LOCAL COMMUNITY PARTICIPATION AND THE ADOPTION OF AGRICULTURAL TECHNOLOGY IN KAYUNGA DISTRICT, UGANDA

BARBARA KYAMPEIRE

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DECLARATION

1, Barbara Kyampeire, do hereby declare that this dissertation is my original work as a result of my personal effort and has never been submitted to any university or any other institution for any kind of award.

Signed----------

Barbara Kyampeire

REG NO: 09/MMSPPM/20/33

Date----------

APPROVAL

This dissertation has been written under our supervision and is submitted for examination with our approval:

Signature----------Date----------

Dr. David Onen

Supervisor

Signature----------Date----------

Dr**.** Gerald K. Karyeija

Supervisor

DEDICATION

This piece of work is dedicated to my parents, Dr Nathan and Dr. Emily Twinamasiko. It is through their tireless efforts that they built for me a strong foundation on which I stand now.

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My sincere appreciation goes to all people whose direct and indirect contributions made this study feasible. Special regards goes to my academic supervisors: Dr. David Onen and Dr. Gerald K. Karyeija whose inspiration and support in all ways kept me moving a step further. Special regards also goes to Dr. Nathan Twinamasiko who proof read my dissertation and made relevant changes. In another special way, my appreciation goes to the Kangulumira NAADS Sub County Coordinator, Sam Muroma who assisted me in identifying competent research assistants in data collection. Special regards also go to my research assistants, Esawu Kaka and Fred Bangirana who actively participated in the data collection. My appreciation also goes to the National Agricultural Research Organization (NARO) Management for contributing part of my school fees to complete the study. To you all, I say thank you!

TABLE OF CONTENTS

TITLE PAGE i

DECLARATION……ii

APPROVAL…….. iii

DEDICATION……iv

ACKNOWLEDGEMENT……..……v

TABLE OF CONTENTS……v

LIST OF TABLES…….…..…xi

LIST OF FIGURES……..…….……xii

ABSTRACT…….……xiii

CHAPTER ONE:1NTRODUCTION..... 1

1.0 Introduction..... 1

1.1 Background of the study 1

1.1.1 Historical perspective..... 1

1.1.2. Theoretical perspective 2

1.1.3. Conceptual perspective 3

1.1.4 Contextual perspective..... 6

1.2. Problem statement..... 7

1.3. General objective 8

1.4 Specific objectives 8

1.5. Research Questions..... 8

1.6 Hypotheses of the study 9

1.7. Conceptual Framework showing the relationship between variables 10

1.8. Significance of the study 11

1.9. Justification of the study 11

1.10. Scope of the study 11

1.10.1 Geographical Scope 11

1.10.2 Content Scope 12

1.10.3 Time Scope 12

CHAPTER TWO: LITERATURE REVIEW 13

2.0. Introduction 13

2.1 Theoretical review 13

2.2 Participatory planning and agricultural technology adoption 14

2.3 Participatory implementation and agricultural technology adoption 17

2.4 Participatory monitoring and evaluation……..4

2.6 Summary of the literature review 22

CHAPTER THREE: METHODOLOGY 23

3.0. Introduction 23

3.1. Research Design 23

3.2. Study population 23

3.3. Sample size and selection 24

3.4 Sampling techniques and procedure 24

3.5. Data collections methods 24

3.5.1 Data collection instruments..... 25

3.6 Validity and Reliability of instruments..... 25

3.6.1 Validity 25

3.6.2. Reliability..... 25

3.7 Procedure of Data Collection..... 26

3.8 Data Analysis 26

3.9 Ethical considerations and measurement of variables 26

CHAPTER FOUR: DATA PRESENTATION, ANALYSIS AND INTERPRETATION.....27

4.0 Introduction……..……27

4.1 Response rate……...27

4.2 Background characteristics of respondents.....…...28

4.3 Category of respondents…….....…… ..……28

4.4 Sex of respondents (adopters) ….....28

4.5 Sex of respondents (non adopters) ….....30

4.6 Age of respondents (adopters).....…...33

4.7 Age of the respondents (non adopters…….……....34

4.8 Education level of the respondents (adopters)……...35

4.9 Education level of respondents non adopters)….....37

4.10 Source of employment of respondents……..39

4.11 Employment of respondents (non adopters ……..……..42

4.13 Duration of employment (adopters) ……43

4.14 Duration of employment (non adopters) ……...49

4.15 Descriptive statistics on respondents' views over community participation in planning…..45

4.15 Descriptive statistics on technology adoption……....54

4.16 Descriptive statistics on respondents' views over community participation in implementation……..……53

4.17 Testing of hypothesis.....…..55

4.18 Descriptive statistics on respondents' views over community participation in Monitoring and Evaluation……...……56

4.19 Test of hypothesis……..……61

CHAPTER FIVE: SUMMARY, DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS…….63

5.0 Introduction…….....63

5.1 Summary……..…..63

5.2 Participation in planning and technology adoption…….……73

5.2.2 Participation in implementation ant technology adoption……73

5.2.3 Participation in monitoring and evaluation and technology adoption…….74

5.3 Conclusions…….……...…….74

5.3.1 Local community participation in planning and technology adoption……....74

5.3.2 Local community participation in implementation and technology adoption…….…….74

5.3.3 Local community participation in monitoring and evaluation and technology adoption.....75

5.4 Recommendations…….……...……75

5.4.1 Local community participation in planning and technology adoption…….76

5.4.2 Local community participation in implementation and technology adoption……..76

5.4.3 Local community participation in monitoring and evaluation and technology adoption….76

5.5 Contributions of the study……77

5.6 Areas for further research…….……..…..78

REFERENCES…….79

APPENDICES

APPENDIX A: Reliability……...….i

APPENDIX B: Interview guide……..ii

APPENDIX C: Questionnaire…….....ii

APPENDIX D: Focus group discussion guide……..…….iii

APPENDIX E: Picture of a farmer with pineapple suckers for planting…….....vi

APPENDIX F: Map of Kayunga District showing the study area….....vii

LIST OF TABLES

Table 4.1 Distribution of respondents (adopters) by sex….....28

Table 4.2 Distribution of respondents (non adopters) by sex…….……..…….30

Table 4.3 Distribution of adopters by age…….…….32

Table 4.4 Distribution of non adopters by age…….…….….33

Table 4.5 Distribution of adopters by educational level…..…...……35

Table 4.6 Distribution of non adopter by educational level……..…….37

Table 4.7 Distribution of adopters by employment…..……..……38

Table 4.8 Distribution of non adopters by employment…..…….……..40

Table 4.9 Distribution of adopters by duration of employment…….……42

Table 4.10 Distribution of non adopters by duration of employment……..……..44

Table 4.11 Descriptive statistics on participation in planning…….……..……46

Table 4.12 Descriptive statistics on technology adoption…….……49

Table 4.13 Testing of hypothesis on planning…….…….…….52

Table 4.14 Descriptive statistics on participation in implementation……...….53

Table 4.15 Testing of hypothesis……...…55

Table 4.16 Descriptive statistics on Monitoring and Evaluation (M&E)….…….56

Table 4.17 Test of the hypothesis…….…….……61

LIST OF FIGURES

Figure 3.1 Conceptual Framework showing the relationship between variables……..….9

Figure 4.1 Graphic illustration of adopters by sex…….....29

Figure 4.2 Graphic illustration of non adopters by sex……..……30

Figure 4.3 Graphic illustration of adopters by age….…….……..32

Figure 4.4 Graphic illustration of non adopters by age….…….…...34

Figure 4.5 Graphic illustration of adopters by education level…….....36

Figure 4.6 Graphic illustration of non adopters by educational level……...37

Figure 4.7 Graphic illustration of adopters by source of employment…….…….……....39

Figure 4.8 Graphic illustration of non adopters by source of employment…….…….…….....41

Figure 4.9 Graphic illustration adopters by duration of employment…….……...47

Figure 4.10 Graphic illustration of non adopters by duration of employment….……..…44

Figure 4.11 Participation in planning…….46

Figure 4.12 Technology adoption…….……..……72

Figure 4.13 Participation in implementation….……..……...……54

Figure 4.14 Participation in Monitoring and Evaluation….…….……..……56

ABSTRACT

This study investigated the influence of local community participation on the adoption of new agricultural technology in Uganda, using the case study of Smooth Cayenne Pineapples in Kayunga District, Uganda. The mechanism of adoption of new technologies is often not fully understood and this prompted the study. The study adopted a descriptive, co relational, survey design. The researcher used questionnaire survey, focus group discussion as methods of data collection. A total of 152 respondents including adopters and non-adopters of new technology for producing pineapples were selected from 8 farmer groups in Kayunga District. The results indicated that the participation of the community in the planning, implementation and the monitoring and evaluation of the adoption of the new technology for producing pineapples was low thus reducing the adoption of the new technology in the District. The researcher concluded that community participation significantly influences the adoption of new agricultural technology by members of a particular community. The study thus recommended that: first, there is need for maximum involvement of members of the community in the planning, implementation and monitoring of any new agricultural technology; secondly, there is need for continued sharing of information about new agricultural technologies being introduced; and finally, community members must be equipped with Monitoring and Evaluation (M&E) skills in order to make them monitor the progress made by the new agricultural technologies.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

This study was an investigation into local community participation and its influence on agricultural technology adoption in Uganda, using Smooth Cayenne pineapple in Kayunga district as a case study. Local community participation was conceived as the independent variable while technology adoption of Smooth Cayenne pineapple was the dependent variable. This chapter presents the background to the study, the statement of the problem, general objective, specific objectives, research questions, hypotheses, scope, significance, justification, conceptual framework and the operational definition of terms.

1.1 Background of the study

1.1.1 Historical perspective

Worldwide adoption of smooth cayenne pineapple is correlated with production which is at 13.5 million metric tonne per year and is growing by over 200,000 metric tonnes annually. The trend could be attributed to lack of local community participation for technology adoption. Globally, leading adopters of smooth cayenne pineapples are Thailand (1.7 million metric tonnes), Philippines (1.6metric tonnes), China (1.3 million metric tones) and India (1.1 million metric tonnes) (*ipd@ugandainvest.com*). Up to mid 1970s, some EU member countries and some states in the USA like Florida and Hawaii were the leaders in pineapple adoption of smooth cayenne. However, by 1975, Thailand took the lead. The United States is now ranked as the 14th largest

pineapple adopter, having dropped from a 13% share in global production to 2% (Teresa & Hakiza, 2002).

In Africa, leading adopters of smooth cayenne pineapples are: Nigeria producing 889,000 metric tonnes, Kenya 600,000 metric tonnes, Cote D'Ivoire 225,000 metric tonnes, and South Africa 167,724 metric tonnes (Uganda Export Promotion Board, 2004*).* In Uganda, the adoption of smooth cayenne pineapple has no clearly documented history, which could be attributed to declining levels in adoption as a result of limited local community participation. What is known is that it has traditionally been grown for home consumption until during the recent decades when the fruit assumed commercial importance in Kayunga, Luwero and Kasese districts (Uganda Export Promotion Board, 2004). It is now by far the most widely grown commodity in the fruit crop range and value chain in Uganda. Currently, pineapple production is estimated at 5,000 acres (2000ha) on 2,500 smallholdings in Kayunga and Luwero where pineapples are grown as a sole crop or intercropped with bananas. In Uganda, there are no large scale pineapple growers at the moment and pineapples are produced exclusively as a smallholder crop. Varieties of pineapples grown currently include: the small sized spiked (Sasilimu) also known as Queen Victoria variety and the large smooth Cayenne (smooth spike less leaves). This study investigated the influence of community participation on the adoption of the growing of the smooth cayenne pineapples.

1.1.2. Theoretical perspective

This study was guided by the adaptation theory advanced by Roger (1957). The theory classifies adopters of technologies into various categories. It is based on the idea that certain individuals are inevitably more open for adoption than others. It is also called diffusion of technologies'

theory. The theory states that the first group of people to adopt a given technology is called innovators, and the last people to adopt are called the laggards. Some scholars believe that technology adoption occurs in stages. Lilja and Ashby (2005) for instance, divided the technology adoption process into three stages; namely: planning, implementation, monitoring and evaluation (M & E). In the planning stage, technologies are identified and determined. The outcome of the decisions made at this stage is an array of potential technologies. Potential technologies are evaluated in the implementation stage, and decisions are made about which technology to implement, who does the implementation, where and how will it be done. Outcomes at this stage could result in mass distribution of the technology through building the awareness of recommended technologies for adoption, followed by monitoring and evaluation to determine the performance of the diffused technology

By using this theory therefore, the researcher believed that the involvement of community members in the adoption of new technology enhances the adoption of that technology. Thus, the theory was used to determine whether low participation of community members was responsible for the limited adoption of growing the smooth cayenne pineapple (SCP) in Kayunga District.

1.1.3. Conceptual perspective

Many researchers have conceptualized local community participation as a functional participation because it is concerned with increasing the efficiency and effectiveness of the existing technology processes. However, Okali et al. (1994), Mikkelsen (1995), and Ashby (1996) all stated that, local community participation is best looked at as "empowering". According to them, a community is a group of people who live in the same area or a group of people who share the same interest within the society. In this study, the people of Kayunga

District constituted the community of interest. Their participation was looked at in terms of their involvement in planning, implementing and monitoring and evaluation of adopting of smooth cayenne pineapple production.

Rahman A (2009) in her study states that participation is a process through which stakeholders influence and share control over priority setting, policymaking and recourse allocation. Most policies are taken without the benefit of citizens' involvement, to the detriment of communities. However, she states that decisions are always better if they can be brought to the decision-making table, as they know better their communities than agencies that are supposedly taking care of them.

While as Vergara (2002) states that participation is an approach for learning about and engaging with communities, the approach is used in identifying needs, planning, monitoring or evaluating projects and programmes. Whilst a powerful consultation tool, it offers the opportunity to go beyond mere consultation and promote the active participation of communities in the issues and interventions that shape their lives.Traditional, extractive research tends to 'consult' communities and then take away the findings for analysis, with no assurance that they will be acted on. It combines sharing of insights with analysis and, as such, provide a catalyst for the community themselves to act on what is uncovered. He emphasizes that the approach has been used, traditionally, with rural communities in the developing world. There it has been found extremely effective in tapping into the unique perspectives of the rural poor, helping to unlock their ideas not only on the nature and causes of the issues that affect them, but also on realistic solutions. It enables local people to share their perceptions and identify, prioritize and appraise

issues from their knowledge of local conditions. In the UK, PLA approaches are increasingly used in a range of community-based poverty-reduction and regeneration projects – wherever the active participation of the community is prioritized. By utilizing visual methods and analytical tools. Participation enables all community members to participate, regardless of their age, ethnicity or literacy capabilities.

A technology is an idea, object or practice that is perceived as new by the members of a social system (Mahajan and Peterson, 1985)

World health organization (2009) emphasizes that monitoring progress is an integral part of project management. It is a useful tool that does not make project management more difficult or more complicated. On the contrary, it pays in the long run to establish an effective system of monitoring. It is a way of managing projects better and smarter. Monitoring will save time and effort for the project manager and make project follow-up and reporting more effective. Monitoring is a way of knowing and understanding what is going on in the project and of being in control. The results serve as the basis for decisions with regard to the need for reprogramming and/or reassigning human and financial resources. It will provide relevant and timely information to top management on the progress and any difficulties encountered in the project. Monitoring is to be focused on the expected results level. The project document, and more particularly the annual work plans, constitutes the basis for monitoring project progress. Monitoring means comparing actual performance with plans. It includes two distinct but interrelated types of follow-up: technical execution of the project and financial expenditure related to the project. The two aspects of monitoring and reporting should be performed in a synchronized manner.

1.1.4 Contextual perspective

Internationally, Uganda's Smooth Cayenne Pineapple adoption is low and insignificant. Adoption has been varying in response to market demand. Between 1995 and 2001, the production data was between 6000-6800 hectares which was a reduction from 150,000 to 75,000 metric tons (Ministry of Agriculture Animal Industry and Fisheries, 2010). This large fall in the production of pineapples could be attributed to the lack of local community participation in planning, implementing, monitoring and evaluating of the introduction and growing of the new brand of pineapples. Given the interest and commitment which Uganda Government has recently shown in supporting the agricultural sector, it is very likely that consideration could be made to offer one of the schemes formerly owned by the government for fruit production.

In a conference presentation by Women's Economic Development Council held in Uganda in 2009, it was indicated that one key policy requirement in technology adoption was the participation of the local community. However, it was indicated that local participants often failed to express effective demand for new technologies. Usually, the lower income groups, with less influential politicians are left out un-served when new technologies are being introduced. In this study, the researcher felt that some community members of Kayunga District might have been left out during the introduction and implementation of the smooth cayenne pineapples; thus reducing the adoption of the growing of this crop in the district. The researcher thus set out to investigate the influence of local community participation on the adoption of new agricultural technology in Uganda using the case of smooth cayenne pineapple in Kayunga district.

Kayunga district which is currently the base of pineapple adoption by smallholder farmers still has large chunks of open land and water bodies that can provide water for irrigation. The district's climate is favorable for planting at anytime. Irrigation has the added advantage of planting anytime and early maturity harvest throughout the year (Uganda Export Promotion Board, 2004). Despite the above comparative advantages, farmers are not adopting the pineapple technology, leading to low incomes which further contribute to a decline in achieving the Millennium Development Goals (MDGs) of eradicating poverty. This study investigated why there has been low adoption of the new pine apple production technology in the district despite its numerous advantages.

1.2. Problem Statement

Participation of the local community is hypothesized to impact on adoption of new technologies. This is because participation at planning stage promotes needs assessment, priority setting and budgeting; while at implementation stage it helps in involvement of beneficiaries (Freeman & Mumba, 2005). At the Monitoring and Evaluation stage, participation helps to measure progress and act on results. In addition, local community participation provides learning platforms for all participants involved in Agricultural Research and Development (Freeman & Mumba, 2005). Extension workers and scientists acquire better understanding of what the local community demands and the local community gains confidence in the collective power which they can use to demand for new agricultural technologies of their own choice (Freeman & Mumba, 2005) .In 2000-2009, Kayunga district started a horticulture programme of Smooth cayenne pineapples and availed 2,172,786 pineapple suckers to only 102 lead farmers out of 1000 farmers who adopted the technology. This constitutes only 10.2% which is very low. The above scenario was

escalated by a mealy bug pest which invaded pineapple plants. One farmer said he lost up to about 20,000 pineapple plants to the pest within only three months and anticipated losing more plants if the local community participation in monitoring was not enhanced by researchers and extension workers in controlling the pest. The researcher felt that if the above scenario persisted, adoption of smooth cayenne pineapples would slacken and the production of the crop would deteriorate. This prompted the researcher to investigate the influence of community participation in the adoption of new agricultural technology.

1.3. General objective

The purpose of this study was to investigate the influence of local community participation on the adoption of new agricultural technology in Uganda using the case study of Smooth Cayenne Pineapple (SCP) in Kayunga District.

1.4 Specific objectives

The study was guided by the following objectives:

1. To establish whether participatory planning has an influence on the adoption of Smooth Cayenne pineapple technology in Kayunga district.
2. To find out if participatory implementation has an influence on the adoption of Smooth Cayenne pineapple technology in Kayunga district.
3. To establish whether participatory Monitoring and Evaluation (M&E) has an influence on the adoption of Smooth Cayenne pineapple technology in Kayunga district.

1.5. Research Questions

This study was guided by the following research questions:

1. What is the influence of participatory planning on the adoption of the Smooth Cayenne pineapple technology in Kayunga district?
2. What is the influence of participatory on the adoption of the Smooth Cayenne pineapple technology in Kayunga district?
3. What is the influence of participatory Monitoring and Evaluation (M&E) on the adoption of the Smooth Cayenne pineapple technology in Kayunga district?

1.6 Hypotheses of the study

The hypotheses of the study were;

1. Participatory planning has a significant positive influence on the adoption of new agricultural technology.
2. Participatory implementation has a significant positive influence on the adoption of new agricultural technology.
3. Participatory Monitoring and Evaluation has a significant positive influence on the adoption of new agricultural technology.

1.7: The Conceptual Framework

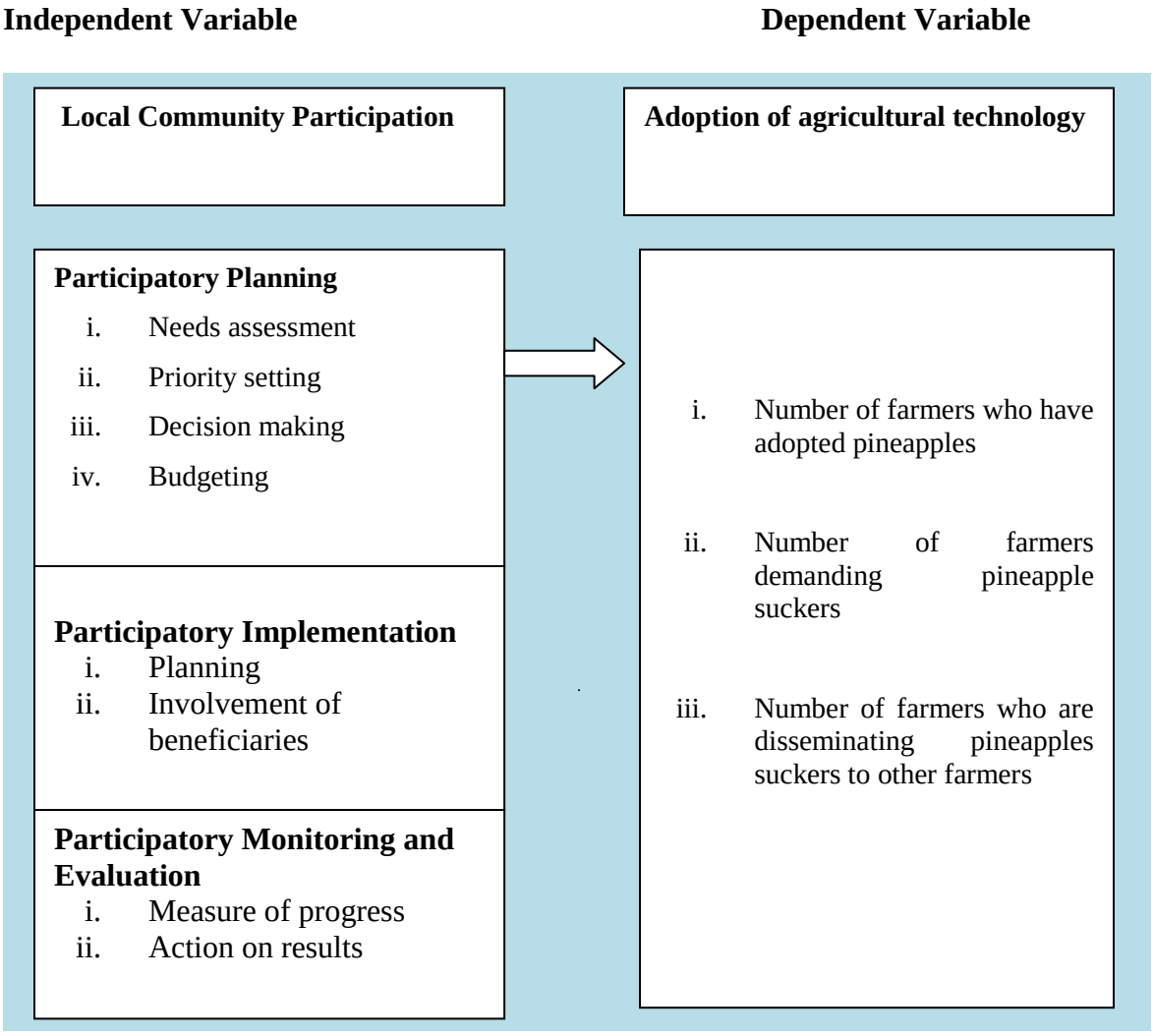

Figure1: Conceptual Framework showing the relationship between local community participation and adoption of agricultural technology

Source: Adopted from Freeman, (1984), Mumbo, (2005), Xiaojin & Jing (2006), Rogers (1975)

The study focused on local community participation which has been operationalised under the dimensions of participatory planning, implementation, monitoring and evaluation as the independent variables and agricultural technology adoption dimension as the dependent variable. Many to one relationship has been used to explain the indicators of dependent relationship as number of farmers who have adopted the production of pineapples, number of farmers

demanding pineapple suckers and number of farmers who are disseminating pineapple suckers to other farmers. The framework illustrates that if the local community actively participates in development activities, high levels of agricultural technology adoption will be achieved.

1.8. Significance of the study

It was anticipated that positive results of the study would be of value to the following parties. First, Agricultural Research and Development Actors (R&D): The research findings could be utilized by researchers on community participation to enhance adoption of agricultural technologies. Secondly, to the Policy makers**:** This study could help them in pinpointing out better strategic policies to curb down the dissatisfaction among technology beneficiaries in Uganda. And finally, the academicians**:** the research findings would add to a body of knowledge in the areas of research planning, implementation and monitoring and evaluation

1.9. Justification of the study

There is great need to understand what goes on for a technology to be adopted. This study revealed that technology adoption can be influenced by participatory planning, implementation and Monitoring and Evaluation. The study also filled the knowledge gap following the fact that there were still limited studies in this area.

1.10. Scope of the study

1.10.1 Geographical Scope

Geographically, the study was carried out in Kayunga District located in the Central region of Uganda.

1.10.2 Content Scope

The content scope of the study was restricted to the independent variable of local community participation which included planning, implementation, monitoring and evaluation and dependent variable of agricultural technology adoption which included number of farmers who have adopted pineapples, number of farmers who are disseminating and demanding for pineapples.

1.10.3 Time Scope

The time scope of the study was within the period of 2006-2010 when the district started the horticultural programme of pineapples production but registered a declining trend in adopting the growing of the pine apple crop.

CHAPTER TWO

LITERATURE REVIEW

2.0. Introduction

The chapter presents the theoretical review, actual review on local community participation and agricultural technology adoption. The literature was reviewed objective by objective. It also presents the summary of the literature review highlighting gaps in the existing literature and then the conclusion. Literature review according to Sanders et al (2000) helps one to generate and refine research ideas.

2.1 Theoretical review

This study was guided by the Adaptation theory advanced by Roger (1957). The theory classifies adopters of technologies into various categories. It is based on the idea that certain individuals are inevitably more open for adoption than others. It is also called diffusion of technologies' theory. The theory states that groups of people to adopt a given technology are called innovators, and the last people to adopt are called the laggards. However Lilja and Ashby (2005) divided the technology process into three stages planning, implementation, Monitoring and Evaluation. In the planning stage, technologies are identified and determined. The outcome of the decisions made at this stage is an array of potential technologies. Potential technologies are evaluated in the implementation stage, and decisions are made about which a technology to implement, who does the implementation, where and how it will be done. Outcomes at this stage could result in mass distribution of the technology through building the awareness of recommended technologies for adoption followed by monitoring and evaluation to determine the performance of the diffused technology.

2.2 Participatory planning and agricultural technology adoption

Kerzner (1984) notes that because of a short duration detailed planning in general is described as the function of selecting the enterprise objectives and establishing the procedures and programs necessary for achieving them. Planning is determining what needs to be done by who and by when in order to fulfill ones' assigned responsibilities. Failure to involve technology beneficiaries is attributed to declining levels in technology adoption.

Over the last two decades the role of needs assessment in the planning of technologies and systems has increased in importance. Several factors attributed to this development include, questions that arise about the relative priority of different community needs. The focus is to ask about the new services that may be needed. There is acceptance in most jurisdictions that a range of community services is needed and technologies designed for people should be appropriately assessed and matched to meet their needs. However, information is needed to help decide how much of what type of that technology is required in a given community or region. The increasing use of technologies with potential for harm among the general population is due to decline in needs assessment analysis.

Johnson (2003) emphasizes that; different types of farmer participation at different stages of technology adoption can lead to different impacts. For example, participation at the needs assessment stage can influence overall project priorities, and help ensure that a project is appropriately focused from the start. Because of the implications for activities and budgets, sharing authority with the local community at this stage could enhance a sense of empowerment

and ownership of the process. Participation helps to identify the best technology for dissemination to the local community. If community gains training and experience in needs assessment its capacity for adoption can be substantially increased and hence technology adoption. Local community participation at needs assessment influences technology adoption to the extent that a technology can ‘‘sell itself. Participation would also be expected to influence outcomes. Local community participation at needs assessment of the research process can provide important information to technology innovators. At the needs assessment stage adopters learn about user priorities, technical knowledge and criteria for evaluating specific technologies, factors that conditions farmer’s awareness of new technologies.

Okello & Chongtrakul (2000) argue that, priority setting is simply one component in the larger process of creating and adopting a given technology at any level – institutional, national and global. At the outset, it is important for all stakeholders to realize that priority setting should not be seen as a "one time only" event; rather it is a dynamic and iterative process, where each step is influenced by the results of the work and thinking in preceding steps. The preparatory work in getting started includes elements such as the following. Identifying suitable leadership, raising awareness with stakeholders, agreeing on work plan and agricultural technology information.

Local community participation at priority setting of the research process provides useful feedback to innovators of a given technology that improves the relevance and appropriateness of the technologies and contributed to actual or potential impact of the research hence influencing technology adoption. Priority setting is associated with important changes in technology design that influences technology adoption. Empowering participation during priority setting is essential for strengthening the human capital of participants hence influencing adoption. Training and

intensive interaction with project researchers were key to strengthening technology adoption among participants.

Johnson (2003) argues that through empowering participation, impact-oriented Research and Development (R&D) actors should advocate for priority setting because it could reduce costs and contribute greatly to technology adoption among the user participants. Costs of participation for research rose when start up costs were incurred because project staff needed training in participatory approaches Finally, the limited participation impact during priority setting on National Agricultural Research Organizations that was observed in projects is worrying given their potential comparative advantage in on-farm adaptive research and extension that is believed to be a great influence on technology adoption. Johnson (2003) High staff turnover and incompatible incentives, e.g. no money for fuel to go to the field, resistance to change are also factors that can be observed during priority setting meetings with user participants.

Some studies have shown how this can be overcome when the institutionalization of participatory research methods becomes important to strategic decision makers in national systems Menter (2001), Lilja & Erenstein, (2002). More studies such as this that document the potential benefits and costs of participation will be useful. Influencing research policy and the motivation of researchers to incorporate participatory research approaches still requires convincing evidence that research effectiveness depends on giving intended beneficiaries a say in determining research agendas and that if a serious investment is made in developing capacity to use them, participatory approaches can provide a mechanism for holding down research costs.

Participatory budgeting is a process where all the people have opportunity to affect the allocation of public resources from local government perspective taking into account the sectoral priorities. Broadly speaking, the local and national government bodies arrange participatory budgeting to use information by the public in order to affect revenue and expenditure decision-making. Vergers (2002)

Participatory budgeting enhances technology adoption through (i) promoting public learning and active citizenship, (ii) achieving social justice through improved policies and resource allocation, and (iii) reforming the administrative mechanism Wampler (2000). The World Bank observes that increased participation in budgeting can lead to technology adoption. According to Wampler (2000) Participatory Budgeting has shown positive links between participation and technology adoption, Participatory budgeting have been exercised in a number of countries including Ireland, Canada, India, Uganda, Brazil and South Africa. Amongst them, Ireland has developed participation agreements in which the government and a range of stakeholders engage in extensive consultations on economic and social objectives. The idea of participation was developed in the mid 1980s aimed at coping with Ireland's recession (1980-87), high inflation, heavy public borrowing and deficit, and loss of manufacturing base Wampler (2000).This study found out that participatory planning influences technology adoption at 32.7%

2.3: Participatory implementation and agricultural technology adoption

Bamberger (1986) argues that awareness is showing that participation by project beneficiaries at implementation level brings greater ownership of objectives and encourages the sustainability of project benefits. Ownership brings accountability and objectives should be set and indicators selected in consultation with stakeholders, so that objectives and targets are jointly owned. The

emergence of recorded benefits early helps reinforce ownership and early warning of emergency problems allows actions to be taken before costs arise.

Participatory planning meeting is the first step of implementation phase exercise of any given endeavor. In the Sirajganj, Bangladesh, Project participatory meeting are organized in different steps. The Project has developed a kind of participatory planning system, which provides a process to prioritize schemes identified by representatives of all the people of the community. In November to January 2000 participatory meetings were held to form different committees, e.g. Ward Development Committee (WDC), Union Development Committee (UDC) and Scheme Supervision Committee (SSC) Participatory planning sessions were then held at ward level. These sessions were conducted by WDC, and then chaired by the (UDC) member. Union Facilitation Team (UFT) participated in the meetings.

The participatory planning process were based on the activities intended to establish rapport building with the communities which were further strengthened by participatory rapid appraisal (PRA) exercises undertaken at ward level. At the outset, a transect walk was usually undertaken for problem identification and rapport building. The ward-level participatory process that follows was usually a two- to three-day event generally involving between 200 and 500 people. In most of the unions the participants were divided into three or four groups for identification of problems and possible projects. There are generally separate groups of women to prioritize gender-sensitive schemes. This activity is called ‘mass gathering’. Participatory planning created local ownership and involvement in the implementation and adoption of a given technology. This included the provision of additional labor and finance for projects. (Case Study adopted from Community Engagements in Sirajganj project in Bangladesh, 2000)

Shamanay et al (2000) stresses that; Sirajganj Project in Bangladesh specifically took into account participation of women in adoption. Women's participation in decision-making process was ensured in the project implementation strategy. The female members chaired one-third of the WDCs. At least 30 per cent of the development schemes and corresponding funds were allocated for women. Women's participation in participatory project implementation processes was ensured because they were the key target beneficiaries and if they had been left out, it could have led to low adoption levels Participation of the other marginalized groups, e.g. youth, ethnic minorities, the disabled and other disadvantaged groups like elder citizens was considered as a priority on the project because studies have shown that it enhances technology adoption because they have a higher influence on the project, hence technology adoption.

Concerning the Sirajganj project the local citizens were invited in the committee formation, participatory planning sessions and open budget meetings to assert their opinions. In the case of the Hunger Project's open budget sessions all the people were invited by public announcement. The level of participation in these sessions was very high. All of the section of the society, e.g. the poor, women, elderly people, were equally vocal in the day-long open budget session. They raised their common problems that could be incorporated in the proposed budget hence ensuring adoption. All of the poor and other marginalized groups participate in monitoring of the scheme implementation. (Case Study adopted from Community Engagements in Sirajganj project in Bangladesh, 2000). This study found out that participatory planning influences adoption of new technologies at 3.9%

2.4: Local community participation in Monitoring/Evaluation and agricultural technology adoption

Monitoring is a management tool for tracking progress of ongoing projects. The basic idea is to compare actual performance with plans and to measure actual results against expected results. The monitoring function is an integral part of project execution. It is simply a way of making efficient project follow-up and to provide systematic, consistent and reliable information on project progress. Once in place, monitoring will save time and effort for the project manager and facilitate project follow-up and reporting. It does not make a project more complex – instead, it makes it more systematically manageable

Monitoring and evaluation are however different with respect to their timing and the aspects that they address. Evaluation is more occasional than monitoring and is typically undertaken "after the fact" analyzing the long-term Appraisal Evaluation ex ante Monitoring Ex-post evaluation ex post impact of an intervention. Monitoring, on the other hand, is done periodically during project implementation assessing project progress. The World Bank report of 2004 shows that there has been an evaluation in the field of Monitoring and Evaluation involving a shift away from traditional implementation based approaches toward new result based approaches. The introduction of a results based M&E system takes makers one step further in assessing whether and how goals are being achieved over time. This has also been proved as a complex concept which is not clearly understood Participation of stakeholders further enhances the quality of an appropriate follow up action. Thus participation is a central element in achieving objectives. I recent years participation has become a critical concept in development. Internationally donors, government and NGOs are insisting upon participatory approaches in assessing needs and

implementing programmes. In his recent book Whose Reality Counts? Robert Chambers (1997) describes the new approach which starts with peoples' knowledge as the basis for planning and change. In this study, findings indicate that local community participation in Monitoring and Evaluation influences adoption of new technologies at 7%. In other words when community participation increases the rate of adopting new technology also rises

Rohaya (1996) states that monitoring is a management tool for tracking progress of ongoing projects. The basic idea is to compare actual performance with plans and to measure actual results against expected results. The monitoring function is an integral part of project execution. It is simply a way of making efficient project follow-up and to provide systematic, consistent and reliable information on project progress. Once in place, monitoring will save time and effort for the project manager and facilitate project follow-up and reporting. It does not make a project more complex – instead, it makes it more systematically manageable. Monitoring serves the project manager in several ways: It provides information to be presented to national counterparts, and external financing partners at periodic meetings and in progress reports. It provides a basis for decisions on necessary modifications of the project: Resource utilization may be adjusted, priorities shifted and new activities introduced. Flexibility and agility in project management is enhanced. It helps the manager: to show results, to understand and explain to others what is happening in the project and why expected results are or are not achieved, to provide arguments for needed changes, and to build confidence with top management It improves the chances of serving the target population well, because the effect on the target population is analyzed reiteratively.

2.5 Summary of the literature review

The literature reviewed indicated that local community participation provides useful feedback to suppliers of a given technology through participation at planning, implementation and Monitoring and Evaluation (M&E) hence influencing technology adoption. Training and intensive interaction with extension workers were key factors to strengthening technology adoption among recipients.

CHAPTER THREE

METHODOLOGY

3.0. Introduction

The chapter presents the research design, study population, sampling size and selection, sampling techniques and procedures, data collection methods, data collection instruments, validity and reliability, procedures of data collection, data analysis and measurements of variables.

3.1. Research Design

The study adopted a descriptive, co relational, cross-sectional survey design. Justification for employing of a cross-sectional survey design was that data was to be collected from various respondents at a given point in time. The cross-sectional design has an advantage of being less expensive and takes a little time to conduct (Sekaran, 1994). Quantitative approach was used in computing percentages, mean and measures of variability, whereas Qualitative methods were used to provide detailed information about the subject of study and so helped the researcher to establish the patterns, trends and relationships among the study variables.

3.2. Study population

The study targeted eight farmers groups supported by NAADS in Kayunga District with the total number of 360 farmers who include those who had adopted and those that did not adopt Smooth Cayenne Pineapple. While some of these groups have rules and regulations or a constitution in place, their application is very weak and group cohesion and discipline is ineffective. It was noted that, groups form and adopt innovators ideas on an adhoc basis specifically to access the packaged development support programme for the duration of the project and disband thereafter.

Group disintegration rate is high and the problem of vision and sustainability is real. This has serious implications on NAADS approach to group formation, development and sustainability.

3.3. Sample size and selection

The sample size in this study was 186. This size was determined using Krejcie and Morgan's (1970) table for determining sample for finite populations. According to the table, if the accessible study population was 360, as it was in this case, then the sample size should be 186.

3.4 Sampling techniques and procedure

Sampling satisfies the basic law of probability and assures the researcher of an utmost representation of the total population within an accepted margin of error. In this study, both probabilistic and non probabilistic sampling was used. Stratified sampling techniques were employed to determine the category of farmers to be selected. Random sampling technique was used to ensure that relevant information is obtained from the respondents at equal chance. Lastly, judgmental sampling technique was used to allow the researcher to choose only the respondents who have the exposure that best fits the purpose used. It saves time and cuts down on cost

3.5. Data collections methods

The researcher used questionnaire survey method where primary data was collected from the original source (farmer groups) using a designed questionnaire. Secondly the researcher also used documentary review method to gather data gathered from published journals, research reports, textbooks, news papers, and internet data, to be use for the current purpose of the study. This was because it is a cheaper method of obtaining data for the research plus collaboration of data. Lastly the research used Observation method to note silent features among the respondents.

3.5.1 Data collection instruments

The researcher used a questionnaire while conducting a survey which consisted of open ended and close ended questions designed to obtain data on the respondent's background, farmers' level of participation in the 8 selected farmer groups which constituted of 152 individual farmers A questionnaire was preferred because of the big numbers of respondents. It was also cost effective and good for quantifying responses from a large number of respondents. Lastly the researcher also used a documentary checklist. The researcher used a documentary checklist on documentary method to review relevant literature related to the study

3.6 .Validity and Reliability of instruments

3.6.1. Validity

Validity is the accuracy and meaningfulness of inferences which are based on research results Mugenda & Mugenda (2003) In order to ensure validity of the instruments, the drafted questionnaires were given to the supervisors and colleagues for critical assessment. Coefficient of validity ratio was used i.e. CVR=ne-N/2/N/2 where n represents respondents saying YES and N represents total number. Where CVR=30/40=0.75

3.6.2. Reliability

Reliability is a measure of the degree to which a research instrument yields consistent results or data after repeated trials. (Mugenda & Mugenda, 1999) To ensure the reliability of instruments the researcher used Cronbach's Alpha Descriptive Statistics (Refer to appendix A)

3.7. Procedure of Data Collection

A letter of introduction was obtained from UMI introducing the researcher to the respondents. Then, the research pretested the research instruments developed with selected individuals to determine the validity of the questions. This was followed by clearing of instruments and then the researcher proceeded to data collection from the respondents

3.8 Data Analysis

After obtaining the data through questionnaires it was edited, coded, blank responses handled, coded, categorized and entered into computer software SPSS for analysis to generate mean, correlations and frequency distributions against the hypotheses. SPSS package was used because of its ability to handle diverse numbers of variables and test them. The researcher also used Pearson correlation to determine the influence between Participatory planning, implementation and monitoring and evaluation and adoption of new agricultural technologies. Data was presented in tables for easy interpretation. This was convenient because it distinguished between positive and negative correlation which helped the researcher to determine the direction of correlations. Lastly the researcher used content analysis to analyze qualitative data generated from focus group discussion and documents.

3.9 Measurement of variables

The researcher made use of the following ethical considerations, consent from respondents to conduct the research, no names of respondents on questionnaire, security of field questionnaires and not revealing responses-test. These were used to measure the relationship between the all the hypotheses

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.0 Introduction

This chapter presents data analysis and interpretation of the study findings. The data was presented according to the specific objectives and research questions. Descriptive data were presented in tables which showed frequencies and percentages of the respondents. The specific objectives of the study were; to establish whether participatory planning has a significant influence on agricultural technology adoption of smooth cayenne pineapple in Kayunga district; to find out if participatory implementation has a significant influence on agricultural technology adoption of smooth cayenne pineapple in Kayunga district; to establish the significant influence of participatory monitoring and Evaluation (M&E) on agricultural technology adoption of smooth cayenne pineapple in Kayunga district and to evaluate the moderating influence of gender on agricultural technology adoption of smooth cayenne pineapple in Kayunga district.

4.1 Response rate

The researcher targeted 186 respondents but out of the 186, only 168 subjects participated in the study. Out of 168 subjects 152 were given questionnaires and the rest participated in the focus group discussion. This gave a response rate of 90.3%. The researcher considered this a high response rate since Amin (2004) recommends that in a survey of a similar kind, a good response rate should exceed at least 70%. The researcher therefore believes that the findings of this study are valid and dependable.

4.2 Background characteristics of respondents

The study response consisted of farmers who adopted smooth cayenne pineapples and those that did not adopt. Results were presented using percentage, frequency tables, and correlation matrices. The correlation was guided by the directional hypothesis to enable the researcher subject the findings to statistical analysis**.** Background information on the respondents included age, farmer group, gender, marital status, educational level, employment and duration of employment. The purpose of collecting the demographic information on respondents was to help in establishing the respondents' sample characteristics and be able to form appropriate opinions about the research findings. A detailed questionnaire was given out to both categories of respondents.

4.3 Category of respondents

The respondents were selected from 8 farmer groups. Out of the 8 farmers groups the researcher selected categories of farmers who were engaging in growing of smooth cayenne pineapples, now called adopters and those who have not yet begun to grow the smooth cayenne pineapples, described here as the non adopters.

4.4 Sex of respondents

Table 4.1 Distribution of respondents (adopters) by sex

Gender	**Frequency**	**Percentages**
Male	49	57
Female	27	43
Total	76	100

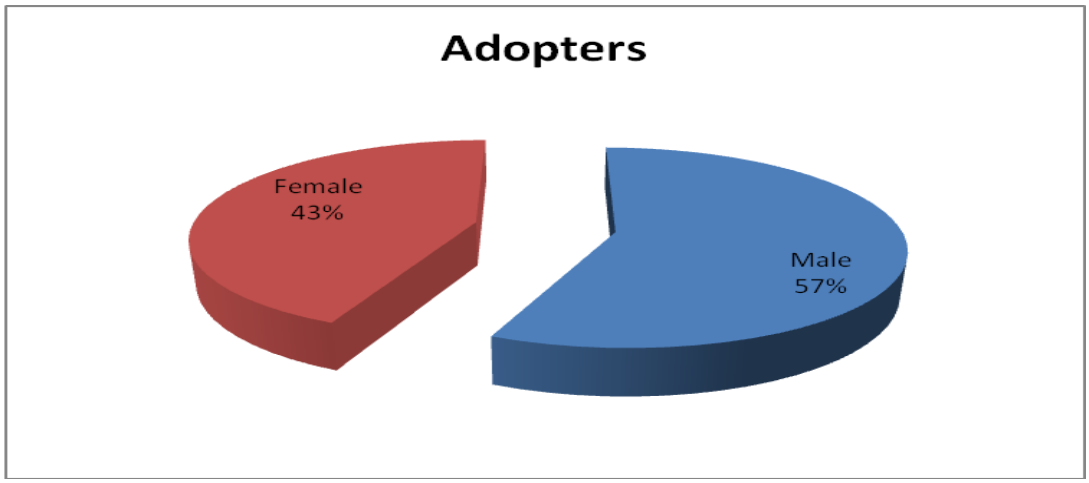

Figure 4.1: Graphic illustration of adopters by sex

Figure 4.1 shows that male adopters who participated in the research were 57% while as 43% were females. This indicates that female adopters were fewer compared to men. This could be explained by the fact that women adopt the growing of food crops and also crops that are not labour intensive. Pineapple growing is tedious to cultivate and requires big acres of land which is usually owned by men in the patriarchal societies where the research was conducted. However the number of men adopters could also be attributed to the fact that men are heads of families and key decision makers in families and societies and have high chances of attending different foras organized by extension workers prior to the adoption of new technologies compared to women. Women are limited by their reproductive role which is associated with staying home to look after the young ones hence limited in movements to participate in development initiatives.

Adoption of pineapple by both sex categories could also be influenced by the size of land families own and average crop yields, a major determinant of profitability which has been on a steady downward trend as a consequence of declining soil fertility resulting from intensified land use and poor soil management. Failure to apply proper agronomic and husbandry practices was

reported to account for low crop yields. Respondents noted that they could not apply recommended practices because they were not aware of them, expensive hired labor and attitudes towards farming. While labor was readily available, the cost of hiring labor was reported exorbitant and unaffordable to most of the farmers. However, it was noted that perceptions of high cost of hired labor were linked to low labor productivity and low total factor productivity which resulted into to low adoption

4.5 Sex of the respondents (non adopters)

The table below shows sex distribution by non adopters which was developed using SPSS to generate frequencies and percentages**.**

Table 4.2: Distribution of non adopters by sex

Sex	**Frequency**	**Percentages**
Male	42	55.2
Female	34	44.7
Total	76	100

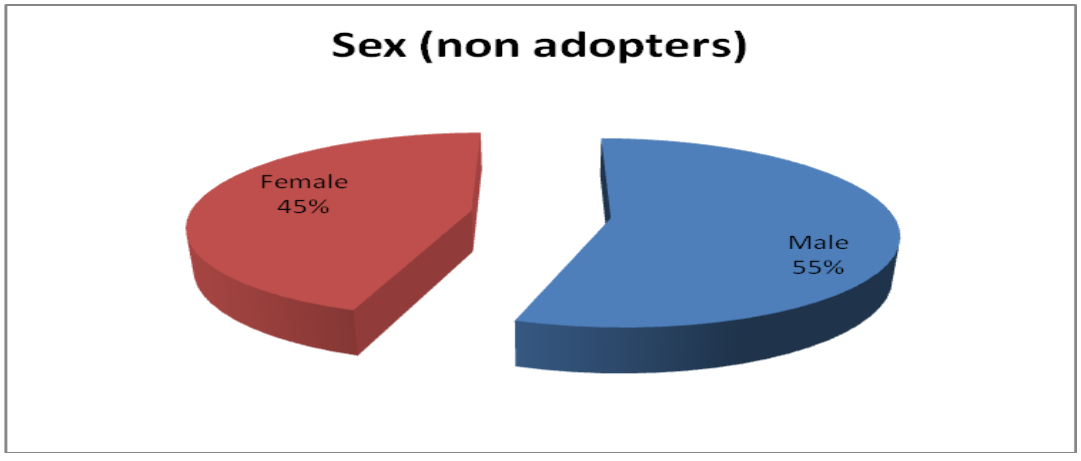

Figure 4.2: Graphic illustration of non adopters by sex

Figure 4.2 reveals that the number of non adopters who are men (55%) was more than (45%) of the female non adopters. Men carry out most off -farm activities like charcoal burning, and harvesting of forest timber. Women would be engaged in petty trade. In most households women non adopters suggested that they did not adopt pineapple production because of its cumbersomeness. Men predominantly did fishing with the help of boys during holidays and weekends. All categories of gender were involved in the processing of fish and marketing of fish at various levels. It was also noticed that these gender categories that did not adopt pineapples were engaged in the selling of local brew. Men also commonly owned cattle while women owned smaller stocks like goats, sheep, pigs and chicken. The selling of livestock was substituted with pineapple production hence a limitation in adoption of smooth cayenne pineapple.

Respondents also reported that pineapple growing was an expensive venture and this could also explain non adoption. Other related studies reveal that an estimated cost for preplant treatment (20 kg active ingredient/ha; a.i./ha) would be about $1,300 per ha and post-planting sprays (5 sprays of 2.4 kg a.i./ha prior to flower initiation) would cost about $1,160. Dr. Stirling states that because of cost and concerns for groundwater contamination, the most effective program should include surveying to first determine the need for nematode control. Nematode infestations vary across fields and farms and use of chemical controls should be based on nematode population densities high enough to cause economic damage. Current knowledge indicates that nematode populations in pineapple can be determined with sufficient accuracy so that a monitoring system will provide an adequate recommendation in at least 70% of the cases.

4.6 Age of respondents

The distribution of respondents by age group is presented in table 4.6 below. From the table below, the response rate was grouped in 5 categories to capture prospective respondents.

Table 4.3: Distribution of adopters by age

Years	Frequency	Percentages
Below 20 years	3	3.94
21-30 years	15	19.7
31-40 years	39	51.3
41-50 years	12	15.7
51-above	7	9.21
Total	76	100

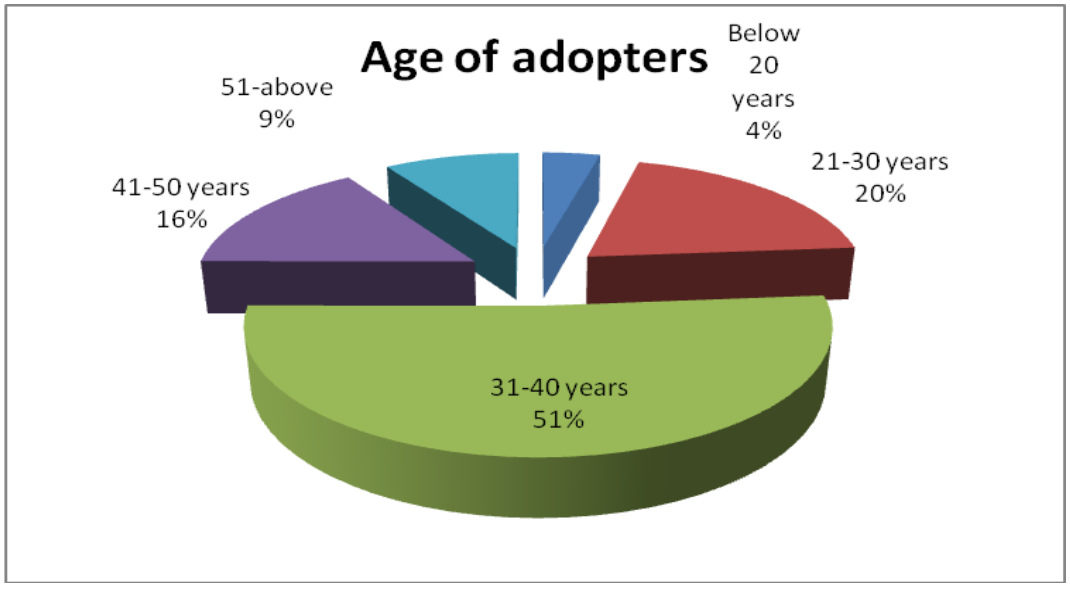

Figure 4.3: Graphic illustration of adopters by age

Figure 4.3 shows that the majority of adopters (respondents 51%) were between the age of 31-40 years and the minority (4%) was below the age of 20 years. Most of the respondents who were below 20 years were students who only engaged in pineapple growing during holidays to generate income for school fees and these were mostly single headed households. Respondents who were above 31 years of age were perceived as an active age for pineapple production which could explain the high numbers of adopters falling in that age bracket. Above 51 years is perceived as the retirement age where energy levels to engage in active agricultural production is limited which explains the 9% of the respondents who fall under that age bracket.

4.7: Age of respondents (non adopters)

To generate a frequency and percentage table, age category of respondents who have not adopted the growing of pineapples was distributed according to the five age brackets as indicated below:

Table 4.4: Distribution of non adopters by age

Years	**Frequency**	**Percentages**
Below 20 years	18	23.6
21-30 years	16	21.0
31-40 years	15	19.7
41-50 years	16	21.0
51-above	11	14.4
Total	76	100

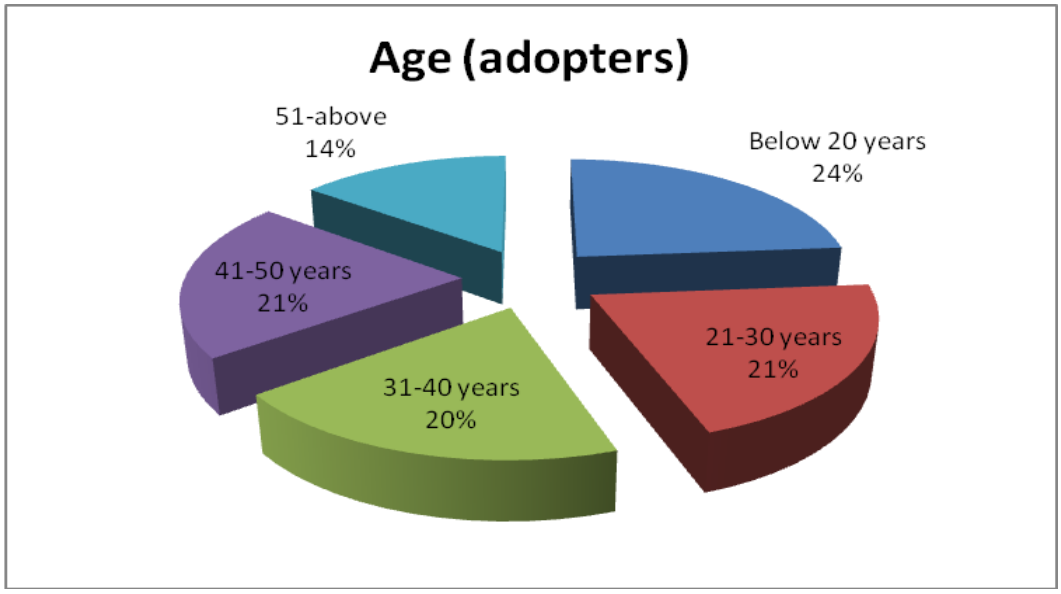

Figure 4.4: Graphic illustration of non adopters by age

Figure 4.4 indicates that 24% of the respondents were below the age of 20 years. These were mostly students who had never participated in pineapple adoption either due to agriculture not being popular among the youth or limited ownership of land. The results also indicate 21% of the respondents were between the ages of 21-30 years. This was perceived as an active age for engaging in pineapple growing but this was not the case as proved by the results. This category of respondents probably could be a new breed of energetic men who enjoy leisure activities like drinking and playing pool as opposed to income generating activities like engagement in pineapple production. A steady shift in rainfall confidence limits would also explain non adoption. However, due to declining soil fertility, intensified land use and poor agronomic practices, probably contributes much more in the trend of adoption.

The figure also indicates 14% of the respondents being above 51 years of age. This category of respondents had a very good understanding of the general soil fertility trend of the agricultural

ecological zone of Kayunga and reported that pineapples required fallowing, mulching and use of compost manure to boast the soil fertility declining trends hence a limitation to adoption.

4.8: Educational level of respondents (adopters)

Educational level of respondents ranged from primary to degree. Responses were generated and tailored to frequencies and percentages.

Table 4.5: Distribution of adopters by educational level

Educational level	**Frequency**	**Percentages**
Primary	17	26.0
Secondary	40	53.4
Certificate	6	8.2
Diploma	10	9.6
Degree	3	1.4
Total	75	98.6
Missing	1	1.4
Total	76	100

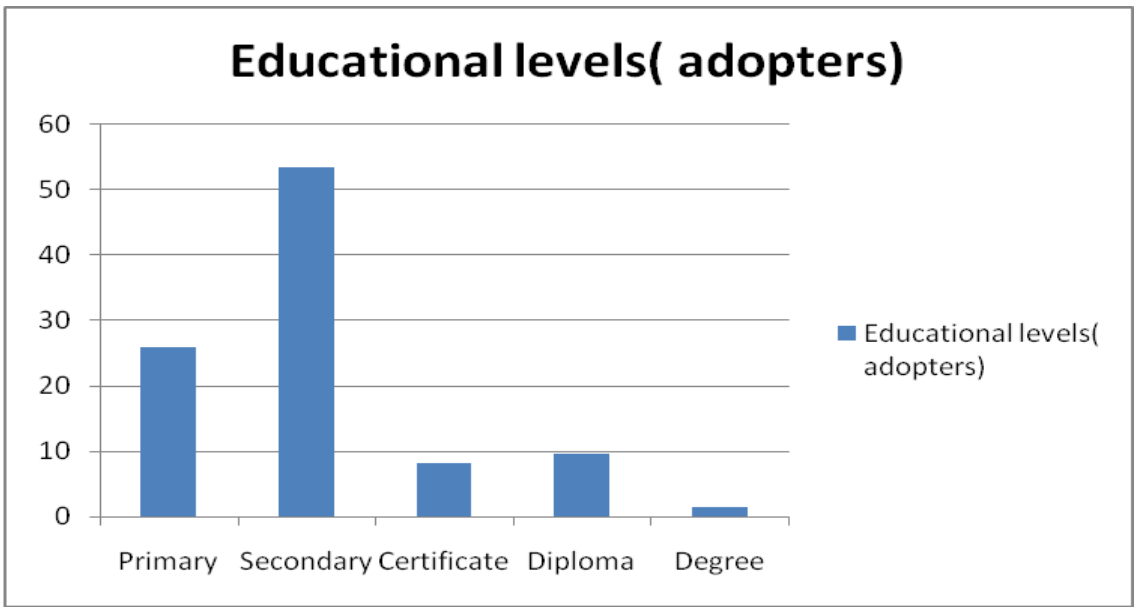

Figure 4.5: Graphic illustration of adopters by education levels

Figure 4.5 shows 53% this revealed that the more educated the less chances of adopting pineapple as a cash crop probably because pineapple production is not a dependable income generating activity and thus it can be substantiated with engagement in other business ventures like sell of general merchandizes which was reported to be a general business venture for those that had attained a degree. The results also revealed 1.4% of the respondents having attained a degree level. The number of adopters who had attained the lowest education level (primary) could be attributed to the fact that agriculture is a self learnt business which requires semiskilled labor. This is substantiated by limited agricultural technical institutes available within the county.

It was also noted that the less educated travel within a radial distance of 5kms to access the Parish-based technologies. The absence of any official policy to register or document service providers and their activities renders the farmers unaware of their existence, objectives, performance as well as the opportunities they offer. Some NGOs are invited on personal initiative to handle the plight of a specific community and this aggravates the problem.

4.9: Education level of respondents (non adopters)

Respondents were interviewed and grouped according to education levels to generate frequencies and percentages as indicated in the table below

Table 4.6: Distribution of non adopters by educational level

Educational level	Frequency	Percentages
Primary	3	3.95
Secondary	23	30.2
Certificate	11	14.4
Diploma	30	39.4
Degree	9	11.8
Total	76	100

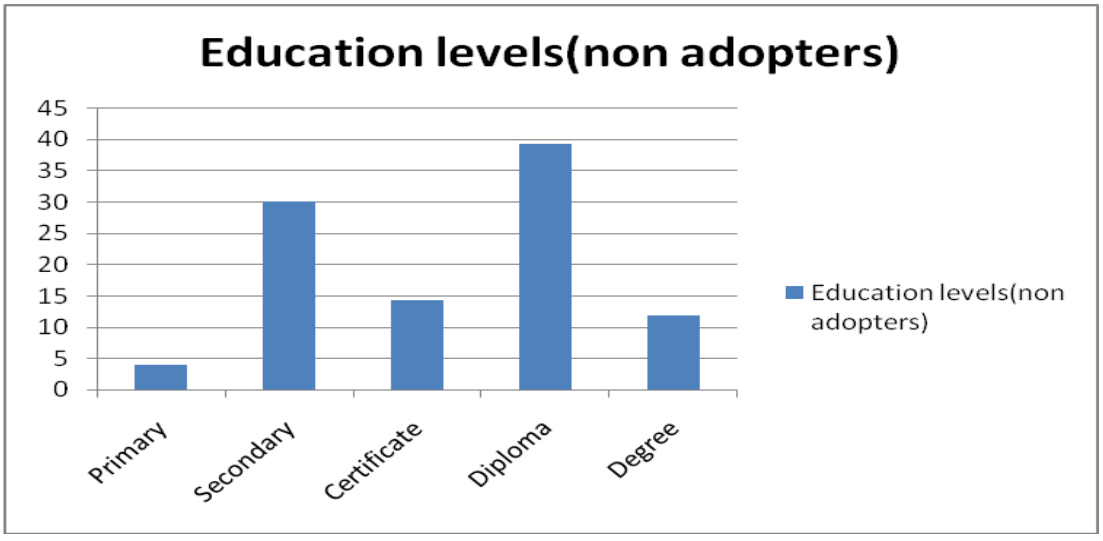

Figure 4.6: Distribution of non adopters by educational level

Figure 4.6 above shows 39% of the respondents having attained education to a diploma and the lowest percentage (3%) of respondents having attained primary level education this means. This means that the diploma level were involved in alternative enterprises which could not facilitate adoption of pineapples. Never the less it was reported by the non adopters that educational level had no major influence on adoption of pineapple growing. It was discussed in the focus group discussion that the education level that one needs is to be able to write ones' name and signature during training meeting organized by extension workers in a bid to promote pineapple and therefore production therefore adoption was by choice according to availability of land. It was also noted that respondents with high educational levels had no time to participate in training meetings because they were not quite aware when a new technology is being introduced in an area, hence limited adoption

4.10: Source of employment of respondents (adopters)

Respondents were employed by government, NGOs, self and others were student. The table below indicates distribution of adopters by employment

Table 4.7.Distribution of adopters by source of employment

Sources of employment	Frequency	Percentages
Government	8	10.5
Non government	9	11.8
Self employed	58	76.3
Student	1	1.3
Total	72	98
Missing	4	2
Total	76	100

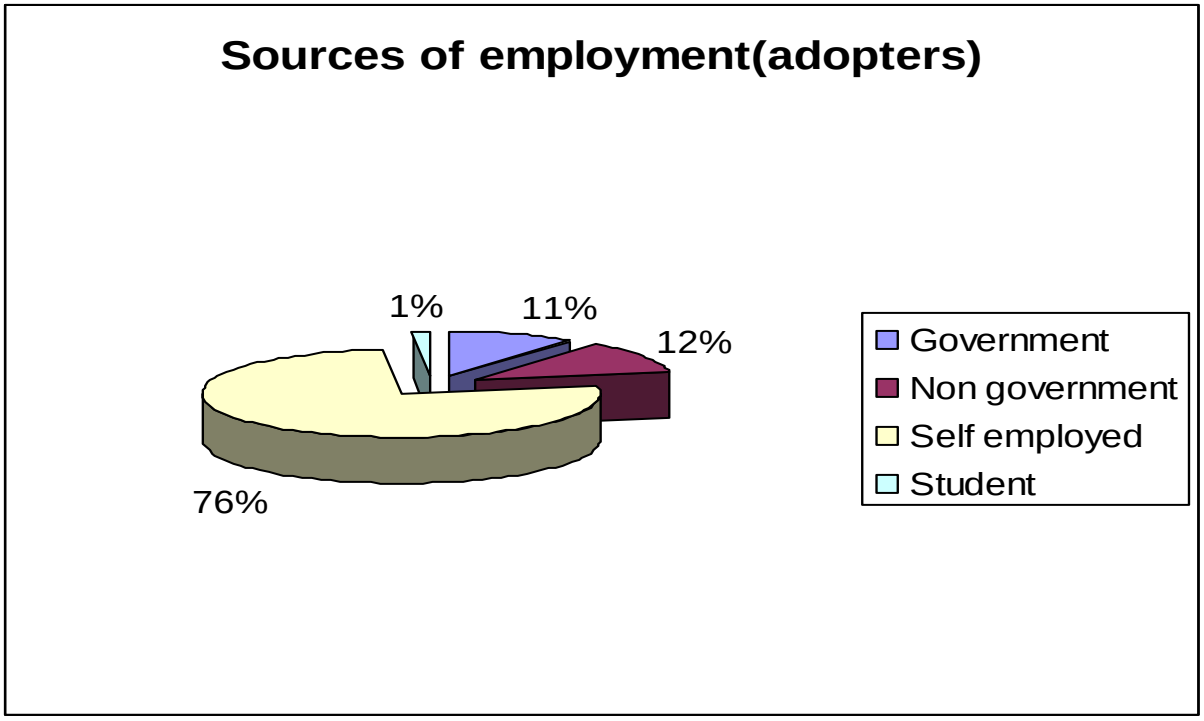

Figure 4.7: Graphic illustration of adopters by source of employment

Figure 4.7 shows the majority of respondents (76%) being self employed in retail business. This shows that pineapple growing was another added income generating activity. These respondents were too involved in small retail business including sell of charcoal and rearing of chicken. Self employed respondents were flexible to engage in pineapple adoption because they were administrators of their own business and could do any activity at will. Respondents (11%) who were employed by government had limited time to engage in pineapple growing .Results also indicated that 12% of the adopters who were employed by non government organization such as BUCADEF, UNFA, ICRAF had very little time for growing pineapples. Such employees were fully involved in multi-activities within their organizations that adoption of pineapples was on a small scale. This is witnessed by a smaller number of respondents (1%) who were growing pineapples. It was also noted that their salary scales were higher and there was no need to grow pineapples for income generation.

4.11. Source of employment of respondents (non adopters)

Table 4.8 below indicates distribution of adopters according to where they work to earn a living. These included government, Non Government Organizations (NGOs), self employment and students who were given funds in form of bursaries and scholarships by the school administration.

Table 4.8 Distribution of non adopters by source of employment

Occupation	**Frequency**	**Percentages**
Government	2	2.63
Non government	5	6.57
Self employed	12	15.7
Students	28	26.8
Total	29	28.1
Missing	0	0
Total	76	100

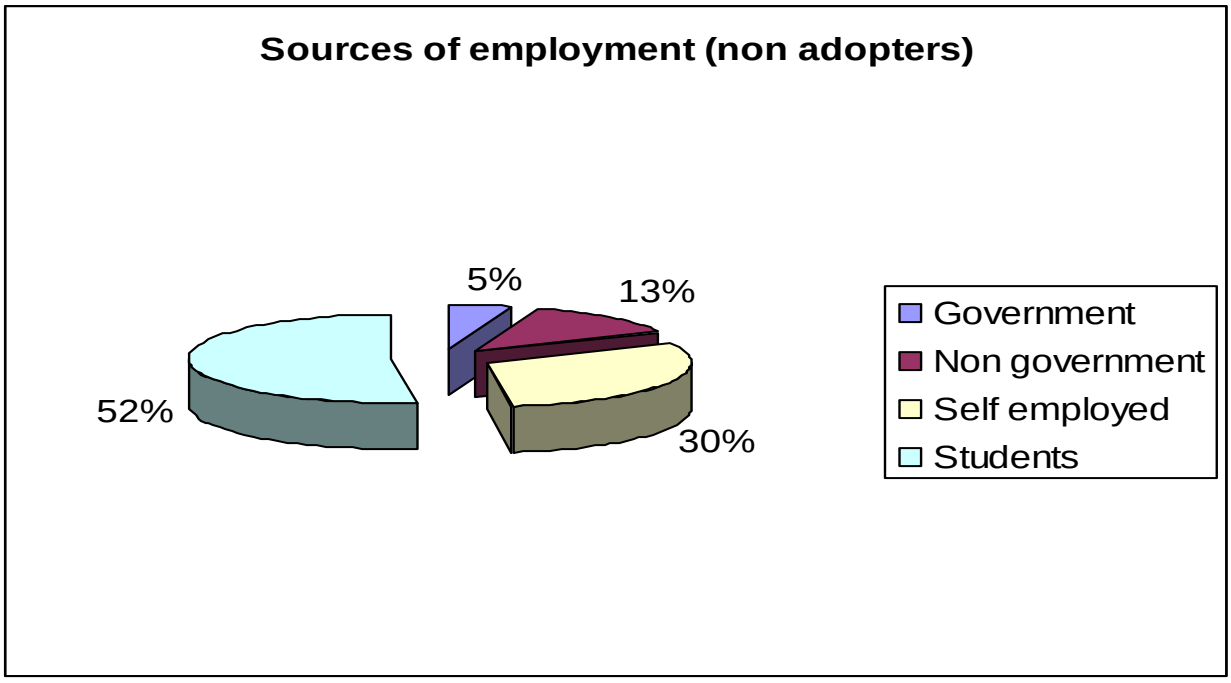

Figure 4.8 Graphic illustrations of employment sources of non adopters

Figure 4.8 indicates 52% of the respondents being students. This could indicate that they probably had no time to engage in pineapple growing. The variation in the cropping calendar when students are at school is a limitation to adoption. The data also shows 30% being self employed .This could indicate that they had retail business other than pineapple production. The fact that there are various crops grown in the Lake Victoria Crescent Zone crops like watermelons, passion fruits and palm oil which could have been alternative crops could have had a limitation on the adoption of pineapples. However various incidents were also reported during the focus group discussion that would limit adoption and these included unreliable rainfall, pests and diseases, laziness and theft of pineapples and poor health/old age of the farmers. Other incidences included hailstorms, limited land, and low yielding varieties. The data also shows 13% working in non government. This could indicate that such respondents lacked information about a new technology within the research area and it was reported as the major constraint.

4.12: Duration of employment of the respondents (adopters)

The table below shows the duration of employment of the adopters; data was analyzed using SPSS to generate cumulative frequencies and percentages.

Table 4.9 Distribution of adopters by duration of employment

Duration of employment	Frequency	Percentages
Less than one year	18	23.6
1-2 years	24	31.5
3 and above years	24	44.7
Total	66	99.8
Missing	10	6.6
Total	66	100

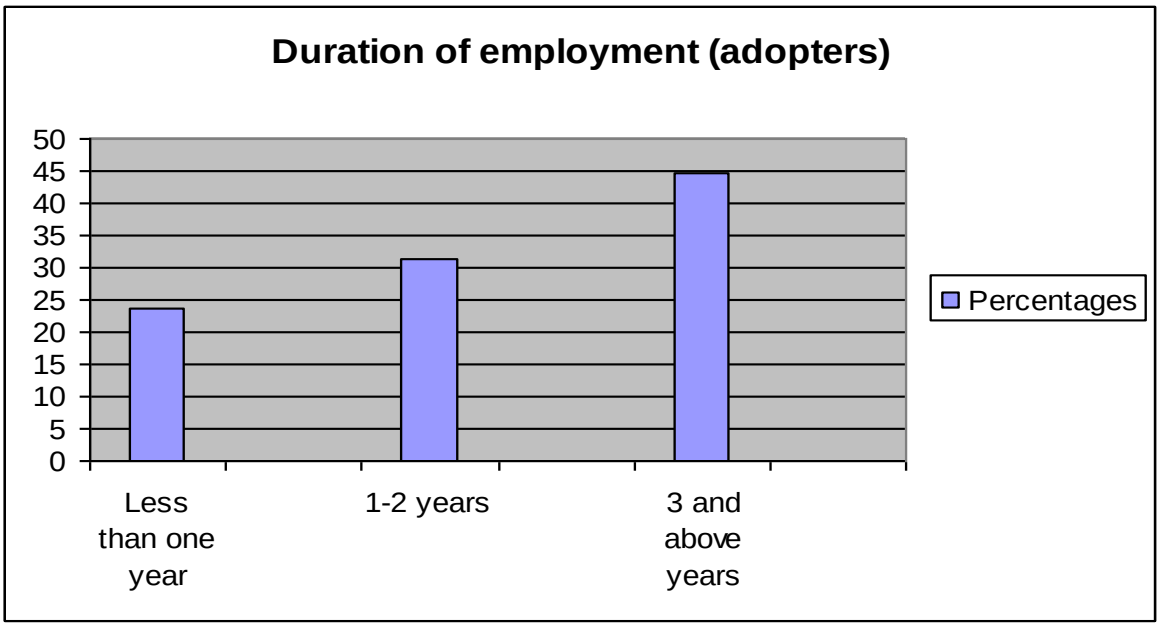

Figure 4.9 Graphic illustration of duration of employment by adopters

Response rate for duration of employment was grouped in 3 categories. The employment period ranged from 1 to 3 years and above. Figure 11 shows that 44% of the adopters had been employed for a period of 3 and above years. This could indicate that they had access to loans to handle costs involved in pineapple production. It could also imply that they had probably saved some funds to engage in pineapple adoption/ production and able to pay hired labor where family labor was insufficient. 31.5% of the adopters had an employment range of 1-2 years. This could indicate that this category lacked neighbors who had adopted the new technologies for them to be influenced to adopt. They could also have hard funding challenges. 23% of the respondents had less than one years of employment. They probably were reluctant to adopt new technologies. They had never seen with their own eyes .They preferred to adopt these technologies on a smaller scale because of costs incurred in pineapple adoption plus the availability of market and challenges of value addition. Some respondents openly confessed of their incapacity to genuinely select commercial enterprises based on their cost-benefit analysis, while nearly all key informants interviewed complained of lack of markets or their inability to penetrate existing markets.

4.13 Non adopters by duration of employment

The figure below indicates results of non adopters who participated in the research. They were distributed according to years of employment.

Table 4.10 Distribution of non adopters by duration of employment

Duration of employment	Frequency	Percentages
Less than one year	21	27.6
1-2 years	31.5	51.3
3 and above years	16	21.0
Total	66	100
Missing	0	0
Total	66	100

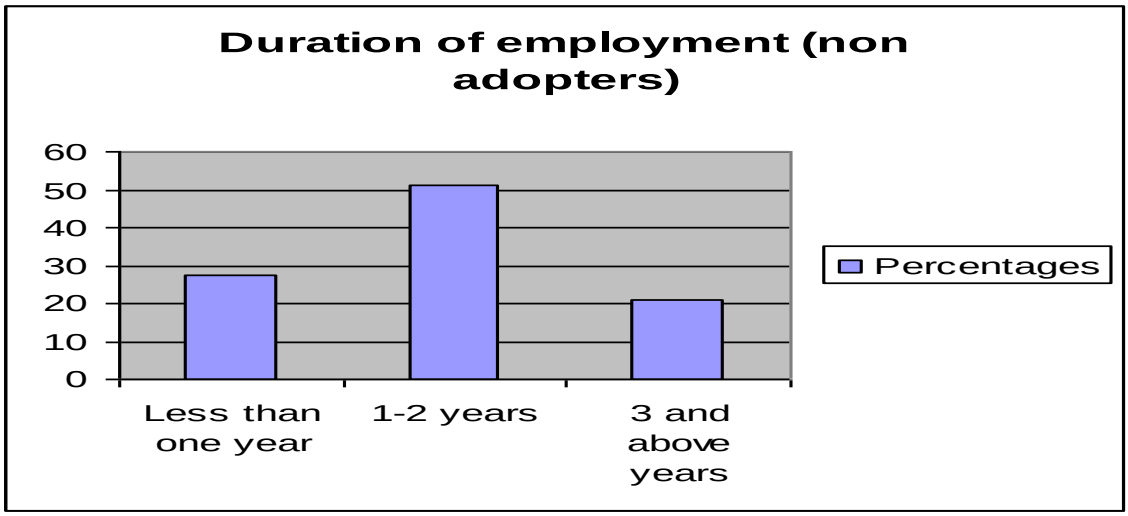

Figure 4.10 Graphic illustrations of non adopters by duration of employment

Figure 4.10 indicates the percentage of non adopters disaggregated by years of employment, 27% had less than one year of employment, 51% had been employed for 1-2 years, and 21% had been employed for a 3 years and above years. This indicates that the above categories of non adopters were probably constrained due to the demanding jobs they were employed in or the fact

that they had never had about smooth cayenne pineapples. They could also have been faced with insufficient capital, financial and human resource constraints. Closely related is the fact that extension workers could not have availed these smooth cayenne pineapple suckers for adoption. This category could also have found it hard to access the technology. Another constraint could have been environmental concerns that affect pineapple adaptation in Kayunga district which would have included prolonged drought, pests and diseases and low prices at marketing. Adopters usually learn more from those who have adopted new technologies with whom they can identify with. This group of adopters could probably have hard no neighboring farmers who had adopted the new technonology of smooth cayenne pineapples. It was also reported that some agricultural practices practiced in pineapple growing have a direct impact on human health, for example through pesticides which are harmful to humans.

4.14 Descriptive statistics on respondents' views over community participation in planning

Data was grouped into four categories from the respondents who strongly disagree and who strongly agree. It was therefore possible to derive the observed frequencies against the expected frequencies.

Table 4.11 Descriptive statistics on participation in planning

	Participation in planning	SA % (f)	A % (f)	D % (f)	SD % (f)	U % (f)
1	Local community participation in needs assessment has an influence on technology adoption of smooth cayenne pineapple	27% 41	44.7% 68	14.5% 22	6.6% 10	3.9% 6
2	Local community participation in priority setting has an influence on technology adoption of smooth cayenne pineapple	22.4% 34	44.7% 68	15.1% 23	8.6% 13	3.9% 6
3	Local community participation in budgeting has an influence on technology adoption of smooth cayenne pineapple	21.1% 32	54.6% 83	13.2% 20	7.2% 11	0.7% 1

Strongly Agree=SA, Agree=A, Disagree=D, Strongly Agree=SA, Undecided=U, Disagree=D

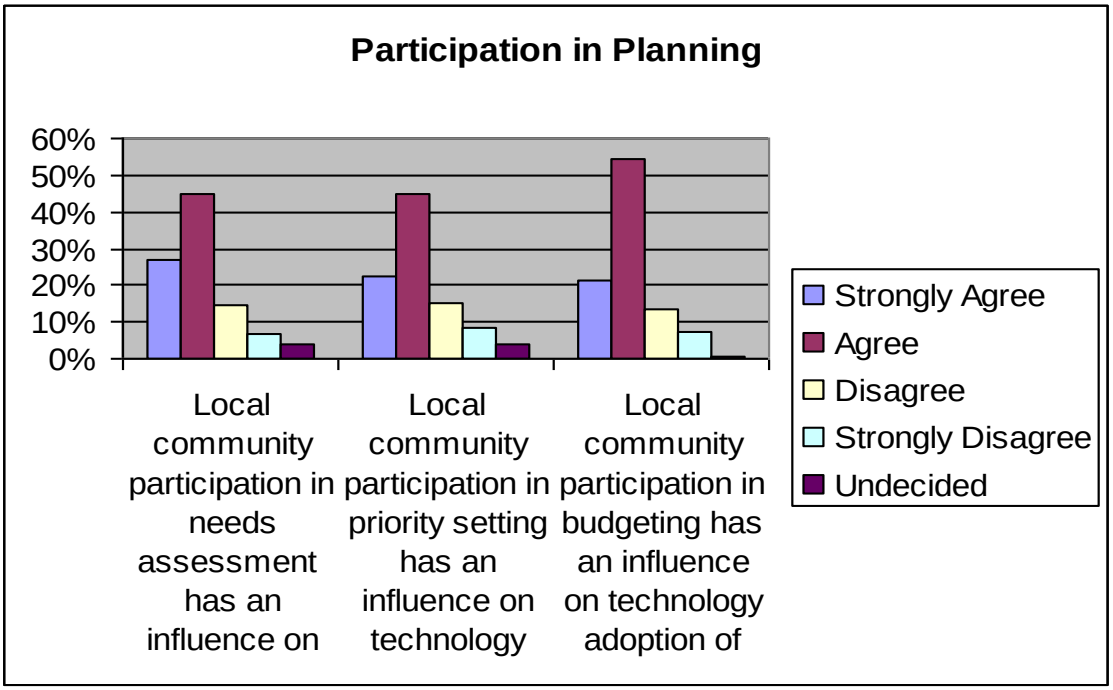

Figure 4.11 Participation in planning

Table 4.11 shows that 27% of the respondents strongly agreed that needs assessment influences technology adoption. This is an indicator that most farmers suffers from lack of knowledge and capabilities which impinges on their participation and bargaining power in spheres that affect farmers' livelihoods. These weaknesses derail farmers' development efforts and exclude them from the decision making process which influences the country's development path. On the other hand 44% of the respondents agreed. These were elite respondents who knew that participation in needs assessment resulted in community development whereas 14% disagreed. Such respondents could be weak in demanding what would be due to them and rejecting goods and services imposed on them. This means that the local community has to participate in needs assessment to effect adoption of technologies. This is supported by the highest number of respondents (44%) who agreed that participation in needs assessment has an influence on adoption. One member of the focus group commented in a very disappointing way *"how did they expect us to adopt the planting of pineapples without obtaining information to determine the current status and technology needs of us the target population".*

When information from the focus group discussion was analyzed it was observed that a total of 5 technological needs on pineapple as a crop were identified as sensitization and training on better agronomic practices, availability of pesticides and availability of planting materials. One participant from the focus group discussion informed the researcher that extention workers were not available to offer such a service to the local community hence their inability to adopt the growing of pineapples. Therefore, pineapple technological needs were constraining factors affecting pineapple growing

Figure 4.11 also shows that 22%, of the respondents strongly said participation in priority setting has an influenced on adoption The quantitative data is substantiated by one member of the focus group discussion who said that for adoption to succeed it calls for participation in priority setting to determine the priority areas of a community. The same table also indicates that 44% of the respondents agreed and this is supported by data from the focus group discussion which concluded that planning starts with analysis of priorities at all levels of management. The results also indicated that 15% of the respondents who disagreed that participation in priority setting did not influence adoption. This could be attributed to the fact that priority setting is an excise that is not clearly understood by so many extension workers therefore, it is always left out. One would also argue that participants who participated in the study did not probably understand the benefits of priority setting. Other related factors such as climate conditions becoming more hot and humid and post harvesting challenges are likely to increase. Farmers will have to prepare for new pests and diseases which have no natural predators which effect low adoption.

Figure 4.11 also indicates that adoption is influenced by participation in budgeting. This is substantiated by 54% of the respondents who agreed. The quantitative data above (54%) is substantiated by Wampler (2000) who concluded in his study that participatory budgeting has an influence on adoption of technologies and that it has been exercised in a number of countries including Ireland, Canada, India, Uganda, Brazil and South Africa.

4.15 Descriptive statistics on respondents' views on adoption of new agricultural technology

Indicators for the adoption of technologies were identified as the number of farmers who have adopted a technology, number of farmers demanding for a technology and number of farmers'

dissemination a technology. The researcher wanted to understand respondents' views concerning these indicators in regard to technology adoption.

Table 4.11 Descriptive statistics on technology adoption

	Technology adoption	**SA** **%** **(f)**	**A** **%** **(f)**	**D** **%** **(f)**	**SD** **%** **(f)**	**U** **%** **(f)**
1	The number of farmers who have adopted pineapples has an influence on technology adoption	30.3% 46	67.1% 102	0.7% 1	0.7% 1	0.7% 1
2	The number of farmers who are demanding pineapples for planting has an influence on technology adoption	63.8% 97	30.9% 47	2.0% 3	0.7% 1	2.0% 3
3	The number of farmers who are disseminating pineapples for planting has an influence on technology adoption	0.7% 1%	94.7% 144%	0.7% 1%	1.3% 2%	2.0% 3%

Source: Primary data

Strongly Agree=SA, Agree=A, Disagree=D, Strongly Agree=SA, Undecided=U

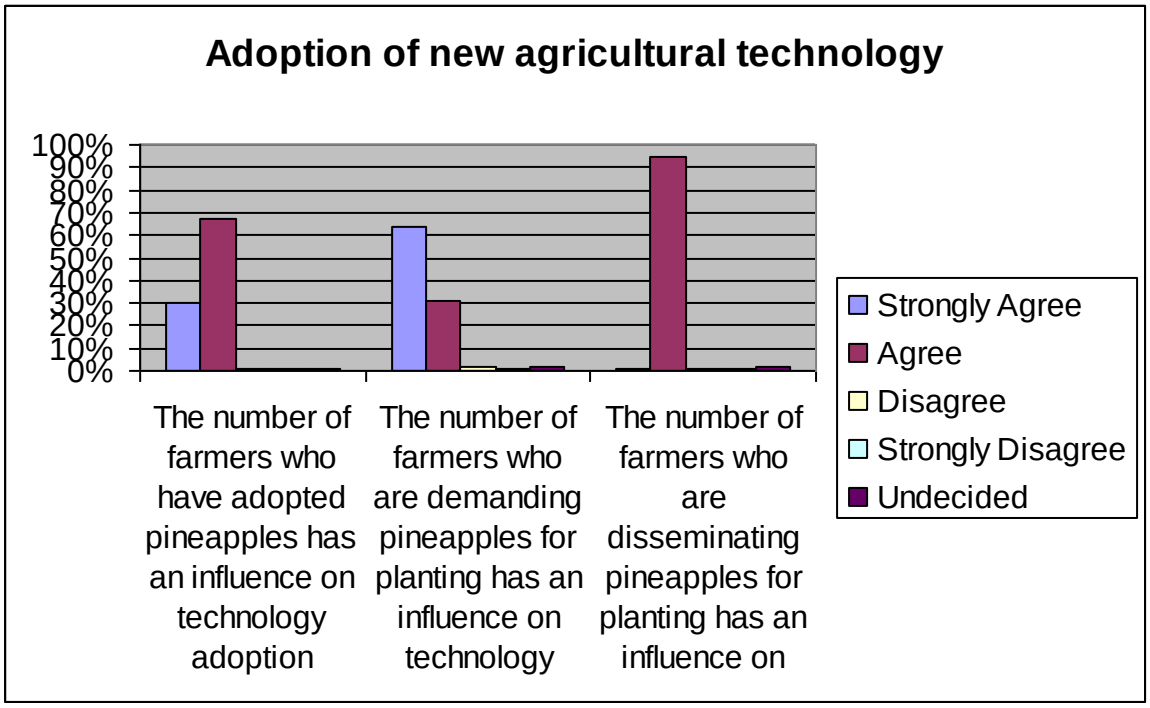

Figure 4.12: Technology adoption

One of the principal impact variables of NAADS intervention is adoption of improved and productivity enhancing technology and innovations. Where some adoption was observed, farmers were not adopting the full range of the package, but fragmented components of the technology.

Figure 4.12 shows that 30.3% of the respondents strongly agreed, the results show that farmers who have adopted pineapple influence others to adopt due to the fact that they probably sensitize other farmers about the benefits of a new technologies which could have an influence on adoption. However 0.7% strongly disagreed. This could mean that those who have the technology are mean and not disseminating suckers to other farmers for adoption

Figure 4.12 also shows 63.8% of the respondents who strongly agree that the number of farmers demanding pineapples have an influence on adoption. This shows that these respondents could have a multipliers effect on those that have not adopted probably when they get the pineapples they give out to other fellow farmers hence an influence to adoption. The table also shows 0.7% strongly disagreed this could mean that there is no direct correlation between farmers demanding for pineapples and adoption. However the same figure 4.11 also shows 94.7% of the respondents who agree that the number of farmers disseminating pineapples for planting has an influence on technology adoption. This shows that farmers who are disseminating pineapples to other farmers are facilitating the role of extension workers, where extension workers cannot reach these farmers are availing these technologies to other farmers hence and influence on adoption.

Respondents who had adopted pineapple growing also reported that they had hard trainings in agronomic practices with NAADS and understood the common source of planting materials which includes planting suckers produced by decapitation of vegetative plants and shoots produced below the fruit but on the fruit peduncle, sliplets produced by treating plants with chlorflurenol tissue cultured plants, and plantlets produced by vertical sectioning or vertical and horizontal sectioning of the stems of crowns, suckers, and plant and ratoon crop stems.

4.16: Test of hypothesis

To distinguish between negative and positive correlations which would help the researcher to determine the direction of hypothesis that says local community participation has a significant influence on technology adoption; data was subjected to Pearson correlation momentum for further testing. Results are shown in the table below:

Table 4.12 Test of hypothesis

Variables	Correlation definition	Local community participation in planning	Technology adoption
Local community participation in planning	Pearson Correlation	1	.572(**)
	Sig. (2-tailed)	.	.000
	N	148	148
Technology adoption	Pearson Correlation	.572(**)	1
	Sig. (2-tailed)	.000	.
	N	148	148

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

Table 4.12 shows that local community participation in planning has a significant positive influence on technology adoption of smooth cayenne pineapple. The results summarized above show a correlation coefficient of .572** between local community participation in planning and technology adoption. The significance (2-tailed) level indicates that the p-obtained (.000) was less than p-critical (.05). This indicates that local community participation in planning has a statistically significant positive influence on technology adoption. Thus, the directional hypothesis that local community participation in planning has a significant positive influence on technology adoption was upheld.

To determine the significant positive influence of participation in planning on technology adoption, the coefficient of determination (r^2) was obtained. At r=0.572, the r^2 was 0.327. This meant that community participation influences technology adoption at 32.7%. In other words

when community participation increases, the rate of adopting a new technology also rises by 32.7%.

4.17 Descriptive statistics on respondents' views over community participation in implementation

Raw data was analyzed using SPSS to generate the frequencies and percentages as indicated in the table below.

Table 4.13 Respondents' views over participation in implementation

	Participation in implementation	**SA** **%** **(f)**	**A** **%** **(f)**	**D** **%** **(f)**	**SD** **%** **(f)**	**U** **%** **(f)**
1	The local community participation in planning meetings at implementation has an influence on technology adoption	17.1% 26	42.8% 65	30.9% 47	2.6% 4	2.6% 4
2	Participation of technology beneficiaries has an influence on adoption	44.7% 68	32.9% 50	14.5% 22	5.9% 9	0% 0

Strongly Agree=SA, Agree=A, Disagree=D, Strongly Agree=SA, Undecided=U

Figure 4.13: Participation in implementation

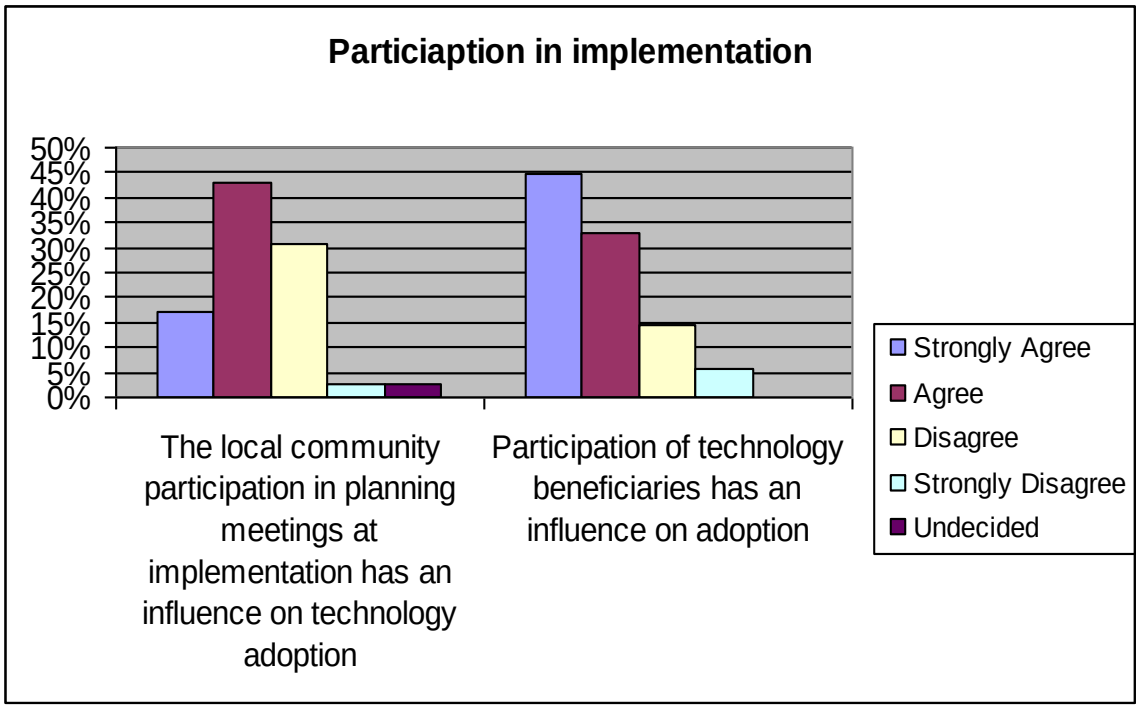

Figure 4.13 shows that the majority of respondents (42%) agreed that planning during implementation had an influence on adoption, 17% of the respondents strongly agreed that planning during implementation has an influence on adoption, 30% disagreed and indicated that planning during implementation had no influence on adoption whereas 2.6% of the respondents strongly disagreed that planning during implementation had an influence on adoption. In regard to the majority of respondents who agreed participation at this level is hypothesized to establish rapport building with extension workers which would influence adoption. It also creates local ownership and involvement in the implementation and adoption of a technology. Those who disagreed that participation at planning has no influence on adoption could probably have been used to a conventional approach where technologies are directly introduced into the communities by extension workers without engaging the community in a participatory approach.

Figure 4.13 show that 44% strongly agreed that participation of technology beneficiaries influences technology adoption. This means that participation at this stage empowers researchers and development partners. However 14% disagreed, this could be attributed to the fact that beneficiaries usually have a low influence to any development initiative The study shows that the majority of the respondents were in agreement that technology beneficiaries has an influence on adoption. Beneficiaries in this case include members of the household that had adopted the technology and non government organizations promoting the agricultural research technologies. Interactions during the focus group discussion revealed lack of beneficiary involvement in selection of on-farm technologies. Beneficiaries are not yet empowered or in position to drive the process of technology generation and development. There is, however an increasing trend, especially in Kangulumila Sub County to test and demonstrate technologies on farmers' farms.

4.18 Testing of hypothesis

When the data was subjected to Pearson's momentum correlation coefficient, the outcome further indicated that local community participation in implementation has a significant influence on technology adoption of smooth cayenne pineapple. Results are shown in the table below:

Table 4.14 Testing of hypothesis

Variable	Correlation definition	Local community participation in implementation	Technology adoption
Local community participation	Pearson Correlation	1	.198(*)
	Sig. (2-tailed)	.	.017
	N	146	146
Technology adoption	Pearson Correlation	.198(*)	1
	Sig. (2-tailed)	.017	.
	N	146	146

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

Table 4.14 shows that local community participation in implementation has a significant positive influence on technology adoption. The results summarized above show a correlation coefficient of .198* between local community participation in implementation and technology adoption. The significance (2-tailed) level indicates that the p-obtained (.017) was less that p-critical (.05). This indicates that local community participation in implementation has a significant positive influence on technology adoption. Therefore the directional hypothesis which states that participatory implementation has a significant positive influence on agricultural technology adoption was accepted.

To determine the influence of participation on implementation on technology adoption, the coefficient of determining (r^2) was obtained. At r=0.198, the r^2 was 0.039. This meant that

community participation influences technology adoption at 3.9%. In other words when community participation increases the rate of adopting a new technology also rises.

4.19 Descriptive statistics on respondents' views over community participation in Monitoring and Evaluation (M&E)

Participation in monitoring and evaluation was perceived as a determining factor that has a significant positive influence on technology adoption. Data was analyzed to generate frequencies and percentages of respondents, who strongly agreed, agreed, disagreed, and strongly disagreed as shown in the table below.

Table 4.15 Descriptive statistics on Monitoring and Evaluation (M&E)

	Participation in Monitoring and Evaluation	**SA** **%** **(f)**	**A** **%** **(f)**	**D** **%** **(f)**	**SD** **%** **(f)**	**U** **%** **(f)**
1	Local community participation on action on results during monitoring and evaluation has an influence on technology adoption	11.8% 18	44.1% 67	24.3% 37	10.5% 16	1.3% 2
2	Methods used for sensitizing the community about a new technology has an influence on technology adoption	9.9% 15	38.2% 58	28.9% 44	11.2% 17	3.3% 5
3	Local community participation in measuring of technology progress during monitoring has an influence on technology adoption	17.1% 26	45.4% 69	24.3% 37	2.6% 4	5.9% 9

Strongly Agree=SA, Agree=A, Disagree=D, Strongly Agree=SA, Undecided=U

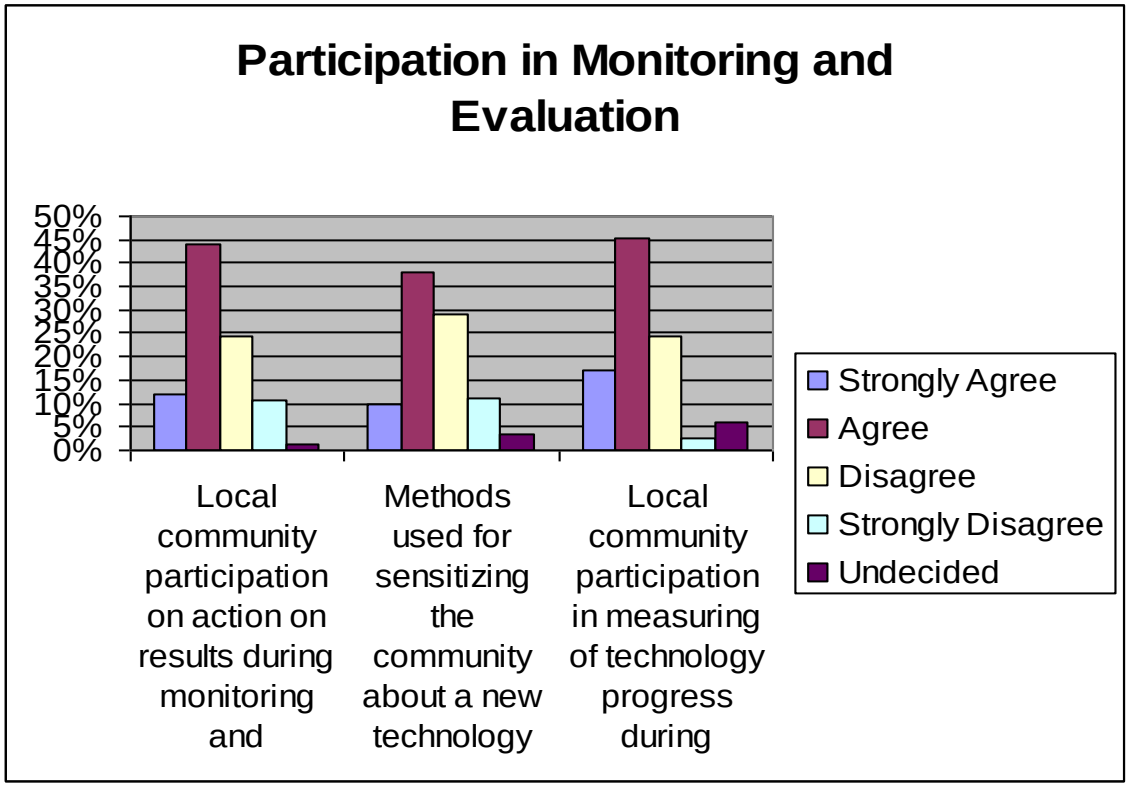

Figure 4.13: Participation in Monitoring and Evaluation

Figure 4.13 shows 11% of the respondents strongly agreeing that local community participation in monitoring of results and taking action has an influence on adoption. This means that in terms of capabilities, this seems to be the major hindrance affecting the quality of respondents. Quality is looked at in this case in terms of respondents' ability to actively participate in evaluation of technology constraints. The figure also shows 41% of the respondents agreeing, such respondents could probably have witnessed the benefits of participation in monitoring and evaluation together with extension workers. However 24% disagreed and this could be attributed to the common use of conventional approach where actions are taken by either extension workers or scientists without full participation of the user communities.

Figure 4.13 also shows results of respondents who participated in the research further indicating 58% agreeing that methods used to sensitize the community influences adoption and 44% disagreeing that there is no influence between the two variables. Methods used to sensitize the community reported in the focus group discussions included use of flipcharts to write, complicated language especially use of English which is not understood by a group of community members especially those that did not attain any education level. Developing brochures that are not translated using the local language to promote smooth cayenne was not conducive enough to facilitate adoption. The results above were further investigated using Pearson correlation to determine the influence between methods used to sensitize the community and technology adoption.

Figure 4.13 also shows that 17% of the respondents strongly agreed that participation in measuring of progress with research and development actors has an influence on technology adoption. This shows that these respondents had probably participated in measuring of progress with extension workers and had seen the benefits it has on adoption. The highest % of respondents agreed (45%) This means that, they believe they have the right to a share in national resource allocation and its accountability, the right to participate in decisions that affect the farming community, 24% of the respondents disagreed, this could mean that these respondents have never seen any extension worker measuring technology progress with the local communities therefore they had no idea of the benefits of participation at this stage. Indicators of quality of extension include: frequency and intensity of contact between extension as a system and the farmers, and logistical support provided to staff. Periodic and well orchestrated assessment of attainment of these indicators is a necessary condition to effect adoption.

Results from the focus group interactions with respondents, show that the main approaches used by the field extension workers in delivering extension messages is through group discussions, whereby the community and extension staff evaluate constraints and achievements. Physical farm visits are done and information from Local Councils (LCI) and contract farmers is used to evaluate progress. Visits to demonstration sites provide evidence of work done and progress reports are prepared. Auditors from the district and other funding agencies also carry out sport verification checks

According to the Extension Workers interviewed, job morale has been on a steady decline for many years now. As one Extension Worker in Kangulumila Sub County emphasized that he is not satisfied by the fact that they (Extension Workers) have never received any kind of formal or specialized training in the last two years, and yet new challenges are coming up as farmers' information needs change. There is inadequate facilitation in terms of fuel and allowances, training kits and working tools. The salary scales are low (U5b-3) and there are no job promotional avenues. District based and directed performance monitoring is hitherto ineffective to effect adoption of technologies According to one of the extension officers in the district. Physical performance monitoring is neither frequent nor intense as it is only done in selected project sites due to lack of logistical support in terms of transport and fuel. Physical monitoring at the Sub-County level is still inadequate. Some staff lack vital skills to enable them to actively participate in the monitoring of extension service delivery. Human resource development has been given less attention and staff motivation is still low which has had influence negative on technology adoption.

4.20 Test of the hypothesis

Data was further subjected to Pearson correlation definition to measure the variables of community participation and monitoring and evaluation and technology adoption as indicated in the table below

Table 4.16: Test of the hypothesis

Variables	Correlation definition	Local community participation in Monitoring and Evaluation(M&E)	Technology adoption
Local community participation	Pearson Correlation	1	.278(**)
	Sig. (2-tailed)	.	.001
	N	145	145
Technology adoption	Pearson Correlation	.278(**)	1
	Sig. (2-tailed)	.001	.
	N	145	145

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

Table 4:16 indicates results which show that local community participation in monitoring and evaluation has a significant positive influence on technology adoption of smooth cayenne pineapple with a correlation coefficient of .278(**). The significance (2-tailed) level indicates that the p-obtained (.001) was less that p-critical (.05).This indicates that local community participation in Monitoring and Evaluation (M&E) has a significant positive influence on technology adoption. Therefore, the directional hypothesis which states that Participatory Monitoring and Evaluation (M&E) has a significant positive influence on agricultural technology adoption of Smooth Cayenne pineapple in Kayunga district was accepted.

To determine the influence of participation in Monitoring and Evaluation (M&E) on technology adoption, the coefficient of determining (r^2) was obtained. At r=0.279*, the r^2 was 0.077. This meant that community participation influences technology adoption at 7%. In other words when community participation increases the rate of adopting a new technology also rises.

CHAPTER FIVE

SUMMARY, DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter presents summary of findings, discussion of results, conclusions and recommendations. The study objectives included to establish whether participatory planning influences the adoption of agricultural technology of Smooth Cayenne (ATASC) pineapple in Kayunga district, to find out if participatory implementation influences adoption of agricultural technology of smooth cayenne pineapple , to establish whether participatory monitoring and evaluation (M&E) influences adoption of agricultural technology of smooth cayenne pineapple, to evaluate the moderating influence of Gender on adoption of agricultural technology of smooth cayenne pineapple.

5.1 Summary

With regard to local community participation in planning and technology adoption: Pearson's moment of correlation coefficience indicated that local community participation in planning has a significant influence on technology adoption of smooth cayenne pineapple. The test using Pearson correlation analysis returned a result of ($r=0.572$); $p<0.0015$) verifying that the strength of the influence is statistically significant at 0.0015 level of significance.

As far as local community participation in implementation and technology adoption is concerned, Pearson's moment of correlation coefficience show that local community participation in planning has a significance influence on adoption of smooth cayenne pineapple.

The results returned were ($r=0.198$); $p<0.0015$). The directional hypothesis which states that participatory implementation has a significant influence on technology adoption was accepted.

In the case of local community participation in monitoring and evaluation and technology adoption: The directional hypothesis which states that Participatory Monitoring and Evaluation (M&E) has an influence on agricultural technology adoption of Smooth Cayenne in Kayunga district was accepted with results ($r=0.278$;$p<0.0015$).

Additionally gender and its influence on agricultural technology adoption of smooth cayenne pineapple: Pearson correlation returned ($r=0.524$; $p<0.0015$) results where the directional hypothesis which starts that gender has a moderating significant influence on agricultural technology adoption of smooth cayenne pineapple in Kayunga district was accepted.

5.2: Discussion of findings

Research findings established that it was necessary to involve the local community in technology adoption at all levels of project activities that is planning, implementation and monitoring and evaluation.

5.2.1: Participatory planning and technology adoption

From the findings local community participation in planning was found to be crucial for technology adoption. Respondents consistently said that planning influences adoption especially at needs assessment, priority setting, and decision making and budgeting levels. For example non adopters were dissatisfied with the level of involvement by the extension workers or invitation to

participate in planning meetings of pineapple adoption. This implies that much as some members of the local community participate in planning other related factors are responsible for enhancing adoption. However, the extension workers attributed these challenges to lack of enough incentives to have each and every community member on board. Therefore this implies that some members are left out hence their views are not taken care of and perhaps this in one way or the another is affecting technology adoption. Bourne &Walker (2006) argue that in many cases technology adoption fails because the team does not recognize challenges in the relative power or position of key local community members and fail to make appropriate adjustments in their local community management activities.

The above argument by Bourne and Walker was further supported by Carnea (1991), FAO (1999) that the limited technology adoption of many development initiatives was attributed to failure to involve people during planning of projects and programmes. This study of participation in Kayunga district found out that adopters were older, educated, participated in farmer groups/associations and were employed. Adopters and non adopters did not differ on access to credit. Results of the Pearson correlation revealed that local community adoption of technologies was influenced by participation in planning. Extension program for local communities in remote area and information transmitted orally among trained farmers were not enough to increase adoption.

5.2.2 Participation in implementation and technology adoption

The research findings revealed that local community participation in implementation has got a significant positive influence on technology adoption. Besides this some respondents during the focus group discussion lamented that they were just involved during implementation of what had

already been planned instead of also participating at the planning level. This notwithstanding, the researcher noted that most of the respondents were determined to participate actively to adopt any new technology. This implies that there is a strong relationship between participation in implementation and technology adopt. The study findings agree with what (Reeds, 2008) says that when implementing a participatory process the local community should be considered right from the outset, from concept development and planning through implementation to monitoring and evaluation of the outcomes.

5.2.4 Participation in monitoring and evaluation and technology adoption

Participatory monitoring and evaluation was pointed as having a strong significant influence on technology adoption. The research revealed that usually participants do not participate in monitoring and evaluation in assessing of the technology progress. Measuring of performance and stakeholder identification of who is likely to influence or fail the adoption process. It was noted that most of the community did not know of what the performance indicators were as far as adoption of smooth cayenne pineapple was concerned. This was substantiated by the World Bank report which indicated that's M&E is a new concept which is not clearly understood

5.3 Conclusions

The findings from the research conducted with adopters and non adopters revealed that technology adoption is heavily dependent on participation of the local community in planning, implementation and monitoring and evaluation. User participation at all stages of project stages provides useful feedback to researchers that improved the relevance and appropriateness of the technologies and contributed to actual or potential impact of the research.

5.3.1 Local Community Participation in planning and technology adoption

From the research findings, it is evident that if the local community participates in planning of technologies, adoption would be realized.

5.3.2 Local community Participation in implementation and technology adoption

The research findings reveal that local community participation in implementation has a significant influence on adoption. Most of the respondents agreed and pointed out that awareness is showing that participation at implementation level brings greater ownership of objectives and encourages the sustainability of project benefits. Therefore participation in implementation should be encouraged by research and development actors.

5.3.3 Local community participation in monitoring and evaluation and technology adoption

Participation in monitoring and evaluation was pointed out to have an influence on adoption. The introduction of a results based M&E system taken by policy makers is one step further in assessing whether and how goals are being achieved over time. Participation of the local community further enhances the quality of an appropriate follow up action.

5.4: Recommendations

Attention has been focused on using conventional approach where decisions are made alone without involvement of the community which results in low adoption. Results of the study revealed that to achieve high levels of adoption participation should be a key priority

Interactions during the focus group discussions indicated clear lack of farmer involvement in selection of on-farm research. Farmers are not yet empowered or in position to drive the process

of technology generation and development. There is, however increasing trend, in Kangulumila to test and demonstrate technologies on farmers' farms.

5.4.1 Local community participation in planning and technology adoption

When extension workers are planning technology adoption activities the local community should participate from planning level for adoption to be effected. Planning by the policy makers should emphasize what needs to be done by who, and by when in order to fulfill ones' assigned responsibilities. Failure to involve technology beneficiaries by extension workers contributes to declining levels in technology adoption

5.4.2 Local community participation in implementation and technology adoption

This brings to the attention of the policy makers that local community participation by technology beneficiaries at implementation level brings greater ownership of objectives and encourages the sustainability of project benefits. Participatory planning meetings are the first step of implementation phase exercise of any given endeavor. In addition extension workers should be more educated on project management so that they are willing to provide good environment in which the local community will be motivated to participate

5.4.3 Local community participation in monitoring and evaluation and technology adoption

Results revealed that 45% of the respondents during the study agreed that participation in action on results during monitoring and evaluation has an influence on adoption therefore, Monitoring end Evaluation specialists should develop M&E system that helps to measure technology progress based on key performance indicators. Results also revealed that 38% of the respondents agreed that methods used to sensitize the community about a new technology have an influence

on technology adoption. This implies that publicity of these technologies by public relation personals should be based on the local language that is conducive to the policy of the local communities

5.5. Contributions of the study

The study will help to build on the existing body of knowledge in the area of local community participation and adoption of technologies through published research findings which the researcher intends to. The positive values of participatory planning, implementation, monitoring and evaluation approach will be enhanced based on results that indicated that significant positive influenced between the dependent and independent variables as illustrated on the conceptual framework

5.6. Areas for further research

Given that this study was carried out in only one district which was focusing on technology adoption of pineapples it is recommended that extensive study is carried out on other agricultural technologies The study revealed that participatory planning, implementation monitoring and evaluation have a significant positive influence on technology adoption. These variables alone cannot influence adoption. There are other related factors which influence adoption which could be a future area for research.

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APPENDEX A: Reliability analysis for adopters and non adopters of smooth cayenne pineapple

The space saver method is used. That is, the covariance matrix is not calculated or used in the analysis.

Case Processing Summary

		N	%
Cases	Valid	103	67.8
	Excluded (a)	49	32.2
	Total	152	100.0

a Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.812	22

APPENDEX B: Questionnaire for adopters and non adopters

I am Ms.Barbara Kyampeire, A Master's student of Uganda Management Institute (UMI) conducting research on a topic local community participation and agricultural technology Adoption of Smooth Cayenne pineapple. I am requesting you to tick the most appropriate box that suits your response. Your views will be handled confidentially.

SECTION A. Background information

Please write or tick the most appropriate box that suit your response

1. Age group

   a) Below 20 years ☐
   b) 21-30 ☐
   c) 31-40 ☐
   d) 41-50 ☐
   e) 51-above ☐

2. Do you belong to any farmer group
   a) Yes ☐
   b) No ☐

3. Are you an adopter of pineapple or non adopter?

   a) Yes ☐

   b) No ☐

4. What is your gender?

   a) Male ☐
   b) Female ☐

5. Education level

   a) Primary ☐
   b) Secondary ☐
   c) Certificate ☐
   d) Diploma ☐

e) Degree ☐

6 .Occupation

a) Government ☐
b) Non Government ☐
c) Self employed ☐

7. Duration of employment

a) Less than one year ☐
b) 1- 2 years ☐
c) 3 and above years ☐

SECTION B: Local Community Participation in Planning, implementation, Monitoring and Evaluation and its influence on adoption

Key: Indicate by a tick Strongly Agree (SA) Agree (A) Disagree (D) Un decided (U) Strongly Disagree (SD)

No	SECTION B	SA	A	D	SD	U	SD
	Participation in planning and its influence on Agricultural Technology Adoption of Smooth Cayenne Pineapple (ATASCP)						
7	Local community participation in Needs assessment during planning influences adoption						
8	Local community participation in priority setting during planning influences adoption						
9	Local community participation in budgeting during planning influences adoption						
	Participation in implementation and its influence on ATASCP						
10	Local community participation in planning meetings during implementation influences adoption						
12	Involvement of beneficiaries at implemetentation influences adoption of ATASCP						

	SECTION D: Monitoring and Evaluation and Agricultural Technology Adoption of Smooth Cayenne Pineapple (ATASCP)						
13	Local community participation on action on results during monitoring and evaluation influences technology adoption						
14	Methods used for sensitizing the community about a new technology influences technology adoption						
15	Local community participation in measure of progress during monitoring has an influence on adoption						
	SECTION F. Technology adoption of smooth cayenne						
16	The number of farmers who have adopted pineapples have an influence on adoption						
17	The number of farmers demanding pineapples has an influence on adoption						
18	The number of farmers who are disseminating pineapples for planting has an influence on adoption						

APPENDEX C: **Focus group discussion guide**

i. Smooth cayenne pineapple, is it a priority crop in Kayunga district

ii. Are there extension workers who address the needs of the communities

iii. What tools are used to sensitize the local community about a new technology?

iv. Does the district have communal land for production?

v. What challenges are encountered in pineapple production?

vi. Apart from extension workers where else does the community get pineapple suckers?

vii. Is the seasonal calendar followed when delivering technologies for planting?

viii. Who helps the local community to track progress of technologies brought into the community?

ix. Are there other pineapple varieties that are adopted in Kayunga district apart from smooth cayenne?

x. What technology needs are associated with pineapples

xi. What major crops are grown in Kayunga district

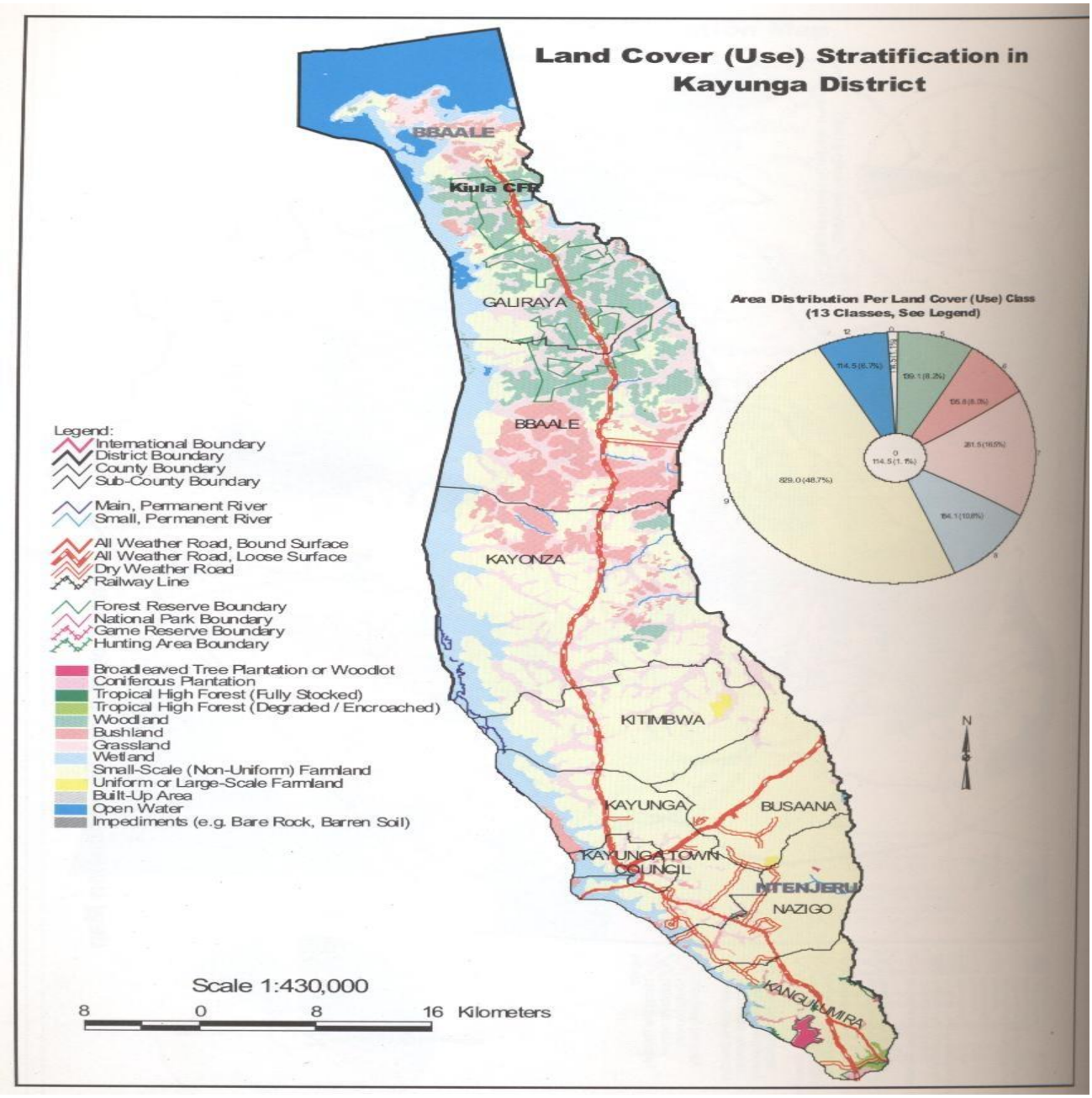
APPENDIX D: Research time frame; 2009/2011

Activity	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1.Developing a research topic												
2.Topic approval by the supervisor												
3.Writing Chapter 1												
4.Writing Chapter												
5.Writing Chapter 3												
6.Proposal defense												
7.Selecting the site for data collection												
8.Data collection												
9.Data Entry												
10.Data Analysis												
11.Chapter 4												
12.Chapter 5												
13.Thesis defense												

APPENDIX E: Pineapple farmer

A farmer in search of pineapple suckers for planting

APPENDIX F: Kayunga district



Map of Kayunga district showing Kangulumila Sub County where the research was conducted