the data

into standard form with a base of 100 for relative comparisons. Farmers' financial returns were measured by Return on Capital (ROC) as a percentage so as to allow comparison.

$$\mathbf{R.O.C=\frac{Revenues-Costs}{Capital\ Invested}X\ 100}$$

Financial literacy was measured by administering financial management, skills, and knowledge questions and scored using a scale of 1 to 10 where a higher score implied higher financial literacy levels. The method applied was closely related to one adopted by Lusardi (2008) who argues that financial literacy is best measured by administering financial skills and management questions and financial literacy to be measured by the number of questions one gets correct; the higher the correct answers, the higher is the financial literacy levels.

Two likely models were to be determined from the analysis:

$$ROC = \beta_0 + \beta_1 FL + \beta_2 CI + \beta_3 SL + \varepsilon \quad (1)$$

Where;

ROC is the Return on Capital as a measure of financial returns from Miraa farming as a percentage computed from formula above

FL is the financial literacy score as a percentage score out 10 financial literacy questions

CI is the amount of capital invested in Miraa farming

SL is size of the land used for Miraa farming. This will be vital in determining the scale of farming since large scale farmers enjoys economies of scale.

ε represents the error in the model which will be assured to be zero

$\beta_{0,}\ \beta_{1,}\ \beta_{2,}\ \beta_3$ are the various intercepts

To achieve the research objective, a model showing the relationship between Financial Literacy levels (FL) and Financial Returns (ROC) was developed which showed the relationship between farmers' financial returns from Miraa farming and financial literacy levels. The model took the following format:

$$ROC = \beta_0 + \beta_2 FL \quad (2)$$

The model significance will be tested using the analysis of the variance (ANOVA), t-tests, z-tests and F-tests at 95% confidence.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND INTERPRETATIONS

4.1 Introduction

The chapter represents the empirical findings and results of the application of the variables using techniques mentioned in chapter three. Specifically, the data analysis was in line with specific objectives where patterns were investigated, interpreted and implications drawn on them. This chapter contains detailed research findings and an in depth discussion on the research findings. The research findings are presented using tables, figures and percentages. As discussed in chapter three, data was collected using closed and open-ended questionnaires and from secondary sources. The data collected was checked thoroughly to ensure accuracy, completeness, consistency and uniformity. These was then arranged to enable tabulation. The results were then presented in cross-analysis tables, graphs and charts to facilitate comparisons and interpretation where relevant.

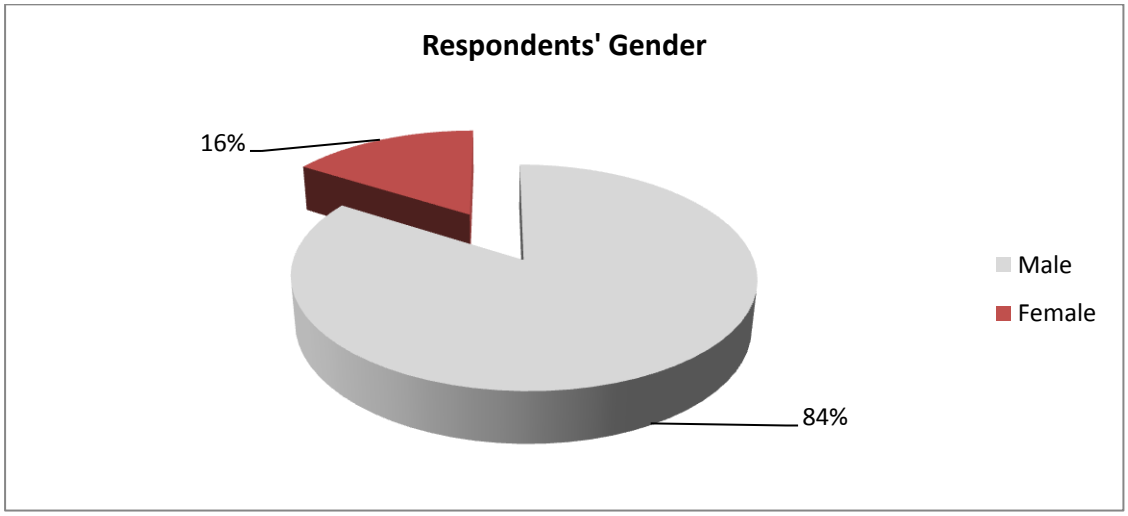
4.2 Descriptive Analysis

From the data collected, all the 100 questionnaires were filled and returned, which represents 100% response rate. Mugenda and Mugenda (2003) observed that a 50% response rate is adequate, 60% good and above 70% rated very good. The recorded high response rate can be attributed to the data collection procedures, where the respondents filled the questionnaires with the guidance of the researcher. The researcher clearly explained the importance of the study to the respondents and adjusted to the best time the respondents could be able to fill the questionnaire. This ensured that all identified respondents filled the questionnaires and hence the reason for 100% response rate.

4.2.1 Respondent's Gender

The descriptive statistics of the study indicated that 84% (84) of the respondents were men while the remaining 16% (16) were women as indicated in Figure 4. 1.

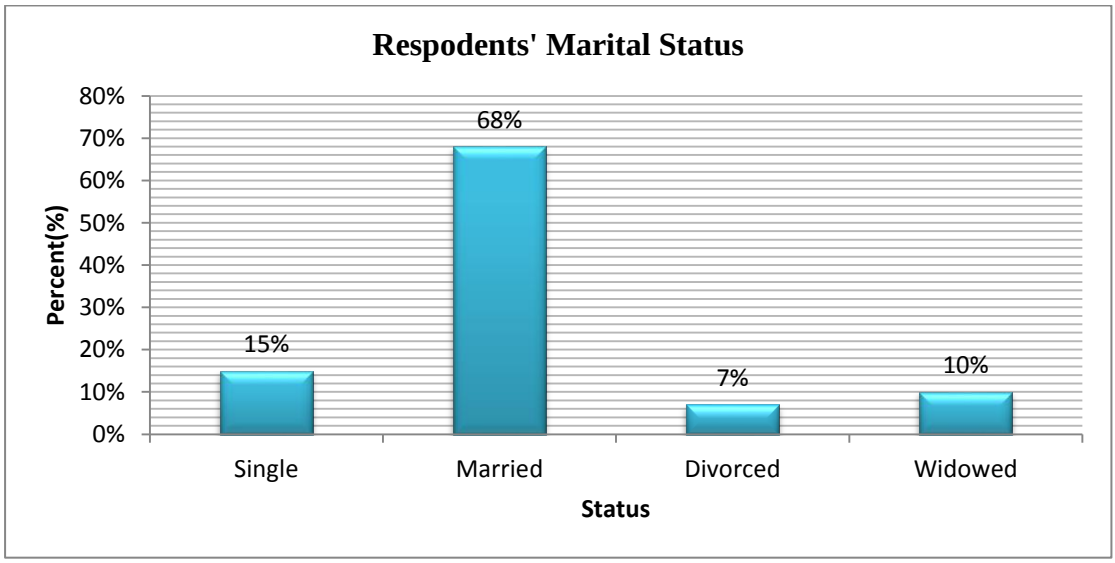
Figure 4.1: Gender of the respondents



4.2.2 Respondent's Marital Status

The figure 4.2 below shows that 68% of the respondents were married, 15% single, 10% widowed and 7% divorced.

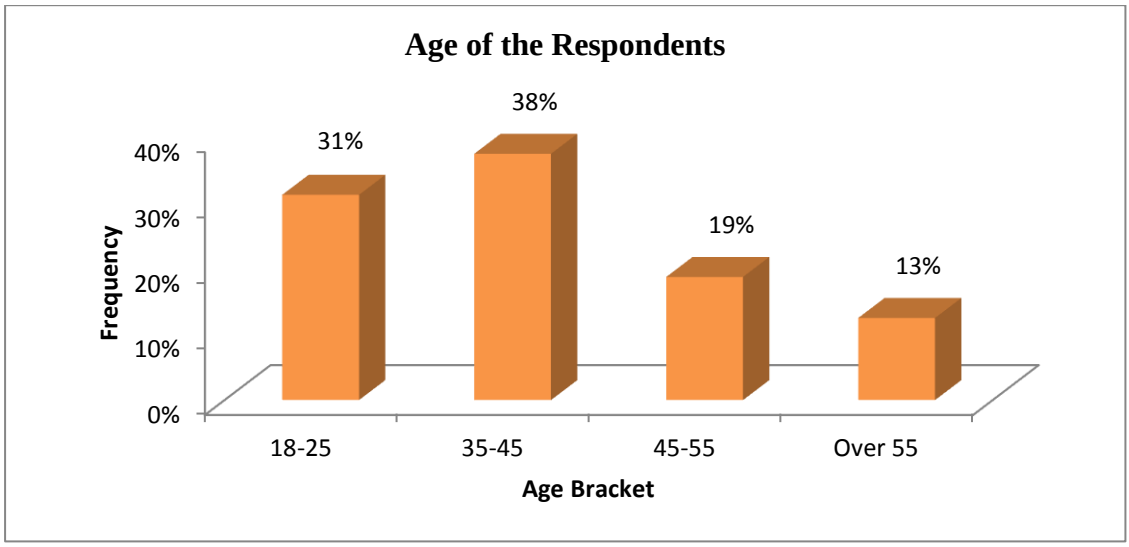
Figure 4.2: Respondents Marital Status



4.2.3 Respondent's Age

The respondent's age is represented in figure 4.3 below. The figure shows that 31 (31%) of the respondents were aged 18-25, 38 (38%) 35-45, 19 (19%) 45-55 and 13% over 55 years.

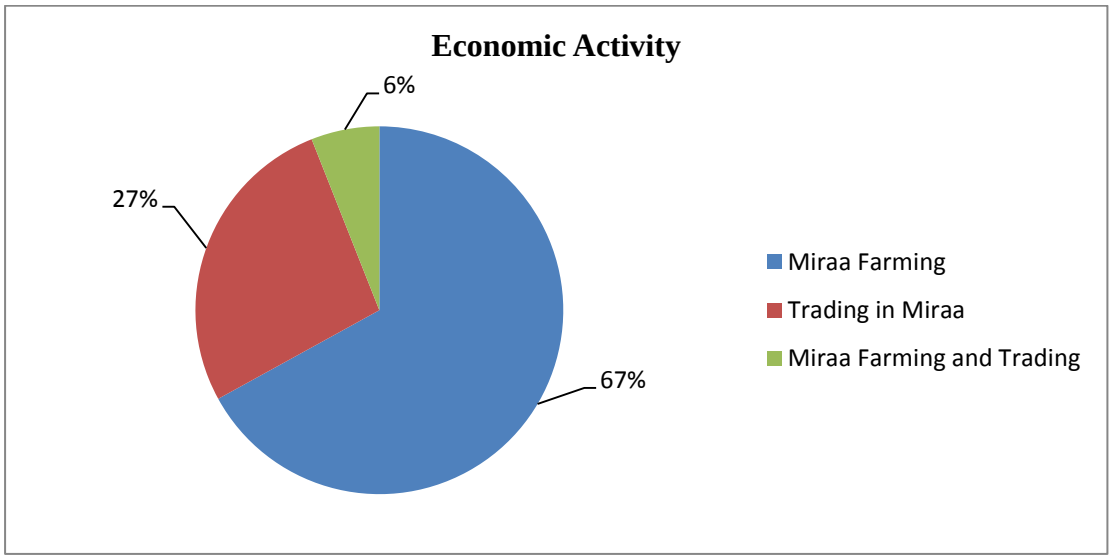
Figure 4.3: Respondents Age



4.2.4 Respondent's Main Economic Activity

This question sought to find out the nature of respondents' participation in Miraa farming and trading. It was meant to give the researcher some degree of accuracy and consistency in the information given by the respondents. The figure 4.4below shows 67 (67%) of the respondents were engaging in Miraa farming, 27 (27%) in Miraa trading and 6 (6%) were dealing with both Miraa farming and trading. The data from respondents not engaging in Miraa farming was excluded in determining the relationship between financial returns and size of land used for Miraa farming.

Figure 4.4: Respondent's main economic activity



4.2.5 Operation of Bank Account

The question on whether the respondent was operating a bank account was a basic one where it was expected that even a person not financially literate was to be operating a bank account which is a basic financial management tool. 97% of the respondents indicated that they had a bank Account with only 3% indicated as not having a bank account. The details are shown in table 4.1 below.

Table 4.1: Operation of a Bank Account

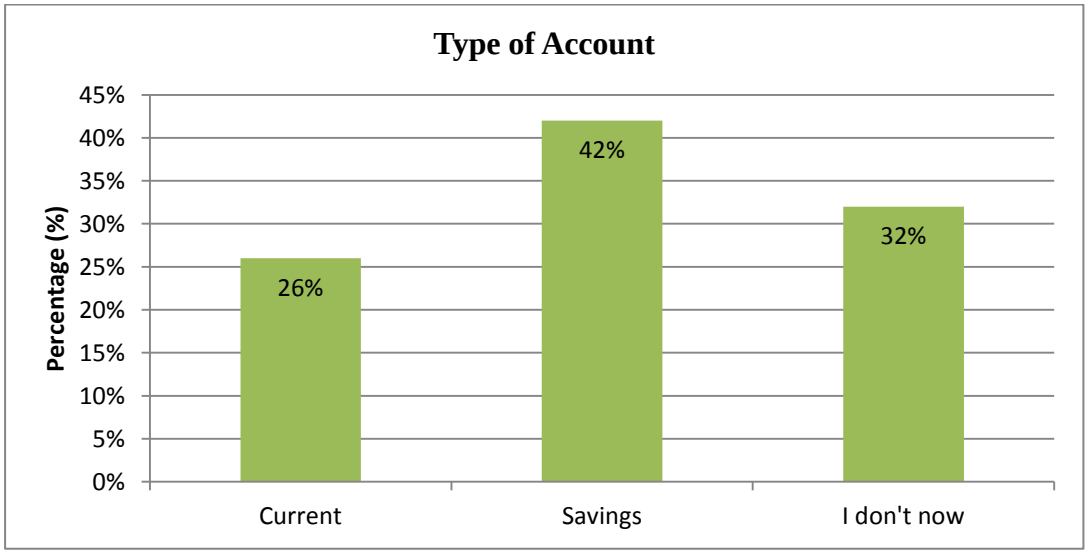
	Frequency	**Percentage**
With Bank Account	97	97%
With No Bank Account	3	3%
Total	100	100%

4.2.6 Type of Account

The question was meant to determine how financially knowledgeable the respondents were. Financially literate respondents were expected to know the type of bank account they were operating since different types of accounts have different financial implications. As seen in the figure 4.5 below, majority of the respondents were found to be aware of the type of account they were holding, with 42% of the respondents

having saving accounts and 26% current account. However, 32% of the respondents indicated that they did not know the type of account indicating low levels of financial literacy.

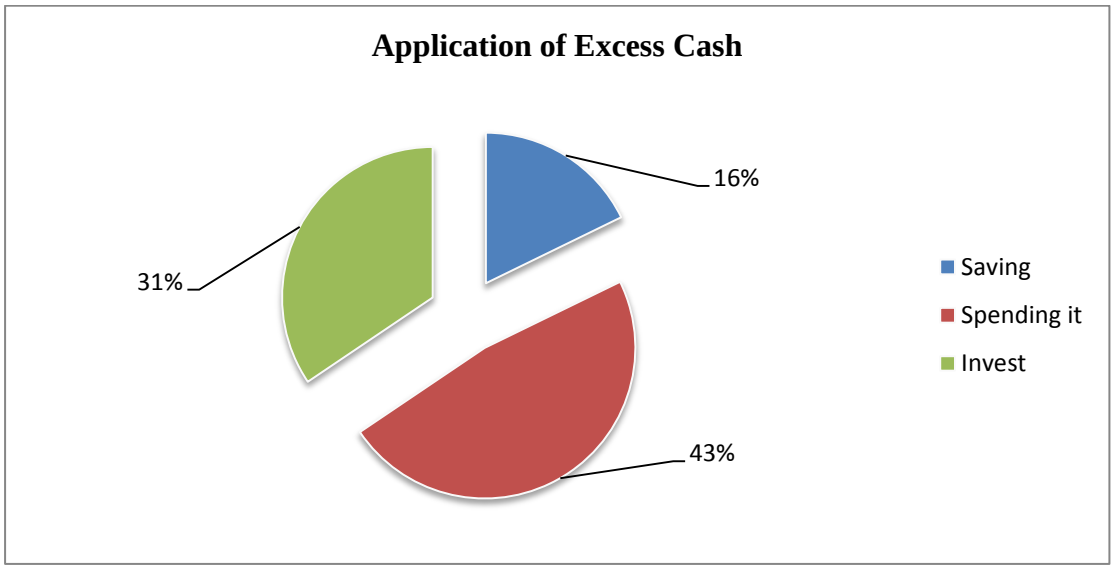
Figure 4.5: Type of Bank Account



4.2.7 Use of Amount remaining after expenses

The question sought to determine the financial management practice of the respondents. Financially literate persons save the surplus cash and invest the same other than spending (Lusardi, and Mitchell, 2011). 43% of the respondents were spending the excess cash, 31% investing it while 16% saving. Overall, 47% of the respondents were either saving the surplus amount or investing latter. However, 43% were not financially literate since they were spending the amounts without saving for a needy day; this indicates low financial literacy. The details are shown in figure 4.6 below.

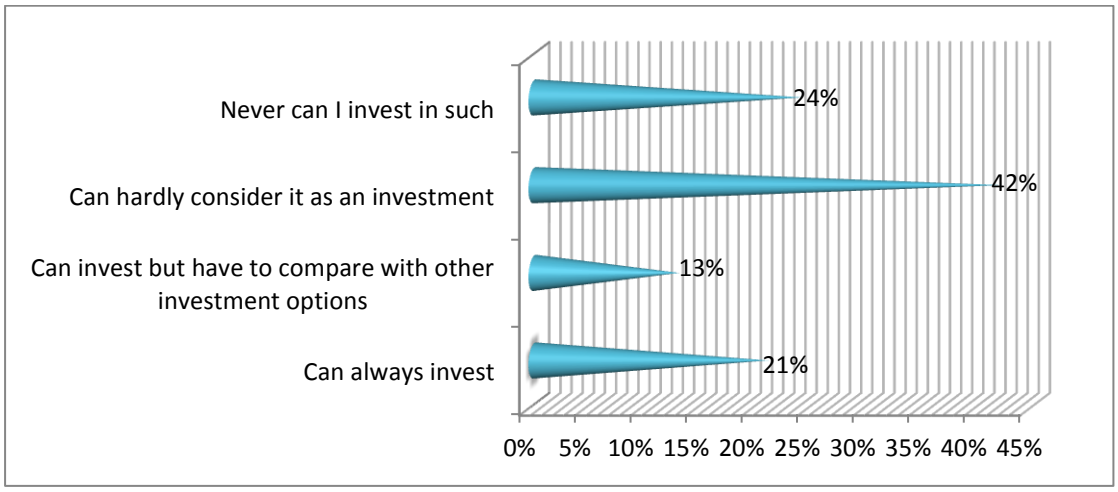
Figure 4.6: Respondent's use of excess money



4.2.8 Investment in financial assets

Financially literate persons are conscious of investment in intangible assets like financial assets. However, the financially illiterate persons mostly invest in real assets among other tangible assets. As seen in the figure 4.7 below, 24% (24) of the respondents indicated that they can never invest in financial assets, 42% (42) can hardly consider investment in financial assets, and 13% (13) can invest but have to compare with other investment options while 21% (21) can always invest in financial assets. Financially literate respondents were expected to indicate that they could invest in financial assets but have to compare with other investment options available.

Figure 4.7: Type of Bank Account



4.2.9 Acquisition of Loan

The question sought to find out the respondents view of non-owner financing. Access to credit is taken as an important part of any business and only less financially literate individuals who do not use debt financing. 44% of the respondents indicated that they had never tried to acquire a loan with 56% stating that they have ever tried to access a bank loan. As seen in the table 4.2 below, 87% of the respondents ranked the rate of interest as the main factor to consider when taking a bank loan. The amount to be advanced was ranked second by 56% of the respondents, repayment period was ranked third by 56%, the repayment amount per month fourth by 39% while cost of loan fifth by 69%. The cost of finance is the most important factor since it includes all the other factors and hence, the same being ranked last shows overall low levels of financial literacy among the farmers.

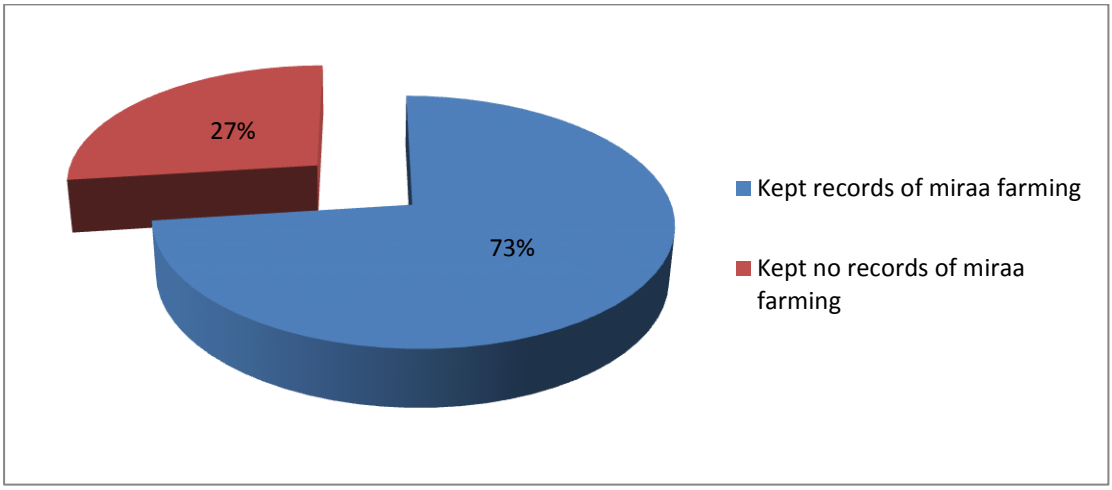
Table 4.2: Factors to consider when taking a bank loan

	Rank	Frequency	Mean	Standard Deviation
Amount to be advanced	2	56%	2.0176	0.3381
Payment period	3	54%	3.4947	0.2938
Rate of interest	1	87%	1.5292	0.6291
Cost of the loan	5	69%	4.9217	1.7293
Repayment amount per month	4	39%	4.0702	0.0925

4.2.10 Maintaining records of Miraa Returns

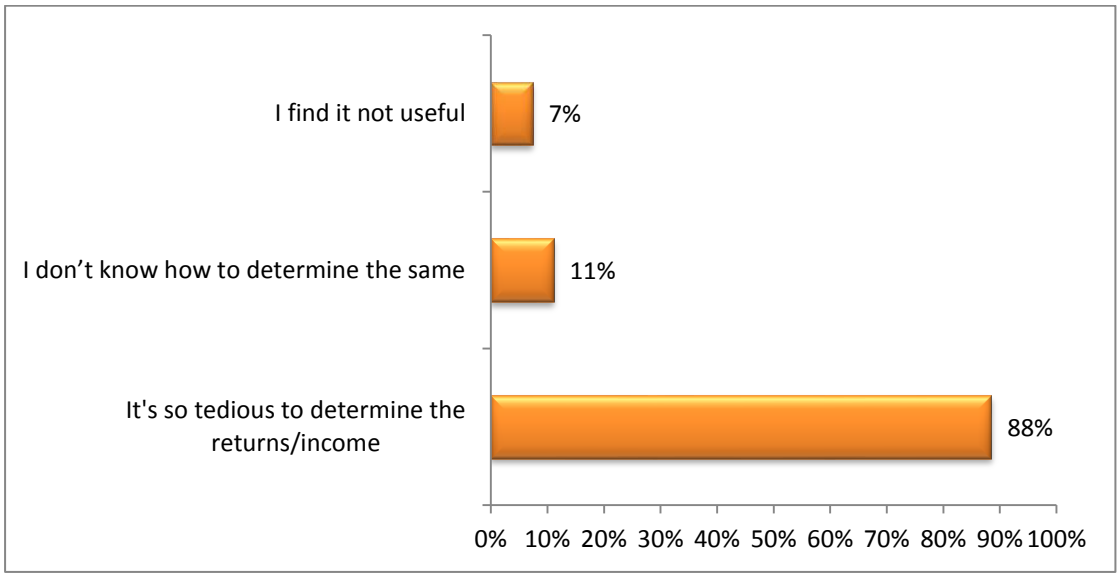
This part sought to find out whether the respondents were maintaining their financial records. Maintaining financial records is important in that a person is able to make better financial decisions and be able to compare performance. Failure to maintain financial records is an indicator of low financial literacy levels. Failure to maintain the records also meant that the financial figures to be provided were not reliable and hence were excluded from the study. From the figure 4.8 above, 27 (27%) of the respondents never kept financial records of their returns from miraa farming.

Figure 4.8: Keeping of financial records



As it can be seen from figure 4.9 below, 88% (23) of the respondents were not maintaining financial records thought that it was so tedious, 11% (3) did not know how to determine the same while 7% (2) thought that it was not useful.

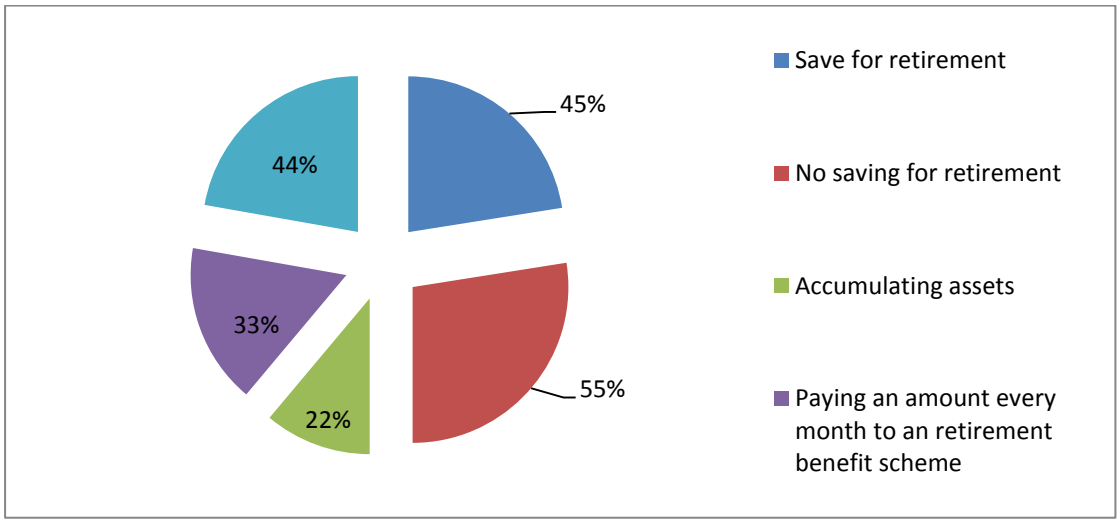
Figure 4.9: Reasons for not maintaining financial records



4.2.11 Savings for Retirement

As it can be seen from the figure 4.10 below, 45% (45) of the respondents were saving for the retirement while 55% (55) were not saving for retirement. Of those who were saving for retirement, 22% were saving through accumulation of assets, 33% through paying to outside institution while 44% were keeping the money to themselves. This indicates high financial illiteracy levels. Out of the respondents who were not saving for retirement, 67% thought it was not important while 33% stated that they couldn't afford.

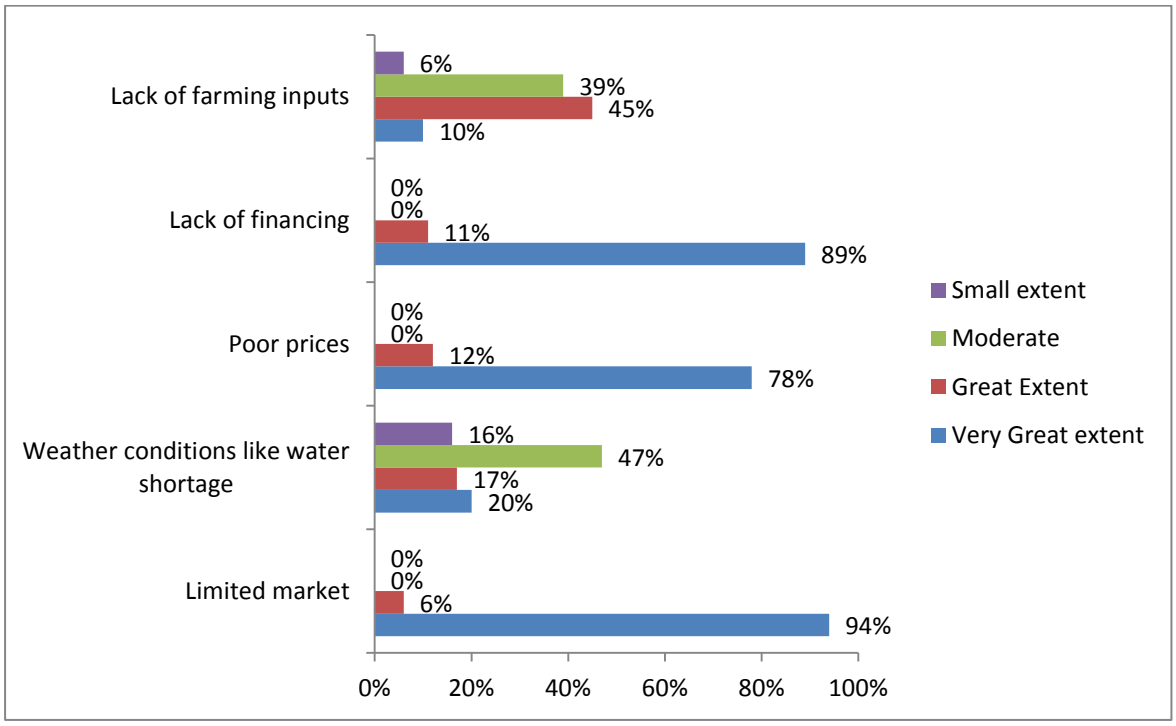
Figure 4.10: Saving for retirement



4.2.12 Factors Limiting Miraa Farming

This part sought to find out the factors limiting Miraa farming and hence financial returns. Limited market and lack of financing were found to be the main factors hindering Miraa farming to a very great extent by 94% and 89% respectively. Worries on the future Miraa farming were noted out of the categorization of Miraa as a drug in various countries in the west. The results obtained are presented in the figure 4.11 below.

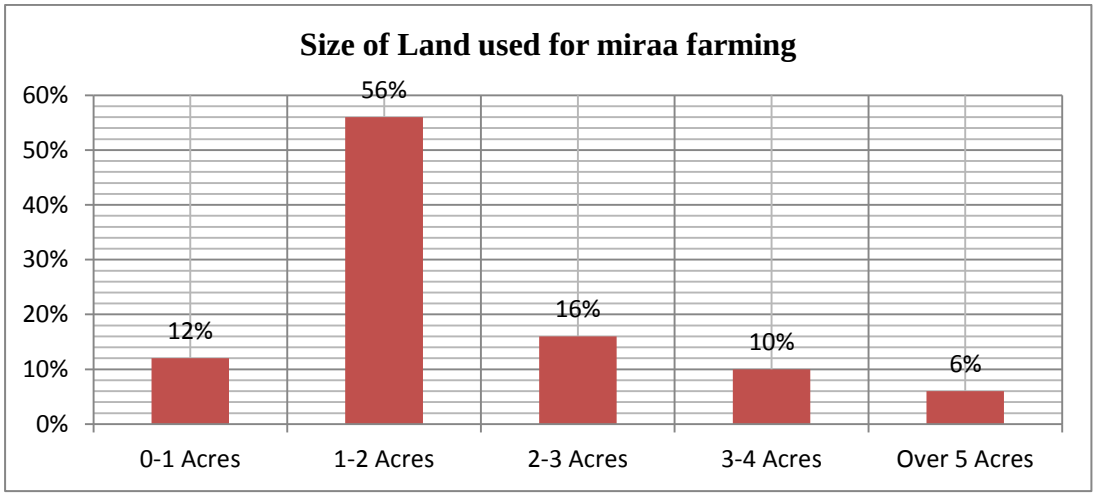
Figure 4.11: Factors limiting miraa farming



4.2.13 Size of Land used for Miraa Farming

Miraa farming was observed to be done in small scale basis where 56% (40) of the respondents were farming 1-2 acres, 16% (12) 2-3 acres, 12% (9) 0-1 acre, 10% (7) 3-4 acres while 6% (4) over 5 acres. The details are shown in figure 4.12 below.

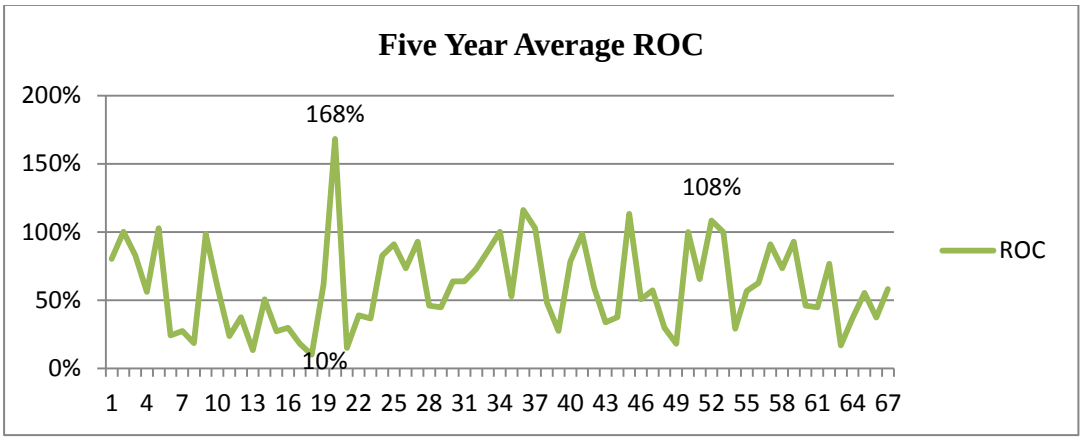
Figure 4.12: Size of the land used for Miraa farming



4.2.14 Miraa Farmers Financial Returns

The Miraa farmers' financial returns were measured by return on investment since it is a simple financial measure that even the nonfinancial respondents could understand. The returns from Miraa farming were observed to be abnormally high with all the sampled farmers making positive five year average financial returns. As seen in the figure 4.13 below, the average return on investment for 5 years was 165% with the lowest being 10%. This indicates that Miraa farming is a good investment with most farmers making above average returns from Miraa farming.

Figure 4.13: Five years Average financial returns



4.3 Correlation Analysis

As shown in table 4.3 below, financial literacy is positively correlated to financial returns with coefficient of correlation of 0.7528. This implies that increase in financial literacy will lead to increase in financial returns. Capital invested in miraa farming also has positive effect on financial returns with a coefficient of correlation of 0.6912. The size of the land also has positive effect on financial returns with a coefficient of correlation of 0.7893.

Table 4.3: Correlation Analysis on Financial Returns

Model	Pearson Coefficient	R Square	Sig. (Two Tail Test)
Financial Literacy	0.7528	0.5667	0.3127
Capital Invested	0.6912	0.47776	0.1054
Size of the Land	0.7893	0.0837	0.3094

4.4 Estimated Empirical Models

Multiple regression analysis was done on the dependent and independent variable to determine the effect of financial literacy, capital invested, size of the land used in farming Miraa and financial returns.

4.3.1 Relationship between Financial Returns and Financial Literacy

Table 4.4 presents the summary of regression model result. The value of R and R^2 are 0.7528 and 0.5667 respectively. The R value of 0.7528 represents a strong positive linear relationship between financial returns and the financial literacy. The R^2 indicates that explanatory power of the independent variables is 0.5667. This means that about 56.67% of the variation in financial returns is explained by the model formulated.

Table 4.4: Model: Financial Returns and Financial Literacy

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.7528	0.5667	0.5495	0.3127

a. Predictors: (Constant), Financial Literacy

Table 4.5 below shows the results of ANOVA test which reveal that financial literacy has significant effect on Miraa farmers' financial returns since the P value is actual 0.0039 which is less than 5% level of significance. This indicates that the model formulated was significant and financial literacy had significant effect on financial returns.

Table 4.5: ANOVA: Financial Returns and Financial Literacy

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	0.4341	1	0.4341	4.4386	0.00390
	Residual	6.3576	65	0.0978		
	Total	6.7917	66			

a. Predictors: (Constant), Financial Literacy

b. Dependent Variable: Return on Investment

The model coefficients are shown in table 4.5 below.

Table 4.6: Coefficients: Financial Returns and Financial Literacy

Model		Unstandardized Coefficients	Std. Error	Standardized Coefficients	t	Sig.
1	(Constant)	0.3962	0.1076		3.6809	0.0005
	Financial Literacy	0.0373	0.0177	0.2528	2.1068	0.0090

a. Dependent Variable: Return on Investment

4.3.2 Relationship between Financial Returns and Capital Invested

The linear regression analysis shows a relationship between financial returns and capital invested. The coefficient of determination R^2 and correlation coefficient R shows the degree of association between financial returns and capital invested. The results of the linear regression indicate an R of 0.6912 and R^2 of 0.4778 indicating that there is a strong positive linear relationship between financial returns and capital invested.

Inferences can therefore be made that increase in capital invested leads to increased financial returns. Therefore, if Miraa farmers want more financial returns, they ought to invest more capital.

Table 4.7: Model: Financial Returns and Capital Invested

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.6912	0.477757	0.6516	0.1054

a. Predictors: (Constant), Capital Invested

Table 4.8 below shows the results of ANOVA test which reveal that capital invested have significant effect financial returns since the P value is 0.0014 which is less than 5% level of significance. Therefore, the model is relevant and can be used in predicting financial returns

Table 4.8: ANOVA: Financial Returns and Capital Invested

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	0.1625	1	0.3665	2.3830	0.0014
	Residual	4.0123	65	0.1917		
	Total	6.7917	66			

a. Predictors: (Constant), Land Size

b. Dependent Variable: Return on Investment

Table 4.9: Coefficients: Financial Returns and Capital Invested

Model		Unstandardized Coefficients	Std. Error	Standardized Coefficients	t	Sig.
1	(Constant)	0.1329	0.0164		1.0898	0.0000
	Capital Invested	0.0134	0.0115	0.1893	1.4369	0.0176

a. Dependent Variable: Return on Investment

4.3.3 Relationship between Financial Returns and Size of land used for Miraa Farming

The linear regression analysis shows a relationship between financial returns and size of land used in Miraa farming. The coefficient of determination (R^2) and correlation coefficient (r) shows the degree of association between financial returns and size of land used in Miraa farming. The results of the linear regression indicate that R=0.7893 and R^2=0.6229 this is an indication that there is a strong relationship between financial returns and size of land used in Miraa farming. The results are shown in table 4.10 below.

Table 4.10: Model: Financial Returns and Size of Land

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.7893	0.0837	0.0696	0.3094

a. Predictors: (Constant), Land Size

Table 4.12 shows the results of ANOVA test which reveal that size of land has significant effect on financial returns. Since the P value is actual 0.00176 which is less than5% level of significance.

Table 4.11: ANOVA: Financial Returns and Size of Land

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	0.5685	1	0.5685	5.9383	0.00176
	Residual	6.2232	65	0.0957		
	Total	6.7917	66			

a. Predictors: (Constant), Land Size

b. Dependent Variable: Return on Investment

Table 4.12: Coefficients: Financial Returns and Size of Land

Model		Unstandardized Coefficients	Std. Error	Standardized Coefficients	t	Sig.
1	(Constant)	0.482915	0.063795		7.56983	0.0000
	Land Size	0.093745	0.03847	0.289328	2.43686	0.01756

a. Dependent Variable: Return on Investment

4.3.4 Overall Model

The model shows the linear relationship between the dependent variable which is financial returns and independent variables which are financial literacy, capital invested and size of the land. The coefficient of determination R^2 and correlation coefficient (R) shows the degree of association between Variables and financial returns. The results of the linear regression indicate that R= 0.8639 and R^2= 0.7463 and this is an indication that there is a strong relationship between financial literacy, capital invested and size of land used in Miraa farming. The results are shown in table 4.13 below.

Table 4.13: Coefficients: Overall Model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.8639	0.7463	0.1053	0.3034

Predictors: (Constant), Land Size, Financial literacy and capital Invested

Table 4.14 below indicates that P value 0.0011 which is less than 5%. This shows that the overall model is significant. It further implies that financial literacy, capital invested and size of the land affects financial returns from Miraa farming.

Table 4.14: Coefficients: Overall Model

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	0.8992	2	0.4496	4.8831	0.0011
	Residual	5.8926	64	0.0921		
	Total	6.7917	66			

a. Predictors: (Constant), Land Size, Financial literacy, Capital Invested

b. Dependent Variable: Return on Investment

The model coefficients are shown in table 4.15 below. From the table, it can be seen that financial literacy has the biggest coefficient and hence has a bigger effect on financial returns. The model developed from the study showing the relationship between the dependent and independent variables is;

ROC = 0.3078 + 0.0328FL+ 0.0854 CI + 0.1754SL + ε

Table 4.15: Coefficients: Overall Model

Model		Unstandardized Coefficients	Std. Error	Standardized Coefficients	t	Sig.
1	(Constant)	0.3078	0.1116		2.7592	0.0075
	Financial Literacy (FL)	0.0328	0.0173	0.2222	1.8950	0.0626
	Land Size(SL)	0.0854	0.0380	0.2635	2.2474	0.0281
	Capital Invested (CI)	0.1754	0.0060	0.1939	1.7609	0.0061

a. Dependent Variable: Return on Investment

4.5 Summary and Interpretation of the findings

The researcher begun by a general analysis on the demographic data got from the respondents which included; the gender, age, marital status, age and the nature of

economic activity the respondents were engaging in. This was in line with the literature that demographic factors like age and gender of respondents affected financial literacy and individual returns (Cohen, 2010; Lusardi, &Tufano, 2009). The descriptive statistics of the study indicated that 84% of the respondents were men while the remaining 16% were women. Lusardi& Mitchell (2011) found that in most cases, women were less financially than men. 68% of the respondents were married, 15% single, 10% widowed and 7% divorced. The marital status of an individual affects the respondent's participation in Miraa farming and household decision making according to findings by Mwambia (2011). Lusardi and Tufano (2009) also found that the divorced/widowed/separated displayed the lowest level of financial literacy. 31% of the respondents were aged 18-25, 38% 35-45, 19% 45-55 and 13% over 55 years. Lusardi and Tufano (2009) found that age was statistically significant determinant of financial literacy where elderly continued to display lower financial literacy.

Majority of the respondents were found to be aware of the type of account they holding with 42% of the respondents having saving accounts and 26% current. However, 32% of the respondents indicated that they did not know the type of account indicating low levels of financial literacy.43% of the respondents were spending the excess cash, 31% investing it while 16% saving. Overall, 47% of the respondents were either saving the surplus amount or investing latter. However, 43% were not financially literate since they were spending the amounts without saving for a needy day; this indicates low financial literacy. Financially literate persons save the surplus cash and invest the same other than spending according to the findings by Lusardi and Mitchell (2011).

44% of the respondents indicated that they had never tried to acquire a loan with 56% stating that they have ever tried to access a bank loan. 87% of the respondents ranked rate of interest as the main factor to consider when taking a bank loan. Amount to be advanced was ranked second by 56% of the respondents, repayment period third by 56%, repayment amount per month fourth by 39% while cost of loan fifth by 69%. The cost of finance is the most important factor since it includes all the other factors and hence, the same being ranked last shows overall low levels of financial literacy. Access to credit is taken as an important part of any business and only less financially literate individuals who do not use debt financing. 27% of the respondents never kept financial records of their returns from Miraa farming with 88% of the respondents not maintaining financial records thought that it was so tedious, 11% did not know how to determine the same while 7% thought that it was not useful.

45% of the respondents were saving for the retirement while 55% were not saving for retirement. Of those who were saving for retirement, 22% were saving through accumulation of assets, 33% through paying to outside institution while 44% were keeping the money to themselves. This indicates high financial illiteracy levels. Out of the respondents who were not saving for retirement, 67% thought it was not important while 33% stated that they couldn't afford. A financially literate person is more conscious of the future and saves for retirement (Lusardi and Mitchell, 2011). Lusardi and Mitchell (2007) observed that households with low levels of financial literacy tend not to plan for retirement, acquire fewer assets, and borrow at higher interest rates. This part sought to find out the factors limiting Miraa farming and hence financial returns. Limited market and lack of financing were found to be the main factors hindering Miraa farming to a very great extent by 94% and 89%

respectively. Worries on the future Miraa farming were noted out of the categorization of Miraa as a drug in various countries in the west.

Miraa farming was observed to be done in small scale basis where 56% of the respondents were farming 1-2 acres, 16% 2-3 acres, 12% 0-1 acre, 10% 3-4 acres while 6% over 5 acres. The average return on investment for 5 years was 165% with the lowest being 10%. This indicates that Miraa farming is a good investment with most farmers making above average returns from Miraa farming. The R value of 0.7528 represents a strong positive linear relationship between financial returns and the financial literacy. The R^2 indicates that explanatory power of the independent variables is 0.5667. This means that about 56.67% of the variation in financial returns is explained by the model formulated. It can be conclude that Miraa farmers should be financial literate so as to increase their returns from Miraa farming. The findings are consistent with Stango & Zinman (2007) findings that respondents unable to correctly calculate interest rates out of a stream of payments end up borrowing more, having reduced financial returns and accumulating lower amounts of wealth.

Financial returns and capital invested are positively related with coefficient of correlation coefficient of 0.6912 and R^2 of 0.4778 indicating that there is a strong positive linear relationship between financial returns and capital invested. In addition, size of land is also positively related to financial returns as shown by R of 0.7893 and R^2=0.6229. The model results shows that the relationship between the dependent variable which is financial returns and independent variables which are financial literacy, capital invested and size of the land with a coefficient of determination (R^2) and correlation coefficient (R) of 0.8639 and R^2 0.7463. The relationship is also

significant at 95% since the p value of 0.0011 is less than 5%. The model developed from the study showing the relationship between the dependent and independent variables is; ROC = 0.3078 + 0.0328FL+ 0.0854 CI + 0.1754SL, where ROC is return on capital, FL is financial literacy, CI is capital invested and SL is size of land. From the model coefficients, financial literacy is the most important factor since it has the highest coefficient of 0.31 implying that increase in financial literacy score leads to 31% increase in ROC.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of the important elements of the study, discussion of major findings and interpretation of the results. This chapter further presents the conclusions drawn from the research findings as well as recommendations for improvement and suggestions for further research. The chapter is subdivided into section 5.2 on summary of the study, section 5.3 on conclusion of the study and section 5.4 and 5.5 that offers recommendations for further research.

5.2 Summary and Discussion

The study sought to investigate the effect of financial literacy on financial returns of Miraa farmers in Miraa growing areas of Meru County, Kenya. Specifically, the study investigated the effect of financial literacy level, capital invested and the size of the land on Miraa farmers' financial returns.

The study found that financial literacy levels among Miraa farmers in the area of study were low with 67% of the respondents answering correctly, less than half of the financial literacy test questions. The study did not find significant difference in financial literacy between men and women. This may have been out of the fact that 84% of the respondents were male while 16% were female. Also, the elderly were found to have low levels of financial literacy than the young. The finding is related to that of Mwambia (2011) who found that Miraa farming and related trade activities were the main economic activities in the study area and that it was mainly men's only affair.

Low level of financial literacy was confirmed by the fact that while 97% of the respondents were operating a bank account, only 31% could tell the type of the account. In addition, 43% were found to spending the amounts remaining after monthly expenses without saving for a needy day; this indicates low financial literacy. 42% indicated that they could hardly consider investment in financial assets with 55% not saving for retirement. This indicates low financial literacy level among Miraa farmers. This was further confirmed by the fact that 27% of the respondents never kept financial records of their financial returns from Miraa farming the average return on investment. The conclusion was further supported by the findings by Lusardi and Mitchell (2007) who observed that households with low levels of financial literacy tend not to plan for retirement, they acquire fewer assets, borrow at higher interest rates (Lusardi and Tufano, 2008) and participate less in the formal financial system relative to their more financially literate counterparts.

The linear regression analysis between the dependent variable which is financial returns and independent variables which are financial literacy, capital invested and size of the land showed a positive relationship between the dependent and independent variables. The results of the linear regression revealed an R of 0.8639 and R^2 of 0.7463indicating that there is a strong relationship between financial literacy, capital invested and size of land used in Miraa farming. P value was found to be0.0011, showing that the overall model was significant.

5.3 Conclusion

This study sought to explore the effect of financial literacy on financial returns of Miraa farmers in Meru County. Based on the study findings, the study concludes that financial literacy is positively related to financial returns of Miraa farmers in Miraa growing areas of Meru County. The findings are consistent with the empirical studies reviewed. For example, Connolly & Hajaj (2001) found that low level of financial literacy was closely linked with financial and social exclusion, resulting in reduced household financial returns. Bernheim & Garrett (2003) also found that lack of financial literacy and capability was particularly serious consequences for those on low incomes, for whom costly mistakes can have grave consequences going beyond depressed financial returns. Campbell (2006) also found that with financial education that leads to financial literacy, poor financial decisions were likely to be reconciled with economic theory given that households have been found to make sub optimal decisions which deviate from what economic theory suggests. Finally, Stango & Zinman (2007) found that those who are unable to correctly calculate interest rates out of a stream of payments end up borrowing more (less financially literate) had reduced financial returns.

The study also concludes that financial literacy levels of Miraa farmers have remained and hence financial illiteracy is to blame to good extent for continued high poverty levels in the area. Thirdly, the study concludes that financial returns from Miraa farming are high as 160% of the capital invested and therefore the finding is consistent with reviewed literature that earnings from Miraa farming are enormous.

Finally, the study concludes that there is a strong positive relationship between financial literacy, capital invested and size of the land used for growing Miraa. Therefore, high levels of financial literacy, capital invested and size of land implies higher financial returns for Miraa farmers. Increase in financial literacy, size of land used in Miraa farming and capital invested will increase financial returns by 85%.

5.4 Limitations of the Study

The study had a few challenges for which the researcher had to formulate ways of overcoming them. The first challenge was on data collection whereby the questionnaires could not be self-administered and the researcher had to administer them through interviews which were time consuming. The researcher had to translate the questions in the questionnaires to local language which was time consuming. The situation was worse since the study had limited time frame within which it should have been complete.

Secondly, identifying respondents with total objectivity was a big challenge since there was no complete register of all household from which respondents would have been sampled from. While the researcher tried to ensure that the sample was representative as possible, the same could not be ensured with absolute accuracy.

Thirdly, most of Miraa farmers were found not to keep complete books on Miraa returns. This meant that the researcher had to use the incomplete information to extract the required data some of which was relating to previous five years. Whereas the researcher tried all efforts to collect as much accurate data relating to financial returns, absolute accuracy could not be assured which may have distorted the findings.

Fourth, time limitation was prominent where the study was done within limited time that was provided for the study. This meant that the researcher had to go extra mile to ensure that data was obtained on time. It would be best to carry such study like this one over a number of years where the farmers involved in the study are required to keep complete books from the start and same reviewed periodically to ensure accuracy.

Finally, the study was also limited by the analytical model adopted between independent and dependent variables where it was assumed to be linear for simplicity. However, this may not be the case and the model could take any form including cubic, quadratic, logarithmic among others

5.5 Recommendations

This section has discussed the recommendations for policy derived from the study findings and those relating to future research.

5.5.1 Policy Recommendations

The study is a justification of the fact that a Miraa farmer with good financial literacy knowledge has sufficient capital to invest and land to carry out Miraa farming will have more financial returns. This can go a long way in eradicating poverty that has continued to face Meru County farmers despite the high financial returns they get from Miraa farmer. Based on this knowledge, the study recommends the following: First, Meru County government to invest in instilling financial literacy knowledge to Miraa farmers. This can be done through holding of workshops and educating the farmers on how to increase their financial returns from Miraa farming as well as how to manage the money they make from Miraa farming.

Secondly, the County government should come up with a financing program where Miraa farmers can be extended cheap credit. This will provide them with the capital required to be invested and ensure that they maximise their financial returns. Finally, the farmers should be encouraged to farm Miraa in large scale so as to benefit from economies of scale.

5.5.2 Recommendations for Further Research

This study is a millstone for future research in this area, particularly in Kenya where the economy highly depends on agriculture. The findings emphasize the importance of the components financial literacy, capital invested, size of land used in farming and financial returns. Available literature indicates that as a future avenue of research there is need to carry out similar research in different economic sectors or farming of different crops. The research concentrated on only one economic sector and hence further research should be carried out on the other sectors.

Further research can also be done on the effect of financial literacy on financial returns of Miraa farmers but in as different since this study did not carry out study on the entire of Meru County and hence presenting a chance for future research on different parts of the country/county.

Further research can also be done the effect of financial literacy of financial returns of employees to find out whether the level of employees' financial returns can be explained by financial literacy. Further study is also recommended but using longitudinal approach where the respondents will be identified and studied over years. The respondents should be trained on how to maintain financial information and

provided with recording materials. This will ensure that the provided information is more accurate.

Finally, the study was also limited by the analytical model adopted between independent and dependent variables where it was assumed to be linear for simplicity. In line with this, further study is recommended on the effect of financial literacy on Miraa farmers' financial returns but assuming other type of relationships.

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APPENDICES

APPENDIX I: QUESTIONNAIRE

This questionnaire is to collect data for purely academic purposes. The study seeks to determine the effect of financial literacy on financial returns of Miraa farmers in Meru County. All information will be treated confidentially. Do not put any name or identification on this questionnaire. The questionnaire is to be filled by Miraa farmers and those trading in Miraa only.

SECTION I: BACKGROUND INFORMATION

1 Gender

Male	☐
Female	☐

2 Marital Status

Single	☐
Married	☐
Divorced	☐
Widowed	☐

3 Age

18-35	☐
35-45	☐
45-55	☐
Over 55	☐

4 What is your main economic activity

Miraa farming	☐
Trading in Miraa	☐
Others, please specify……	☐

SECTION II: FINANCIAL MANAGEMENT AND LITERACY

5 Do you operate a bank account?

Yes	☐
No	☐

6 If Yes, what is the type of Account?

Current	☐
Savings	☐
I don't know	☐

7 What do you do with the money that remains after paying all your expenses

Saving	☐
Spending it	☐
Investing	☐

8 What is your opinion on investment in shares and other financial assets

Can always invest	☐
Can invest but have to compare with other investment options	☐
Can hardly consider it as an investment	☐
Never can I invest in such	☐

9 Have you ever tried to/acquired a loan?

Yes	☐
No	☐

10 If Yes/No, what factors did /would you consider before taking the loan? Number using 1-5 according to their importance in your decision

Amount to be advanced	☐
Payment period	☐
Rate of interest	☐
Cost of the loan	☐
Repayment amount per month	☐

11 Do you usually compute the amount of income/returns you get from farming or trading in Miraa?

Yes	☐
No	☐

12 If No, why?

It's so tedious to determine the returns/income	☐
I don't know how to determine the same	☐
I find it not useful	☐

13 Do you save for retirement?

Yes	☐
No	☐

14 If yes, how do you do the saving?

Accumulating assets	☐
Paying an amount every month to an retirement benefit scheme	☐
Keeping the money myself	☐

15 If 13 above is no, why do you not save for retirement?

I believe it is not important	☐
I can't afford	☐
Others, please specify……	☐

SECTION III: INVESTED CAPITAL

16 Please indicate your annual sales and investment in farming Miraa for the last 5 years

Year	2013	2012	2011	2010	2009
Annual sales					
Annual investment					
Approximate annual costs					

17 Using a scale of 1-5, where 5-very great extent, 4-great extent, 3-moderate, 2-small extent, 1-very small extent, please indicate the extent to which the following factors limit your financial returns from Miraa farming?

	Very great extent	Great extent	Moderate	Small extent	Very small extent
Limited market					
Weather conditions like water shortage					
Poor prices					
Lack of financing					
Lack of farming inputs					

SECTION IV: MIRAA FARMING

18 How big is the size of land that you use in farming Miraa?

0-1 Acres ☐

1-2 Acres ☐

2-3 Acres ☐

3-4 Acres ☐

Over 5 Acres ☐

APPENDIX II: MERU COUNTY GENDER DISTRIBUTION

	Boys		Girls		Total		Ratio
AGE (months)	**no.**	**%**	**no.**	**%**	**no.**	**%**	**Boy: girl**
6-17	131	54.1	111	45.9	242	34.1	1.2
18-29	112	49.1	116	50.9	228	32.2	1.0
30-41	47	47.5	52	52.5	99	14.0	0.9
42-53	43	49.4	44	50.6	87	12.3	1.0
54-59	27	50.9	26	49.1	53	7.5	1.0
Total	**360**	**50.8**	**349**	**49.2**	**709**	**100.0**	**1.0**

Source: Research Data

APPENDIX III: RESEARCH DATA

ROC	Size of land	FL score
0.8035	1.5	8
1.0010	2.5	9
0.8287	1.5	8
0.5613	0.5	6
1.0280	0.5	9
0.2412	1.5	3
0.2733	0.5	5
0.1846	1.5	5
0.9846	2.5	7
0.5933	0.5	2
0.2367	1.5	5
0.3756	1.5	6
0.1333	0.5	3
0.5074	0.5	6
0.2726	0.5	9
0.2988	1.5	4
0.1801	0.5	2
0.1000	2.5	3
0.6150	1.5	7
1.6832	2.5	3
0.1500	0.5	7
0.3903	1.5	6
0.3667	0.5	9
0.8267	1.5	8
0.9100	1.5	5
0.7333	0.5	7
0.9300	5	9
0.4596	2.5	5
0.4483	2.5	5
0.6373	0.5	5
0.6392	0.5	6
0.7300	0.5	7
0.8635	1.5	7
1.0010	2.5	2
0.5287	1.5	8
1.1613	0.5	9
1.0280	0.5	7
0.4812	1.5	6
0.2733	0.5	3
0.7846	1.5	5
0.9846	2.5	8
0.5933	0.5	6

0.3367	1.5	7
0.3756	1.5	4
1.1333	0.5	6
0.5074	0.5	6
0.5726	0.5	2
0.2988	1.5	4
0.1801	0.5	2
1.0000	2.5	3
0.6550	1.5	4
1.0832	2.5	3
1.0000	0.5	7
0.2903	1.5	8
0.5667	0.5	9
0.6267	1.5	8
0.9100	1.5	7
0.7333	0.5	6
0.9300	5	9
0.4596	2.5	5
0.4483	2.5	5
0.7673	0.5	4
0.1692	0.5	6
0.3700	0.5	7
0.5529	0.5	3
0.3737	0.5	1
0.5817	1.5	5

Source: Research Data