AGRICULTURAL DEVELOPMENT STRATEGIES AND RURAL HOUSEHOLD LIVELIHOODS IN MBARARA DISTRICT, UGANDA

BY

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DECLARATION

I **Atuhaire May** hereby declare that, to the best of my knowledge, am the author of this dissertation. The work presented in this dissertation has never been presented to Uganda Management Institute before for the award of a Master Degree in Business Administration or its equivalent, or to any other Institution for any academic award. Thus, the work is original, a result of my own study, and where other people's works were used, the authors have been acknowledged.

Signature…….

Date……..

APPROVAL

We, the undersigned, certify that we have read and here by recommend for acceptance by Uganda Management Institute a dissertation titled *" Agricultural Development Strategies and rural*

Household livelihoods in Mbarara District" in partial fulfillment of the requirements for the award of the Master's Degree in Business Administration of Uganda Management Institute

Dr. Godfrey Mugurusi

Sign…….

Date……..

Dr. James Nkata

Sign…….

Date……..

DEDICATION

This research work is dedicated to my family and my friends that have been there for me. This was a hard journey to accomplish but I finally overcame the major obstacles.

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LIST OF ACRONYMS

BOD	Board of Directors
CSO	Civil Society Organization
CVI	Content Validity Index
GoU	Government of Uganda
ICT	Information and Communication Technology
IG	Inspectorate of Government
IGG	Inspector General of Government
MDGs	Millennium Development Goals
NGOs	Non-Governmental Organizations
PSR	Public Sector Reform
SPSS	Statistical Package for Social Scientists
WGI	Worldwide Governance Indicators

ABSTRACT

The study examined the relationship between Agricultural Development Strategies and rural House hold livelihood in Mbarara District. The study was premised on the following research objectives: to examine the relationship between extension services and rural household livelihoods in Mbarara District, western Uganda, to examine the relationship between access to credit and rural household livelihoods in Mbarara District, western Uganda and to examine the relationship between market information and rural household livelihood in Mbarara District, Western Uganda. The study adopted a descriptive cross sectional survey design where both quantitative and qualitative approaches were used. In this study, a total number of 113 respondents were expected but 60 respondents returned the survey instruments representing a response rate of 53%. The data was collected using questionnaires, interviews and quantitative data analysis was done using regression analysis and Pearson correlation coefficients for the quantitative findings. Qualitative analysis was done using content and thematic analysis Firstly, findings revealed that there is a positive significant relationship between extension services and rural household livelihood in Mbarara District r value was 0.772(**). Secondly, findings revealed that there is a positive significant relationship between access to credit and rural household livelihood r value was 0.212(**). Thirdly, findings revealed that there is a positive significant relationship between market information and rural household livelihood r=0.622 and P=0.000. Findings revealed that three Institutions are extensively carrying out extension services in Mbarara that is Sasakawa, NARO and Local Government. The three have used more than three extension methods to disseminate the climate smart technologies practices/agricultural practices to the farmers.Findings revealed that smallholder farmers often face constraints when they want to access markets or when they want to improve their competitiveness in markets. Smallholder farmers often have low market access as compared to their larger and more capitalized colleagues. It was recommended that: farmer groups should be supported in order to help the extension staff make wider coverage and take advantage of interpersonal communication. There is need to create appropriate information channels among the farmers. The loans should be given at low interest rates since most of the farmers in Mbarara cannot afford loans at high interest rates. Free collateral security loans will be useful in such a situation. So, it is advisable to strengthen farmers group, strengthen cooperative and union to increase chances of farmers accessing credit.

CHAPTER ONE
INTRODUCTION

1.1 Introduction

The study focused on examining the relationship between agricultural development strategies and rural household livelihood in Mbarara District. The independent variable of the study was agricultural development strategies and the dependent variable was rural household livelihood. This chapter presents the background to the study, statement of the problem, purpose of the study, specific objectives, research questions, research hypothesis, the conceptual framework, scope of the study, significance of the study and definitions to key terms and concepts.

1.2 Background to the Study

This sub section presents the background divided into four perspectives, the historical, theoretical, conceptual and contextual

1.2.1 Historical Background

Any attempt to portray evolving ideas in rural development over the past half-century risks oversimplification. While it is superficially neat to characterize the 1960s as modernization, the 1970s as state intervention, the 1980s as market liberalization, and the 1990s as participation and empowerment, popular ideas and their practical effects on rural policies did not, indeed, undergo these transitions in such an uncluttered manner (Swift, 1989). Understanding about sets of rural development ideas across different disciplines, centers of learning, influential think-tanks, international agencies and national governments is very uneven (Richards, 1985). There are leads and lags in the transmission of new ideas across space and time.

The agricultural development approach originates from strands of livelihoods ideas developed through the 1980s and 1990s (Chambers, 1983; Chambers & Conway, 1992; Bernstein et al., 1992), and from famine analysis of the 1980s (Sen., 1981; Swift, 1989). Agricultural development in the 1980s was reflected in the Structural adjustment and its adjuncts in the form of trade and market liberalization which are multi-sectoral in intent, as also are their downstream extensions in the areas of state-market relations and good governance.

An important continuing minority discourse of rural development that manifested itself especially strongly in debates of the 1970s is the 'political economy of agrarian change' strand of thinking inspired largely by Marxist or neo-Marxist social science approaches and methods (Richards, 1989). The well-known collection by rural development debates within this discourse. The emphases here was (and still are) on class, power, inequality, and social differentiation in agrarian settings driven by the large-scale forces and tendencies of development under capitalism (Bernstein, 1998).

In retrospect, it is evident that one major body of thought, albeit with plenty of side excursions and add-ons, has dominated the landscape of rural development thinking throughout the last half-century(Swift, 1985). The decisive contribution resulting in the widespread acceptance of this narrative was the publication in 1964 of Schultz's Transforming Traditional Agriculture, in which the rational allocation of resources by 'traditional' small farmers was a central proposition.

The idea that the great bulk of what were then called 'traditional' or 'subsistence' agriculturalists in low-income countries could form the basis of agriculture-led processes of economic development was a significant break from the received wisdom of the 1950s, embodied in the dual-economy theories of development (Lewis, 1954; Fei and Ranis, 1964). This proposition was, incidentally; also important for socialist strategies of agricultural development as practiced in the

Soviet Union and in low income developing countries that had socialist-leaning governments in the 1960s and 1970s.

Thus, a first 'paradigm shift' in rural development occurred in the early to mid- 1960s period, when small-farm agriculture switched to being considered the very engine of growth and development. The research policy that resulted in the 1980s' promotion of farming systems research (FSR) as an improved process for raising small-farm productivity were entirely consistent with the small-farm orthodoxy. The second 'paradigm shift' was the switch occurring during the 1980s and 1990s from the top-down or 'blueprint' approach to rural development, characterized by external technologies and national-level policies, to the bottom-up, grassroots, or 'process' approach (Rondinelli, 1983; Mosse et al., 1998). This envisaged rural development as a participatory process that empowers rural dwellers to take control of their own priorities for change. Some key strands in this period were: the Green Revolution in mono crop farming systems (rice and wheat), mainly in Asia, might not necessarily work for raising incomes in diverse, risk-prone and resource-poor environments (e.g. Chambers et al., 1989);

Currently few developing country governments, and few donors, take a sufficiently cross- or multi-sectoral view of the possibilities of rural poverty reduction (Kivumbi, 2011). Notwithstanding energetic assertions about the underfunding of agriculture (IFAD, 2001), the reality on the ground is that agriculture is preferred in the public funding of services to rural productive activity (via research, extension, credit, seeds and so on) to say, providing an enabling environment for start-up non-farm activities, or removing barriers to trade and mobility, or reducing licensing requirements for small businesses, or a host of other potential means by which the options and opportunities of the rural poor can be expanded in their non-farm variety and range(Kibuuka, 2013). If a new paradigm of rural development is to emerge, it will be one in which agriculture

takes its place along with a host of other actual and potential rural and non-rural activities that are important to the construction of viable rural livelihoods, without undue preference being given to farming as the unique solution to rural poverty. It is in this sense that the cross-sectoral and multi-occupational diversity as compared to the 1950s (Mougeot, 2014)

In Uganda, Agricultural development strategies have been undertaken in a series of programmes for example District livelihood programmes, Local Economic Development, National Agricultural Advisory Services, Operation Wealth Creation etc (Onyach-Olaa, 2014). In rural areas of Uganda, the poor have responded to economic decline by engaging in a wide range of local initiatives and these survivalist activities range from informal trading, business development services, rural agriculture, value chain production (Muleba, 2003). Although rural agriculture is an old practice in several rural areas of Uganda, the recent rapid expansion of this activity has been attributed to economic hardships (Muleba, 2003).

At the sub county level in Mbarara District, the community development officers, agricultural extension officers, parish chiefs with the help of community resourceful persons play functional role. Their work is to mobilize, identify the poor men and women living below one dollar a day to benefit from the program. After that level, make a follow up during the implementation process .The beneficiaries are told to form groups and trained on the agronomical practices and decide on the type of the seeds before they are procured (Lando, 1990). Almost all agricultural production in Mbarara takes place on smallholder plots, with mixed cropping systems predominating. Two-thirds of agricultural households had between 1 and 4 plots in 2002, and about 40 percent of the plots were themselves mixed stands, where multiple crops are grown together.

1.2.2 Theoretical background

The study was underpinned by "Rostow's social economic theory" (1960) and "the modernization theory". The theory of modernization emerged from the field of program theory and program evaluation in the mid-1990s as a new way of analyzing the theories motivating programs and initiatives working for social and political change. Theory of modernization is focused not just on generating knowledge about whether a program is effective, but also on explaining what methods it uses to be effective. Theory of modernization as a concept has strong roots in a number of disciplines, including environmental and organizational psychology, but has also increasingly been connected to rural transformation. Theory of modernization (ToM) is a specific type of methodology for planning, participation, and evaluation that is used in the philanthropy, not-for-profit and government sectors to promote social change. Theory of modernization defines long-term goals and then maps backward to identify necessary preconditions.

Theory of modernization can begin at any stage of an initiative, depending on the intended use. A theory developed at the outset is best at informing the planning of an initiative. The Outcomes Framework then provides the basis for identifying what type of activity or intervention will lead to the outcomes identified as preconditions for achieving the long-term goal. Through this approach the precise link between activities and the achievement of the long-term goals are more fully understood. This leads to better planning, in that activities are linked to a detailed understanding of how change actually happens. It also leads to better evaluation, as it is possible to measure progress towards the achievement of longer-term goals that goes beyond the identification of program outputs.

Rostow's social economic theory (1960) looks at the state as the central actor in bringing about

modernization in societies that are backward. Rostow postulated a five stage model of development that will be able to apply to backward regions. This model is vital in the sense that it is concerned with the idea that a country is able to develop economically by focusing on the resources that are in short supply in order to expand beyond local industries to reach global market and finance the country's further development to bring about economic growth (Todaro and Smith, 2003).

In relation to this study, it is needless to say modernization of agriculture is aimed at increased production to feed a bigger population and to attain better household income. The national budget allocation to agriculture must be increased to at least 10 per cent in order to enhance efficient extension services. Our abundant natural water sources must be exploited to facilitate irrigation. Pesticides and fertilizers should be available and more affordable to our farmers. The farmers must have access to credit and even insurance against disasters such as hailstorms. They must be linked to markets for their produce. Better roads and rural electrification as part of the modernization process of agriculture is an absolute solution and a path to agricultural modernization. The theory advocated for a nation to focus and empower its people to rely on an activity where it has potential. This will help to stimulate economic development. It is the modernization theory and Rostow's social economic theory of 1960 that underpinned this study and was further expanded in chapter 2 under the sub section of theoretical review.

1.2.3 Conceptual Background

This section provides the definitions to the key concepts in the study which are: "agricultural development strategies" and "rural household livelihood" and how these are conceptualized by other authors.

Livelihood is defined as comprising "the capabilities, assets (including both material and social resources) and activities required for a means of living (Ellis, 1993). Rural household livelihood was used and measured in terms of improved household income, improved food security and improved food productivity

According to World Food Summit Report (1996) food security is defined as existing "when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life". Commonly, the concept of food security is defined in this particular study as including both physical and economic access to food that meets people's dietary needs and food preference.

According to Lutheran (2012), agricultural development strategies entails technical and policy analysis work in the field of modern farming. Independent monitoring of agricultural programs is part of a broad perspective of the work. Agricultural development strategies is the process by which the public, business and government tries to create better conditions for agriculture by giving out in puts and extending extension services to farmers with the aim of improving the quality of life for all (World Bank, 2000). For purposes of this study, agricultural development strategies referred to extension services, access to credit and market information.

1.2.4 Contextual Background

Uganda's economy is purely dependent on agriculture (MAAIF Report, 2012). About 80 percent of the country's population live in the countryside and derive their livelihood from farming. Agriculture plays a pivotal role in the development of Uganda both economically and socially hence the sector employees 82% of the Ugandans. The sector contributes about 75 percent to the country revenue which is basically from exports.

Mbarara was one of the pilot Districts for the agricultural development strategies like NAADS, Plan for Modernization of Agriculture and District Livelihood Support Programs under the National Resistance Government in the early 1990s. By 2001, the Ministry of Agriculture and Animal Industries noted that Mbarara was a success story on agricultural development strategies despite having many of its people still using rudimentary farming techniques. It is on the basis that Mbarara District was chosen as the case study. Mbarara is found in Western Uganda bordered by Ibanda, Lyantonde, Isingiro and Bushenyi. As part of the economic recovery, Uganda introduced the Poverty Eradication Action Plan (PEAP) in the early 2000s, Uganda embarked on an agricultural transformation programme that aimed at modernizing agriculture with emphasis on liberalizing agriculture markets, reducing trade barriers and promoting traditional and non-traditional exports in all Districts including Mbarara (Kivumbi, 2013).

In Mbarara District, this transformation was expected to improve rural food supplies, incomes, increase factor efficiency and propel national development, since the agriculture sector has a "comparative advantage" by employing 90%-80% of the population in the District. These expectations were pursued through the state-driven agriculture transformation strategies; the first one was the Plan for Modernisation of Agriculture (PMA, 2000-2009) followed by the new revised agriculture Development Strategy and Investment Plan 2010-2015 (MAAIF, 2010) with interconnected programs of (a) Enhancing Production and Productivity (b) Improving Access to Markets and Value Addition; (c) Creating an Enabling Environment, and (d) Institutional Strengthening in the Sector (Kibuuka, 2013).

However, the shift within the agricultural system, from subsistence to entrepreneurial capitalist agricultural production has had adverse effects on food availability and the capacity of the rural economy to progress.

These transformation strategies have not been able to improve rural household lives as 90% still use traditional farming methods harvesting crops mainly for subsistence production (Kibuuka, 2013) The increase in non-traditional exports of which the majority are food crops has resulted in low food supply in the local markets pushing food prices high and gradually increasing the costs of living in Mbarara (Mbarara District Agricultural Advisory Report, 2012). Though export and value-adding promotion has allowed for increased export revenue, the redistributive mechanisms of the market system within the trade for development approach are ineffective and inefficient, the economic improvement being visible to only a small population of political and financial elites. The changes in the agricultural system have forced small farmers to participate in the market, which has had the effect of diminishing their capacity to produce sufficient food (Kibuuka, 2013). This is the opposite of the conventional explanation of modernization of agriculture as the right strategy for "food and income security" (Kibuuka, 2013). The market failure signifies a structural and systematic failure of the 'trade for development' paradigm which is an integral part of the whole modernization process. Despite the attempts by government and non-government organizations to offer agricultural advisory services to farmers, there is doubt that the agricultural advisory services have really performed to the expectations of the founders of the programme.

Training, inputs and entrepreneurship advice has been offered under PMA but little has this helped to step up the performance of the advisory service programmes in the country (MAAIF Report, 2012). Year in year out, agricultural production continues to dwindle casting doubt on the role of agricultural transformation strategies in Uganda and Lyantonde in particular. Therefore this will investigate the relationship between Agriculture Development Strategies and Rural House Hold livelihood in Mbarara District. The figure below shows the location of the study area.

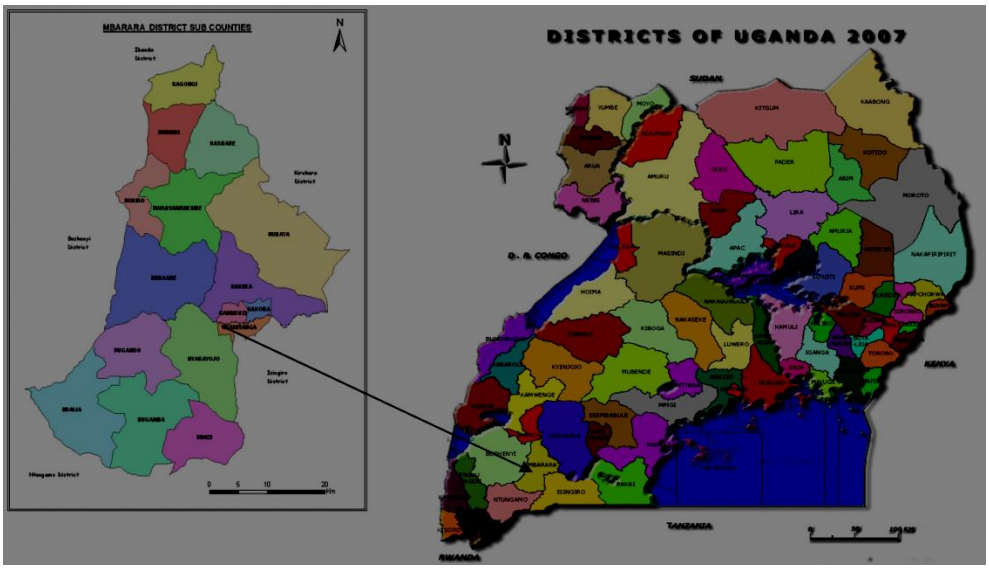

Figure 1.1: Mbarara District Location Map

1.3 Problem Statement

In an attempt to promote agricultural development, Uganda has put in place operation wealth creation, local economic development programmes and district livelihood support programmes aimed at modernising agriculture (Kivumbi, 2013). This is manifested in the increasing training of experts in agricultural modernisation in Netherlands. On the other hand, new agricultural machines have been acquired for the purpose (PMA, 2014). Despite the attempts, there are some challenges it is facing in relation to improving rural household livelihood. Farmers in the countryside find it hard to deliver their products especially the perishable ones to the markets in time because of the poor state of the roads. Most parts in the country experience a boom in food production and yet there are other areas that face serious food shortages, and because of the poor road network, food cannot easily be transported there.

There are still gaps in household income improvement, food security improvement and the food security has not been realized (PMA Report, 2014). The PMA Report (2015) noted that 37% in of the people in Western Uganda have low household income levels worsened by inability to food

insecurity, low food productivity, inaccessibility to credit, market information and extension services. Coupled with the poor road network is the poor marketing system (Kibuuka, 2013). Though the government has made efforts in rectifying the market problem, farmers are still cheated by middle men who buy their products cheaply and sell them expensively. The country also has to devise means of increasing electricity supply to the rural areas. Currently only about 5 percent of the country's population can access electricity. This has halted the country's plan of establishing agro-processing industries in the countryside (Kivumbi, 2013). Accordingly, about 81.5 % of the people in Mbarara District have no access to modern agricultural equipment and are still tied to the traditional forms of farming (UBOS, 2009/2010). Majority of the farmers still practice subsistence farming and are food insecure. There is fear that if the trend of events continues as it is the state of rural household livelihood will worsen in the country. It is against this background that the study sought to investigate the relationship between Agricultural Development Strategies and rural household livelihood in Mbarara District, Uganda so as to find mitigation measures to the problem.

1.4 Purpose of the Study

The purpose of the study was to examine the relationship between Agricultural Development Strategies and rural House hold livelihood in Mbarara District

1.5 Objectives of the Study

i. To examine the relationship between extension services and rural household livelihoods in Mbarara District.

ii. To examine the relationship between access to credit and rural household livelihoods in Mbarara District.

iii. To examine the relationship between market information and rural household livelihood in Mbarara District.

1.6 Research Questions

The research questions were derived directly from the specific objectives.

1. What is the relationship between extension services and rural household livelihood in Mbarara District, Western Uganda?
2. What is the relationship between access to credit and rural household livelihood in Mbarara District, Western Uganda?
3. What is the relationship between market information and rural household livelihood in Mbarara District, Western Uganda?

1.7 Research Hypotheses

The study was premised on the following research hypotheses:

1. There is a positive significant relationship between extension services and rural household livelihoods in Western Uganda.
2. There is a positive significant relationship between access to credit and rural household livelihood in Western Uganda
3. There is a positive significant relationship between market information and rural household livelihood in Western Uganda

1.8 Conceptual Framework

This sub section illustrates the conceptual framework of the study and provides a discussion of the main areas of focus in the conceptual review.

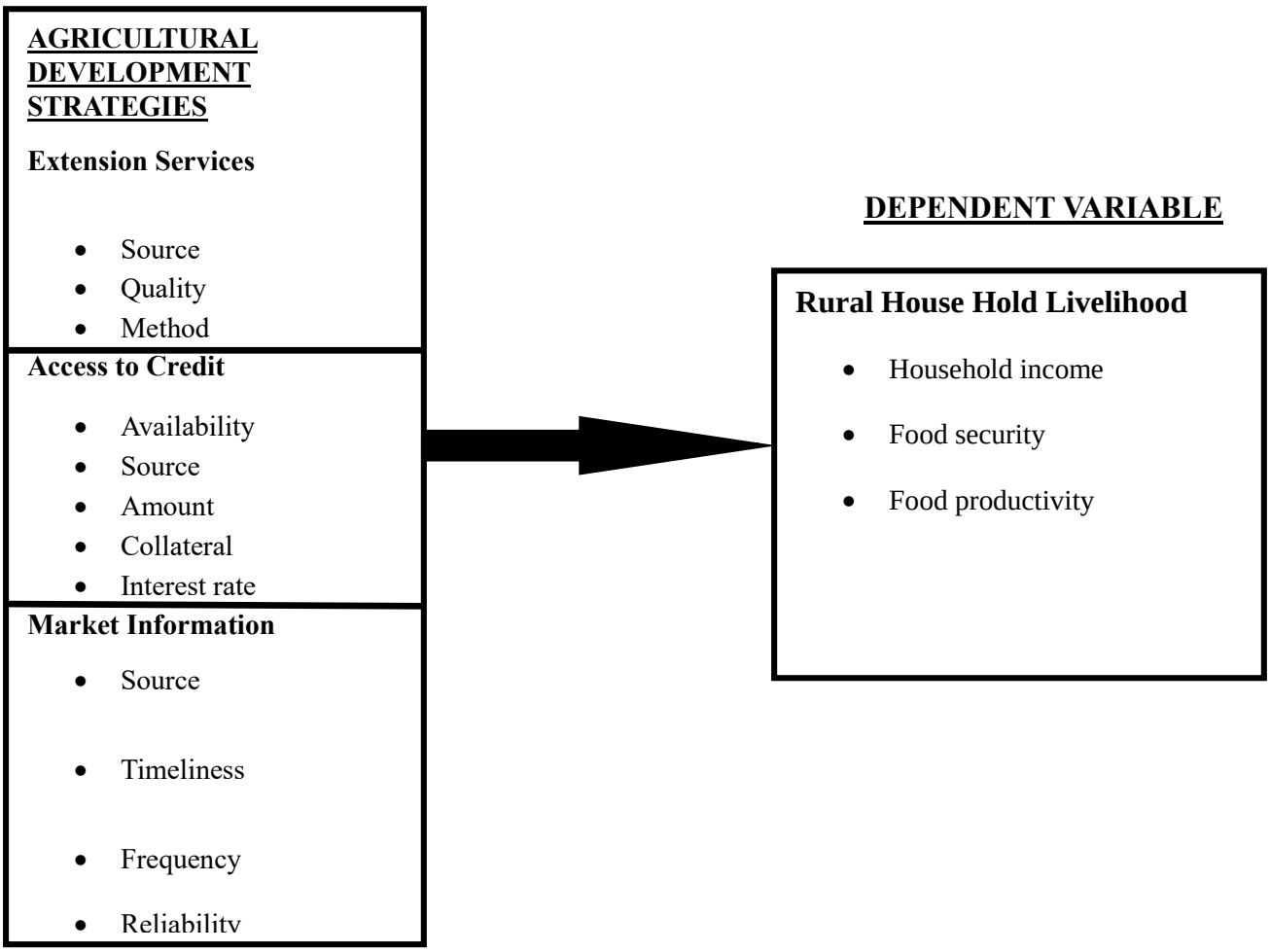

Figure 1.2: The conceptual framework above illustrates the relationship between Agricultural Development Strategies and Rural Household Livelihoods

Source: Adopted from Literature (Berhanu and Jaleta, 2012, Ogeto, 2012, Siziba, 2011 and Barrett, 2007) and modified by the researcher.

The independent variable is agricultural development strategies and rural household livelihood is the dependent variable. Agricultural development strategies were measured in terms of extension services, access to credit and market information. Extension services referred to source, method and quality. Access to credit was measured in terms of availability, source, amount, collateral and interest rate. Market information was measured in terms of source, timeliness, frequency, reliability. The dependent variable is rural household livelihood which was measured in terms of improved household income, improved food security and improved food productivity.

1.9 Justification of the study

Mbarara District being one of the Districts that have seriously embarked on agriculture is rated amongst that still need support in terms of agricultural equipment and other extension services to improve the rural agricultural livelihood (MoFPED Report, 2000). Agricultural Development strategies on this note took root in the District of Mbarara in 1963. However, a cross section of the population feels that modernization of Agriculture strategies have not done much to improve the livelihood of the communities in which they operate. It is against this background that the researcher envisaged an urgent need to carry out a study on the relationship between Agricultural Development Strategies and rural household livelihood in Mbarara District.

1.10 Significance of the Study

This study will be significant in the following ways:

Policy makers: The study will act as a source of information to the policy makers as they seek to make new polices on agricultural transformation in Uganda

District livelihood Support programme officers: It is hoped that the study may help District livelihood Support programme officers to appreciate issues of livelihood support and therefore

since the challenges on agricultural development strategies are highlighted, they follow these challenges as they provide solutions.

Managers: it is hoped that this study will help management of different organizations as they try to identify challenges and strategies of improving rural livelihood support programmes for example through widening the extension services availed.

The researcher: Through the resultant interaction between the researcher and the respondents, the researcher's knowledge, skills and understanding of research may improve on issues relating to agricultural development strategies and rural livelihood. The study will also lead to the award of a Master's Degree in Business Administration of Uganda Management Institute

The future researchers: It is hoped that the study will be used to develop a more comprehensive and efficient policy in running District livelihood Support program and further provide a basis for researchers by serving as a source of material for further studies in related areas of study.

1.11 Scope of the study

The scope of the study is divided into three perspectives geographical, content and time scope

1.11.1 Geographical Scope

The study was carried out in Mbarara District, Mbarara District is a district in western Uganda. It is named after the 'chief town' of the district, Mbarara, where the district headquarters are located. Mbarara District is bordered by Ibanda, Ntungamo, Kiruhura and Bushenyi.

1.11.2 Content Scope

The study examined the relationship between Agricultural development strategies and rural House hold livelihood in Mbarara District. Agricultural development strategies was measured in terms of

extension services, access to credit and market information. Extension services referred to source, method and quality. Access to credit was measured in terms of availability, source, amount, collateral and interest rate. Market information was measured in terms of source, timeliness, frequency, reliability. The dependent variable is rural household livelihood which was measured in terms of improved household income, improved food security and improved food productivity.

1.11.3 Time Scope

The study focused on the period (2008-2013), this is the period when the government of Uganda has made major attempts to improve rural household livelihood through programmes like Plan for Modernization of Agriculture, District Livelihood Support Programmes, NAADS and Operation Wealth Creation.

1.12 Operational Definitions to Key terms and Concepts

The sub section presents the definitions to key concepts and terms in the proposed study.

Livelihoods: are defined as comprising "the capabilities, assets (including both material and social resources) and activities required for a means of living (Ellis, 1993).

Food security: (World Food Summit of 1996) defined food security as existing "when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life". Commonly, the concept of food security is defined in this particular study as including both physical and economic access to food that meets people's dietary needs and food preference. However food security is built on three pillars:

Food availability: sufficient quantities of food available on a consistent basis.

Food access: having sufficient resources to obtain appropriate nutritious diet**.**

Food use: appropriate use based on knowledge of basic nutrition and care, as well as adequate water and sanitation.

Agricultural Development Strategies refers to extension services, access to credit and market information.

Rural household livelihood was measured in terms of improved household income, improved food security and improved food productivity

Modernization of Agriculture, PMA, was issued in 2000, after a long and inclusive consultative process, and it has been implemented since 2001. The PMA is an integral part of the strategies of the national Poverty Eradication Action Plan, (PEAP), and contributes directly to two of the four overarching PEAP goals: (1): rapid and sustainable economic growth and structural transformation, and (3): increased ability of the poor to raise their incomes. In the current study PMA focused on the level of accessibility and implementation.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter provides a review of literature on agricultural development strategies and rural household livelihood. The presentation of this chapter begins with the theoretical review, review of related literature and the summary of the literature reviewed. This chapter also presents the theories that underpinned the study and a review of literature about other studies carried out on agricultural development strategies. The literature is presented in relation to the objectives that guided the study. This chapter will further present the identified research gap, which the study sought to address. The literature reviewed is from journals, textbooks, working papers, dissertations and internet websites.

2.2 Theoretical Review

The theory of modernization emerged from the field of program theory and program evaluation in the mid-1990s as a new way of analyzing the theories motivating programs and initiatives working for social and political change. Theory of modernization is focused not just on generating knowledge about whether a program is effective, but also on explaining what methods it uses to be effective. The theory draws attention to ways to modernize agriculture and how decision making to do this is influenced by the social and environmental factors in the agricultural sector.

The theory emphasizes looking at new ways of doing work with special focus on new technology that can be adopted. Theory of modernization (ToM) is a specific type of methodology for planning, participation, and evaluation that is used in the philanthropy, not-for-profit and government sectors to promote social change. By way of modernization, a new approach that link

between activities and long-term goals is understood. In order to have agricultural modernization, there must be strong and committed rural leadership, especially in the difficult process of developing a 'vision' of a desirable future that the area and its residence must strive to attain. There needs to be an effective consultation process of major stakeholders in the area among the community groups who must at the end support the planned investments and other important social and economic changes to take place.

Rostow's social economic theory (1960) looks at the stages of growth. Rostow postulated a five stage model of development that will be able to apply to backward regions. Rostow postulated a five stage model of development that will be able to apply to backward regions. This model is vital in the sense that it is concerned with the idea that a country is able to develop economically by focusing on the resources that are in short supply in order to expand beyond local industries to reach global market and finance the country's further development to bring about economic growth (Todaro and Smith, 2003). The theory advocated for a nation to focus and empower its people to rely on an activity where it has potential. The theory will help to stimulate economic development. The theory advocated for a nation to focus and empower its people to rely on an activity where it has potential. This will help to stimulate economic development.

2.3 Review of Related Literature

This section presents the detailed literature reviewed on the basis of the study objectives.

2.3.1 Agricultural Extension Services and Rural Household Livelihood

Binns and Lynch (1998) in their book feeding Africa growing population into 21st century: the potential of rural agriculture notes that extension services may involve looking at education on

how the share of output may be achieved at the end of a harvest season. Binns and Lynch (1998) further provided the general facts about the role of agriculture during the growth process available to economists and planners at the beginning of the drive for economic growth in the less-developed countries. However the gap identified is that he did not specify the stages in the growth process which may be central in this study for purposes of fostering agricultural development.

Dima and Ogunmokun (2004) in their book on Agriculture in Namibia rural agriculture magazine noted that the vast number of agricultural decision-makers implies that there are simply too many to reach directly with either pleas for cooperation or police power. Farmers must see the benefits of higher output for themselves because there are too many opportunities to let high yields slip beneath. The benefits talked about may not easily be attained. This may require coming up with better ways or means of achieving these benefits. The brute force alone will not achieve high yields without good extension services. The gap identified is that in traditional agriculture with static technology like that of Uganda, farmers learn these skills by repeated trial and error. But when new technology becomes available, farmers do not automatically acquire the requisite skills to deal with disequilibrium, they will need extension services.

Dima and Ogunmokun (2004) further noted that under extension services, government interventions can have a high payoff, particularly investment, general education (especially rural primary education that includes instruction in farming skills), and rural infrastructure to lower the costs of exchanging inputs and outputs, which become essential ingredients in speeding the adoption of new agricultural technology. In creating a nexus, there two divergent views about inputs and extension, however this research focused on extension services and how it influences rural household livelihood. The author above emphasizes the importance of inputs and is silent on extension services.

Forbos (2006) noted that the scope for effective government intervention is conditioned by the efficiency with which farms allocate the resources at their disposal to produce crops, relative to alternative uses of these resources; the technical ability of farmers to achieve the maximum output from a given set of inputs depends on the extension services extended to the farmers. The conclusions and recommendations of Forbes (2006) are based on government intervention yet sometimes due limited resources extension services may not be offered by the government hence requiring the intervention of the private sector.

Forbos (2006) in his book on Local development, productive networks and training notes that in a world in which risk management involves the establishment of patron-client relations, in which substantial bargaining may go on within the farm household over task assignments, the division of income, and gender-specific access to nutrients, and in which the access of farm members to labor and credit markets may change radically over time even within fairly stable agricultural technology and prices, the decision-making process itself must also be treated as a variable. When a farmer receives good extension services, he is able to make good decisions on when plant, what crops to plant and when to harvest. The gap identified is that Forbos (2006) emphasizes extension services yet in Uganda offering extension services has been the weakest point of the government. Under the National Agricultural advisory services (NAADS) in Uganda little was done in this area and under operation wealth creation the situation has worsened.

Gladwin, Thornson, Peterson and Anderson (2001) in his article on addressing food security in Africa via multiple livelihoods strategy notes that two important implications flow from the distinctive characteristics of agriculture relative to industry. First, if agricultural decision-making is in fact based on rational assessments of highly heterogeneous environments, substantial knowledge of micro environments is necessary to understand the impact of policy interventions or

technical change on the agricultural sector using extension services strategies. However, Gladwin, Thornson, Peterson and Anderson (2001) is silent on designing new technology and fostering its widespread adoption is primarily a public sector activity because of the relatively small scale of individual farmers, yet the success of any given technical innovation depends on the nature of the technology adopted and its applicability.

According to Kivumbi (2013), in planning for rural areas in relation to household incomes, the participatory approach must be considered and this at least has three elements a) there must be systematic knowledge of the strengths and weaknesses of the local rural economy or rural area. With 48% of the modernization strategies funded by donors in Uganda, many donors have complained about the lack of extension services and investment in research (Sendaula, 2016). The gap identified is that modernization strategies would be strong if institutional capacity is improved. The implication of this pattern is the need to establish institutional arrangements for improved research. This was the basis for the so-called better improved rural household livelihood in Uganda.

Griffin (2014) has strongly argued that a quality strategic vision and plan should be: responsive to how residents/communities see things, i.e. the city vision; be strategic in intent- i.e. long-term, futuristic, visionary, compelling, understandable, and memorable; reflect strategic choices that have been made; be simple, not obscure or complex; lay a critical path and casted sequence of actions; have clear links to the organizations own process of delivery of services; have accountability and commitment, with work plans that are open to monitoring and evaluation. Griffin's thoughts have greatly influenced the current planning and budgeting approaches in developing countries such as Uganda. The conclusions and recommendation of Griffin (2014) are based on a developed nation and yet the current study was carried out in Uganda a developing nation whose rural agricultural livelihood programs are just taking off. In this case, the participatory approach in the context of USA emphasized by Griffin (2014) may not work in the context of Uganda

2.4 Access to Credit and Rural House Hold Livelihood

Rural agriculture is increasingly on the international agenda, recognized as a key part of a comprehensive solution to the problems of increased poverty and inadequate food security in developing countries". In Uganda, the attitude towards rural agriculture is increasingly changing to that of cooperation and control rather than suppressing the practice (Mougeot, 2014). Planners and policy-makers are encouraging rural agriculture as a critical source of food for rural dwellers. However, despite the developments, very few farmers access credit in most districts in Uganda. Generally, the rural poor may benefit if credit is easily accessed by these farmers up country. Mougeot (2014)'s study remains silent on the relevance of access to credit in agricultural modernization.

In case of South Africa, Kivumbi (2013) argues that for rural agriculture to benefit poor households, it is important that policies like credit policies are streamlined to enable farmer's access credit from financial institutions. Other incentives/support services include improved distribution and marketing to reduce spoilage of fresh food. The study by Kibuuka (2013) was qualitative and so in creating a nexus between the earlier study and this study, the researcher used mixed methodological approaches.

Similar support services have been suggested for rural cultivators in other countries in Africa (Balala, 2013). In Namibia, the Ministry of Agriculture, Water and Rural Development is supporting several initiatives to improve vegetable production through improved access to credit by farmers, albeit there is still no clear policy on access to credit by farmers (Destra, 2012). The gap in the above study is that the author does not identify the ways in which farmers have been helped to access credit. Planning for rural agriculture is critical in the amelioration of the major problems faced by cultivators, which include access to land and negative responses towards the activity by local authorities. Nevertheless, in most developing countries, agriculture has not been integrated in planning by governments.

World Bank (2012) argues that the rapid increase in farmer's access to credit will enhance rural agriculture. In Latin America, Non-Governmental Organisations (NGOs) have been instrumental in supporting and promoting rural agriculture thereby improving farmer's access to credit (World Bank, 2012). The report does address the end results but does not deal with the issue of the means, yet the mean to attain access to credit are relevant.

Griffin (2000) in his book on Rural Agricultural Programmes: Towards Effective Economic Growth notes that access to credit is the key to agriculture development in low developing nations.

As late as the 1920s, most of the agricultural innovations in Europe and the United States arose on the farm and were gradually diffused by word of mouth and by agricultural colleges. Such on-farm innovation continues, but the scientific revolution in agriculture has made the discovery of technical innovations much more dependent on knowledge and capital investment. Very few farmers even in the United States cannot access credit given the growing attempts by the US government to commercialize agriculture since the administration of President Franklin Delano Roosevelt in the 1930s. However, the question remains how are they accessing credit, the above study is silent on this yet if this is known for comparison purposes it will help in making good recommendations for Uganda on the area of agricultural development.

According to Balala (2013) in his paper presented at Makerere University on livelihood programmes notes that livelihood programmes may call for wide extension of credit to farmers which is a matter of policy concern, especially because not all farm households have equal access to credit. The gap is that very little has been done to help farmer's access credit in most parts of the country. Even the inputs given under operation wealth creation are lumpy since some are brought late or when they have dried up for example coffee seedlings.

Graen (2013), notes that given the large number of farmers within a typical developing country, credit access needs to be highly considered in this case. Price policy for farm crops and agricultural inputs can help farmers pay back the amount borrowed. On the other hand, when there is access to credit, most farmers can benefit amenably given that many do not have the capital to buy in puts. The effectiveness of credit in changing producer results depends on farmers' allocative and technical efficiency. Even if all farmers were narrow-minded profit-maximizers of their available production functions, there would be substantial scope for altering both the production function and the economic environment in which the maximization takes place. However, Graen (2013)

does not consider the effect of credit and how it influences rural livelihood which is central in this study.

Looking at the perspectives of development and its paradigms, a Government is a vehicle for national and local development as it performs it has to ensure that the farmers have access to credit. In terms of the study, when we are talking about credit and its access, one needs to consider the number of people who are able to access credit (Johan, 2014). In this case, the findings of Johan (2014), relied on the general idea of credit without considering access to credit on the side of farmers.

2.4.1 Market Information and Rural House Hold Livelihood

Muleba (2013) in his book on agricultural modernization advocates for promoting increased knowledge of the benefits and costs of rural agriculture, redefining land use and reserving land for rural agriculture, improving market access for rural farmers, and providing technical assistance to farmers (agricultural practices, soil conservation, cropping patterns, and access to credit etc. are essential support services by key stakeholders, which could improve rural agriculture (Muleba, 2003). The study was qualitative and in filling the gap the researcher in the current study investigated the research problem using mixed methodological approaches

Graen (2013) notes that given the large number of farmers within a typical developing country, government extension agents cannot teach each individual farmer new agricultural techniques. Price policy for farm crops and agricultural inputs, on the other hand, is an intervention that reaches most farmers quite directly while being amenable to effective government control. Consequently, knowing the role of relative prices in influencing the behavior of farmers is extremely important. This study is silent on the issue of market information yet it is a very important aspect in this case.

In the recommendations, Graen (2013) dwelt on the aspect of pricing and marketing without considering the area of market information.

Kisuze (2014) noted that the effectiveness of prices in changing producer decisions depends on farmers' allocative and technical efficiency and on the market information available. It is a mistake to think that farmer responsiveness to price is somehow immutable and is given exogenously to the agricultural sector. Even if all farmers were narrow-minded profit-maximizers of their available production functions, there would be substantial scope for altering both the production function and the economic environment in which the maximization takes place. The market information talked about by Kisuze (2014) is the general market information and not market information specifically for agricultural products, this is a gap that this study sought to fill.

Ddumba (2010) notes that only under highly restrictive and unrealistic assumptions about the completeness of markets and access of all farm households to them can production and consumption decisions be analyzed separately. In rural areas of developing countries, the need to make connected production and consumption decisions within a single household obviously complicates life for the farm household; the value of additional time spent in food preparation or tending the children must be balanced against the productivity of an additional hour weeding the rice, driving the ducks, or tending the home garden. In filling the gap, the study looks at market access yet the current study concentrated on market information. For households with inadequate access to market first and foremost need information on market and its nature.

Kibuuka (2013) in his book titled *African local governments as an instrument of economic and social development* notes that Productive livelihood programmes are measured in one of two ways: in output per hectare, or output per agricultural worker. Despite the focus by agricultural scientists on the welfare perspective, access to market information is more important. Market information

is relevant as a vehicle for raising output per worker. For the purposes here getting access to information on the prices of the product and where to sell the products may help the farmer easily harvest knowing where to distribute the products.

Meyer, Stamer and Jorg (2014) emphasizes that the biggest problem to farmers in Uganda is access to market information. Most governments in Africa have not laid strategies on how farmers can easily access market information. It is observed that market information and the need for this information has become a more holistic issue. There is need to focus on building competitive advantages with more sources of information on market availability in Africa. The gap from the onset remains critical as it underscore the fact that market information is not adequately available to farmers in most parts of Uganda.

2.5 Summary of the Literature reviewed.

Extension services: Most of the authors emphasize access to extension services. The authors in their findings, conclusions and recommendations are silent on how the issue of extension services can be handled. The biggest gap on the extension services is on implementation of the idea adumbrated. Although Agricultural modernization has been popularized and promoted as an engine of economic growth and a tool for bringing development to the locality, the approach to be used under extension service raises questions. Many farmers in Mbarara have been given inputs under the operation wealth creation like coffee seedlings but they have little knowledge on how to handle these seedlings.

Access to credit: Most of the works look at credit as an issue of minor importance, given that many farmers lack collateral and other requirements to enable them access credit. The gap is that access to credit is more theoretical in most countries; there is no theory that can be identified as

being specific to explain why access to credit remains a mystery to many farmers in Africa. What exists is a body of theoretical frameworks on access to credit generally which can be used to explain some of the concepts and processes and how they relate.

Market information: Meyer, Stamer and Jorg (2014) emphasizes that the biggest problem to farmers in Uganda is access to market information. The gap from the onset remains critical as it underscore the fact that market information is not adequately available to farmers in most parts of Uganda. Therefore the literature review above confirms that different scholars have conducted several studies to establish the correlation between market information in agriculture and rural house hold livelihood. However, most of the studies are silent on how the farmers can access this information since the African governments have not taken significant steps to help the farmer's access market information.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter presents and describes the approaches and techniques the researcher used to collect data and investigate the research problem. They include the research design, study population, sample size and selection, sampling techniques and procedure, data collection methods, data collection instruments, data quality control (validity and reliability), procedure of data collection, data analysis and measurement of variables.

3.2 Research Design

A descriptive cross sectional survey design was adopted for the study. According to Barifaijo, Basheka and Onyuu (2010) a cross sectional design as a type of design where data is collected from a cross section of respondents at a single point in time. Creswell (2009) asserted that a cross sectional survey design is a least costly alternative and less time consuming.

The quantitative and qualitative approaches were adopted in sampling, collection of data, data quality control and in data analysis. Triangulation was adopted for purposes of getting quality data. Triangulation means using more than one method to collect data on the same topic (Ezeani, 2005). This is a way of assuring the validity of research through the use of a variety of methods to collect data on the same topic, which involves different types of samples as well as methods of data collection (Creswell, 2003). However, the purpose of triangulation is not necessarily to cross validate data but rather to capture different dimensions of the same phenomenon (Kothari, 2004).

3.3 Study Area and Study Population

The target population is 361,500 which is the entire population of people in the study area. The district is subdivided into one municipal council, Mbarara Municipality, and 19 sub-counties, namely: 1. Kashari 2. Bubaare 3. Bukiro 4. Kagongi 5. Kakiika 6. Kashare 7. Rubaya 8. Rubindi 9. Rwanyamahembe 10. Biharwe 11. Kakoba 12. Kamukuzi 13. Nyamitanga 14. Rwampara 15. Bugamba 16. Mwizi 17. Ndaija 18. Nyakayojo 19. Rugando. Mabarara all together has 16 sub counties, 90 parishes and 873 villages. The population under study was 155 comprising of 25 Agriculture officials/District Livelihood Support programme officials, 30 Local Government Officials and 100 residents.

3.4 Sample Size and Selection

The study sample was drawn based on a sample size of 113. The sample size was determined using statistical table by Krejcie, & Morgan(1970). Refer to table 3.1 for details

Table 3. 1: Showing the Target Population, Sample Size and Sampling Techniques

Category	*Target population*	*Sample size*	*Sampling techniques*
Agriculture Officials	3	3	Purposive
Livelihood Support Programme Officials	2	2	Purposive
District Local Government Officials	30	28	Simple random sampling
Rural Local Citizens	100	80	Simple random sampling
Total	**155**	**113**	

Source: Primary Data(2017)

3.4.1 Sampling Techniques and Procedure

3.4.1.1 Simple Random Sampling

Probability sampling, or random sampling, is a sampling technique in which the probability of getting any particular sample may be calculated (Kothari, 2004). The advantage of probability sampling is its lower cost compared to probability sampling. However, one can say much less on the basis of a non-probability sample than on the basis of a probability sample (Glenn-Firebaugh, 2008). Simple random sampling was adopted in sampling residents and Local Government Officials. Best and Khan (2003), states that simple random sampling gives every member an equal chance of being selected. The advantage of probability sampling is its lower cost compared to probability sampling. However, one can say much less on the basis of a non-probability sample than on the basis of a probability sample (Glenn-Firebaugh, 2008).

3.4.1.2 Purposive Sampling

This is a type of sampling that adopts non-random sampling techniques like quota, purposive, convenient and snow ball. Agriculture and Local Livelihood Programme officials were sampled using purposive sampling. According to Amin (2005, pp.76), purposive sampling allows the researcher to use her own judgment to pick the sample. Creswell (2003) noted that whoever is available and ready to be recruited in the sample becomes part of the sample. Selection of respondents to have representative samples was based on the non-probability sampling methods (purposive sampling technique).

3.5 Data Collection Methods

Both primary and secondary data methods which are (qualitative and quantitative in nature) were used for this particular study.

3.5.1 Questionnaire Survey

A questionnaire is a research instrument consisting of a series of questions and other prompts for the purpose of gathering information from respondents. Although they are often designed for statistical analysis of the responses, this is not always the case (Ezeani, 2005). The researcher used the questionnaire survey because it is practical, large amounts of information can be collected from a large number of people in a short period of time and in a relatively cost effective way.Closed ended questionnaire was used because according to Amin (2005), they provide specific responses which are easy to analyze. Mugenda and Mugenda (1999) noted that questionnaires are economical to use in terms of time and money also easier to administer to apply. The results of the questionnaires can usually be quickly and easily quantified by either a researcher or through the use of a software package and can be analyzed more 'scientifically' and objectively than other forms of research. A questionnaire was used because it is cheap, a large group of respondents is covered within a short time, it also allows in-depth research, to gain firsthand information and more experience over a short period of time (Earl-Babbie, 2013).

3.5.2 Interviewing

Interviews were person to person verbal communication in which one person was interviewed at a time. Interviews were used follow up ideas and get in depth data for the study (Bell 1999). Interviews were used because they have the advantage of ensuring probing for more information, clarification and capturing facial expression of the interviewees (Amin, 2005). In addition they also gave an opportunity to the researcher to revisit some of the issues that have been an over-sight in other instruments and yet they are considered vital for the study. These interviews were conducted with the three categories of respondents who included Agriculture Officials and

Livelihood Support Programme Officials, District Local Government Officials and Rural Local Citizens. Interviews were used because they have the advantage of ensuring probing for more information (Creswell, 2003). In addition they also gave an opportunity to the researcher to revisit some of the issues that have been an over-sight in other instruments and yet they are considered vital for the study.

3.5.3 Documentary Review

In the secondary analysis of qualitative data, good documentation cannot be underestimated as it provides necessary background and much needed context both of which make re-use a more worthwhile and systematic endeavor. Secondary data was obtained through the use of published and unpublished documents. Various publications, magazines and newspapers reports, historical documents and other sources of published information like Local Economic Development Programme Reports, District Livelihood Support Programme Reports etc. According to Ragin (2011), secondary data can be helpful in the research design of subsequent primary research and can provide a baseline with which the collected primary data results can be compared to other methods. According to Ragin (2007), documents can be helpful in the research design of subsequent primary research and can provide a baseline with which the collected primary data results can be compared to other methods.

3.6 Data Collection Instruments.

The key data collection instruments to be used were the questionnaires, interview guide and documentary review checklist.

3.6.1 Questionnaire

A questionnaire is a reformulated written set of questions to which respondents record their answers, usually within rather closely defined alternatives. The questionnaire was used on the basis that the variables under study cannot be observed, for instance, respondents' views, opinions, perceptions and feelings. The questionnaire was equally used because the information had to be collected from a large sample in a short period of time yet the respondents could read and write (Ezeani, 2005).

A self-administered questionnaire was used to draw information regarding the study. The researcher chose the questionnaire as an instrument because the study was virtually descriptive and the tool is an easy method of data collection. There is one set of questionnaires whose variables are measured on the 5 point Likert scale that was administered to Agriculture Officials & Livelihood Support Programme Officials, District Officials and Residents. The choice of the Likert scale measurement is that each point on the scale carries a numerical score which is used to measure the respondents' attitude and it is the most frequently used summated scale in the study of social attitude. According to Bill (2011), the Likert scale is able to measure perception, attitudes, values and behaviors of individuals towards a given phenomenon. A copy of the questionnaire is attached marked appendix i

3.6.2 Interview Guide

The researcher also conducted interviews. An interview is a dialogue between an interviewer and interviewee. It is an organized conversation aimed at gathering data about a particular topic (Junker and Pennink, 2010). This is a method where a researcher interviews respondents to obtain information on the issue of interest. Interviews were used because they have the advantage of ensuring probing for more information, clarification and capturing facial expression of the

interviewees (Ragin, 2007). Interviews were used because they have the advantage of ensuring probing for more information, clarification and capturing facial expression of the interviewees (Ragin, 2007). During the interviews, the researcher was able to probe and ask follow up questions for further classification as suggested by Punch (2004). There were two rounds of interviews, one conducted in April 2017 and another conducted in May 2017. The taped interviews lasted 30 minutes. Interviews were recorded using a tape recorder and notes will be written down and this is supported by Glaser (1992) who notes that notes must be taken during the interviewing process. However, Glaser (1992) criticized taping interviews for preventing the researcher from being creative and developing skills in such areas as note taking, coding and analyzing. A copy of the interview guide is appended in the list of appendices (see appendix (ii).

3.6.3 Documentary Review Check list

The documentary review list was used to review the related documentary data. Documentary data was obtained through the use of published and unpublished documents for example Local Economic Development Programme Reports, District Livelihood Support Programme Reports etc. According to Amin (2005) adds that, documents can be helpful in the research design of subsequent primary research and can provide a baseline with which the collected primary data results can be compared to other methods. According to Groves et.al(2009), documents can be helpful in the research design of subsequent primary research and can provide a baseline with which the collected primary data results can be compared to other methods. A copy of the documentary review checklist is appended in the list of appendices labeled appendix (iii).

3.7 Quality Control of Data Collection

Data quality control techniques ensured that data collected is valid and reliable; the instruments

were first tested to ensure validity and reliability.

3.7.1 Validity

Validity refers to the truthfulness of findings or the extent to which the instrument is relevant in measuring what it is supposed to measure (Earl-Babbie, 2013). The validity of the instrument quantitatively was established using the Content Validity Index (CVI). This involved the expert scoring of the relevance of the questions in the instrument in relation to the study variables. The instruments that yielded a CVI above 0.7. The results are presented below

Content Validity results for the Instruments

Table 3. 1: Content validity Index Results

Content validity Index Results for Questionnaires		
Variables	*Content Validity Index*	*Number of items*
Extension Services	0.744	6
Access to Credit	0.732	6
Market Information	0.756	8
Rural House Hold Livelihood	0.776	6

The content validity index results and the Cronbach Alpha reliability results for the dependent and the independent variables were all above 0.7 which was within the accepted ranges. Further, the instruments were discussed with the supervisor and experts and also pre-tested using part of the study sample respondents to ensure construct and content validity

3.7.2 Reliability

Qualitatively, the reliability of the instruments was established through a pilot test of the questionnaire to ensure consistency and dependability and its ability to tap data that would answer the objectives of the study. The results were subjected to a reliability analysis. Quantitatively, reliability was established using the Cronbach's Alpha Reliability Coefficient test. Upon performing the test, if the values 0.7 and above, the items in the instrument was regarded reliable. Based on Cronbach's Alpha Coefficient, the scales for the variables were reliable. In the case of psychometric tests, must fall within the range of 0.7 above for the test to be reliable (Bill, 2011:78).The formula below that was applied to test reliability of the instruments:

$$\alpha = \frac{N.r-bar}{1+ (N-1) . r-bar}$$

Where,

a is the Cronbach's alpha

N is equal to the number of items,

r-bar is the average inter-item correlation among the items.

Cronbach Alpha Reliability results for the Instruments

Table 3. 2: Cronbach Alpha Reliability Results

Cronbach Alpha Reliability Results for Questionnaires		
Variables	*Content Validity Index*	*Number of items*
Extension Services	0.785	6
Access to Credit	0.799	6
Market Information	0.767	8
Rural House Hold Livelihood	0.706	6

The content validity index results and the cronbach alpha reliability results for the dependent and the independent variables were all above 0.7 which was within the accepted ranges. Further, the instruments were discussed with the supervisor and experts and also pre-tested using part of the study sample respondents to ensure construct and content validity

3.8 Data Analysis Techniques

The researcher used both qualitative and quantitative methods of data analysis. Data was sorted using the Statistical Package for Social Scientists (SPSS) method. The analysis relied on both descriptive and inferential statistics. The descriptive statistics included use of frequency tables, mean, and standard deviation.

3.8.1 Quantitative Data Analysis

Quantitative data got from the questionnaires was computed into frequency counts and percentage. Data was sorted using the Statistical Package for Social Scientists (SPSS) method. The researcher adopted bivariate analysis techniques in analyzing her data. Bivariate analysis is the simplest form of quantitative (statistical) analysis. In addition to frequency distribution, tables, mean, standard

deviation and other measures of central tendency was used in data analysis. Regression analysis and Correlations (Pearson's Product Moment Correlation Co efficient) was used to analyze and measure the degree of relationship between the independent variables and dependent variables. The correlation coefficient is a numerical way to quantify the relationship between two variables, e.g. X and Y and it is denoted by the symbol R (Ezeani, 2009). The correlation coefficient is always between -1 and 1, thus $-1 < R < 1$. According to Creswell (2003), a correlation study is most appropriate to conduct the study in the natural environment of an organization with minimum interference by the researcher and no manipulation.

3.8.2 Qualitative Data Analysis

Qualitative data collected from interviews and documentary review was sorted and grouped into themes. The researcher therefore evaluated and analyzed the adequacy of information in answering the research questions through coding of data, identifying categories and parameters that emerged in the responses (Glenn Firebaugh, 2013). While analyzing qualitative data, summaries were made on how different themes/variables are related.

3.9 Measurement of Variables

The independent variable and the dependent variable was measured on a five point Likert type scale (1- strongly disagree, 2-Disagree, 3-Not sure, 4- Agree and 5-Strongly agree). The choice of this measurement is that each point on the scale carries a numerical score which is used to measure the respondents' attitude and it is the most frequently used summated scale in the study of social attitude. According to Bill (2011), the Likert scale is able to measure perception, attitudes, values and behaviors of individuals towards a given phenomenon.

3.10 Ethical Considerations

Honesty: There are several reasons why it is important to adhere to ethical norms in research. First, norms promote the aims of research, such as knowledge, truth, and avoidance of error. For example, prohibitions against fabricating, falsifying, or misrepresenting research data promote the truth and avoid error. Second, since research often involves a great deal of cooperation and coordination among many different people in different disciplines and institutions, ethical standards promote the values that are essential to collaborative work, such as trust, accountability, mutual respect, and fairness (Amin, 2005). To avoid plagiarism, works of different authors was acknowledged whenever they are cited.

Informed Consent: The ethics framework is essential as it entails the voluntary informed consent of the participants. This requires giving the participants adequate information about what the study involved and an assurance that their consent to participate was free and voluntary rather than coerced. According to Sekaran (2003) participants informed consent may be obtained either through a letter or form that clearly specifies what the research involves, includes clearly laid down procedures the participants can expect to follow and explain the ways in which their confidentiality was assured. In this case, a letter was obtained for this purpose. It may also be imperative to describe possible risks and benefits of the research (Sekaran, 2003).

The signing of the voluntary informed consent by each individual participant was confirmation that the respondents are not coerced to participate in the study but are doing so willingly. The researcher explained to the participants that an audio tape was used to record interviews. The researcher made the respondents aware of their right to opt out of the study if they so wish and that recording would only be done with their approval. In all the interviews, the participants consented to the use of audio tape.

Respondent's names were withheld to ensure anonymity and confidentiality in terms of any future prospects. In order to avoid bias, the researcher will interview the respondents one after the other and ensure that she informs them about the nature and extent of her study and on the other hand she gave them reasons as to why she interviewed them.

The researcher protected confidential communications, such as papers or grants submitted for publication, personnel records, trade or military secrets, and patient records.

Justice and beneficence: The researcher explained to respondent's use of certain gadgets that they do not understand or have little knowledge about e.g camera and tape recorders. Some respondents required further verbal assurance that the tapes will under no circumstances be handed over to their supervisors

Objectivity: The researcher avoided bias in experimental design, data analysis, data interpretation, peer review, personnel decisions, grant writing, expert testimony, and other aspects of research where objectivity is expected or required. She avoided or minimized bias or self-deception.

CHAPTER FOUR

PRESENTATION OF FINDINGS, ANALYSIS AND INTERPRETATION OF RESULTS

4.1 Introduction

This Chapter presents the findings, analysis and interpretations to the findings. The findings are presented according to the objectives of the study. The study focused on examining the relationship between Agricultural Strategies and rural House hold livelihood in Mbarara District. The study was premised on the following research objectives: to examine the relationship between extension services and rural household livelihoods in Mbarara District, western Uganda, to examine the relationship between access to credit and rural household livelihoods in Mbarara District, western Uganda and to examine the relationship between market information and rural household livelihood in Mbarara District, Western Uganda

4.2 Response Rate

Presentation of tabulated data according respondents' response rate. Sekaran (2003) notes that a response rate above 50% of the target number is adequate

Table 4. 1: Response Rate

Instrument	Target	Actual Response rate	Response rate
Questionnaire	113	60	53
Interviews	15	09	60

Source: primary data (2017)

Table 4.1 above presents the response rate from the study. The number of questionnaires distributed were 113 and 60 were returned making a response rate of 53%. This implied that the study had a high response rate that enabled the researcher to come up with concrete findings to the study. Face

to face interviews were carried out with the respondents; in total 09 respondents were interviewed out of the target number of 15 expected to be interviewed. This was a 60% response rate from interviews. Sekaran (2003) noted that a response rate above 50% of the target number is adequate

4.3 Findings on Background Characteristics

This section presents findings on demographics of the respondents, namely; gender, age, education, working experience, and position of the respondent, below.

4.4 Respondents by Sex

The sex of respondents was investigated for this study, and findings are presented in Table 4.2.

Table 4. 2: Summary statistics on gender of the respondents

Gender	Frequency	Percentage
Female	28	46.6
Male	32	53.3
Total	**60**	**100**

Source: Primary Data (2017) *N=60*

Table 4.2 shows that the majority of the respondents were male (53.3%) and female were (46.6%). Although the gender findings indicated a discrepancy in favour of males, the study was representative since both males and female were included in the study sample.

4.4 Age of the Respondents

The study looked at age distribution of the respondents by age using frequency distribution. The results obtained on the item are presented in table 4.3 below.

Table 4. 3: Presents the summary statistics on the Age of the respondents

Age in years	Frequency	Percentage
20-29	12	20.8
30-39	33	54.2
40-49	10	16.6
50 and above	05	8.3
Total	**60**	**100**

Source: primary data (2016) *N=60*

From the above Table 4.3, the majority of respondents between the category of 30-39 years were 54.2%, those between 40-49 years were 16.6% and those that were above 50 years were 8.3%. This indicated that all categories of respondents were represented in this study

Respondents by Highest Level of Education the Respondents

The Table 4.4 presents the summary statistics on level of education of the respondents.

Table 4. 4: Distribution of Respondents by Highest Level of Education of the Respondents

Highest Level of Education	Frequency	Percentage
Bachelors	03	5.0
Diploma	20	33.3
Certificate	33	55.0
Others	04	6.7
Total	**60**	**100**

Source: Primary Data (2017) *N=60*

The majority of the respondents were certificate holders making a total percentage of 55%, the respondents with diplomas were 33.3% and the Bachelors holders were 6.0% and those dropped out without completing a given level of education were 7%. These results indicate that the majority of the respondents were able to read, understand the questionnaire and gave appropriate responses.

Table 4. 5: Distribution of Respondents by Marital status of the Respondents

Marital status	Frequency	Percentage
Single	19	31.6
Married	36	60
Separated	01	1.7
Divorced	02	3.4
Widowed	02	2.5
Total	**60**	**100**

Source: Primary Data (2017) *N=60*

The majority of the respondents were married (60%) and the single were 31.6%. This indicated that all categories of respondents in reference to marital status were represented in this study.

4.5 Empirical Results on the relationship between Agricultural Development Strategies and Rural House Hold Livelihood in Mbarara District

In this section, the empirical results for each of the specific research objectives is presented, analysed and interpreted with an overall goal of demonstrating how Agricultural Development Strategies influence rural House hold livelihood in Mbarara District.The items were scaled using the five-point Likert scale where code 1 = Strongly Disagree, 2 = Disagree, 3 = Undecided, 4 = Agree and 5 = Strongly Agree and discussed based 7 questions which are statistically tabulated and presented in the table below with the frequencies and percentages according to the responses collected.

4.5.1 Objective One: to examine the relationship between extension services and rural household livelihoods in Mbarara District, Western Uganda

Table 4. 6: Descriptive Statistics on extension services and rural household livelihoods in

Mbarara District, western Uganda

Items on Extension Services	SA	A	N	D	SD	Mean	Standard Deviation
Agricultural advisory services are extended to the farmers in Mbarara	42%(25)	50%(30)	00	3.0%(02)	05%(03)	4.40	.491
New farming techniques have been taught to the farmers in Mbarara	34%(20)	51%(30)	00	10%(06)	10(06%)	4.28	.399
The people responsible for extension services are well trained	22%(13)	51%(30)	00	17%(10)	10(06)	3.99	1.00
The farmers do not pay for the extension services	31%(18)	58%(23)	00	5.0%(03)	06%(03)	4.44	1.76
Before in puts are given, farmers are educated about their use	54%(32)	40%(24)	00	1.0(01	05%(03)	4.70	.401
Socio economic factors are limiting extension services in Mbarara	27%(16)	61%(36.6)	00	4.0%(03)	8.0%(040	4.46	1.31
The extension workers from the District interact frequently with the farmers in Mbarara	23%(14)	67%(42)	00	1.0(1.0%)	09%(5)	4.38	1.56

Source: Primary data (2017) N=60

SD = Strongly Disagree, D = Disagree, N = Neutral, SA = Strongly Agree and A = Agree, % = Percentage

As to whether agricultural advisory services are extended to the farmers in Mbarara, the respondent's responses indicated that cumulatively, the larger percentage (92%) of the respondents agreed and 8.0% disagreed. The mean = 4.40 was above the median score, three, which on the five-point Likert scale used to measure the items indicated that the respondents agreed that agricultural advisory services are extended to the farmers in Mbarara.

Among 7 farmers interviewed82.5% noted that they have access to extension service and the rest 17.5% didn't get the service. There is no significant difference between the three groups in terms

of access to extension services

A respondent noted that

Among the observed climate smart technology practices that have been taught through extension programmes to farmers in by farmers in sub-counties, namely: Kashari, Bubaare, Bukiro, Kagongi, Kakiika, Kashare was terracing, basin faming, line cropping were the most common (72%), followed by tree planting (37%), mulching (23%), trashlines and trenches (22%), use of cover crops and avoiding of bush burning (21%), fallowing (19%), hedgerows (16%), and contour cultivation and strip cropping (10%). Circular holes were used by 7% of the respondents

Responses to the question as to whether new farming techniques have been taught to the farmers in Mbarara (85%) disagreed while 15% agreed. The mean = 4.28 close to the median score, three, that indicated that new farming techniques have been taught to the farmers in Mbarara.

Of the farmers interviewed, 99% actively participated in the various extension projects. Findings show edequal distribution of respondents in the different projects that they have participated in. The majority of the respondents (63.0%) participated in the extension project funded by Sasakawa, NARO and BRAC. Various climate smart technologies practices were applied by the extension staff in the three projects.

Of the farmers interviewed, 99% actively participated in the various extension projects. Findings show equal distribution of respondents in the different projects that they have participated in. More respondents (63.0%) participated in the extension project funded by Sasakawa, NARO and BRAC. Various climate smart technologies practices were applied by the extension staff in the three projects. The extension services by NARO and BRAC include use of resistant cassava varieties, use of clean planting materials, rouging, isolation of new plots away from diseased crops, pruning,

early cropping, manure application, pesticide application, terracing and Basin farming, burning infected stems and fertilizer application, mixed cropping, and drainage. Each project used three extension methods to disseminate the climate smart technology practices to the farmers. Sasakawa used four extension techniques to reach the farmers. These included; rallies, method demonstrations, farm visits and formal discussion groups. The project was perceived by only 68% of the farmers as being successful. Rallies were the most widely used and had a substantial relationship with the perceived success of the project at a less than 5% level of significance. Sasakawa project on the other hand used six extension techniques to extend the climate smart technology practices to the farmers. These included; rallies, method and result demonstration, farmer discussion groups, farm visits and formal discussion groups. The extent to which the farmers learnt and used the climate smart technologies practices varied among the different projects

With respect to whether the people responsible for extension services are well trained, cumulatively the larger percentage (73%) agreed with 27% disagreeing. The mean = 3.99 which corresponded to agreed indicating that the majority of the respondents agreed that the people responsible for extension services are well trained.

The farmers interviewed noted that the extension farmers displayed good knowledge about the practices they taught like basin farming and mixed cropping indicating that they are well trained.

As to whether the farmers do not pay for the extension services, cumulatively the larger percentage (89%) agreed with 11% disagreed. The mean = 4.44 meant that the respondents agreed that the farmers do not pay for the extension services.

Regarding whether before in puts are given, farmers are educated about their use, cumulatively the larger percentage (94%) agreed and 6.0% disagreed.

The mean = 4.70 implied that before in puts are given; farmers are educated about their use.

Whether socio economic factors are limiting extension services in Mbarara, cumulatively the larger percentage (88%) agreed with 18% agreeing. The mean = 4.46 implied that socio economic factors are limiting extension services in Mbarara.

The farmers in Kashari, Bubaare, Bukiro, Kagongi, Kakiika, Kashare, Rubaya, Rubindi, Rwanyamahembe, Biharwe and Kakoba noted that there are no socio economic factors limiting extension services in Mbarara

Responses to the question as to whether the extension workers from the District interactfrequently with the farmers in Mbarara (90%) agreed while 10% disagreed. The mean = 4.38 close to the median score, three, that indicated that the extension workers from the District interact frequently with the farmers in Mbarara.

The extension workers from the District interact frequently with the farmers in Mbarara. Results reveal that roguing, use of clean planting materials and use of resistant varieties were the commonest practices learnt by over 70% of the respondents in the different projects during interaction with the extension workers. Isolation of new plots from diseased crops was the least used control practice by extension workers from Sasakawa and NARO. It is important to note that over 50% of the farmers who learnt about the control practices still used them during the period of study.

Various techniques were used to disseminate good agricultural practices to the farmers. These however fell in three categories of extension methods. Under mass methods, the rally and the printed media techniques were used. Under group, method demonstration, result demonstration, farmers' own discussion groups and formal discussion groups (courses) were the used extension

techniques. The farm visit technique on the other hand was used under the individual method. The extent to which the different extension techniques were used varied with the different proj ects. Swift(1989) noted that the choice of extension technique should depend on the stage at which the receiver is in the adoption process.

4.6 Group Meeting

The respondents during interviews were asked about the ways extension services are extended to the smallholder farmers in Mbarara District. Group meetings were one of the popular techniques used by the three projects to extend new agricultural practices in the 9 Sub Counties of Rwanyamahembe, Biharwe, Kakoba, Kamukuzi, Nyamitanga, Rwampara, Bugamba, Mwizi and Ndaija. The percentage of respondents exposed to the practices using group meetings by Saakawa, NARO and Local Governments projects were 99%, 93.5% and 65.8% respectively.

The results indicate that group meetings as an extension technique disseminated the practices to a large proportion of farmers. This may have been due to the ability of local councils as well as farming groups to mobilize farmers to attend the group meetings. Further, group meetings as a mass method had the characteristic of making wide coverage within a short time. Over 60% of the respondents were exposed to the practices using the group meetings techniques

4.7 Method Demonstration

Method demonstration is another technique used by extension workers in Mbarara District under the projects of Sasakawa, NARO and the Local Government to extend trainings to farmers about good farming practices. This technique therefore involves the ability of an expert to teach farmers a skill or the how of a practice. The technique was popular with Ssasakawa and NARO and 97% and 88% of respondents were reached through this technique respectively. Sasakawa project

therefore reached more respondents than the other two projects in the past one year (2016-2017). This was probably due to the mode the project used to reach its farmers. Local Government reached its farmers through community agricultural workers (CAWs), who had direct contact with a good number of community farmers in Nyamitanga, Rwampara, Bugamba

However, method demonstrations were most common. Through method demonstrations, 95%, 90% and 85% of the respondents were reached by the three institutions extension projects respectively, during the planting of the resistant cuttings. Planting time was the opportune moment to demonstrate to the farmers the skills of correct cutting length and planting of cassava crop. This observation was in agreement with the adoption literature according to Swinburn and Yatta (2007), group methods are the appropriate extension methods to use at evaluation stages, to enable the farmers weigh the likely advantages and disadvantages of the new innovation, compared to their own situation.

4.8 Farmers' own groups

According to Tevera(2012), the theory behind farmers' own discussion groups method is that, no one person knows all answers. Therefore, some farmers get together to consider and communicate a common public problem, so as to get acquainted with each other and to exchange farming problems. Farmers' own discussion groups were used by Sasakawa and NARO to implement the control practices. Through this technique, these projects reached 88% and 70% of the respondents respectively.

Though the farmers' own groups could have hastened the adoption of good agricultural practices, like result demonstration, they reached less than 50% of the respondents at all the stage of project

activities for the three projects. Farmer discussions could be held at any time when deemed necessary and it was therefore important to use them at any one time.

4.9 Farm Visits

The farm visit technique involves, the extension worker meeting individually with the farmer at his farm or home. This technique helps the extension worker develop personal influence with farmers. Farm visits were popular techniques with the three projects and reached 99% and *55%,* of the respondents respectively. However, Local government reached only 1% of its participants by this technique. At least 60% of the respondents in 2016 and the first half of 2017 were reached by this technique by Ssasakawa. This observation agrees with the available literature which suggested that the individual methods would be appropriately used if they are utilized at the trial and adoption stages (Tinker, 1994). These trial and adoption stages were equated to project stages of monitoring the multiplication centers and the distribution of mature stems. It is at these stages the farmer requires individual help or advise about how to utilize or go about the new idea. Local government approached fewer farmers by this technique as compared to the other two. Local government project extended its practices through the individual women farmers. Although smallholder farmers may have been vigorous in promoting farm visits among themselves, it is possible that, the respondents did not perceive visits from fellow farmers as farm visits, since these farmers were not “extension workers. This might explain why technique reached fewer respondents as compared to the other two projects.

Local government funded project reached fewer respondents as compared to Sasakawa because, it had a large area of jurisdiction where farm visits could not adequately be effected. Ofthe farmers interviewed, 88%, 64% and 58% perceived that Sasakawa and NARO funded extension services

were successful respectively.

Each institution (Sasakawa, NARO and Local Government) used more than three extension methods to disseminate the climate smart technologies practices to the farmer. Sasakawa used four extension techniques to reach the farmers. These included; group meetings in different communities under an extension worker, method demonstrations, farm visits and formal discussion groups. The exercise was perceived by 88% of the farmers as being successful. Group meetings were the most widely used and had a substantial relationship with the perceived success of the project at a less than 5% level of significance.

The Local Government Sub County based staff on extension services on the other hand used six extension techniques to extend the practices to the farmers. However, only 58% noted that they were successful. These included; group meetings, method and result demonstration, farmer discussion groups, farm visits and formal discussion groups. All the techniques had a very strong relationship with the perceived success of the project at a less than 5%level of significance. The Local government project has a large area ofjurisdiction and used more techniques than the other two projects as seen above. NARO like Sasakawa used four techniques but the farmers' perceived it as being 64% successful. The techniques included; group meetings method and, farmer discussion groups, farm visits, and formal discussion groups.

Table 4. 7: Utilization of identified extension techniques

Extension techniques used
Rallies Method demonstration Result demonstration Farmer discussion groups Formal discussion groups Printed media Farmer visits

4.10 Summary of findings on the dependent variable (rural household livelihoods)

Presentation of the summary of responses on the dependent variable (rural household livelihoods)

Table 4. 8: Descriptive Statistics on Rural Household Livelihoods

Items	**SA**	**A**	**N**	**D**	**SD**	**Mean**	**Std. Dev**
Rural household income has improved in Mbarara	31%(19)	45%(27)	00	11%(07)	13(08)	3.87	.396
There is improved food security in Mbarara	23%(14)	63%(37)	00	4%(02)	10(06)	4.06	.242
There is improved food production in Mbarara	26%(04)	45%(27)	00	11%(07)	18(10)	3.82	.967
The people are made aware of how to improve on their incomes	31%(19)	34%(21)	00	13%(07)	22(13)	3.60	.135
The people are made aware of how to improve on food security	34%(21)	62%(36)	2%(01)	4%(02)	6.0(3.0)	4.70	.401
The people are made aware of how to improve on food production	29% (18)	59%(33)	3%(02)	9%(05)	12(07)	4.46	1.31
TheDistrict AgriculturalDepartment has improved the lives of the people in Mbarara	39%(23)	51%(31)	2%(01)	8%(04)	10(06)	4.38	1.56

Source: Primary Data (2017) N=60

SD = Strongly Disagree, D = Disagree, N = Neutral, SA = Strongly Agree and A = Agree,

% = Percentage

As to whether rural household income has improved in Mbarara, the respondent's responses indicated that cumulatively, the larger percentage (76%) of the respondents agreed and 24% disagreed. The mean = 3.87 was above the median score, three, which on the five-point Likert scale used to measure the items indicated that rural household income has improved in Mbarara.

A respondent noted that

Rural household income has improved in Mbarara, farmers are able to sell their produce and access farm input from the government and NGOs. The District helped to vaccinate 22,000 heads of cattle and also procured, Veterinary Field Quality Control Kits and it also collected and analysed crop and livestock statistical data. In April 2016, the District conducted 5 crop pests and diseases control demonstrations and in June 2017 conducted 6 end-users (farmers) training in various aspects of goat breeding and management.

Responses to the question as to whether there is improved food security in Mbarara (86%) disagreed while 14% agreed. The mean = 4.06 above four indicated that there is improved food security in Mbarara.

With respect to whether there is improved food production in Mbarara, cumulatively the larger percentage (71%) agreed with 29% disagreeing. The mean = 3.82 which corresponded to agreed indicated the majority of the respondents agreed that there is improved food production in Mbarara.

A respondent noted that

There is no improved food production in Mbarara District. In support Turyahabwa (2016) noted that farmers receive low farm gate prices for what little surplus they do sell on the market because of the high cost of transporting produce from the farm to the market, which arises from the poor state of rural feeder roads, many of which are impassable in the rainy season, and the low volumes

of produce traded. Consequently the financial returns to farming are very low. This means that farmers do not accumulate savings for investment in improved farm technology, and even if they do have resources, they have few incentives to invest in raising their yields. As a result, farmers remain trapped in poverty, engaged in low productivity subsistence farming, without the resources or incentives to increase their yields. Findings from interviews revealed that the key challenges are land fragmentation, drought, financial difficulties

As to whether the people are made aware of how to improve on their incomes, cumulatively the larger percentage (65%) agreed with 35% disagreed. The mean = 3.60 meant that the people are made aware of how to improve on their incomes.

Regarding whether the people are made aware of how to improve on food security, cumulatively the larger percentage (94%) agreed and 6.0% disagreed. The mean = 4.70 implied that the people are made aware of how to improve on food security .

Whether the people are made aware of how to improve on food production, cumulatively the larger percentage (88%) agreed with 18% disagreeing. The mean = 4.46 implied that the people are made aware of how to improve on food production.

Responses to the question as to whether the District Agricultural Department has improved the lives of the people in Mbarara (90%) agreed while 10% disagreed. The mean = 4.38 close to the median score, three, that indicated that the District Agricultural Department has improved the lives of the people in Mbarara.

In general, smallholder farmers still use rudimentary farm technology in Mbarara with very low levels of farminputs, often allied with poor agricultural practises such as the mining of soils which

are a reflection of their poverty and lack of feasible alternative strategies. The average value of fertiliser used on a good Mbarara farm is only $0.6 per acre per annum, and only 7 percent of farm land in Mbarara is planted with improved varieties of seeds

4.11 Hypothesis testing one: there is a positive significant relationship between extension services and rural household livelihood in Mbarara Western Uganda

Pearson Correlation Coefficient

The hypothesis was tested using the Pearson correlation coefficient and the results of the hypothesis are given Table 4.9 below.

Table 4. 9: Correlation matrix for extension services and rural household livelihood in Western Uganda

		Extension Services	Rural Household Livelihood
Extension Services	Pearson Correlation	1	.772(**)
	Sig. (2-tailed)	.	.000
	N	60	60
Rural Household Livelihood	Pearson Correlation	.772(**)	1
	Sig. (2-tailed)	.000	.
	N	60	60

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

Source Primary data (2017)

The results show that the correlation coefficient is 0.772(**) and its significance level 0.000. This implied that extension services significantly influencesrural household livelihood in Mbarara District. Therefore according to the results there is a positive significant relationship between extension services and rural household livelihood in Mbarara District. Therefore the alternative

hypothesis that was earlier postulated is accepted.

4.11.1 Regression Analysis

A regression analysis for extension services and rural household livelihood in Mbarara District was run and the results from the analysis are below in Table 4.10

Table 4. 10: Regression Analysis for extension services and rural household livelihood in Mbarara District

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.772(a)	.391	.334	1.675

a Predictors: (Constant), extension services

Source Primary data (2017)

Table 4.10 provides the R and R2 value. The R value is 0.333, which represents the simple correlation and, therefore, indicates a low degree of correlation. The R2 value indicates how much of the dependent variable rural household livelihood can be explained by the independent variable extension services. In this case, 0.391 can be explained, which is very large. The standard error of the estimate is 1.675 and the adjusted R square value is 0.334. Therefore the adjusted square value of .334 implied that extension services predicts rural household livelihood in Mbarara District; in other words the rural household livelihood in Mbarara District is dependent on extension services by 33.4%

4.12 Research Objective two stated that: relationship between access to credit and rural household livelihood in Mbarara Western Uganda

The survey instruments used for the study had a list of 09 items measuring the relationship between access to credit and rural household livelihood in Western Uganda whose descriptive findings are

presented. The researcher analyzed the questionnaires that were distributed to the respondents and responses were based on Likert scale ranging from one which represented strongly disagrees to five which reflected strongly agree. The resulting summary statistics are in Table 4.11 below.

Table 4. 11: Descriptive statistics on relationship between access to credit and rural household livelihood in Western Uganda

Items	SA	A	N	D	SD	Mean	Std. Dev
Financial institutions that offer agricultural loans are spread across the District.	21%(13)	62%(37)	00	14% (08)	03%(02)	4.04	.764
The Financial institutions ask for low interest rates	34%(20)	50(30)	00	06% (03)	10%(06)	3.86	1.25
Credit can easily be accessed without collateral security by a farmer	13%(07)	18%(10)	00	17% (10)	42%(25)	2.44	.734
Farmers are educated on good use of the loans extended	13%(07)	23%(13)	00	24% (15)	40%(23)	2.01	.117
Loans are given on time to farmers seeking to access credit	29%(17)	52%(31)	00	11% (06)	8%(0 4)	4.01	1.17
The grace period for repayment of the principal is favourable to farmers	17%(10)	52%(38)	00	08% (04)	14%(08)	3.62	1.07

Source: Primary Data (2017)

SD = Strongly Disagree, D = Disagree, N = Neutral, SA = Strongly Agree and A = Agree,

F = Frequency, % = Percentage

As to whether financial institutions that offer agricultural loans are spread across the District, the respondent's responses indicated that cumulatively, the larger percentage (83%) of the respondents agreed and 17% disagreed. The mean = 4.04 was above the median score, three, which on the five-point Likert scale used to measure the items indicated that financial institutions that offer agricultural loans are spread across the District.

The majority of the farmers (65%) revealed that they had not used any fertilizers because they are

expensive. They attributed this to difficulty to access credit from the institutions in the area like Brac, Uganda. Credit may be an important factor in determining adoption (Swinburn and Yatta, 2007) noted. According to Swinburn and Yatta (2007), credit is one of the major factors constraining the adoption of new agricultural innovations. Tevera (2012)also found the same results in their study. The credit may be offered as a package that provides a set of inputs to farmers. Parts of the package may be adopted simply because of this obligation, although farmers may feel that they are inappropriate or unprofitable.

Responses to the question as to whether the financial institutions ask for low interest rates, serial or tag numbers, cost, insured value, estimated life, and residual value. (86%) agreed while 14% disagreed. The mean = 3.86 above four indicated that the financial institutions ask for low interest rates.

The majority of respondents agreed that the interest rates were high from Financial Institutions and this created the feeling that the client was working for 70% benefit to Financial Institutions and not for herself. This meant that the profits were shared between the client and the Financial Institutions. This made it rather risky to take up the credit facilities yet at the moment it was inevitable.

One respondent in relation to the above noted

The interest rates are high and I can't benefit fully from the loans I get from the Financial Institutions that is why I resort to Village Savings cooperatives because the interest rates a bit low compared to financial institutions.

The Financial Institutions demand for collateral or security as a prerequisite for accessing loans yet most Smallholder farmers don't have any kind of collateral. The respondents comprising eleven percent cited lack of security as a challenge faced while accessing the Financial Institutions. The

group collateral had also become a problem since it was reported that it was becoming rather difficult to get trustworthy group members by eleven percent. This was because members would join the group only to access credit and after doing so they would relocate to an unknown destination for some time. Some group members' businesses would neither break even nor make any profit yet the Financial Institutions wanted the group repayment made on schedule.

When asked about the procedure of loan acquisition, one respondent noted

"it is long and cumbersome and would not love to talk about it. One day, I gave up on the loan after the lengthy procedure only to be called on the last minute that the loan is successful. The banks demand for titled land as collateral yet ours is not titled but customary land"

The long procedure of accessing the loan was also mentioned by eleven percent of the respondents as a big challenge. It was however reported that the period between the application and the actual disbursement was too long for smallholder farmers in Mbarara District. At times the farmers lost hope, forgot and tried other means only to be summoned by Financial Institutions offices that their applications had been successful. The paper work involved in filling the forms and signing agreements and contracts was cited by five percent of the respondents as affecting the speed with which the farmers handled the applications. It was also pointed out that there were letters of recommendations required from local authorities or employers that would not be readily available and in some instances money was paid for the stamps. This discouraged the smallholder farmers from accessing the Financial Institutions loans

With respect to whether credit can easily be accessed without collateral security by a farmer. Cumulatively the larger percentage (41%) agreed with 59% disagreeing. The mean = 2.44 which corresponded to disagreed indicated that credit can easily be accessed without collateral security by a farmer.

As to whether farmers are educated on good use of the loans extended, cumulatively the larger percentage (64%) disagreed with 34% agreed. The mean = 2.01 meant that farmers are educated on good use of the loans extended.

Regarding whether loans are given on time to farmers seeking to access credit, cumulatively the larger percentage (94%) agreed and 6.0% disagreed. The mean = 4.01 implied that loans are given on time to farmers seeking to access credit.

About 48% of the farmers sampled complained about the repayment period being too short. This was because some Financial Institutions require the farmers to make the repayments weekly. This was rather too short a period for the business to have yielded any returns from which to get money to service the loan. The respondents also revealed that they had been forced by these circumstances to join as many Financial Institutions as possible so as to service the loans while they wait for the business to progress steadily. The farmers who have been wise are getting credit from village cooperative at low interest rates compared to Financial Institutions.

The short repayment period as explained above affected the flow of money from the business to the Financial Institutions. Eighteen percent of the respondents revealed that they had to borrow from other Village savings cooperatives to service the loans or risk the taking of their property by the Financial Institutions. The repayment period for some village savings cooperatives is weekly while for others it was bi-weekly. For the respondents, this period was too short for any meaningful profits to have been realized from which to get money for repaying part of the loan. Twelve percent of the respondents also mentioned that at times when they borrow from institutions like Brac Uganda, it is difficult for them to fulfill the repayment schedules and they ended up defaulting. This could have been as a result of circumstances beyond their control like weather for farmers

but Brac Uganda would call them defaulters and confiscate their property.

Whether the grace period for repayment of the principal is favourable to farmers, cumulatively the larger percentage (88%) agreed with 12% agreeing. The mean = 3.62 implied that the grace period for repayment of the principal is favourable to farmers.

About 61% of the respondents (local government officials) sampled explained that Financial Institutions had strict and rigid policies that could not be changed no matter what. Examples included paying of fines when one could not fulfill the repayment schedule, not granting the loan to a group even if it was only one member who had failed to pay and confiscating property when one had failed to pay. These policies affected the access to the services of Financial Institutions and Brac Uganda by the small holder farmers in the study area. This instilled fear and anxiety that made the smallholder farmers to shy away from getting a loan from Financial Institutions Another challenge identified by the respondents was the lack of flexibility from Financial Institutions and Brac Uganda that is spread across Mbarara District Sub counties when their clients are sick, lost family members or were involved in accidents. The respondents who were ten percent explained that “Ssente ye‘bbanja temanyi nnaku, temanyi kulwala, temanyi kufirwa” in the Luganda language translated to mean that “borrowed money/loan did not know sorrow, did not know sickness, did not know death” in other words, whatever the situation of the client, the loan had to be serviced. This caused a lot of fear and anxiety among the beneficiaries.

4.13 Hypothesis testing two: there is a positive significant relationship between access to credit and rural household livelihood in Mbarara Western Uganda4.9.1 Pearson Correlation Coefficient

The hypothesis was tested using the Pearson correlation coefficient and the results of the hypothesis are given below in Table 4.12.

Table 4. 12: Correlation matrix for access to credit and rural household livelihood in Western Uganda

		Access to Credit	Rural Household Livelihood
Access to Credit	Pearson Correlation	1	.212(**)
	Sig. (2-tailed)	.	.000
	N	60	60
Rural Household Livelihood	Pearson Correlation	.212(**)	1
	Sig. (2-tailed)	.000	.
	N	60	60

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

Source Primary data (2017)

The results show that the correlation coefficient is 0.212(**)and its significance level 0.000. This implied that access to credit influences rural household livelihood in Mbarara District. Therefore according to the results there is a positive significant relationship between access to credit and rural household livelihood in Mbarara District. Therefore the alternative hypothesis that was earlier postulated is accepted.

4.14 Regression Analysis

A regression analysis for access to credit and rural household livelihood in Mbarara District was run and the results from the analysis are below in table 4.13

Table 4. 13: Regression Analysis for access to credit and rural household livelihood in Mbarara District

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.212 [a]	.400	.395	.48939

a. Predictors: (Constant), access to credit

Source Primary data (2017)

Table 4.13 provides the R and R^2 value. The R value is 0.212, which represents the simple correlation and, therefore, indicates a low degree of correlation. The R^2 value indicates how much of the dependent variable, rural household livelihood can be explained by the independent variable access to credit. The standard error of the estimate is .48939 and the adjusted R square value is 0.395. Therefore the adjusted square value of .395 implied that access to credit predicts rural household livelihood in Mbarara District; in other words rural household livelihood in Mbarara District is dependent on access to credit by 39.5%

Table 4. 14: Summary of the hypothesis results for access to credit and rural household livelihood in Mbarara District

Hypothesis No.	Hypothesis	Statement
HP_2	There is a significant relationship between access to credit and rural household livelihood in Mbarara District	This implied that access to credit significantly influences rural household livelihood in Mbarara District

In conclusion, both the qualitative and the quantitative data that was collected agree. The qualitative and quantitative data that was collected on objectives two that sought to establish the relationship between access to credit and rural household livelihood in Mbarara District

4.15 Objective three: relationship between market information and rural household livelihood in Mbarara District

The items on relationship between market information and rural household livelihood were derived

from the third of objective of the study. Question items measuring market information were put to the respondents. The items were scaled using the five-point Likert scale where code 1 = Strongly Disagree, 2 = Disagree, 3 = Undecided, 4 = Agree and 5 = Strongly Agree. Descriptive data is as presented in Table 4.15

Table 4. 15: Descriptive statistics on relationship between market information and rural household livelihood in Western Uganda

Items	SA	A	N	D	SD	Mean	Std. Dev
Farmers in Mbarara are near the market source	22%(13)	26%(15)	00	48%(29)	42%(25)	3.00	.491
Market information is availed by government to the farmers	48%(29)	25%(14)	00	17%(10)	10%(06)	3.88	.632
Access to market information has enabled the farmers set the price for their products.	19%(11)	56%(33)	00	12%(07)	13%(07)	3.94	.544
The good road infrastructure has enabled farmers move to access market information	29%(17)	52%(31)	00	08%(04)	11%(06)	4.07	.946
The farmers are into cooperatives for easy access to market information	32%(19)	37(22)	00	11%(06)	20%(12)	3.75	.798
Availability of modern technology has enabled farmers access market information	37%(22. 2%)	51%(30)	00	04%(02)	08%(04)	4.01	.401
There is able bodied leadership willing to look for market information and avail it in Mbarara District	41%(25)	43%(22)	00	12%(07)	14%(07)	3.92	.313
Farmers willingly invest resources to get access to market information even when the government cannot	22%(13)	26%(15)	00	48%(29)	42%(25)	3.00	.491

Source: Primary data (2017)

SD = Strongly Disagree, D = Disagree, N = Neutral, SA = Strongly Agree and A = Agree,

F = Frequency, % = Percentage

As to whether farmers in Mbarara are near the market source, the respondent's responses indicated

that cumulatively, the larger percentage (48%) of the respondents agreed and 42% disagreed. The mean = 3.09 was above the median score, three, which on the five-point Likert scale used to measure the items indicated the respondents were undecided about farmers in Mbarara are near the market source .

Responses to the question as to whether market information is availed by government to the farmers (73%) agreed while 27% disagreed. The mean = 3.88 above three indicated that market information is availed by government to the farmers.

Findings revealed that farmers source of market information are: 88.8% is from fellow farmers, 56% relatives and 37.5% traders, mobile phone 25% and radio 23 % to find market price information but newspapers and cooperative societies covered by far less user.The government had done little to avail farmers with market information. Very few farmers access market information on radios like radio West.Farmers in Kashari, Bubaare, Bukiro and Kagongi Sub County were asked to rank the program they need to find from radio. Four programs were listed which are commonly broadcasted via the radio. About 49.34% and 41.45% of the respondents ranked agriculture program first and secondly news. Respondents who ranked music and drama as first were 7.24 % and 1.97. This implied that smallholder farmers are more interested to find agricultural information primarily followed by News.

Turyahabwa(2016) relatedly notes that rural communities are more attached to use the traditional ways of market information than of using the new technology due to several factors. Yet, this time the technology is diversifying in Mbarara while we compare it every year. The number of mobile phone and radio user are increasing among smallholder farmers in Mbarara District

With respect to whether access to market information has enabled the farmers set the price for their products, cumulatively the larger percentage (75%) agreed with 25% disagreeing. The mean = 3.94

which corresponded to disagreed indicated that access to market information has enabled the farmers set the price for their products.

A respondent noted that through training the farmers can get market information from extension workers. Access to training refers how and from whom farmers are getting the training to find crops price information. This will be an indicator to access updated information via the possible information delivering mechanism. In line with this, access to training is also used to diversify skills and knowledge to use an old and emerging technology via different means of interventions.

During interviews, a famer said that, “our main problem is we do not have knowledge on how to access the daily price information, even nobody tells us about the daily market price condition. Yet, we usually listen price information via radio but while we go to marker the information we got was not exactly the same because of this we usually face problem due to lack of full market information and weak bargaining power

As to whether the good road infrastructure has enabled farmers move to access market information, cumulatively the larger percentage (81%) agreed with 19% disagreed. The mean = 4.07 meant that the good road infrastructure has enabled farmers move to access market information

Regarding whether the farmers are into cooperatives for easy access to market information. A responsible officer, a records officer is in charge, cumulatively the larger percentage (69%) agreed and 31% disagreed. The mean = 3.75 implied that the farmers are into cooperatives for easy access to market information.

A respondent noted that farmers are in groups that have helped them access market information. In corroboration another farmer noted farmers frequently visit markets, visiting market is a way of getting relevant information and cross checking mechanism of pre-gathered information with the

existing price

Whether availability of modern technology has enabled farmers access market information, cumulatively the larger percentage (88%) agreed with 12% agreeing. The mean = 4.01 implied that availability of modern technology has enabled farmers access market information.

A farmer noted*radio is listened to by 80 per cent of people living in Mbarara District, every week, reaching people isolated by language, geography, conflict, illiteracy and poverty. Radios are widely listened to in Mbarara compared to those staying in the Municipality who watch T.V and can afford Newspapers. Given that very few smallholder farmers own phones, they rarely use this avenue to receive market information*.

In relation to the above, the DFID(2000) noted thatin addition, internet-based market information systems work well in more developed, literate markets. Other media, such as mobile phones or community radio, could be appropriate alternatives in developing countries, particularly in sub-Saharan Africa. Mobile phone is an emerging technology which can be used to communicate with different bodies via calling, sending SMS and others. It is delivering different information via personal phone.

With mobile phones, farmers can simply make a call and determine the availability of inputs from an input supplier and this reduces the cost of traveling. In addition, the mobile phone is used to get information from extension staff on markets. Yet, among the total respondents who owned mobile phone 28.6% have the information about the technology, the rest 71.4% of the respondent did not access the technology. Three major challenges were identified which are, 52.3 % did not know how to use their mobile to access the information, 32.3% of others did not have any information about the technology and 15.4 % of the rest could not understand the delivered information.

A farmer further noted that *currently they are using modern technologies to store and transport the products to the market.*

4.16 Storage

The majority of the respondents (82%) were not marketing their crops immediately after harvest for example bananas, beans and ground nuts. They attributed this to the fluctuating prices. Sometimes they wait for the prices to improve on the market before marketing most especially this applies to beans and coffee

Table 4. 16: Description of storage facilities used (n 60)

Storage facility	Frequency	Percent of farmers
On the floor of a room	66	66.7
No storage facility	14	14.1
Other	19.	19.2
Total	99	

Source: Primary Data (2017)

It is also worth noting that 28.6 percent of the farmers complained of pest damage during storage. This indicated that storage structures used were not appropriate. The structures were not rodent proof and were not well designed to provide adequate ventilation and cool conditions. The maize is poorly stored in their houses yet they are not the best places for storage. In Mwizi, Ndaija, Nyakayojo and Rugando Sub County, most farmers are putting up a joint storage structure which at the time of the study was still incomplete.

4. 17 Transportation

Another variable which significantly affects market information source preference positively is distance to market. The odds ratio in favor of choosing market information sources increases by of 0.73 for farmers' proximity to market than far distance. This might be farmers' far from the market may have problem to go far due to very limited transportations and other institutional factors. Nearest distance from market is 1 kilometer and the far is 28 kilometer which has big difference between the groups farmers from Kakiika, Kashare, Rubaya and Rubindi noted. Most farmers (57.7%) transported their crops on bicycles and mainly in sacks, wooden boxes and baskets. These were stacked one on top of the other. Of the 87.8 percent who used baskets, only 0.6 percent included an improvising of sticks during stacking to protect crops.

4. 18 Marketing

The majority of the harvests are sold in urban and local markets with percentages of 53.1 percent and 48.0 percent, respectively. Sixty five percent (65%) of the farmers used a strategy of sort before selling and this applied to maize and beans. However, the quality of maize sold was poor in some households given that it is spread on the ground in the courtyard for days until it dries, a factor that has lowered its quality and price in the market. For the year 2016, the highest prices of vegetables grown like cabbages, tomatoes and onions, bananas were reported to be low in the months of July to August and October to December. Most farmers (98%) reported high supply of crops to the market as being the major cause of low prices. About half the farmers (51.9%) reported ready access to information regarding ready market and about the same percentage of farmers (52.2%) reported that this information was fairly reliable. This information was got through fellow farmers, traders and extension agents.

As to whether there is able bodied leadership willing to look for market information and avail it in Mbarara District, cumulatively the larger percentage (84%) disagreed while 26% agreed. The mean = 2.010 implied that the respondents were undecided. This meant that there is able bodied leadership willing to look for market information and avail it in Mbarara District.

A respondent noted that

The discouraged crop market value result in market polices regulating, and the low base of market infrastructure, lack of adequate marketing information system, high seasonal price variability, and the unorganized sector, high transaction cost, which is mainly caused inadequate transport infrastructure and services in rural areas push up marketing costs, undermining local markets and exports.

Tinker (2012), thus, access to information is an important determinant to create competitiveness by effectively reducing transaction costs. The application of the new information and communication technologies, and especially the internet and mobile offer increased effectiveness encourage and facilitate direct contacting between trade partners.

As to whether farmers willingly invest resources to get access to market information even when the government cannot, the respondent's responses indicated that cumulatively, the larger percentage (48%) of the respondents agreed and 42% disagreed. The mean = 3.09 was above the median score, three, which on the five-point Likert scale used to measure the items indicated the respondents were undecided about farmers willingly invest resources to get access to market information even when the government cannA respondent noted that *investing resources would not be a problem but the biggest challenge is that markets in the developing world are characterized by pervasive imperfections such as lack of information on prices and technologies, high transaction costs and credit constraints*

Sendaula (2004) noted that lack of value adding and agro-processing are parts of missing markets amongst

smallholder farmers in marketing. Agricultural produce from smallholder farmers are usually are poorly packaged. With few exceptions, most smallholder farmers cannot add value to their produce because they do not know its importance or lack processing technology (Singh, 1990). Inability to add value to agricultural produce by smallholder farmers excludes them from profitable markets.In summary, findings revealed that smallholder farmers often face constraints when they want to access markets or when they want to improve their competitiveness in markets. Smallholder farmers often have low market access as compared to their larger and more capitalized colleagues. The small farmers access market information over the radio, mobile phones and through friends. In Mbarara District informal markets, for instance, smallholders often find their prices undercut by produce that informal traders buy from large-scale commercial farmers. Most smallholder produce has no clearly defined grades and standards and, therefore, fails to meet the consumer's demands. Findings revealed that farmers do not meet certain market grades and standards because the farmers lack the knowledge and resources to ascertain such requirements. Production assets such as tractors, machinery and vehicles to transport produce to markets are key requirements yet most farmers use bicycles to transport their produce to markets. Findings revealed that Lack of value adding and agro-processing parts are missing in the markets amongst smallholder farmers in marketing. Agricultural produce from smallholder farmers are usually are poorly packaged. With few exceptions, most smallholder farmers cannot add value to their produce because they do not know its importance or lack processing technology.

4.19 Hypothesis testing three: There is a positive significant relationship between market information and access and the performance of Small and medium Enterprises in Uganda

4.19.1 Pearson Correlation Coefficient

The hypothesis was tested using the Pearson correlation coefficient and the results of the

hypothesis are given in table 4. 17 below.

Table 4. 17: Correlation matrix for market information and rural household livelihood in Western Uganda

		Market Information	Financial Performance
Market Information	Pearson Correlation	1	.622
	Sig. (2-tailed)	.	.000
	N	60	60
rural household livelihood	Pearson Correlation	.622	1
	Sig. (2-tailed)	.000	.
	N	60	60

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

Source: Primary Data (2017)

The results show that the correlation coefficient is 0.622and its significance level 0.000. This implied that market information significantly influence rural household livelihood. Therefore according to the results there is a positive relationship between market information and rural household livelihood. Therefore the alternative hypothesis that was earlier postulated is accepted.

4.19.2 Regression Analysis

A regression analysis for market information and rural household livelihood was run and the results from the analysis are below in Table 4. 18.

Table 4. 18: Regression Analysis for the relationship between market information and rural household livelihood

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.622 [a]	.333	.367	.51018

a. Predictors: (Constant), market information

Source: Primary Data (2017)

Table 4.19 provides the R^2square value. The R value is 0.622, which represents the simple correlation and, therefore, indicates a low degree of correlation. The R^2 value indicates how much of the dependent variable, rural household livelihood can be explained by the independent variable market information. Therefore the adjusted square value of .367 implied that market information predicts rural household livelihood; in other words rural household livelihood is dependent on market information by 36.7%

Table 4. 19: Summary of the hypothesis results for market information and rural household livelihood

Hypothesis No.	Hypothesis	Statement
HP_3	There is a significant relationship between market information and rural household livelihood in Mbarara District	This implied that market information significantly influence rural household livelihood in Mbarara District

Source: primary data (2017)

This Chapter focused on presenting the findings, interpretation and analysis, the next chapter focuses on the summary of findings, discussion of the findings, conclusions, recommendations and areas for further research.

CHAPTER FIVE

SUMMARY, DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This Chapter focuses on the summary of findings, discussion of the findings, conclusions, recommendations and areas for further research.

5.2 Summary of Findings

5.2.1 Extension services and Rural Household Livelihood

The Pearson Correlation Coefficient was run and results showed that extension services significantly influences rural household livelihood in Mbarara District. Therefore according to the results the r value was 0.772(**), therefore there was a positive significant relationship between extension services and rural household livelihood in Mbarara District. Therefore the alternative hypothesis that was earlier postulated is accepted. A regression analysis was run and findings indicated that the adjusted r value was 0.334 implying that extension services predicts rural household livelihood in Mbarara District; in other words rural household livelihood in Mbarara District is dependent on extension services.

5.2.2 Access to credit and Rural Household Livelihood

The Pearson Correlation Coefficient was run and results showed that the r value was 0.212(**) implying that access to credit significantly influences rural household livelihood in Mbarara District. Therefore according to the results there was a positive significant relationship between access to credit and rural household livelihood in Mbarara District. Therefore the alternative hypothesis that was earlier postulated is accepted. A regression analysis was run and findings

indicated that adjusted r value was .395 implying that access to credit predicts rural household livelihood in Mbarara District; in other words rural household livelihood in Mbarara District is dependent on access to credit.

5.2.3 Market Information and Rural Household Livelihood

The Pearson Correlation Coefficient was conducted and the results showed r=0.622implying that market information significantly influences rural household livelihood in Mbarara District. Therefore according to the results there was a positive relationship between market information and rural household livelihood in Mbarara District. Therefore the alternative hypothesis that was earlier postulated is accepted. A regression analysis was run and findings indicated that market information predicts rural household livelihood in Mbarara District; in other words rural household livelihood in Mbarara District is dependent on market information.

5.3 Discussion

This subsection discusses of the findings which are discussed according to the respective research objectives as earlier presented in chapter one.

5.3.1 Extension Services and Rural Household Livelihood

Findings revealed that there was a positive significant relationship between extension services and rural household livelihood in Mbarara District. Similar findings were observed by Sendaula(2004) who observed a positive relationship between extension services and agricultural output. Findings revealed that three institutions (Sasakawa, NARO and Local Government that are on ground in Mbarara) use more than three extension methods to disseminate the climate smart technologies practices to the farmer. Sasakawa used four extension techniques to reach the farmers. These

included; group meetings in different communities under an extension worker, method demonstrations, farm visits and formal discussion groups. The exercise was perceived by the majority of the respondents as being successful. Group meetings were the most widely used and had a substantial relationship with the perceived success of the project at a less than 5% level of significance. Tevera (2012) noted that the smallholder farmers face challenges in asset ownership, and extension services. Also, it has been noted that smallholder farmers participate in both crop and livestock production, even though they lack substantial amount of land and education. In marketing, the majority of the sampled farmers still perform individually because they are not exposed to various marketing channels due to disadvantages associated with selling as individuals in these rural areas. Findings revealed that the Local Government Sub County based staff on extension services on the other hand used six extension techniques to extend the practices to the farmers. However, only 58% noted that they were successful. These included; group meetings, method and result demonstration, farmer discussion groups, farm visits and formal discussion groups. All the techniques had a very strong relationship with the perceived success of the project at a less than 5%level of significance. The Local government project has a large area of jurisdiction and used more techniques than the other two projects as seen above. NARO like Sasakawa used four techniques but the farmers' perceived it as being 64% successful. The techniques included; group meetings method and, farmer discussion groups, farm visits, and formal discussion groups. Tinker (1994) too argued that for a technology to be adopted, it had to be profitable and possessed one or more of the following attributes: lower per unit expenditures on production inputs, increase output per unit input, produce more profitable crops and livestock, reduce capital expended on machinery, reduce crop and animal losses, and result into fuller use of available land, labour and capital.The relationships between adoption of time of climate smart technologies practices and

contact with agricultural extension staff were negligible, and the chi-square test was not significant (P>0.05). Results also revealed that there were little or no differences between the percentages of adopters and non-adopters with respect to contact with extension staff. For example, for correct time of harvest, the difference was 2.8 percent, while for correct stage of maturity, the difference was *0.5* percent. According to Ndegwa (2012), extension staffs have no influence on adoption of the above mentioned practices. It is possible that both the adopters and non-adopters were equally exposed to the available information only that non-adopters were not convinced of the advantages of applying the correct practices. It could also be that extension staff did not disseminate information on panting and harvest practices efficiently. There were low positive relationships between adoption of correct time of planting and harvest. In fact, in this study, some of the respondents revealed that when they do sort for example, many crops are sorted out as damage and that is a loss.

The implication of this finding is that availability of inputs is a factor influencing adoption of climate smart technologies. Also considering the percentages of adopters and non-adopters, there were more adoptersthan non-adopters for farmers who said that the inputs were available. The knowledge level of farmers on a number of issues concerning recommended planting and harvest practices was found to vary widely.

5.3.2 Access to Credit and Rural Household Livelihood

Some Financial institutions like Brac Uganda offer loans for dynamic smallholder farmers at the prevailing rate in the country which is high as per the responses of the farmers interviewed. This has limited a number of them from taking loans from financial institutions. This is in line with Muleba(2003) who states that financial institutions treat their clients as a unit and do apply the same lending policies throughout. This helps the system maintain credibility before the public. In

this circumstance, his study established that lending policies like interest rates and demand for collateral security were limiting the ability of farmers to borrow from financial institutions. This is inline with Mougeot (2014) who noticed that some farmers fail to take loans from lending institutions due to high interest rates and demand for high collateral security.

It was observed that the lack of access to credit for the poor is attributable to practical difficulties arising from the discrepancy between the mode of operation followed by financial institutions and the economic characteristics and financing needs of low-income households. For example, lending institutions require that smallholder farmer's borrowers have a stable source of income out of which principal and interest can be paid back according to the agreed terms. Similarly Muleba (2003) notes that lending policies limit lending by commercial institutions. However, the income of many farmers is not stable, regardless of its size. This is in line with Mlozi (2014).

It was observed that just handing money to farmers and giving them access to financial assets and resources creates a new set of challenges for farmers.

Study findings also established that financial institutions rates of interest are applicable with no lower or upper limits. The scheme aims at stimulating smallholder farmer farms by removing some of the constraints on financial institutions lending to the sector. The client provides 25% of the security for the loan while the guarantee fund provides the remaining 75%, thus helping to distribute the risk of lending.

The findings revealed that it is the criterion of creditworthiness that delays loan processing and disbursement, and the government approach to preferential interest rates which resulting in non-price credit rationing. The findings also revealed that financial institutions have limited the amount

of credit available to smallholder's farmers due to limited credit worthiness. This is in line with Muleba (2003) who states that MFIs will be hesitant to lend to small entrepreneurs not because of the size of their scale of operation but because of the level of creditworthiness amongst this group.

5.3.3 Market Information and Rural Household Livelihood

Findings revealed that smallholder farmers often face constraints when they want to access markets or when they want to improve their competitiveness in markets (Mlozi, 2014). Market access and competitiveness relate to the options farmers have to sell their products and purchase inputs (Lynch, 2013). Smallholder farmers often have low market access as compared to their larger and more capitalized colleagues. According to Tinker (1994), barriers to enter into markets can be related to physical limitations in reaching the market, such as poor roads, restrictions on international trade, or to minimum product characteristics required. These barriers mean that a certain market does exist, but that smallholder farmers are hindered in selling their products in that market. In most developing countries, institutions (e.g. insurance) that can alleviate risks are missing or weakly developed as a result smallholder farmers are exposed to high market risk (Muleba, 2003). In many cases, smallholder farmers are not yet positioned to compete and access better paying markets and many will be left behind if they are not properly organized.

Findings further revealed that smallholder farmers usually sell their produce to intermediaries, often at a low price. However, innovations in marketing arrangements can transform market relations in favour of smallholder farmers (Lynch, 2013). Producer organizations and cooperatives are well-positioned to take advantage of these new opportunities that may incorporate smallholder farmers into high value chains. In addition to filling in the gaps created by market imperfections, collective action can open up new marketing opportunities for smallholders by introducing innovations to existing value chains or creating entry ways into new markets (Tevera, 2012). For

example, creating new demand for traditional products through processing and value-adding activities has proved to be an innovative route to higher prices, such as through design of a branding strategy and awareness for agricultural products from smallholder farmers. Farmers can participate in high-value markets by obtaining the required food safety certifications, which otherwise would be inaccessible to them individually but as groups or cooperatives to enhance them to easily access markets (Tinker, 1994).

In Mbarara District informal markets, for instance, smallholders often find their prices undercut by produce that informal traders buy from large-scale commercial farmers. Supermarket chains, on the other hand, provide a lucrative niche market for smallholders but these downstream linkages are limited to smallholders that meet product variety and quality standards (Muleba, 2003). Farm workers in the sector are becoming more impoverished as they are squeezed in agricultural labour markets and agro-food output markets. Other sectors of the rural poor, specifically smallholder farming and informal trading, face similar pressures as a result of the market-oriented restructuring of food and agricultural value chains (Lando, 1990).

Findings revealed that the problem of market access has also been due to lack of follow-up investments by smallholder farmers and government, coordination challenges among farmers and inadequate management of these farms. Farmers face enormous constraints in physically accessing markets (Tinker, 1994). Smallholder farmers lack resources such as business and negotiating experience and the collective organization to give them the power to interact on equal terms with stronger market chain actors (Muleba, 2003). In addition, farmers need more training in more profitable and sustainable agricultural methods. Many of these farmers spend up to twelve months producing fruits and vegetables and have to wait almost as long for a return on their investment. Because it is difficult to enter these long value chains this makes it difficult for the farmers to make

ends meet. Lack of investment in smallholder farming has been noted to be responsible for failure to guarantee a stable and sufficient supply of agricultural produce to markets (Mlozi, 2012).

Most smallholder produce has no clearly defined grades and standards and, therefore, fails to meet the consumers‟ demands. Findings revealed that farmers do not meet certain market grades and standards because the farmers lack the knowledge and resources to ascertain such requirements (Tevera, 2012). In addition, institutions for determining market standards and grades tend to be poorly developed in smallholder farm environments. Production assets such as tractors, machinery and vehicles to transport produce to markets are key requirements yet most farmers in Kashari, Bubaare, Bukiro , Kagongi, Kakiika, Kashare, Rubaya, Rubindi, Rwanyamahembe, Biharwe, Kakoba, Kamukuzi 13. Nyamitanga, Rwampara, Bugamba, Mwizi, Ndaija, Nyakayojo, Rugandouse bicycles to transport their produce to markets. Findings revealed that lack of value adding and agro-processing are parts of missing markets amongst smallholder farmers in marketing. Agricultural produce from smallholder farmers are usually are poorly packaged. With few exceptions, most smallholder farmers cannot add value to their produce because they do not know its importance or lack processing technology (Lando, 1990). Inability to add value to agricultural produce by smallholder farmers excludes them from profitable markets

5.4 Conclusions

On the basis of the study findings, a number of conclusions were made notably:

5.4.1 Extension Services and Rural Household Livelihood

Findings revealed that there is a positive significant relationship between extension services and rural household livelihood in Mbarara District. Findings revealed that three institutions are extensively carrying out extension services in Mbarara that Sasakawa, NARO and Local

Government. The three have used more than three extension methods to disseminate the climate smart technologies practices/agricultural practices to the farmers. Sasakawa used four extension techniques to reach the farmers. These included; group meetings in different communities under an extension worker, method demonstrations, farm visits and formal discussion groups. Group meetings were the most widely used and had a substantial relationship with the perceived success of the project at a less than 5% level of significance. Findings revealed that the Local Government Sub County based staff on extension services on the other hand used six extension techniques to extend the practices to the farmers.

5.4.2 Access to Credit and Rural Household Livelihood

Findings revealed that there is a positive significant relationship between access to credit and rural household livelihood. Financial Institutions rarely lend money to serve the needs of low-income small holder farmers in Mbarara save for farmers with big farms given that most of these borrowers lack collateral security. However, the income of many self-employed households is not stable, regardless of its size and this could be limiting the extension of credit to such a group of people. A large number of small loans are needed to serve the poor, but financial institutions prefer dealing with large loans in small numbers to minimize administration costs. Whereas some farmers in Mbarara may experience marginal improvements in welfare after the intervention of financial institutions and financial advise, there is also the issue of access the credit.

5.4.3 Market Information and Rural Household Livelihood

Findings revealed that smallholder farmers often face constraints when they want to access markets or when they want to improve their competitiveness in markets. Smallholder farmers often have low market access as compared to their larger and more capitalized colleagues. The small farmers access market information over the radio, mobile phones and through friends. In Mbarara District

informal markets, for instance, smallholders often find their prices undercut by produce that informal traders buy from large-scale commercial farmers. Most smallholder produce has no clearly defined grades and standards and, therefore, fails to meet the consumer's demands. Findings revealed that farmers do not meet certain market grades and standards because the farmers lack the knowledge and resources to ascertain such requirements. Production assets such as tractors, machinery and vehicles to transport produce to markets are key requirements yet most farmers use bicycles to transport their produce to markets. Findings revealed that Lack of value adding and agro-processing are parts of missing markets amongst smallholder farmers in marketing. Agricultural produce from smallholder farmers are usually are poorly packaged. With few exceptions, most smallholder farmers cannot add value to their produce because they do not know its importance or lack processing technology.

5.5 Recommendations

Basing on the study conclusions, several recommendations were made. The recommendations below were made on the basis of research objectives as provided in chapter one.

5.5.1 Extension Services and Rural Household Livelihood

Farmer groups should be encouraged in order to help the extension staff make wider coverage and take advantage of interpersonal communication. It is important for the extension staff to understand the purpose of the various extension methods and techniques, and the way in which these particular extension methods and technique is carried out. This will enable the extension staff to select the most effective combination of extension methods and techniques to promote the adoption of any new innovation. The methods and techniques however, should be appropriately used with respect to the stages of the conventional innovation adoption process stages to encourage interpersonal communication and competition among farmers. There is need to create appropriate information

channels among the farmers. This will be helpful in passing on pertinent and update information about new technologies for example newly discovered nonagricultural benefits to new technologies. Farmers need to be informed about newly discovered non-agricultural benefits of terracing.

5.5.2 Access to Credit and Rural Household Livelihood

A promising solution is to provide multi-purpose loans or composite credit for income generation, housing improvement and consumption support. The loans should be given at low interest rates since most of the farmers in Mbarara cannot afford loans at high interest rates. Free collateral security loans would best help in this situation, however many institutions are reluctant to give loans that are not secured. Eventually it would be ideal to enhance the creditworthiness of the poor women and to make them more "bankable" to financial institutions and enable them to qualify for long-term credit from the formal sector. The financial institutions should also collaborate with and facilitate the local government technical and extension workers to monitor and supervise their clients (farmers) in the areas where they operate. One of the crucial success factors is finance advise, it should be given to smallholder farmer borrowers freely hence before taking out a loan.

5.5.3 Market Information and Rural Household Livelihood

Additional source of income by farmers is a way for better source of information source choices. So, it is suggested to build up farmers, accessing credit through organizing well-functioning farmers group, strengthening cooperative and union are important. In addition, further study is needed to see cooperative and union in regarding with their potential and communication among farmers. It is advised making the institutional factors more conducive for better accessing and to reduce frequent movement of farmers through availing market information via radio and easy way of information delivering by mobile phone and manual/modern price ticker using knowledge

worker or farmers group. Better training service on mobile phone utilization enabled coffee farmers to have better market information. Therefore, it is recommended to diversify intensive training on how to use mobile phone to access daily market information

5.6 Limitations of the study

There were a number of limitations associated with decisions made regarding the methodology. They relate to the choice of participants, the type of data collected and the analytic process.

Another limitation was the time frame in which data was collected. The data constituted a snapshot of one point on the implementation continuum. Interviews date is limited in a number of ways including the limitations present in the questions themselves and also in the nature of the responses from participants. The participant's responses were based only on the questions that the researcher asked but there could have been more information through observation hence sometimes misleading information is given during interviews.

The researcher encountered some limitations during the study especially when it came to interviewing some respondents. Some were not willing to give information unless paid and at some instances, the researcher had to wait till late in the evening when the respondents are through with their work so as to interview them.

The study used a small sample and so it was not easy to generalize results. Adopting a mixed methodological approach required a lot of skills and reading about the two approaches which was not easy.

For the key informants, given their busy schedules, some interviews were rescheduled to fit their timetables, but these also sometimes failed. The research took slightly long to conduct particular interviews which delayed the study. There was also a problem of absenteeism by some of the

respondents at the designated place of carrying out the interviews. Therefore collecting data from them through the questionnaires proved to be a big challenge. In some instances, respondents wanted pay prior to providing information.

The researcher managed these problems by making use of the supportive team leader who in one instance was willing to introduce the researcher in person to the respondents a through sensitization of respondents on the importance and significance of the study. The Uganda Management Institute letter helped to allay any fears and doubts among some respondents. Efforts were made to maintain confidentiality of the responses. The absenteeism of some officials was tackled by frequent visits to their offices, and above all establishing good rapport. In general, the following measures were taken, aimed at reducing non-response for the initial mailing, an introduction letter on Uganda Management Institute logo was sent out and this emphasized academic relevance of this research project.

A summary of results was offered to the respondents, reporting on the main conclusions of the study. Five weeks after the initial mail out, a replacement questionnaire was emailed to all non-respondents (follow-up mail). Two weeks after follow-up mailing, remaining response received an email, asking them for the third and last time to participate in the survey and a replacement questionnaire added as an attachment. Even though the researcher knew very well that use of pre-notification was likely to affect the response rate, in this study, the respondents were not pre-notified as there was no adequate time to do so.

5.7 Areas for Further Research

This study should be replicated in a manner that compares farmers who have been exposed to the Horticulture programme and those who have not been exposed to the programme to find out if similar results can be obtained.

A study needs to be done to establish the role of institutions (Government Institutes, NGOs, Development organizations working with farmers) in encouraging proper use of climate smart technologies, and what their perceptions, problems and constraints in doing this work are. This would particularly give information on the kind of assistance and co-operation they need in order to ensure and enhance continued and proper use of the technology.

It could be important to carry out detailed study of costs and benefits to the farmer, of applying improved farming practices. Knowledge of the cost/benefit ratio involved in the application of the improved farming practices will be helpful to farmers. Astudy should be carried out to determine the existing interrelationship within the various extension methods and techniques.

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APPENDICES

Appendix: I: Questionnaire for District Employees and Local Leaders

SECTION A: Introduction

Dear Respondent**,**

Iam **May Atuhaire,** registration no. **15-MBA-00-KLA-WKD-0041** a student of Uganda Management Institute undertaking a Master's Degree in Business Administration. In partial fulfillment of the requirements for the award of a master's degree in Business Administration, I am undertaking a research titled the relationship between Agricultural Development Strategies and rural House hold livelihood in Mbarara District. The questionnaire provides a set of structured questions seeking responses on the topic as provided. Please be as objective as possible in filling this questionnaire. All responses provided will remain confidential; and will be used purely for academic purposes.

SECTION A: Background Information *(Tick Where Applicable)*

1. **Gender of Respondents**

Gender	Tick	
Male		1
Female		**2**

2. **Age Groups of Respondents**

Age group	***Tick***	
20- 29Years		1
30- 39Years		2
40- 49Years		3
Over 50 Years		4

3. **Highest Level of Education**

Education Level	**Tick**	
Certificate		1
Diploma		2
Degree		3
Post Graduate Qualification		4

4. **Respondents Marital Status**

Marital Status	Tick	Measure
Married		1
Single		2
Divorced		3
Separated		4

Widow		5
Others		6

SECTION B:

PART I- Please fill in appropriately, by ticking to rank the questions provided under each section, according to the scores provided; ***(5, 4, 3, 2 and 1)***

		SCORES				
		Strongly Agree	**Agree**	**Not sure**	**Disagree**	**Strongly Disagree**
		5	**4**	**3**	**2**	**1**
Section B1: Extension Services						
	Agricultural advisory services are extended to the farmers in Mbarara					
	New farming techniques have been taught to the farmers in Mbarara					
	The people responsible for extension services are well trained					
	The farmers do not pay for the extension services					
	Before in puts are given, farmers are educated about their use					
	Socio economic factors are limiting extension services in Mbarara					
	The extension workers from the District interact frequently with the farmers in Mbarara					
	The extension services are extended on programme in the entire district to ensure equal access					

Section B2: Access to Credit

	Financial institutions that offer agricultural loans are spread across the District	**5**	**4**	**3**	**2**	**1**
	The Financial institutions ask for low interest rates					
.	Credit can easily be accessed without collateral security by a farmer					
.	Farmers are educated on good use of the loans extended.					
.	Loans are given on time to farmers seeking to access credit					
.	The grace period for repayment of the principal is favourable to farmers					
	B3: Market Information					
.	Farmers in Mbarara are near the market source					
.	Market information is availed by government to the farmers					
.	Access to market information has enabled the farmers set the price for their products.					
.	The good road infrastructure has enabled farmers move to access market information					
.	The farmers are into cooperatives for easy access to market information					
.	Availability of modern technology has enabled farmers access market information					
.	There is able bodied leadership willing to look for market information and avail it in Mbarara District					
.	Farmers willingly invest resources to get access to market information even when the government cannot					
		SCORES				

		Strongly Agree	Agree	Not sure	Disagree	Strongly Disagree
		5	4	3	2	1
Section B4: Rural House Hold Livelihood						
.	Rural household income has improved in Mbarara					
.	There is improved food security in Mbarara					
.	There is improved food production in Mbarara					
.	The people are made aware of how to improve on their incomes					
.	The people are made aware of how to improve on food security					
.	The people are made aware of how to improve on food production					
.	The District AgriculturalDepartment has improved the lives of the people in Mbarara					

Thank you for your cooperation

Appendix II: Research Interview guide for District Employees, Local Leaders, Agricultural Officials

BY

MAY ATUHAIRE

REG: NO: 15-MBA-00-KLA-WKD-0041

Open Ended Questions

1. Comment on the existing Agricultural Development Strategies in Mbarara?
2. What are the challenges to these strategies in Mbarara District
3. What kind of extension services do farmers in Mbarara receive?
4. To what extent have these extension services been effective?
5. Comment on the view that farmers have access to credit in Mbarara
6. What are the challenges to credit access by farmers in Mbarara?
7. How best can the government help farmers have easy access to credit in Mbarara?
8. Comment on the view that farmers in Mbarara have access to market information
9. To what extent has the government availed market information to the farmers?
10. What are the obstacles to accessing market information by the farmers in Mbarara?

Appendix III: Uganda Management Institute Research Documentary Review List

1. Audit Reports
2. NGO Reports(those dealing with agricultural related services in Mbarara)
3. Annual Reports
4. MAAIF Annual Reports
5. District Agricultural Officers Reports
6. NAADS Reports

Appendix IV: Field Research Letter

Appendix IV: Introductory Letter