

**Perceptions of smallholder vegetable farmers and extension officers regarding
the extension service in the Hhohho region, Swaziland**

By

SICELO MOSES SIMELANE

Submitted in partial fulfilment of the requirements for the degree of

MSc. Agric. Agricultural Extension

In the

Department of Agricultural Economics, Extension and Rural Development

Faculty of Natural and Agricultural Sciences

In the University of Pretoria

February 2018

Declaration

I, Sicelo Moses Simelane, declare that this dissertation, which I hereby submit for the degree M.Sc. Agric. in Agricultural Extension at the University of Pretoria, is my work and has not been previously submitted by me for a degree at any tertiary institution.

SIGNATURE: S.M. Simelane

DATE: February 2018

Acknowledgements

I will begin by thanking God for the opportunity He gave me to study; He has been a source of strength, good health, wisdom and patience. He blessed me with all the resources that I needed to complete my study. I will forever be indebted to Him.

I would like to thank Dr S.E. Terblanché and Professor M. T. Masarirambi for their guidance and support as my supervisor and co-supervisor, respectively. You have moulded and imparted important research skills that will go a long way in my career development. As you continue do your calling, may God bless you and greatly reward your efforts.

My gratitude also goes to the University of Pretoria for all the academic and financial assistance they gave me towards my study. This mainly goes to the administration and support staff, especially Yvonne Samuels who never got tired of my frequent requests for assistance. May my God bless you in abundance.

My sincere gratitude also goes to Mr. Sizwe Simelane, my research assistant, for the support and assistance he provided in the first few days of data collection.

I would also like to thank the administration and teachers of Etimphisini High School for affording me the time and assistance as I pursued my studies. May my God bless you as per your hearts.

Lastly and most importantly I would thank my family for tolerating my frequent absences from their lives while I went to classes, attended supervisory appointments and collected data. Mainly for the financial strain I put you under; may God listen to your prayers and fulfil your dreams.

ABSTRACT

Perceptions of smallholder vegetable farmers and extension officers regarding the extension service in the northern Hhohho Region, Swaziland

By

SICELO MOSES SIMELANE

Degree: M.Sc. Agric. in Agricultural Extension

Department: Agricultural Economics, Extension and Rural Development

Study Leader: Dr S.E. Terblanché

Study Co – supervisor: Professor T.M. Masarirambi

The inefficiency of smallholder production in Swaziland renders the country a net importer of horticultural products, yet the geographic and climatic conditions are suitable for sufficient crop production to achieve food security. Development agencies suggest that the country can indeed rely on smallholder farmers to address rural poverty and food insecurity. However, they all suggest that efficient extension services are central to achieving this goal. Therefore, this study was set to discuss the perceptions of smallholders and extension officers (EOs) regarding the extension programme in Swaziland, since perceptions are the main driver of behaviour. A sample of 13 horticultural EOs participated by completing a questionnaire, while a snowball sample of 82 farmers participated in one-to-one interviews. The data was supplemented by *ad hoc* group discussions with farmers and EOs that were used to explain some of the perceptions. The SPSS program was used for analysis. The administration of the extension system has been centralised and services were extended to farmers through regional centres called RDAs. The EOs were generally young men with agricultural Bachelor's degrees, but without training in agricultural extension, while the farmers were usually aged women and were mostly full-time farmers. They perceived themselves as being relatively neglected by the government because of poor remuneration and poor working conditions of EOs. The EOs nevertheless had good relations with farmers, and the farmers believed that EOs were pivotal to the success of their businesses. The farmers were generally members of farmer groups that had broken down though conflicts, hence the members operated individually. They also had small pieces of land, and generally lacked access to finance and markets. The analysis suggested that grouped

farmers were more likely to access local market and extension services. Therefore, it was recommended that EOs should assist farmers to establish and manage strong formal groups (i.e. cooperatives), as such organisations better align smallholders to markets and also enable EOs to better deliver their services to farmers. To accomplish this task, EOs need training in extension and agribusiness management.

TABLE OF CONTENTS

DECLARATION.....	I
ACKNOWLEDGEMENTS	II
ABSTRACT	III
TABLE OF CONTENTS	IV
LIST OF TABLES	V
LIST OF FIGURES	VI
LIST OF ABBREVIATIONS AND ACRONYMS	VII
CHAPTER 1: INTRODUCTION.....	1
1.1 Background and Setting.....	1
1.2 Problem Statement.....	5
1.3 Purpose of the Study	5
1.4 Specific Research Objectives.....	6
1.5 Research Questions.....	6
1.6 Significance of the Study	7
1.7 Limitations of the Study	7
1.8 Definition of Terms	8
1.9 Conceptual Framework.....	9
CHAPTER 2: LITERATURE REVIEW	10
2.1 Introduction.....	10
2.2 Environmental/Climatic landscape of Swaziland	10
2.3 Vegetable Farming and Marketing in Swaziland.....	11
2.4 Challenges Faced by Smallholder Farmers	14
2.5 Workable Solutions to the Farmers’ Challenges and Threats.....	18
2.6 Challenges Faced by Extension Officers	20
2.7 Practical Solutions to the Challenges faced by Extension Workers	21
2.8 Summary of Agricultural Policies in Swaziland.....	23

2.9	Contribution of Agriculture to Socio-Economic Status of the Country.....	25
2.10	Access of farmers to financial support	27
2.11	The role of NGOs in rural development	28
2.12	Measuring Perception	28
2.13	Topic Summary	29
CHAPTER 3: METHODOLOGY		31
3.1	Research Design	31
3.2	Site Description	31
3.3	Target Population.....	32
3.4	Sampling	32
3.5	Instrumentation and Data Collection	34
3.5.1	Instrumentation.....	35
3.5.2	Data collection.....	35
3.6	Data presentation and analysis.....	36
3.7	Summary.....	37
CHAPTER 4: RESULTS		38
4.1	Introduction.....	38
4.2	Results presentation	38
4.2.1	Extension landscape in Swaziland.....	38
4.2.1.1	Structural setup of the Extension Department	38
4.2.1.2	Characteristics of extension officers.....	41
4.2.1.3	General perceptions of extension officers	49
4.2.1.4	Challenges faced by extension officers	52
4.2.1.5	Suggested solutions to extension officers' challenges	53
4.2.2	Farmers' landscape in Swaziland	54
4.2.2.1	Farmers' demographics	54
4.2.2.2	Farmers' Operations	58
4.2.2.3	Farmers' perceptions of extension service and access to resources and services.....	67

4.2.2.4	General perceptions of farmers about the extension system	72
4.2.2.5	Challenges faced by smallholder vegetable farmers	75
4.2.2.6	Suggested solutions to farmers' challenges.....	77
4.3	Results discussions	79
CHAPTER 5: SUMMARY, CONCLUSION AND RECOMMENDATIONS		85
5.1	Summary of the most important findings	85
5.2	Conclusions.....	86
5.3	Recommendations.....	88
List of references		91
APPENDICES.....		105
	Appendix 1: Letter from supervisor requesting for permission and cooperation in data collection.	106
	Appendix 2: Letter of consent to extension officers and farmers	107
	Appendix 3: Questionnaire for extension officers	109
	Appendix 4: Interview guide for farmers	119
	Appendix 5: Tables for data analysis	132

List o Tables

Table 2.1: Agro-ecological Zones of Swaziland.....	10
Table 2.2: Agro-Ecological (Geographic) Zones and their Farming Activities.....	11
Table 2.3: RDAs under their Administrative Regions of Swaziland	15
Table 2.4: Regional Policies, Treaties, and National Policies and Strategies Governing the Swaziland’s Agriculture Sector	25
Table 3.1: Advantages and disadvantages of surveys	31
Table 3.2: RDAs in Swaziland, the number of extension officers and farmers in each RDA and the samples chosen in each RDA	33
Table 3.3: Data collection tools and the participants for each objective.....	34
Table 3.4: Measures of central tendency and their levels of measurements	37
Table 4.1: The general description of extension officers in the Northern Hhohho Region, Swaziland	42
Table 4.2: The relationship between age and educational level reached by extension officers	43
Table 4.3: The relationship between education level and current position of extension officers in the Department.....	44
Table 4.4: The number of extension officers who attended at least one workshop and their rating of the workshop.....	45
Table 4.5: The frequency at which extension officers do certain tasks with their farmers.....	47
Table 4.6: Self-evaluation of extension officers in doing some of the tasks mandated to them.....	48
Table 4.7: Perceptions of Extension Officers (EOs) about themselves and their work	49
Table 4.8: Perceptions of EOs on government in relation to their work.....	50
Table 4.9: Perceptions of EOs about farmers.....	51
Table 4.10: Perceptions of EOs about other organisations working with farmers.....	51
Table 4.11: Reasons for extension officers to encourage farmers to venture into vegetable production.	52
Table 4.12: The number of respondent farmers per RDA and gender	54
Table 4.13: The relationships between farmers’ age groups and their gender.....	55
Table 4.14: The experience farmer respondents had in the farming business in relation to gender.....	56
Table 4.15: Comparison between male and female farmers with regard to access to formal education.....	58
Table 4.16: How do full-time and part-time farmers view the viability of vegetable production?.....	61
Table 4.17: Characteristics of the farmers’ projects, in general	62
Table 4.18: How the farmers were organised in the Hhohho region	63

Table 4.19: Farmers rating of the extension officers based on the service they provide to them.....	68
Table 4.20: The level of accessibility of important resources to farmers as perceived by farmer respondents.....	71
Table 4.21: General perceptions of farmers about their business	71
Table 4.22: Challenges faced by farmers as perceived by extension officers.....	76
Table 4.23: Significance of gender difference on general perceptions (Group statistics)	133
Table 4.24: Significance of gender difference on general perceptions	136
Table 4.25: Significance of age difference between male and female farmers (group statistics)	139
Table 4.26: Significance of age difference between male and female farmers (Independent Samples Test).....	139
Table 4.27: Significance of gender difference on farmers' perceptions on the quality of help they get from extension officers (group statistics).....	140
Table 4.28: The significance of gender differences on farmers' perceptions on the quality of help they got from extension officers (independent samples test).....	141
Table 4.29: Significance of formal education reached by farmers on their perception of extension officers help (Group statistics)	144
Table 4.30: Significance of formal education reached by farmers on their perception of extension officers help (independent samples test)	146
Table 4.31: Significance of formal education level reached by farmers on their perceptions about the extension officers help (Group statistics)	148
Table 4.32: Significance of formal education level reached by farmers on their perceptions about the extension officers help (Independent samples test).....	150
Table 4.33: Correlation between farmers' characteristics	152
Table 4.34: Correlation of farmers' characteristics and their perceptions on accessibility of farming resources and inputs.....	154

List of Figures

Figure 4.1: Organogram for the extension department of Swaziland	39
Figure 4.2: The average frequency of visits by extension officers to farmers in a month	44
Figure 4.3: Number of extension officers using a certain extension technique	45
Figure 4.4: Common NGOs that assist in agricultural extension or farming in the Hhohho region.....	46
Figure 4.5: The number of farmers, as categorised in age groups	55
Figure 4.6: Figure 4.6: The marital status of farmer respondents	56
Figure 4.7: Level of education achieved by farmer respondents	57
Figure 4.8: The trend with regard to access to education between male and female farmer respondents.....	58
Figure 4.9: The types of fertilisers frequently used by farmer respondents.....	59
Figure 4.10: The methods of irrigation used, according to farmer respondents	60
Figure 4.11: The percentage of farmers who are full-time and those that are part-time farmers.....	60
Figure 4.12: Reasons why farmers were not active members or members of SNAU.....	64
Figure 4.13: The status of farmers with NAMBoard	64
Figure 4.14: How farmers rated the help they received from NAMBoard	65
Figure 4.15: Meeting arrangements between extension officers and farmers.....	66
Figure 4.16: The source of labour for farmer respondents.....	66
Figure 4.17: Overall evaluation of extension officers' service delivery by farmer respondents	69

List of Abbreviations and Acronyms

ACS:	Assistant Consumer Specialist
AEE:	Agricultural Education and Extension
AEO:	Assistant Extension Officer
AfDB:	African Development Bank
AO:	Agricultural Officer
ASEO:	Assistant Senior Extension Officer
CAADP:	Comprehensive Africa Agriculture Development Programme
CIGA:	Common Interest Group Approach
CS:	Consumer Specialist
CTA:	Technical Centre for Agricultural and Rural Cooperation in Netherlands
DAE:	Director of Agricultural Extension
DDAE:	Deputy Director of Agriculture: Extension
DDA(TS):	Deputy Director of Agriculture: Technical Services
DRAO (HMLS):	Deputy Regional Agricultural Officer (Hhohho, Manzini, Lubombo & Shiselweni)
EO:	Extension Officer
FAO:	Food and Agricultural Organization
FEDWGA:	Forum Environment and Development Working Group on Agriculture
GDP:	Gross Domestic Product
GFRAS:	Global Forum for Rural Advisory Service
GPA:	Government Program Action
HIV/AIDS:	Human Immunodeficiency Virus / Acquired Immune Deficiency Syndrome

HPMO:	Heavy Plant Mechanisation Officer
IFPRI:	International Food Policy Research Institute
MoA:	Ministry of Agriculture
MoTEA:	Ministry of Tourism and Environmental Affairs
NAMBoard:	National Agricultural Marketing Board
NAS:	National Agriculture Summit
NERCHA:	National Emergency Response Council on HIV/AIDS
NGO:	Non-Governmental Organisations
PAPPR:	Prioritised Action Programme on Poverty Reduction
PCS:	Principal Consumer Specialist
PS:	Principal Secretary
RA:	Regional Administrator
RAO (H,M,L,S):	Regional Agricultural Officer (Hhohho, Manzini, Lubombo & Shiselweni)
RCS:	Regional Consumer Specialist
RDA:	Rural Development Area
RISDP:	Regional Indicative Strategic Development Plan
SACU:	South African Customs Union
SADC:	South African Development Community
SADP:	Swaziland Agricultural Development Project
SAHEE:	Sustainability for Agriculture, Health, Education and the Environment
SCS:	Senior Crops Specialist
SEA:	Swaziland Environmental Authority

SEO (F, A, H):	Senior Extension Officer (Fisheries, Agronomy, Horticulture)
SFO:	Senior Fisheries Officer
SHO:	Senior Horticultural Officer
SMO:	Senior Mechanisation Officer
SNAU:	Swaziland National Agricultural Union
SNL:	Swazi Nation Land
SPS:	Sanitary and PhytoSanitary
SPSS:	Statistical Package for Social Science
SZL:	Swaziland Lilangeni (currency) equivalent to South African Rand (ZAR)
TDL:	Title Deed Land
TPS:	Tractor Pool Services
UN:	United Nations
WFP:	World Food Program

CHAPTER 1: INTRODUCTION

1.1 Background and Setting

The Kingdom of Swaziland is landlocked and mainly surrounded by South Africa. Mozambique shares the eastern borders with the country. The country has a total area of 17 364 km² (Manyatsi et al., 2013). According to the 2007 national census, the population was around 1.02 million, of which 0.54 million were females and 0.48 million were males. However, data from the World Bank (2016) has reported that the population has grown to 1 286 970 people. As reported at 2013, 78% lived in rural areas, while only 22% lived in urban areas (Manyatsi et al., 2013).

Geographically, the country is divided into six (6) agro-ecological zones, namely Highveld, Upper Middleveld, Lower Middleveld, Western Lowveld, Eastern Lowveld and Lubombo Ridge [Ministry of Tourism and Environmental Affairs (MoTEA), 2011]. These regions are categorised according to their altitudes, temperatures and rainfall characteristics. The Highveld has the highest altitude of 900–1400 m; the Middleveld ranges from 400 to 600 m; the Lowveld ranges from 200 to 400 m, and the Lubombo Ridge ranges from 250 to 600 m. The Highveld receives the highest amount of mean annual rainfall, at 850–1200 mm, and the Lowveld receives the least amount, at 500–625 mm. Magagula and Faki (1999) reported that the Highveld takes up about 33% of the total area, followed by the Western Lowveld with 20%, the Upper and Lower Middleveld occupy 14% each, followed by the Eastern Lowveld with 11%, and the Lubombo Ridge is the smallest with 8% in extent, and it forms eastern border between Swaziland and Mozambique.

Administratively, the country is divided into four (4) administrative regions, namely Hhohho, Manzini, Lubombo and Shiselweni. The regions are governed by Regional Administrators (RAs) who are appointed by the King. These regions are further divided into Chiefdoms / communities which are governed by Chiefs. The Chiefs are traditional leaders who directly work on behalf of the King; therefore, this makes the King both head of government and a traditional leader. The country is ruled by an absolute Monarchy under a system known as the

Tinkhundla System of Government (Mzizi, 2006). The area for this study is the Hhohho region, which is in the northern part of the country. This region geographically comprises the Highveld and Middleveld. The Highveld is mainly forested, while the Middleveld is almost completely rural, and that is where the smallholder farmers are mainly based.

Land ownership in Swaziland has two main categories: communal land, which is held in trust by the King for the nation and is called Swazi Nation Land (SNL), comprising 74% of the total land area, and private land, or Title Deed Land (TDL), which accounts for 26% of the total land area (Remmelzwaal, 2006). However, about a quarter of SNL is not used communally, but is controlled by government parastatals or companies. The TDL area has been mainly used for industrial timber plantations, livestock production, sugarcane growing and the establishment of towns. The SNL area is mainly under communal extensive grazing and subsistence crop production (Remmelzwaal, 2006).

The SNL is governed and allocated by Chiefs to households through a customary process known as *kukhonta* and that land has no commercial value, and accordingly it cannot be sold or used as surety for loans, but is inherited by succeeding generations of the resident family (Mzizi, 2006). The Swaziland Agricultural Development Project (SADP, 2011) reported that the SNL comprises some 86% of all agricultural land, occupied by approximately 100 000 farm households. These farm households averaged about 1.3 hectares in extent, but the numbers have been reported to be decreasing in recent years as a result of demographic changes. The productivity of SNL farms has been very low and the quality of the produce is generally poor. The contribution by farmers from SNL to overall earnings from agriculture has remained very limited (Swaziland Environment Authority (SEA), 2002).

Swaziland has been classified as a middle-income economy, but distribution of income is highly unequal and nearly half of the population live below the national poverty line (Swaziland – European Community, 2005). The World Bank's (2016) data shows that in 2009, the poverty head count was at 63%, with a Gini index of 51.45%. Mahlahat (2012) has reported that food insecurity stood at 29% of population in 2010, and unemployment at 29% of the labour force in 2010. Although the official unemployment rate was 29%, the actual figure was estimated at 40%, and even higher in rural areas (Manyatsi et al., 2013). A large part of the population lives on food aid from the World Food Program (WFP) and other international organisations (FAO, 2004). Mahlahat (2012) argued that the uneven income distribution

emanated from low job creation and the absence of adequate social protection. These challenges, together with the highest prevalence rate of HIV in the world, needed to be addressed to achieve meaningful and sustained improvements in people's lives. The AfDB et al. (2012) reported that food security was projected to deteriorate in 2012 due to reduced food supply, caused by erratic rainfall, out-dated farming methods, and diminishing agricultural services provided by the government in the wake of the fiscal crisis. Given the possible lasting negative impacts of inadequate nutrition, this widespread food insecurity demanded permanent and robust solutions like food emergencies, which so far tend to be addressed on ad hoc basis (AfDB et al., 2012).

According to Magagula and Faki (1999), the economy of Swaziland could be described as being essentially an agricultural economy, relying mainly on agro-forestry and manufacturing based on agricultural raw materials. It was a dual system of economy which includes a highly developed commercial sub-sector that is dominated by large-scale, capital-intensive, export-oriented enterprises and farms. These enterprises and farms (sugarcane) were developed using mostly foreign-sourced capital (Magagula & Faki, 1999). These authors further reported that the other system consists of a low productivity smallholder sub-sector, which is characterised by semi-subsistence agriculture with rain-fed crops and communal grazing. It has high vulnerability to droughts and other changes in rainfall patterns. The African Development Bank, (AfDB), (2005) concluded that the country has substantial natural resources and fertile land, which offer an immense potential for agriculture-led development. The country has potential to rely on agriculture for economic growth and poverty reduction in the country. This suggestion was also supported by the World Bank (2011), as they reported that, based on the agro-ecological conditions, logistics, value chain linkages, and market opportunities, Swaziland's potential for expanding the production of conventional and baby vegetables was quite good (World Bank, 2011).

Connolly et al. (2011) argued that Swaziland's agricultural extension system had experienced a severe decline and chronic debilitation over the 20 years prior to their research, due to weak stakeholder participation and planning, feeble leadership and management, poor training of personnel and skills upgrading, and inadequate resource allocation and management. In line with that, Xaba and Masuku (2012) highlighted the various problems faced by farmers in Swaziland, ranging from planning, production, marketing, land rights, financial access and transaction costs, to access to information. The arguments made by both Connolly et al. (2011)

and Xaba and Masuku (2012) give a general picture of the smallholder farming systems in Southern Africa. Oladele et al. (2009) suggested that these problems emanated from the general neglect of the extension service in most Southern African countries. Therefore, the World Bank (2011) recommended that Swaziland had to revitalise the extension service to reap the benefits of smallholder development.

Rivera and Qamar (2003) stated that there was a need to re-conceptualise and re-prioritise extension services and promote communication for rural development activities within the framework of the food security challenge. However, extension services alone cannot address all the problems faced by farmers, although it is the vehicle by which most farmers' problems can be addressed (Stevens, 2013; GFRAS et al., 2012). The increase in recent years in the competitiveness trends in the agribusiness sector and the global market demand an institutional reform of extension. This reform must involve pluralism, cost recovery, privatisation, and decentralisation, with more emphasis being placed on participatory approaches of extension delivery (Stevens, 2013).

The AfDB (2005); FEDWGA (2006) and World Bank (2011) have suggested that Swaziland could survive through agriculture and thereby reduce the high rates of poverty, unemployment, inequalities and food insecurity. The Swaziland–European Community (2005) noted that the smallholder agricultural sector in Swaziland was the largest contributor to the livelihoods of the majority of the population and was the main raw materials provider for the agro-based industries.

The survival and development of smallholder farmers are rooted in a properly institutionalised and effective extension system. Extension is a pre-requisite for effective and substantial agricultural growth (Düvel, 1996). While emphasis is put on extension, farmers' attitudes, skills and commitment are also of equal importance. The smallholder farmers could alleviate most of the socio-economic problems of the country (World Bank, 2011), but they seem to be facing many challenges, as does the extension system, to achieving such a crucial national development goal.

1.2 Problem Statement

The challenges of smallholders in Swaziland may be exacerbated by the inefficient extension service, among other things. The need for extension services is pivotal, as most smallholder farmers have low levels of education and are generally poor, as described by Masuku et al. (2016). The World Bank (2011) and Connolly et al. (2011) have reported that Swaziland's extension service was inefficient and hence required revitalisation as a strategy for attaining economic development and general rural development in Swaziland.

In general, the literature suggests that smallholder vegetable farmers could help Swaziland to alleviate food insecurity, poverty and unemployment (AfDB, 2005; FEDWGA 2006; World Bank, 2011; Xaba & Masuku, 2013; SADP, 2011). There have been numerous calls by development agencies and experts for Swaziland to revitalise the extension system and align it with current agribusiness trends to enable the sector to deliver at its potential. This means that there has to be development and/or alignment of policies, together with planned capacitation of extension officers and farmers to realise sustainable and meaningful agribusiness development.

In policy development, the perceptions and attitudes (informal institutions) of stakeholders must be known and considered because they have substantial influence in driving policy into practice (North, 1991; Ajzen, 2002). Therefore, it is of paramount importance to conduct a study to assess the status quo of the extension services being rendered to farmers, and of the perceptions of both farmers and extension officers about their work. Dube (1993), Keregero (2000), Connolly et al. (2011), and the World Bank (2011) have argued that the extension service in Swaziland is generally weak and needs revitalisation, and this has negative concomitant effects on the success of farmers. Therefore, this study also seeks to ascertain if there have been any improvements, as perceived by the farmers and extension officers.

1.3 Purpose of the Study

This study was set to describe the extension service and smallholder vegetable farmers' landscape in the country, and to further identify their challenges and workable solutions. The main objective was to unearth solutions that would help to improve efficiency in the extension

system, and hence improve vegetable productivity for smallholder vegetable farmers, which would in turn enhance economic growth and alleviate the socio-economic ills of the country, as noted by the World Bank (2011). To develop practical solutions to the small-scale vegetable enterprises, there was a need to interrogate the perceptions of both extension officers and the farmers to unearth issues affecting their job. This would then help the government to realign the relevant policies to support the smallholder vegetable farmers. If the pressing plight of farmers could be addressed, more numbers of subsistence farmers could commercialise vegetable production, which would improve vegetable production and marketing in the country, and hence boost the economy and strengthen food security.

1.4 Specific Research Objectives

The specific research objectives of this study are to:

1. Describe the current agricultural extension system landscape of Swaziland;
2. Describe the characteristics of the extension officers and the smallholder farmers in the Hhohho region;
3. Identify the challenges of small smallholder farmers as they conduct their businesses;
4. Identify the challenges faced by extension officers in delivering their advisory service;
5. Describe how farmers and extension officers perceive the extension system, in general;
6. Suggest practical solutions to the challenges as perceived by the smallholder farmers and extension officers

1.5 Research Questions

Following from the research objectives, the research questions of this study are the following:

1. How is the extension system structured in Swaziland, and how does that structure function?
2. What are the demographic characteristics of the farmers and extension officers in the Hhohho region?
3. What challenges do farmers face in conducting their businesses?
4. What challenges do extension officers face in delivering their advisory services to farmers?
5. Do farmers think that the extension system is effective and efficient?

6. Do extension workers think about the farmers' needs and challenges?
7. How can the extension system be improved to give more value to farmers?

1.6 Significance of the Study

1. It may act as a wake-up call for government to re-focus on agriculture, especially smallholder farmers and extension services. This may give direction to the functioning of the RDA programme, which tends to be the centre of local economic revitalisation in the country which has an agriculturally based economy.
2. It could help in realigning the country's extension service structure with current socio-economic landscape.
3. It could assist in good policy formulation.
4. It would unearth research opportunities to empirically test the magnitude and causes of challenges and the impact of the suggested policies.

1.7 Limitations of the Study

1. It was difficult to find out about farmers who were not in communal farmer-groups, unless the researcher knew about those farmers personally. This was mainly because extension officers work with farmer-groups, in most cases. Moreover, farmers would mostly suggest someone they worked next to, rather than another isolated farmer. This is why few farmers who operated individually were included in this study.
2. An inordinate amount of time was needed to travel to all identified farmers because their residences were greatly dispersed. Most farmers were found at their homes since the drought had discouraged them from farming. Walking from home to home, conducting the interviews, reduced the number of farmers that could be interviewed in a day. Some homes had vicious dogs, so although those farmers had been suggested for interviews, they were skipped for the fear of the dogs.
3. The study was conducted in a year of drought, which might have influenced the farmers' perceptions of aspects of their productivity.
4. The data collection was done in summer when farmers were in the process of growing mainly maize, sweet potatoes, rice, legumes and other crops, and accordingly the researcher did not see evidence of any cultivation of vegetables.

5. The rating scales and rankings used by the researcher were difficult to deal with for the farmers, especially those who had no formal education; however, their facial expressions, gestures and tones were used to choose the appropriate rating for the farmers during interviews.

1.8 Definition of Terms

Agricultural Extension landscape: The organisational and institutional structure of the Agricultural Extension Department.

Agriculture-Based Economy: An economy that is mainly supported by farming and subsequent micro-businesses.

Chief: Traditional leader of a community in Swaziland who represents the king in an area.

Demographics: Age, sex and level of education of the farmers and extension officers.

Extension Officer: A trained official who is hired to help farmers execute their businesses better.

Extension Service: The assistance that farmers receive from Extension Officers.

Extension System: The administrative linkage structure of all the organisations and people who hold the mandate to help farmers.

Inkhundla: A political administrative centre in Swaziland that is comprised of several Chiefdoms who elect a representative to parliament (Member of Parliament).

Ministry of: Department in government headed by a Cabinet Minister.

Perception: A conceptual picture of the extension system in Swaziland.

Regional Administrator: A person who heads one of the four administrative regions (Hhohho) in Swaziland.

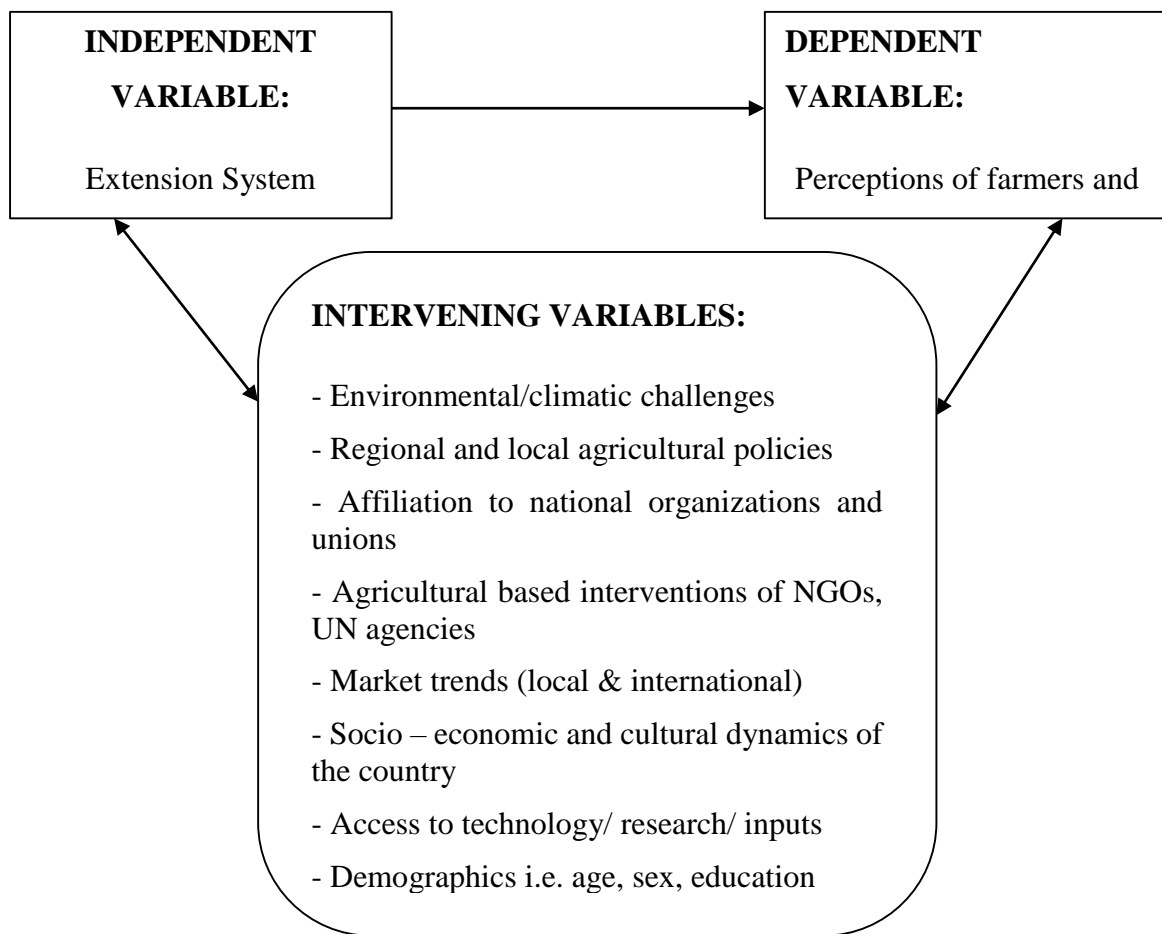
Smallholder Farmers: All vegetable farmers, especially in the Hhohho region.

Snowball Sampling: It is a nonprobability sampling technique in a study where existing respondents suggest the next respondent from their acquaintances

Swazi Nation Land: A land tenure system in Swaziland which defines the land that is held in trust for the Swazi Nation by the King, with assistance of chiefs.

Title Deed Land: A land tenure system that defines the land that is owned by individuals and private companies.

1.9 Conceptual Framework



CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This part of the research study deals with what other researchers and authors have found and documented as they studied agricultural extension and smallholder farmers, in their respective study areas. This section is divided into subtopics for the proper organisation and discussion of agricultural concepts/practices. The subtopics are;

- vegetable farming and marketing in Swaziland; challenges faced by farmers;
- way forward for farmers; challenges faced by the extension service;
- way forward for Extension Officers;
- summary of agricultural policies;
- the contribution of agriculture to the economy of a country;
- roles or interventions of NGOs and UN agencies for assisting small-scale farmers; and
- measurement of perceptions.

2.2 Environmental/Climatic landscape of Swaziland

Swaziland is divided into six agro-ecological zones (Ministry of Tourism and Environment Affairs, 2011). These zones can be identified by altitude, rainfall received, and temperature. Table 2.1 summarises the characteristics of the agro-ecological zones.

Table 2.1: Agro-ecological Zones of Swaziland

Agro-ecological Zone	Mean Temperature (°C)			Mean Annual Rainfall (mm)		Altitude (m)
	Annual	Jan	July	Mean Annual	80% Dependable	
Highveld	17	20	12	850-1,500	700-1,200	900-1,400
Upper Middleveld	20	24	15	800-1,000	650-850	600-800
Lower Middleveld	21	25	16	650-800	500-700	400-600
Western Lowveld	22	26	18	625-725	425-550	250-400
Eastern Lowveld	22	27	17	550-625	400-500	200-300
Lubombo Ridge	21	26	17	700-825	500-750	250-600

Source: Ministry of Tourism and Environment Affairs (2011:4)

In terms of size, the Highveld is the largest, at 33% of the total area; followed by the Western Lowveld at 20%; the Upper and Lower Middleveld at 14%; then the Eastern Lowveld at 11%; while the smallest is the Lubombo Ridge, at 8%. The climatic and topographic characteristics determine the land-use patterns of a region, as shown in Table 2.2.

Table 2.2: Agro-Ecological (Geographic) Zones and their Farming Activities

Zone (% Total Area)	Soils	Farming Activities
Highveld (33%)	Acidic, Low in Nitrogen, Phosphorous & Manganese; high erosion.	Cattle grazing; Small-scale farming; Maize is the main crop.
Upper Middleveld (14%)	Deep clay loam.	Main agricultural zone; Crops: citrus, pineapple, cotton, maize, vegetables.
Lower Middleveld (14)	Sand and sandy loam.	Groundnut, beans vegetables.
Western Lowveld (20%)	Good to fair soils.	Crops: Sugar cane, cotton
Eastern Lowveld (11%)	Vertisoils.	Groundnut, sorghum.
Lubombo Range (8%)	Escarpment, Limited arable land (12%).	Main activities: Ranching, maize, cotton, minor crops.

Source: Magagula & Faki, (1999:5)

2.3 Vegetable Farming and Marketing in Swaziland

Agricultural productivity has been declining over the years, mainly due to declines in government spending in the sector that were caused mainly by the decline in global economic status and the HIV/AIDS pandemic. Sibandze (2013) stated that the National Agricultural Marketing board (NAMBoard) had estimated vegetable imports to be over SZL73.6 (= ZAR73.6) million per year for the period then under investigation (2012/2013), which indicated that there was a reduction in the production of vegetables in the country. This decline might be attributable to poor skills, lack of funding, poor institutions, and general poverty in the areas with arable soils and suitable climatic conditions (Sibandze, 2013). The AfDB (2005) cited the poor economic performance in recent years as being somehow responsible for the low agricultural productivity, and the impact of the drought, especially on Swazi Nation Land (SNL), where the principal source of livelihoods is mostly rain-fed subsistence crop farming and livestock rearing. Moreover, Swaziland has the highest prevalence rate of HIV in the world, and consequently has high numbers of orphans and child- and women-headed homes (NERCHA, 2006), which also comprise a factor to the decline.

The majority of the population lives on Swazi Nation Land (SNL) and they practice subsistence agriculture for their livelihoods (Manyatsi et al., 2013:220). They keep poultry, cattle, goats and sheep, and they grow maize, groundnuts, jugo beans, sweet potatoes, yams, pumpkins, melons, and cassava. (FAO, 2001). Most commercial farms, especially crop producers' conduct farming on SNL and hence they have no title deeds for the land they use, and they have no clear/proper water rights. The decline in overall production on SNL was mainly blamed on drought, death of breadwinners (through HIV/AIDS), poverty due to job losses, withdrawal of extension service, and low support of NGOs as donors (World Bank, 2011).

Xaba and Masuku (2012) reported that vegetable production in Swaziland was seasonal and that farmers, especially on SNL, produce maize in summer and vegetables in winter, with the most commonly produced vegetables in the country being tomato, cabbage, carrot and onion. Others include beetroot, lettuce, potato, green pepper, cauliflower, Brussels sprouts and broccoli. However, some vegetables, like tomatoes, cabbages, carrots and onions, can be grown in any part of the country, and so all vegetable growers usually produce these crops (Xaba & Masuku, 2012).

In Swaziland, the National Marketing Board (NAMBoard) has been established by an Act of parliament, Act 13 of 1985, and is mandated to monitor and regulate vegetable production and marketing in the country (NAMBoard, 2016). However, farmers complained that NAMBoard is competing with farmers by importing vegetables, as well as by paying unsatisfactory prices for locally produced vegetables (SNAU, 2010). Furthermore, the World Bank has criticised the current institutional setup of the Board, suggesting that it has created distortions and conflicts of interest (World Bank, 2011). Furthermore, the SADP has identified the need to review the regulatory and development functions of the Board (SADP, 2011). This serves as a clear sign that NAMBoard needs some revitalisation and repositioning to meaningfully help farmers.

The Swaziland National Agriculture Union (SNAU) has urged farmers to join the union so that farmers could be assisted, instead of working in isolation which results in their produce having difficulty in reaching lucrative markets (Sibandze, 2013). SNAU's mission is "to enable farmers in Swaziland access land, water, markets, research and technology for the improvement of their livelihood and enhance the relationship between individual farmers with their relevant stakeholders locally and internationally" (SNAU, 2010). This unity of farmers could constitute a vehicle for organising and institutionalising farming in the country, and serve to create an

effective horizontal integration and in consequence, value chains in the farming business (Trienekens, 2011). Therefore, this union must be supported and made stronger for the benefit of smallholder farmers.

The World Bank (2011) has noted that vegetable production could help reduce rural unemployment and contribute to GDP growth, although achieving the integration of small-scale farmers who could benefit from export opportunities remains a challenge. Gaining access to markets is the second hurdle that smallholders have to overcome (Mwaniki, 2006) and this problem is mainly exacerbated by the general poor infrastructure and barriers to penetrating the market that are caused by farmers' limited resource bases, lack of information, lack of or inadequate support institutions, and poor policies that are in place, among other factors. On the same note, Trienekens (2011) argued that poor infrastructure, low bargaining power, and lack of market knowledge and market orientation are key factors in gaining access to good markets by smallholder farmers in developing countries.

In the case of Swaziland, Gadlela (2008) concluded that marketing channels for vegetables were inefficient and unpredictable because of the lack of price collusiveness, price discrimination and nonexistence of price determination among the market channels. Similarly, FEDWGA (2006) reported that in Africa, large-scale farming benefited much more from export opportunities than small-scale farms did, and if this was left to market forces alone, small-scale farms would be bypassed by these opportunities, unless policy interventions were put in place. All these findings suggest that smallholder farmers are left vulnerable by the lack of market access, and therefore government support is required in this regard.

South African producers are very competitive and have dominated the regional market, as well as overseas exports, because they have better access to transport, and are united, financially assisted by government, and they are able to produce on larger scales (Alther, 2008). The report on Sustainability for Agriculture, Health, Education and Environment (SAHEE) has stated that the local Swazi food market has low buying power and a rather low demand due to the relatively small urban population. This is caused by the fact that most Swazis are rural dwellers who cultivate most of their food themselves, and have received free food parcels from NGOs (Alther, 2008). This makes it more difficult for the local smallholder vegetable farmers to be included into better markets than their counterparts in South Africa are, which results in the increase of vegetables imported from South Africa.

The marketing of horticultural products is a major challenge in rural areas because of the considerable numbers of smallholder producers who are geographically isolated from cities and have poor infrastructure like roads (Norton & Alwang, 2005). Even if traders (middleman) are involved, they incur high transaction costs in aggregating production to marketable volume and the limited market information constrains efficient and competitive marketing (Sykuta & Cook, 2001). These challenges can be addressed through collective action amongst farmers (Markelova et al., 2008; Louw et al., 2008; Stockbridge et al., 2003). They argue that collective action (i.e. cooperatives) can reduce unit transport costs, processing costs, storage costs, compliance costs and transaction costs by pooling produce; facilitate financing of value-adding investments by pooling capital; improving farmers' bargaining power; promoting their access to government and NGOs' support; securing greater returns to members since they are offered a 'soft-tax' regime; and pooling produce to meet scale requirement by smallholders. Norton and Alwang (2005) reported that the large number of small producers hindered quality control and coordinated production scheduling. In as much as farmers need support from the government to prosper, they also need to commit themselves to collective action which could position them well to markets and services.

2.4 Challenges Faced by Smallholder Farmers

Farmers are mainly located in the rural areas on SNL in Swaziland where they use communal fields and grazing land. The Ministry of Agriculture and Cooperatives has established Rural Development Areas (RDA) where extension officers are stationed to help farmers in those areas. These RDAs have been built in all the four (4) administrative regions of the country. Each administrative region has four (4) RDAs (Magagula et al., 2001), as shown in Table 2.3.

Table 2.3: RDAs under their Administrative Regions of Swaziland

Hhohho	Manzini	Lubombo	Shiselweni
Entfonjeni RDA	Ludzeludze RDA	KaLanga RDA	Hlathikhulu RDA
Emkhuzweni RDA	Mahlangatja RDA	Tikhuba RDA	Hluthi RDA
Madlangempisi RDA	Ngwemphisi RDA	Sithobelweni RDA	Zombodze RDA
Motshane RDA	Mliba RDA	Sphofaneni RDA	Mahlalini RDA

Source: Magagula et al., (2001:220)

The situations faced by low-income farmers in sub-Saharan Africa are altogether more complex (Farrington, 1998:3). In biological and physical terms, these are characterised by:

- poor infrastructure;
- complex, diverse and risk-prone agro-ecological conditions; and
- strong interactions between crop, livestock, tree and fodder components of the farming system, and between on- and off-farm resource management.

In socio-economic terms (Farrington, 1998:3), these are characterised by:

- a degree of political and economic marginalisation, implying limited access to markets;
- diverse socio-economic conditions – some households being fully committed to farming; off-farm employment being important for others; and traditional or newer 'safety nets' compensating for the limited labour availability of the lowest-income households;
- the importance of group action in some areas for traditional practices (e.g. exchange labour) and also for soil and water conservation through the management of common-pool resources;
- a high proportion of female-headed households and of female farm labour; and
- strong local knowledge underpinning traditional farming practices.

The World Bank has discovered three sets of main constraints in horticultural value chains that have affected smallholder farmers in Swaziland (World Bank, 2011), and these comprise: (i) inefficient links between smallholder farmers and markets; (ii) high transaction costs to source from smallholder farmers; and (iii) weak public services delivery to small-scale horticulture farmers. In the same vein, Xaba and Masuku (2013) ascertained that access to credit, selling prices, fertiliser quantity and gender were significant and positively related to the productivity of the vegetable farmers, while distance to market was negatively related to productivity. Xaba and Masuku (2012) and Ortmann and King (2010) highlighted the various challenges faced by farmers in Swaziland, ranging from planning, production, marketing, land rights financial access transaction costs to access to information. Farmers face many challenges, yet they are regarded as being key stakeholders in rural development (Ashely & Maxwell, 2001); hence, immediate interventions must be put in place.

Many smallholder farmers have complained that they work harder and harder, but remain stuck in the same socio-economic classes, mainly because they have little bargaining power in the market (Rupela, 2008) – they were price takers, not price makers. The buyers of their products (the middlemen – the price makers) tend to control the rates of return to farmers so that they are just high enough to keep the farmers working, but low enough to maximise the profits to the buyers (Rupela, 2008). Bargaining power was also noted alongside infrastructure, market knowledge and orientation (Trienekens, 2011) as constraints to access to good markets. Hoyt (1996) and Xaba and Masuku (2012) suggested that smallholder farmers must develop strong horizontal integration (by cooperating) to increase their bargaining power.

The World Bank (2011: iv-v) found the following challenges for smallholder farmers in Swaziland:

1. Lack of security of land tenure, and specifically the lack of title deeds in SNL. Since they do not hold title deeds to the land, smallholder farmers cannot use SNL as collateral for credit.
2. The lack of institutional capacity within the government agencies that are responsible for agricultural development in the country. Within the Ministry of Agriculture (MoA), there were not enough human and financial resources to provide critical extension services and maintain Sanitary and Phyto Sanitary (SPS) measures, as well as quality standards.
3. Most smallholder farmers cannot afford to purchase agricultural inputs, including seed and fertiliser, lack reliable access to irrigation (except in cases where they are located within sugar cane production schemes), and lack reliable and affordable transport to transport their perishable vegetables.
4. Weak literacy skills and poor management capacity prevent many smallholder farmers from accessing export markets. In addition, accessing export markets for many vegetables requires third party certification, which was difficult to achieve and was costly.
5. Moreover, the MoA faces capacity constraints which impede the application of SPS measures based on internationally acceptable practices; hence, it is difficult to gain access to export markets.

The World Bank (2011:29) further identified the following threats facing farmers:

1. The high prevalence of HIV/AIDS in the country, which if ignored, could reduce the much-needed labour force that carries out vegetable production and processing activities.
2. Some irrigated vegetable production schemes involving smallholder farmers are highly dependent on the continued viability of the national sugar crop, which looks increasingly unstable in the wake of the recent reforms in international sugar policies.
3. The current institutional setup of the NAMBoard seems to create distortions and conflicts of interest, leaving farmers suspicious as to whether the Board was helping them or exploiting them.
4. The strong South African Rand, to which the Swazi Lilangeni is tied, reduces the competitiveness of Swazi exports.
5. Plant pest problems, associated with a weak SPS unit, constitute a major threat to Swaziland's plant protection and access to export markets.

Nkambule and Dlamini (2013), when studying a smallholder farmers' irrigation scheme in Swaziland, found that the scheme was faced with major sustainability challenges, ranging from inadequate access to irrigation water, inadequate knowledge and skills on sustainable agriculture production practices that led to poor crop yield performance and environmental degradation, poor irrigation designs, high debts, poor market environment, and inadequate skills in business management. Likewise, the World Bank (2011) noted similar constraints. There were also some social constraints contributing to these challenges, which included conflicts arising from poor management, lack of cooperation by members, land tenure issues, and poor productivity (Nkambule & Dlamini, 2013). These challenges were also found by Xaba and Masuku (2013), who stated that vegetable farmers were facing problems regarding access to credit, selling price, fertiliser quantity, and long distances to market.

The National Agricultural Summit (NAS) concluded in 2007 that increasing agricultural productivity and competitiveness was key to addressing the root causes of poverty and food insecurity in Swaziland (SADP, 2012). The Swaziland Agricultural Development Project (SADP) was established in 2009 to revitalise agriculture and contribute to the creation of a vibrant commercial agricultural sector. Its main focus was on improving smallholder crop and

livestock production, research and extension service delivery, and smallholder market-oriented agro-business development. The SADP further fosters sustainable food security for rural households and contributes to increased equitable economic growth and development (SADP, 2011). In 2011, a Swaziland National Agriculture Summit identified eleven key constraints (SADP, 2011:18) to agricultural development:

- a) The absence of a functional National Farmers' Organisation (institutional);
- b) Difficulties in accessing loans (marketing);
- c) The absence of a Land Policy (policy);
- d) The absence of a comprehensive water resources development programme (policy);
- e) Low levels of knowledge and skills in agriculture and a general lack of basic skills in agri-business (capacity building);
- f) The Ministry of Agriculture's (MoA) structure was not responsive to the country's needs for technical support (institutional);
- g) Agricultural research is not demand driven, and is too centralised, characterised by a lack of appropriate policy, inadequate capacity, and very ineffective delivery systems (institutional/capacity building);
- h) Inefficient extension service of the MoA (institutional/capacity building);
- i) Poor marketing structure: high costs of imported inputs and low prices of produce (marketing);
- j) Inadequate supply of breeding and feeder stock: piggery, dairy, beef, goats, poultry and fish (production); and
- k) Effects of the HIV/AIDS pandemic, resulting in reduced productivity due to a weakened and sick workforce (health).

Most of these eleven (11) problems could be fully or partly addressed by appropriate and effective extension services.

2.5 Workable Solutions to the Farmers' Challenges and Threats

Xaba and Masuku (2013) have suggested that farmers should form production clusters to improve their market intelligence. In each cluster, there should be an advisory committee that is trained in various aspects of marketing, which committee would be able to gain access to up-to-date pricing information and make it available to farmers, on time. Moreover, Trienekens

(2011) also emphasised the value of forming horizontal integrations of farmers within their value chain, which would give them capacity to compete in the market and source inputs as a unit. Such clusters of farmers might enable effective extension service delivery, as extension officers would find active groups and plan their programmes, based on existing groups (Stevens, 2013). Although some of the challenges that farmers are facing need high capital investment, cooperation could address some of the challenges, and could act as a foundation for addressing the challenges too.

The World Bank (2011) and Xaba and Masuku (2013) have suggested that government should develop proper policies for upgrading farmers through workshops and seminars, and also formulate an extension system that is market driven, decentralised and farmer led. The government alone cannot afford addressing the challenges faced by farmers, and therefore the government should develop and manage sustainable linkages with other development partners, like NGOs, United Nation programmes, the business sector, and other agencies. In support of the World Bank's recommendation, Adekunle et al. (2012) suggested that interventions that encourage innovation should not be primarily focused on developing research capacity, but should be developed from the outset in a way that encourages interaction between public, private, NGOs and civil society organisations, with the main focus on building and supporting partnerships; strengthening farmer organisations; involving the private sector and ensuring market-driven approaches; improving access to information, knowledge and training; scaling up and adding value to country's agricultural strategies; and sustainability. Adekunle et al. (2012) and the World Bank (2011) further emphasised the point that the improvement of areas of infrastructure, particularly roads, communication and electricity, which provide the basis for ensuring inputs could be made available at affordable prices. Government has a fundamental role to play in rural development, and more especially if smallholder farmers are viewed as being central to rural development. Seitz et al. (1994) categorised the role of government into two major aspects, namely physical infrastructure development and institutional infrastructure development. However, there were support services, such as in extension, research, technology and subject matter specialists, which government must also provide.

2.6 Challenges Faced by Extension Officers

The definition of the roles and responsibilities of agricultural extension officers has changed over time (Birkhaeuser et al., 1991). This is supported by Davis (2008), who argued that extension goes beyond technology transfer, to facilitation, and beyond training to learning, and includes forming and assisting farmer groups, dealing with marketing issues, and partnering with a broad range of service providers and other agencies.

The challenges for extension officers differ from one country to another, depending on the extension model used and socio-economic terrain of the country (Davis, 2008). Most countries have reduced their budget allocation for public extension (Davis, 2008); hence, a few extension officers are left to service many farmers. This has resulted in extension officers choosing which farmers they would work well with, and leaving the other farmers without extension services (Belay & Abebaw, 2004). Some farmers have isolated themselves and have not joined farmer groups or cooperatives in Swaziland (Sibandze, 2013), which has increased the costs of helping such farmers by the extension officers, and in most cases, they ended up neglected. Moreover, these budget cuts further limited the little resources for the extension officers to use, i.e. they have to travel long, awkward distances to meet farmers, but they were rarely provided with transport and accordingly they could not respond promptly to farmers or end up not attending to farmers at all. NGOs have provided extension services to farmers, and even to those farmers who were found in very awkward communities; however, projects were unsustainable (World Bank, 2011). Government should be the main role player in making sure the extension department is made a priority, if it is honest about rural development prioritisation.

The training of extension officers in Swaziland dates back to the 1930s, alongside the introduction of rural development by the British government (Dube, 1993). In an analysis of the Agricultural Education and Extension (AEE) programme, which was intended to train extension officers and farmers in Swaziland, Dube (1993) found they faced challenges such as poor maintenance of houses for officers; low salaries; lack of further training opportunities; farmers being reluctant to accept the latest ideas; and meetings clashing with national cultural events. These findings were similar to challenges found by Keregero (2000) and Connolly et al. (2011) in Swaziland, and to those found by Oladele et al. (2009) and GFRAS et al. (2012) in the SADC region.

Keregero (2000) reported that there was an increasing concern that the extension services in Swaziland have not contributed significantly to the improvement of the conditions and well-being of farmers, even after 70 years of existence. He cited several threats to the credibility of agricultural extension, including the perception that the extension practices ignore indigenous knowledge; the extension personnel being male dominated and gender stereotyped; they were also relatively lowly qualified but moderately experienced; they disregard conventionally recognised sources of agricultural information for farmers; their community meetings with farmers were ineffective; less attention was given to women, yet they are a majority group of farmers; and rural people tended to portray mutual distrust in interpersonal relations with extension officers. Such findings existed, regardless of the implementation AEE programme which was evaluated by Dude in 1993. Keregero (2000) concluded that the agricultural extension service in Swaziland is generally weak in addressing its mandate, and called for a review in order to seriously address its credibility problem.

2.7 Practical Solutions to the Challenges faced by Extension Workers

Extension helps farmers to deal with technological and economic changes; therefore, as agriculture develops from a traditional to a more dynamic, scientific model, the quality of extension services must also improve. Norton et al. (2010) stated that extension services accelerated the dissemination of research results to farmers and, in some cases, helps convey farmers' problems to researchers, and because extension officers provided training for farmers on a variety of subjects, they must be technically competent, economically competent, technologically competent, and communicate competently. This meant that extension officers required extensive training and retraining to maintain their credibility with farmers (Norton et al., 2010).

There are many extension approaches in the world that suit different situations, but unfortunately, there is no one "best practice" for modifying extension programmes, such that they could be standardised and implemented anywhere (Davis, 2009). However, the better models include the farmer field school approach; the Indian ATMA market-driven approach; and the pluralistic, demand-driven models that incorporate the use of information and communication technologies (Davis, 2009). The Global Forum for Rural Advisory Service (GFRAS) et al. (2012) noted that there is a need to remobilise the potential of extension and advisory service to focus on five (5) main opportunities, which are focusing on best-fit

approaches; embracing pluralism; using participatory approaches; developing capacity; and ensuring long-term institutional support. Government alone could not provide sufficient extension services to farmers, and thus there is a need for the well-institutionalised participation of farmer organisations, NGOs, the donor community, and private companies to address the diverse needs of farmers (GFRAS, et al., 2012; Swanson, 2011). This means that Swaziland must adopt and modify its extension model so that it will best suit the socio-economic terrain of its farmers and the country. Oladele (2011) suggested that advisory services and extension services must be transformed and integrated to become more farmer-led and market-driven, if they are expected to transform the agribusiness sector.

There are many approaches to delivering an extension service and they need special approaches in their implementation. Several researchers have made suggestions on how best these approaches could be implemented to work effectively and efficiently. Blake et al. (2011) concluded that community-based extension systems are more effective and sustainable, and further argued that these reach even the poorest farmers whom government and private extension officers could not reach. Groenewald et al. (2011), on the other hand, recommended that a private extension service works best when combined with a public extension service, since a private extension service tends to focus more on well-established farmers than on emerging farmers. Therefore, combining the two models has the potential to bring smallholder farmers to the mainstream value chain, as the extension officers would share experiences learned from well-established farmers with the developing smallholder farmers.

Vodonle (2011) concluded that the ‘contractualisation’ of the extension service might be a good tool for making the agricultural advisory service efficient, but its promoters should take into account the need for adequate funding, training and farmer literacy. The author further reported that the contractualisation of an extension service works best with donor-funded projects. Another approach to extension is the Common Interest Group Approach (CIGA). Magambo et al. (2011) described this approach as a good one for addressing gender biases among farmers in getting extension services. However, it needs to be transformed from mere social groupings to business ventures that have proper governance structures and business plans so that its contribution to the socio-economic life of farmers would be significant.

Belay and Abebaw (2004) stated that if an agricultural extension is to contribute significantly to the agricultural development endeavour of the country, it must provide timely and competent

services. This calls for strengthening the contact between extension officers and farmers through, among others, the hiring of professional extension officers who have adequate training in extension methods. Moreover, they must have communication skills, technical skills, marketing skills, and leadership and management skills (Belay & Abebaw, 2004). Therefore, in-service training programmes must be organised on a regular basis to help extension officers develop the knowledge, skills and attitudes necessary to meet increasingly diverse demands (Magambo et al., 2011), since it is also important that the extension system must be flexible to respond to new challenges in the agribusiness sector. In a SNAU workshop in 2010, it was recommended that there should be a revamp of extension services through recruitment, re-training and retention of extension officers and development of farmer skills (SNAU, 2010). In line with the needs for training, Paul (2011) found that extension officers, in general, lack understanding in the interpretation of contracts and market trends; and therefore, recommended that there must be capacity development for extension officers, including training in trade, industrial and innovation policies, to enable them to create the policy space to access the benefits of the agreements, while addressing supply-side issues.

In most cases, vegetable farmers are located in rural areas and conduct farming as a source of their livelihoods. In general, they are entangled in a poverty trap, and therefore, Vorster et al. (2008) have suggested that the technologies developed for these farmers should be labour saving and require low-resource (human, financial, natural and physical) use. Vorster et al. (2008) also suggested that science and indigenous knowledge should be integrated, since this would help researchers, extension officers and farmers to effectively improve cropping systems, together with realising the reality of households' possibilities and potentials.

2.8 Summary of Agricultural Policies in Swaziland

Salam and Mamba (2012) noted that Swaziland then had only the following available policies under the Ministry of Agriculture and Cooperatives: The National Livestock Development Policy, enacted in 1995; the National Action Program of the Convention to Combat Desertification of 2001; The National Forestry Policy, approved in 2002; and The Rural Resettlement Policy of 2003. They further stated that the Comprehensive Agricultural Sector Policy of 2005, which supposed to be the main agricultural policy, was still a draft policy awaiting approval in parliament. It was, however, regretted that although the country had been affected by drought for a long time, it still did not have a policy to address such a challenge

(Salam & Mamba, 2012; Oseni & Masarirambi, 2011), which has resulted in the decline of staple food supplies, more especially in the Lowveld the drought problem is severe.

A major problem in organising agricultural extension in developing countries is the absence or voids in legal and policy frameworks for providing services (Oladele et al., 2009). Putting such frameworks into place would help support extension officers in developing countries. It would also remove the confusion currently existing around the effort to transfer agricultural knowledge to farmers, particularly in the areas of service provision, programme development, and funding (Oladele, 2011). Swaziland is a member of the Southern African Development Community (SADC), and hence its agricultural practices are governed by a plethora of Regional and National agricultural policies/treaties and strategies (SNAU, 2010), some of which policies can be seen in Table 2.4 below.

Table 2.4: Regional Policies, Treaties, and National Policies and Governing the Agriculture Sector

Regional Policies/Treaties	National Policies	National Strategies
1. SADC Declaration, Treaty & Protocol (1992)	1. National Development Strategy (Vision 2022)	1. National Agriculture Summit Action Plan (2007)
2. SADC RISDP (2003)	2. Poverty Reduction Strategy & Action Plan (2006)	2. Draft Agriculture Diversification Strategy (2009)
3.SADC Declaration on Agriculture & Food Security (2004)	3. Comprehensive Agriculture Sector Policy (2005)	3.Swaziland Agriculture Development Project (2009)
4. SADC Regional Agriculture Policy Framework (2010)	4. Food Security Policy (2005)	4. National Adaptation Strategy (2006)
4. CAADP (2005)	5. Livestock Development Policy (1995)	
	6. Irrigation Policy (2006)	
	7. Draft Land Policy (1999)	
	8. Resettlement Policy (2003)	
	9. Seed Policy (2000)	
	10. Water Policy (2009)	
	11. Input Support Programme (2010)	

Source: SNAU (2010:3,4&8)

The Swaziland Agricultural Development Project (SADP) identified the following as the main agricultural issues of concern for the government of Swaziland in 2012 (SADP, 2012:5):

- Establishment of a SZL1 million marketing investing fund to help small-scale farmers link better to markets;

- Rehabilitation of two earth dams and building of weirs, in tandem with downstream irrigation systems;
- Rehabilitation of regional infrastructure to strengthen capacities of the Ministry of Agriculture;
- Establishment of over 1 200 demonstration plots for training on good agricultural practices, including conservation agriculture, agro-forestry, vegetable cropping, livestock raising;
- Implementation of the new Agricultural Extension Policy;
- Development of an Agricultural Research Policy;
- Finalisation of a National Farmers' Organisation Capacity Development Programme; and
- Support Swaziland's involvement with the Comprehensive Africa Agriculture Development Programme (CAADP), a vision to stimulate economic growth in Africa through agriculture-led development.

2.9 Contribution of Agriculture to Socio-Economic Status of the Country

In 2011, agriculture contributed about 8.2% of the GDP of Swaziland (Mahlahat, 2012). Most people in Swaziland live in rural areas and are poverty-stricken: 80% of the population earn their livelihoods through agricultural activities, but agriculture only contributed 12% of the GDP (Alther, 2008). This suggests that agriculture contributes to the economy too, and therefore if developing countries want to tackle poverty, they have to put the smallholder farmers first (SADP, 2011). Moreover, Xaba and Masuku (2013) reported that agriculture acts as a source of income and is a food security contributor to a large proportion of the rural households in Swaziland, while it offers markets for industrial products and is an earner of foreign exchange.

The World Bank (2011) reported that the Swazi Government developed the Government Program of Action 2008-13 (GPA), which placed agriculture at the centre of the economic growth agenda, emphasising intensification and diversification of smallholder agriculture and food security as the pillars for reducing poverty. This was noted as a positive sign and direction from government in the drive to develop rural people, as they depend mainly on agriculture.

Xaba and Masuku (2013) noted that smallholder farmers have great opportunities in the vegetable production area, although they produce seasonally for local market, while there was room for year-round production and export.

Commercial arable estates generated more than 81% of the value of all agricultural output (and 8.6% of GDP), while traditional farming accounted for some 11% of the value of agricultural output, and did not exceed more than 1.2% of GDP (MNM Consultants, 2002). This tells a positive story about farming in Swaziland. Sibandze (2013) stated that National Agricultural Marketing board estimated vegetable imports to be over SZL73.6 million per year, notwithstanding the fact that the economy of the country depends on local farming. The author further stated that Swaziland even imported the staple crop, maize. From 2003 to 2006, the imports into the country exceeded the exports (AfDB et al., 2012), which meant that the country had to raise extra income to pay for its imports, since the value of exports could not cover imports costs. Xaba and Masuku (2013) also reported that in NAMBoard's fresh produce market, only 11 percent of the vegetables were from local production, while the rest came from South Africa. Swaziland's economy depends on farming but there is high underperformance, hence not self-sufficient. This creates an opportunity for farmers to increase productivity.

Davis (2009) reported that, in general, agricultural extension had undergone a number of transformations: from centralised top-down technology-transfer-orientated approaches to decentralised, participatory and more integrated approaches. Egziabher et al. (2013) noted that there was little or no evidence relating to these transformations having a positive impact in farmers' lives. However, in a study they conducted in Ethiopia, it was found that a participatory extension programme had a large, positive impact on household welfare, increasing income by about 10%, and on investment and income diversification (Egziabher et al., 2013).

Swaziland has needed to tackle several challenges, which include lack of employment opportunities; the vulnerability of the economy to external shocks and variable climatic conditions; combating the HIV/AIDS pandemic; and enhancing good governance (AfDB, 2005). Extension and Rural Advisory Services (RAS) were deemed to be crucial in putting farmers' needs at the centre of rural development, ensuring sustainable food security and poverty reduction, and dealing with risks and uncertainty (GFRAS et al., 2012). Eicher and Staatz (1998:11) emphasised and categorically stated that agricultural growth (for smallholder

farmers) could have a major impact on poverty reduction, since it addresses the following strategic areas:

- a) Reduction of consumer prices of non-tradable and semi-tradable foods (unless their markets are heavily protected or monopolised).
- b) Generating rapid growth of rural employment and self-employment.
- c) Tightening rural labour markets, which increases rural wages and subsequent provision of a market for rural and urban products.
- d) Creating more jobs, as government has to support these smallholder farmers by hiring extension officers; and in improving research; improving infrastructure; and in establishing and regulating markets.

2.10 Access of farmers to financial support

Limited capital, lack of credit information, and fluctuating interest rates have been identified as serious financial hindrances to the success of small-scale farmers (Ricketts & Ricketts, 2009). Agricultural financing has been rarely offered in the Swaziland, and in the few cases where it was offered, it has been largely made to sugarcane growers (Samuel, 2008). Such an important activity has been dominated by two development finance institutions which were government-funded: the Swazi Bank and the Swaziland Development Finance Corporation (FINCORP) (Samuel, 2008). This meant that commercial financiers play no role in making agricultural finance available for small-scale farmers. The neglect of smallholder farmers by financial institutions should be discouraged at all costs, although it should be acknowledged that it is very difficult and costly to finance smallholder farmers, as they carry high risks and have poor markets access (Kirsten & Sartorius, 2002).

The literature on collective action amongst farmers suggests that farmers can finance their activities and services, collectively (Mavimbela, Masuku and Belete, 2010). Collective action can range from simple informal farmer groups to formal farmer groups, like cooperatives. Apart from paying joining fees, the groups can develop their own micro-finance schemes (Alther, 2008). Although cooperatives can help raise finances through joining fees, projects may later experience difficulties to access finance as cooperatives grow. These issues are well

discussed in the cooperatives literature, and the literature suggests that cooperatives fail to raise additional capital because of ill-defined property rights (see Cook, 1995; Cook & Iliopoulos, 1999; Sykuta & Cook, 2001). These authors argue in support of hybrid structures for cooperatives, called ‘new generation cooperatives’, which give incentives for investment (i.e. if you invest more, you get better returns and control power in the cooperative).

2.11 The role of NGOs in rural development

Alther (2008) reported that NGOs usually convey technical skills, such as how to save money and set up saving clubs, and improve skills in horticulture, husbandry, and crop cultivation, while they empower people to maintain water systems and, most importantly, they train in social competences and the setting up of group structures. The role of NGOs in rural development is seen as not sustainable if the community is not fully engaged and capacitated. These NGO projects need to be incorporated within government projects to improve their sustainability prospects.

2.12 Measuring Perception

There are numerous factors that shape or distort one’s perception of a subject or an object. These factors can be in the perceiver, in the perceived object or subject, and in the context of the situation in which the perception is made (Pilot, 2013). The characteristics of the perceiver include attitudes, moods, motives, self-concept, interest, cognitive structure and expectations. Pilot (2013) further stated that the appearance of the perceived object will greatly influence one’s perception of the subject, i.e. objects/subjects in their extremes (very short or tall) are more likely to be noticed than average subjects/objects, and this further influences our perceptions of them. Moreover, the environment or conditions or situations created when one analyses an object/subject greatly influences the perception.

Perception, in psychology, is the mental organisation and interpretation of sensory information (Ajzen, 2002; Kumar & Popat, 2009). Therefore, the way in which both farmers and extension officers perceive the extension system influences the way and level of participating in the system. If they perceive it as ineffective and useless, they would not participate effectively, and the inverse is true if they perceive the system as useful and effective. Benjamin (2013:1-2)

listed the following factors to help identify whether an extension programme is effective or not: the factors included awareness, visits, field marketing, regularity, field days, demonstration, supervision, research extension linkage, and farmers' training. This means that farmers would judge the effectiveness of an extension system mainly based on these factors. However, there are sometimes variations in the perceptions about a phenomenon that emanate from differences in demographics and experiences. Several studies have used farmers' perceptions to describe certain behaviour or trends (see Bhuyan, 2007; Tathdil et al., 2009; Adesina & Zinnah, 1993; and Zegeye et al., 2010)

To measure perceptions, questionnaires and interviews are used in most cases (Isaac & Michael, 1997). These can be developed with open-ended questions or structured questions, based on the sample and preferences of the researcher. It is very important to develop an instrument that is valid and reliable, and that will help the researcher to collect relevant data for analysis. Likert scale types of questions have been prominent over the years and bring data that is more suitable for analysis, and achieve valuable results (Reingold & Merikle, 1998).

2.13 Topic Summary

There are many smallholder vegetable farmers in the country who are regulated by NAMBoard, although some are not registered with this Board. Some of these farmers work as cooperatives, while others as individuals. Some are members of SNAU, and some are not. Production has declined over the years for some vegetables, and has increased for other vegetables, although production has declined, in general. Agriculture contributes considerably to the country's GDP and improvements by small-scale vegetable farmers could further alleviate food insecurity, poverty and unemployment.

Generally, small-scale farmers have poorer access to markets than large-scale farmers do because of a number of constraints. They face stiff competition from South African large-scale vegetable farmers. Farmers face many socio-economic challenges in the country, ranging from deficiencies in infrastructure, markets, political and agricultural institutions; poor organisation of the industry, imports and land tenure; lack of access to finance; to droughts. There must be a mutual interaction between public, private, NGO and civil society organisations (Adekunle et al., 2012), with main elements that include: building and supporting partnerships; strengthening farmer organisations; involving the private sector and ensuring market-driven

approaches; improving access to information, knowledge and training; scaling up and adding value to the country's agricultural strategies; and sustainability. There are also extension workers who on a day-to-day basis who should interact with farmers in a bid to capacitate them; however, they also face many challenges in their endeavours. Extension officers need regular training, resources and general good welfare attention from government and partners.

There are a number of policies and strategies implemented by NGOs, government and the SADC which are intended to improve agribusiness in the country, although their implementation seems to be inefficient, when their successes are analysed. Financing is mainly highlighted as being the problem for both policy implementers and the farmers, at large. There are many socio-economic factors that affect the perceptions of farmers and extension officers. When these factors are properly analysed and interpreted, they could play a significant role in positively influencing both the structural and institutional dimensions of the extension system.

CHAPTER 3: METHODOLOGY

3.1 Research Design

This research was conducted as a survey type of study; it was set to evaluate the extension service landscape and smallholder vegetable farmers' welfare in the Hhohho region, with the main goal of identifying methods to enhance agricultural growth, and thus achieve the overall alleviation of food insecurity and poverty. A survey research study constitutes social scientific research which focuses on people, the vital facts of people, and their beliefs, opinions, attitudes, motivations and behaviour (Mathiyazhagan & Nandan, 2010). It uses interviews, questionnaires, panel surveys, observations and telephone interviews for data collection (Hatch, 2009). Salkind (2009) and Isaac and Michael (1997) recognised the advantages and disadvantages of surveys, as shown in Table 3.1.

Table 3.1: Advantages and disadvantages of surveys

Advantages	Disadvantages
Allows researcher to view a broad picture of what is being studied, and with proper sampling, its results can be generalised	It is highly susceptible to interviewer/researchers' and respondents' biases
Data can be collected cheaply with just one contact with the respondents.	Non-responses from sampled respondents can be a serious shortfall
If sampling errors are minimised, the results can be very accurate and useful	It may leave out respondents with crucial information when the sample is chosen

Source: Isaac and Michael (1997:136)

3.2 Site Description

The Hhohho region is in the northern part of Swaziland, with coordinates 26°00'S 31°30'E. The area is about 3625.17km², with a population of 282 734, according to the 2007 census (Ministry of Tourism and Environment Affairs, 2011). This region is mainly composed of the Highveld and Middleveld geographic characteristics, with an altitude ranging from 400 to 1400m and mean annual rainfall of 650–1500mm. Oseni and Masarirambi (2011) reported that the unreliability and unpredictable distribution of rainfall have increased in general, although the Highveld and Middleveld were described as least affected by these phenomena. In the rural communities of this region, subsistence agriculture is the provider of livelihoods and an

economic support strategy. Simultaneously with subsistence agriculture, smallholder vegetable farmers grow their vegetables for selling in urban areas and locally. According to the Ministry of Tourism and Environment Affairs (2011), the Hhohho region is the most urbanised part of the country, with the towns of Mbabane (the capital of the country), Zulwini (residential fast-growing town), Pigg's Peak (forestry and tourism) and Buhleni (small but growing). The economy of this region is centred on forestry and tourism, although the rural dwellers grow rain-fed crops and keep livestock.

3.3 Target Population

This survey focuses on agricultural extension officers and smallholder vegetable farmers in four (4) Rural Development Areas (RDAs) in the Hhohho region. The researcher chose only the Hhohho region out of the four administrative regions of Swaziland, because the limited time and finances available for conducting the study would not have covered all the regions. Moreover, this region was purposefully selected because there is much vegetable and field crop production taking place in it. According to Arcury and Quandt (1998), convenience sampling is a procedure typically used to save time and expense, and therefore it was used in choosing the area of study. Conclusions drawn from such samples would be quite tentative, and the samples are better suited for generating research questions than answering them (Arcury and Quandt, 1998). The RDAs situated in the Hhohho region are Entfonjeni, Mayiwane, Madlangemphisi and Motshane.

3.4 Sampling

Sampling is the drawing (choosing) of a representative unit (sample) of the target population under investigation (Taylor-Powell, 1998). There are probability and non-probability samples. Only correctly done probability samples can be generalised as a representation of the population under investigation (Taylor-Powell, 1998). Table 3.2 below shows sample sizes for each RDA, for both farmers and extension officers.

Table 3.2: RDAs in Swaziland, the number of extension officers and farmers in each RDA and the samples chosen in each RDA

REGION	RDA	TOTAL NO. OF EXTENSION & FARMERS		SAMPLE SIZES	
		Extension	Farmers	Extension	Farmers
		N	s	N	s
Hhohho	Entfonjeni	3	70	3	59
	Mayiwane	3	9	3	9
	Madlangempisi	4	20	4	19
	Motshane	3	18	3	17
Total		13	117	13	104

N = population

s = sample

The sampling was done in accordance with the Krejcie and Morgan formula for estimating samples (Isaac & Michael, 1997). The formula is stated thus:

$$S = \frac{X^2 NP (1 - P)}{d^2 (N - 1) + X^2 P (1 - P)}$$

Where;

S = required sample size

N = the given population size

P = population proportion that for table construction has been assumed to be 0.50 as this magnitude yields the maximum possible sample size required.

d = the degree of accuracy as reflected by the amount of error that can be tolerated in the fluctuation of sample proportion *p* about the population proportion *P* – the value for *d* being 0.05 in the calculations for the entries in the table, a quantity equal to $\pm 1.96 \sigma_p$.

X² = the value of the chi square for one degree of freedom relative to the desired level of confidence, which was 3.841 for .95 confidence level represented by entries in the table.

According to the Hhohho Regional Extension Officer, the region had a total of 13 crop production extension officers in the four (4) RDAs and 117 smallholder vegetable farmers. All the 13 extension officers in the region were able to participate in the research since they were few in number. The farmers were initially sampled with that understanding that they were 117,

although it was difficult to locate them on the ground. Therefore, to find the farmers, a snowballing technique was used and 81 farmers were interviewed, in total.

When all things are held equal, larger samples reduce sampling errors (Isaac & Michael, 1997). In general, the larger the sample size is, the more reliable the data you collect will be and the more accurately it would represent the opinions of the entire population (Responsive Management, 2007). Isaac and Michael (1997) recommended that if you want to get a sample with a sample proportion p that is within ± 0.05 and a 95% level of confidence, you have to make the sample high when the population is low; i.e. in population of 10, the sample should be 10; in a population of 50, the sample should be 44; in a population of 100, the sample should be 80; and in a population of 1000, the sample should be 278. Therefore, the sample of 81 can be said to fall within such recommendations.

3.5 Instrumentation and Data Collection

Surveys in typical use utilise interviews, questionnaires, panel surveys, observations and telephone interviews for data collection (Hatch, 2009). Table 3.3 below summarises the data collection tools viewed as being appropriate to collect data for each research question or objective.

Table 3.3: Data collection tools and the participants for each objective

Objective/Research Question	Participants	Tool/Instruments
1	Senior Extension Officers and Agriculture Officials	One-to-one interviews
	Ministry/NGOs reports	Secondary data
2	Farmers	One-to-one interviews
3	Farmers	One-to-one interviews
4	Extension Officer	Questionnaire
5	Farmers and Extension Officers	One-to-one interviews
6	Farmers and Extension Officers	Group discussion and interviews

3.5.1 Instrumentation

The research used standard structured interviews and accordingly the researcher developed corresponding questionnaires for collecting data. The researcher developed a list of short, structured questions that were used in the interviews. This type of question allows for an easy flow to an interview, and ensures accuracy of the answers and ease of analysis.

The researcher informally asked the farmers and extension officers to share with him their problems/challenges and suggest practical solutions to their problems. Moreover, certain information from the previous literature review was also used to develop the questionnaires. This enabled the researcher to develop scales (Likert scales) and closed-ended questions which farmers and/or extension officers responded to during the interviews.

The questionnaire was validated by extension officers and research supervisors. The supervisors were an extension expert and a horticultural expert. The questionnaire was pilot tested on a few respondents in a bid to restructure the items and general flow. This would also help to train the interviewers and acclimatise them for data collection. Moreover, the questionnaire was pilot tested in one RDA of another region, which helped in designing modifications to improve its validity and reliability.

3.5.2 Data collection

Data collection for a survey may be very difficult task, since there might be many extraneous variances which are difficult to control and which may harm the validity (Salkind, 2009); however, one can give consideration to other sources of information that are in line with the respondents, and may re-interview the respondents to test the accuracy of the data.

The researchers obtained permission from the Ministry of Agriculture (MoA) to conduct the study. The permission was used to ask for assistance in the RDAs where the extension officers are based. In addition to the permission from extension officials, the researcher personally requested assistance from extension officers and explained how it was important for them to participate meaningfully in the study. The researcher then asked the extension officers in the RDAs to introduce him to their farmers so that he could personally request them to participate in the study too. Only the farmers who agreed to participate were interviewed for the study. The details of the research and its significance were discussed with the farmers and they were ensured of the confidentiality of the information they gave. These visits with the extension

officers to the farmers also helped the researcher to gain a picture of the dynamics of the farmers so that the data collection procedures would be aligned with the situation of the farmers, i.e. literacy and grouping possibilities. Moreover, it also helped in the refining of sampling procedures and data collection tools.

The researcher made appointments with farmers and extension officers to collect data for administering the pilot tests to the actual participants of the study. Thereafter, dates, times and venues for interviews were set: these interview arrangements were made largely according to the convenience of the farmers and extension officers, although the RDA centre was highly preferred as a venue. Some farmers were not available for the set date, time and venue, and when an extension officer or farmer was busy on the date of the interview, the researcher left the questionnaire behind and asked the respondent to fill it in, depending on their literacy level. If this was not suitable, the researcher arranged another time for interview.

For the farmer's interviews, the researcher trained an assistant to help, with the view that he would gain experience during pilot testing and participate fully during the real data collection. All respondents were given the liberty to ask questions if they needed clarity on some of the items. When all questionnaires were completed, the researcher carried out a cross-check immediately to ensure they were well completed and there were no items that were skipped.

To identify solutions to the challenges faced by farmers, group discussions were arranged with senior extension officers in the region. They were approached during their monthly meetings to allow time for the discussion.

3.6 Data presentation and analysis

The data was predominantly quantitative and was analysed using the Statistical Package for Social Studies (SPSS) (SPSS, 2001). However, some of the data would be qualitative and accordingly was given the appropriate analysis. According to Dey (1993), quantitative data deals with numbers, while qualitative data deals with meaning; however, these two types of data should be viewed as dependant. The data was coded, fed in the SPSS package, analysed, presented, comprehensively interpreted, and deductions made. This research mainly used descriptive statistics, which measure central tendency or averages and variability. The central measures of central tendency include mean, mode and median, while the measures of

variability include range and standard deviation (Salkind, 2009). The measures of central tendency have specific levels of measurement, which could be used as shown in Table 3.4.

Table 3.4: Measures of central tendency and their levels of measurements

Measure of Central Tendency	Level of Measurement	Example
Mode	Nominal	Eye colour, Party affiliation
Median	Ordinal	Rank in class, birth order
Mean	Interval and Ratio	Speed of response, age in years

Source: Salkind (2009)

Cross-tabulations were used to analyse behaviour in variables in relation to other variables, which helped to develop in-depth discussions or explain certain trends within farmers and extension officers. Furthermore, relationships were measured using correlation and a Chi square' which is an inferential statistic. Some qualitative data was collected mainly to support or act as evidence for inferences of the quantitative data which only appear in data presentation as supporting statements.

3.7 Summary

This was a survey-type of a study, targeting the Hhohho region which has four (4) RDAs. All RDAs participated. These RDAs had a total of thirteen (13) crop production extension officers and 117 smallholder vegetable farmers. All 13 extension officers participated and while 104 farmers were supposed to participate, only 82 were interviewed. One-to-one interviews were conducted with the farmers. The extension officers were given a questionnaire to fill in within 14 days. The instruments were developed by the researcher and validated by extension experts and university academic staff. They were pilot tested using farmers and extension officers in another region. All ethical and technical data collection procedures were followed. The data was predominantly quantitative and was coded and fed into SPSS for analysis. The data was presented in graphs, frequency tables and summaries from descriptive statistics, mainly.

CHAPTER 4: RESULTS

4.1 Introduction

This research was conducted to examine the extension system of the Hhohho Region in Swaziland. It mainly focused on analysing the extension system and unearthing the challenges that smallholder vegetable farmers and extension officers were facing in their work. The identified challenges will lay a platform to discuss workable solutions to such problems for the betterment of farmers. The development of farmers is very important for the economy of the country because it will improve food security, reduce poverty and rural inequalities.

4.2 Results presentation

4.2.1 Extension landscape in Swaziland

4.2.1.1 Structural setup of the Extension Department

Figure 4.1 below summarises the structural set-up of the Extension Department in Swaziland. It is under the Ministry of Agriculture which is headed by a Minister who is given a term of five (5) years in office. Under the Minister is the Principal Secretary (PS), who is the permanent administrative head of the Ministry. For this study, only the Extension Department in the Ministry was of interest.

The Extension Department is headed by the Director of Agricultural Extension (DAE), who reports to the PS. The DAE is assisted by two (2) deputy directors, namely the Deputy Director of Agricultural Extension (DDAE) who heads the pure extension section, and the Deputy Director of Agriculture: Technical Services (DDA (TS) who heads all the other activities under the Extension Department as a whole. There is also the seed regulation office, headed by the Seeds Registrar (Figure 4.1).

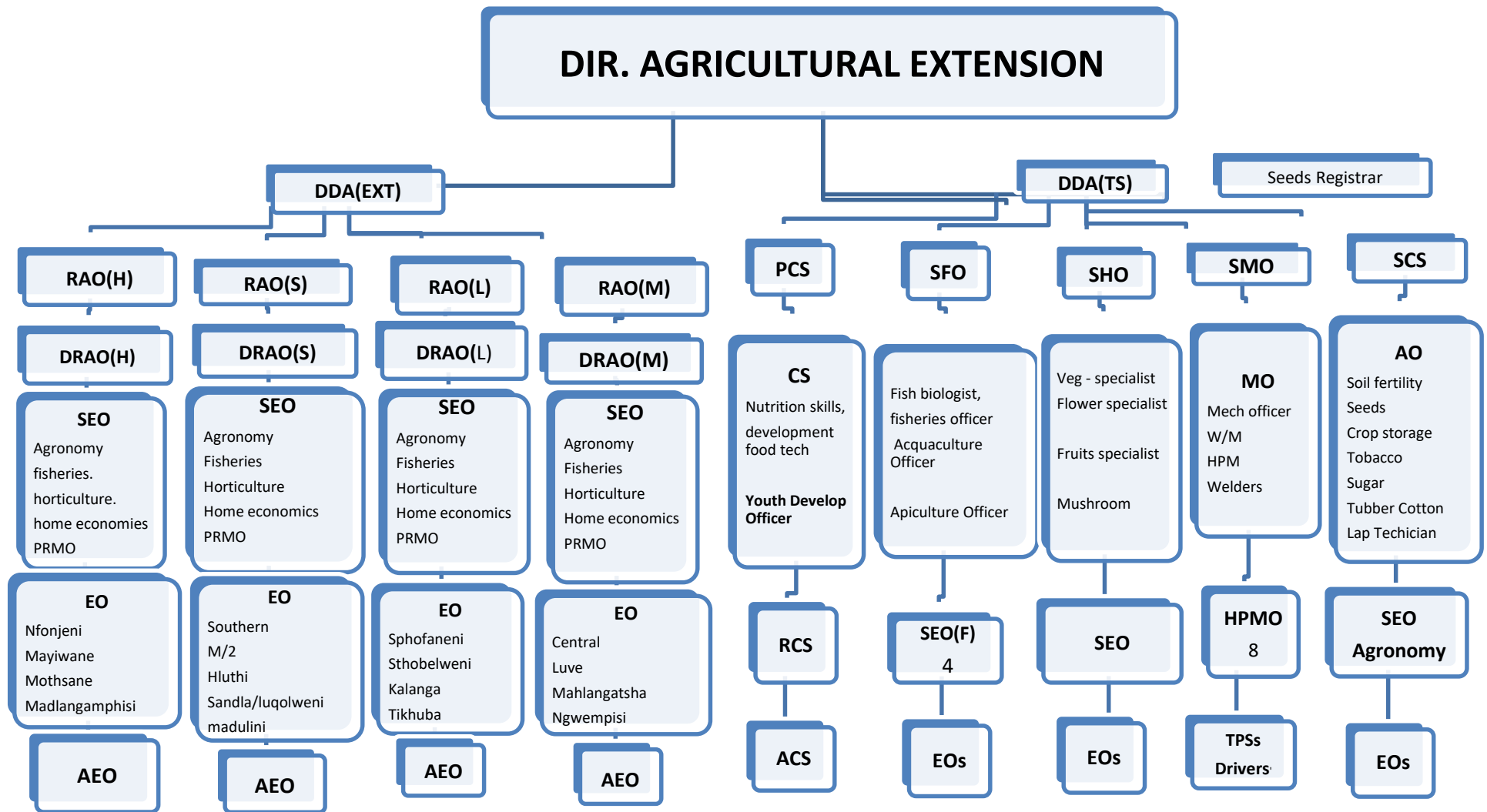


Figure 4.1: Organogram for the extension department of Swaziland

a) Pure extension sector

National level

The pure extension department is headed by the Deputy Director of Agriculture: Extension, at national level. All extension programmes are overseen by this office and it reports direct to the DDA: Extension.

Regional level

In all the four (4) administrative regions of Swaziland (Hhohho, Manzini, Shiselweni and Lubombo), there is a Regional Agricultural Officer (RAO) who reports to the DDAE. The RAO has an assistant, named the Deputy Regional Agricultural Officer (DRAO), who receives and compiles all reports for his or her region.

Still at regional level, the extension department is run by the Senior Extension Officer (SEO) who has an assistant, known as the Assistant Senior Extension Officer (ASEO). They take all the reports from the RDAs under the region, compile them, and send these to the DRAO office, quarterly.

RDA level

The RDAs are headed by an Extension Officer (EO) who works with the Assistant Extension Officers (AEOs). The AEOs work on the ground with the farmers and they report weekly to the EO. In the research, the AEOs are the ones mentioned frequently as extension officers.

b) Technical services department

National level

Alongside the pure extension services, there are other services provided to farmers that are non-extension in nature. Such services are regulated by the DDA (TS) office. These services include youth development on nutrition and food technology, which is regulated by the Principal Consumer Specialist (PCS); the fisheries services, which are regulated by the Senior Fisheries Officer (SFO); mechanisation services, i.e. tractors, which are regulated by the Senior Mechanisation Officer (SMO); vegetable, fruits and flower specialist services, which are regulated by the Senior Horticulture Officer (SHO); the soil fertility, seeds, crop storage, tobacco, sugar, tuber, and laboratory technician departments which are regulated by the Senior Crop Specialists (SCS).

Still at national level, the youth development programme for nutrition and food technology is regulated by the Consumer Specialist (CS); the fisheries services are regulated by the Apiculture Officer, Fish Biologist, Fisheries Officer, and Aquaculture Officer; the horticulture services are regulated by the Vegetable, Flower, Fruits and Mushroom Specialist; the mechanisation services are regulated by the mechanisation officer; and the agronomy services are regulated by the Agriculture Officer (AO).

Regional level

These services are also regulated at regional level. The youth development programme for nutrition and food technology is regulated by the Regional Consumer Specialist (RCS); the fisheries services are regulated by the Senior Extension Officer (Fisheries) [SEO (F)]; the horticulture services are regulated by the Senior Extension Officer (Horticulture) [SEO (H)]; the mechanisation services are regulated by the Heavy Plant Mechanisation Officer (HPMO); and the agronomy services are regulated by the Senior Extension Officer (Agronomy).

RDA level

In the RDAs where real practical work takes place in the communities, the services are facilitated as follows: The youth development programme for nutrition and food technology is implemented by the Assistant Consumer Specialist (ACS); the fisheries services are run by the Extension Officers (EOs); the horticulture services are facilitated by the Extension Officers (EOs); the mechanisation services are run by the tractor pool supervisors (TPSs) and drivers; and the agronomy services are facilitated by the Extension Officers (EOs).

4.2.1.2 Characteristics of extension officers

a) Demographics

The extension officers are evenly distributed across the RDAs and mainly comprised young males, below 40 years old. Table 4.1 below shows that 92.3% of them had recently joined the Department, as a result of government intervention to revive the dilapidating extension department. This young cohort of extension officers have agriculture-related bachelor's degrees, but without pure extension training, while only 16.7% of them had a certificate in Agricultural Extension, but they did not have a bachelor's degree. It is worth noting that 75%

grew up in farming families, which is common in most of Swaziland’s rural areas, and 92.3% of them were farmers as well (Table 4.1).

Table 4.1: The general description of extension officers in the Northern Hhohho Region, Swaziland

Item	Variables	n	%
Which RDA do you work under?	Motshane	3	23.0
	Ntfontjeni	4	30.8
	Mayiwane	4	30.8
	Madlangemphisi	2	15.4
Gender	Males	9	69.2
	Females	4	30.8
Marital Status	Married	4	30.8
	Single	8	61.5
	<i>De facto</i> partnership	1	7.7
Age	21 – 25 Years	2	15.4
	26 – 30 Years	3	23.0
	31 – 35 Years	3	23.0
	36 – 40 Years	2	15.4
	51 – 55 Years	1	7.7
	56 – 60 Years	2	15.4
Current position in the Department	Extension Officer	5	38.5
	Assistant Extension Officer	8	61.5
Experience in the position	0 – 5 Years	12	92.3
	16 – 20 years	1	7.7
Highest level of education	Certificate: Agricultural Extension	2	15.4
	Diploma: Agriculture	1	7.7
	Degree: Agriculture	10	76.9
Are you working in your home area	Yes	2	15.4
	No	11	84.6
Did you grow up in a farming home	Yes	9	69.2
	No	4	30.8
Are you a farmer	Yes	12	92.3
	No	1	7.7

Table 4.2 shows that 76.9% of the extension officers had bachelor’s degrees and were below 40 years of age. On the other hand, those with Certificates and Diplomas made up about 23% of the sample, and these extension officers were above 50 years of age.

Table 4.2: The relationship between age and educational level reached by extension officers

Age	Highest level of education			Total	% ext. officers in each age-group
	Certificate in agriculture: Extension	Diploma	Degree		
21 - 25 years	0	0	2	2	15.4
26 - 30 years	0	0	3	3	23.1
31 - 35 years	0	0	3	3	23.1
36 - 40 years	0	0	2	2	15.4
51 - 55 years	1	0	0	1	7.7
56 - 60 years	1	1	0	2	15.4
Total farmers holding qualification	2	1	10	13	13
% of ext. officer for each qualification	15.4	7.7	76.9	100	100

Table 4.3 below shows that about 62% of those with a bachelor's degree were assistant extension officers, while 38.5% were extension officers managing the RDAs. There was one (1) extension officer who was an assistant senior extension officer heading an RDA, yet he had a certificate as the highest qualification.

Table 4.3: The relationship between education level and current position of extension officers in the Department

		What is your position in the department?		Total	% ext. officers in each qualification
		Extension Officer	Assistant Extension Officer		
Highest level of education	Certificate	1	1	2	15.4
	Diploma	1	0	1	7.7
	Degree	3	7	10	76.9
Total		5	8	13	100
% of ext. officers in each position		38.5	61.5	100	100

b) Operations

There were 13 extension officers who worked with farmers who are growing crops and vegetables in the region. The number of farmers per extension officer ranged from 50 to over 500. Depending on the number of farmers, the extension officers were able to visit each farmer one to three times a month. About 46% of the extension officers were able to meet their farmers three times a month, while 15.4% could only meet their farmers once a month, on average, as shown in Figure 4.2 below.

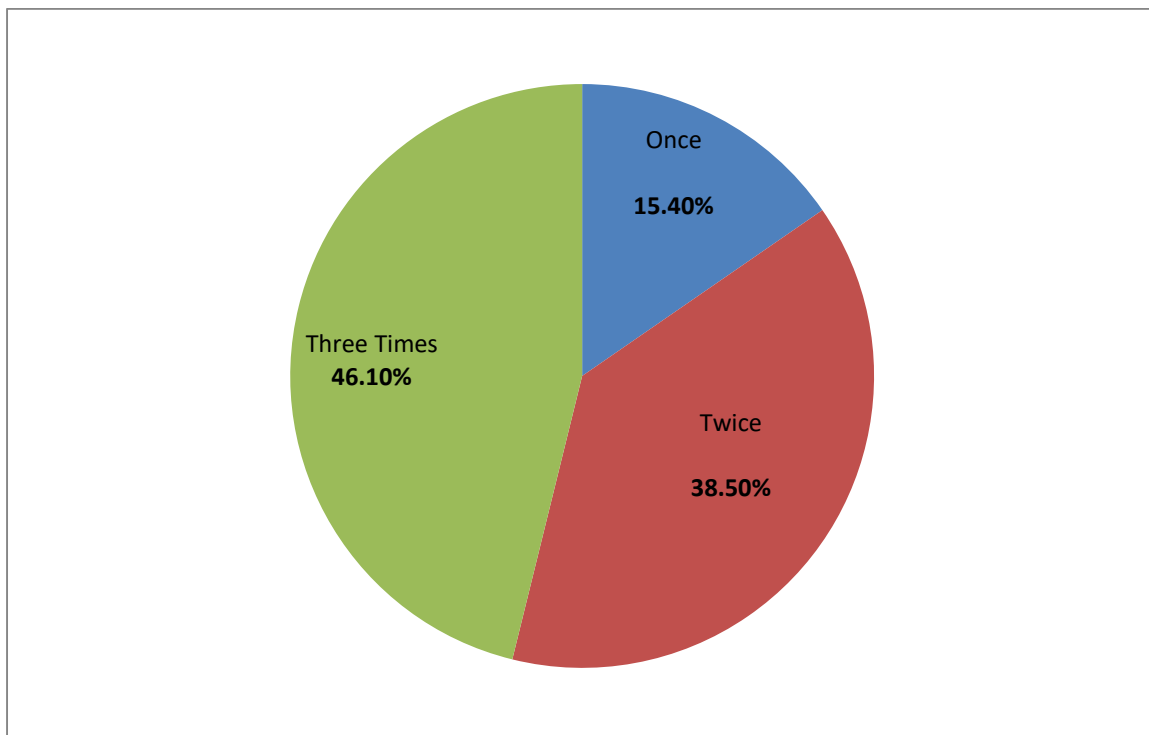


Figure 4.2: The average frequency of visits by extension officers to farmers in a month

The extension officers used different techniques to work with their farmers, as shown in Figure 4.3 below. The most common technique was the farmer group, followed by the individual farmer visit, while the Farmer Field School was the technique used least.

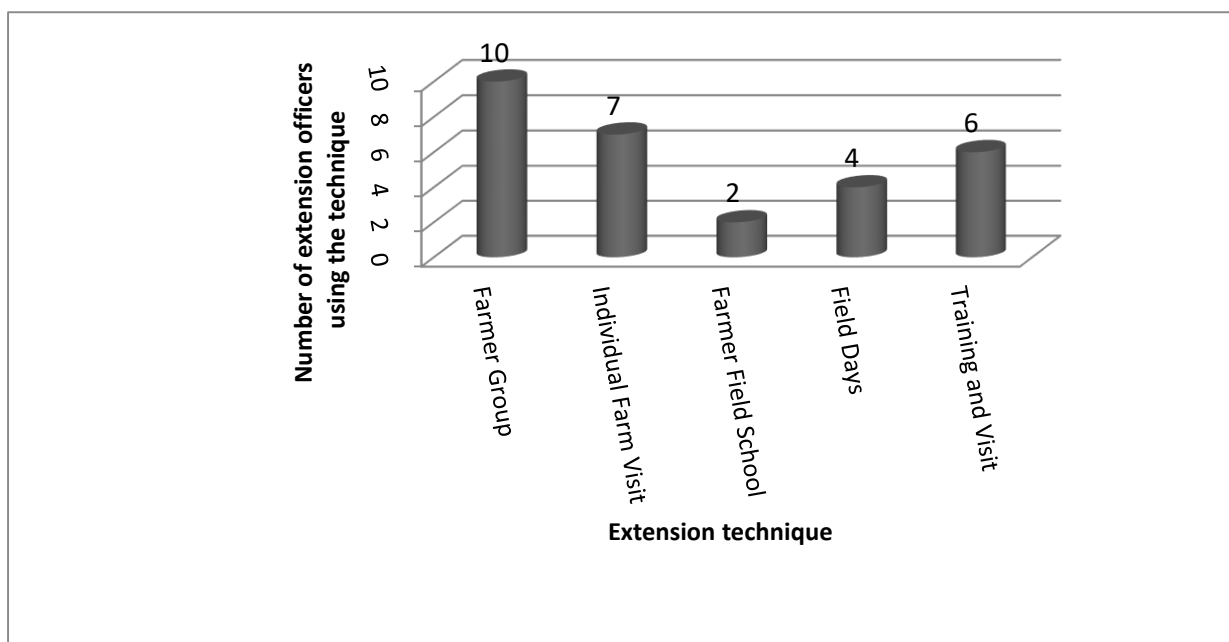


Figure 4.2: Number of extension officers using a certain extension technique

Workshops are important in a highly dynamic department like the Extension Department, as they provide a platform for gaining new and relevant knowledge to assist farmers. It was found that twelve (12) out of the thirteen (13) extension officers had attended at least one workshop in the past three months, which was on vegetable and crop production. All those who attended it believed it was informative (5) and even very informative (7), as shown in Table 4.4 below. Such workshops were generally financed and organised by NGOs.

Table 4.4: The number of extension officers who attended at least one workshop and their rating of the workshop

Responses		Rate the informativeness of the workshop			Total	%
		Very informative	Informative	Neutral		
Attended any workshop the past three months?	Yes	7	5	0	12	92
	No	0	0	1	1	8
Total		7	5	1	13	100
% of ext. officer		53.9	38.5	7.6	100	

The most prevalent NGO that was involved in farming in the region was the Food and Agricultural Organization (FAO). This means that although other organisations might have been assisting farmers, the FAO was more active, as shown in Figure 4.4 below. Other organisations, such as World Vision, Red Cross, Techno Serve and NERCHA, also assisted.

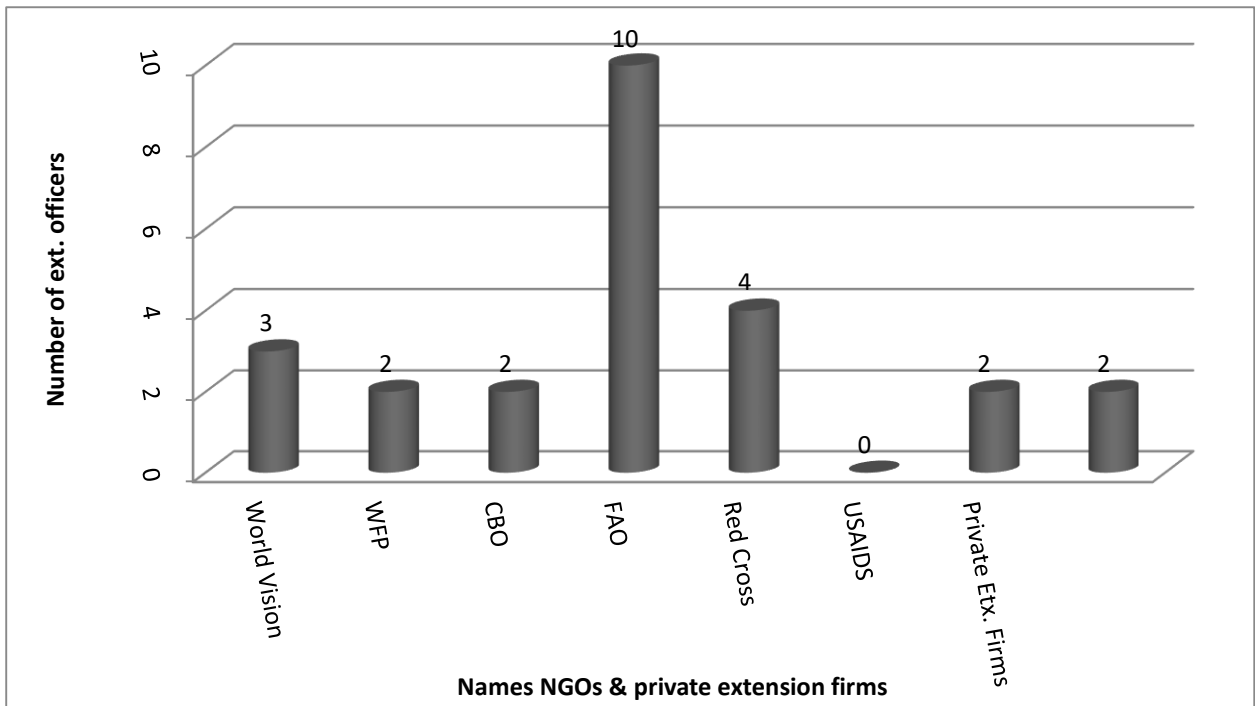


Figure 4.3: Common NGOs that assist in agricultural extension in the Hhohho region

Although extension officers were deemed as being good in doing most of their tasks, it was also evident that some of them were still not able to do other tasks. Table 4.5 below identifies tasks, such as drawing business plans, financial management, forming farmer groups, advocating on behalf of farmers to government and NGOs, conflict management, and sourcing affordable inputs, as being tasks that were performed less, or done by only some of the extension officers. Table 4.5 below shows that extension officers mainly concentrated on advising farmers on production-related aspects of the business.

Table 4.5: The frequency at which extension officers do certain tasks with their farmers

Tasks	N	Minimum	Maximum	Mean	Std. Deviation	Comment
How often do you train farmers on vegetable production?	13	2.00	4.00	3.00	0.71	O
How often do you advise farmers on how to market their produce?	13	2.00	4.00	2.92	0.64	O
How often do you advise farmers on pest and disease control?	13	2.00	4.00	3.15	0.56	O
How often do you train farmers on drawing business plans?	13	1.00	3.00	2.15	0.80	LO
How often do you train farmers on financial management?	13	1.00	4.00	2.62	0.87	O
How often do you organize farmers into farmer groups?	13	1.00	4.00	2.92	1.04	O
How often do you secure good market contracts for farmers?	13	1.00	4.00	2.62	0.87	O
How often do you represent farmers in government or NGOs	13	1.00	4.00	2.23	0.83	LO
How often do you intervene in conflict amongst farmers?	13	1.00	4.00	2.54	1.05	LO
How often do you train your farmers on new farming trends	13	1.00	4.00	3.08	0.86	O
How often do you help farmers in finding cheaper inputs providers?	13	1.00	4.00	2.62	1.04	O
How often do you organize tractors, seeds and fertilizers for farmers?	13	2.00	4.00	3.15	0.80	O
How often do you advise farmers on the best time to plant?	13	2.00	4.00	3.23	0.83	O
How often do you explain market contracts to farmers?	13	2.00	4.00	2.92	0.76	O

To comment: MO – More Often (mean: 3.6-4)

O – Often (mean: 2.6-3.5)

LO – Less Often (mean: 1.6-2.5)

N – Never (mean: 1-1.5)

Table 4.5 also shows that extension officers frequently trained farmers on a number of activities to assist them in their businesses. However, they did not frequently train farmers in drawing business plans (mean: 2.15); advocate for farmers to government or NGOs (mean: 2.23); and intervene in farmer-group conflicts (mean: 2.54).

Extension officers were also asked to evaluate themselves on the tasks they do. Table 4.6 below shows the self-evaluation of extension officers.

Table 4.6: Self-evaluation of extension officers in doing some of the tasks mandated to them

Tasks	N	Minimum	Maximum	Mean	Std. Dev.	Comment
Training farmers on growing vegetables	13	2.00	4.00	2.92	0.76	Good
Advising farmers on produce marketing	13	1.00	4.00	2.77	0.83	Good
Advising farmers on pest and disease control	13	2.00	4.00	3.00	0.71	Good
Training farmers on drawing business plans	13	2.00	4.00	2.54	0.66	Average
Training farmers on financial management	13	1.00	4.00	2.69	0.75	Good
Forming cooperatives or farmer groups	13	1.00	4.00	2.85	0.90	Good
Securing good market contacts for farmers	13	1.00	4.00	2.77	1.09	Good
Representing farmers to government and NGOs	13	2.00	4.00	2.69	0.75	Good
Managing conflicts & disputes in farmer groups	13	1.00	4.00	2.31	0.75	Average
Training farmers new farming methods and trends	13	2.00	4.00	3.31	0.63	Good
Finding cheaper inputs providers or strategies	13	1.00	4.00	2.54	0.88	Average
Organize tractors, seeds and fertilizers for farmers	13	1.00	4.00	2.85	0.99	Good
Advise farmers on when to plant	13	2.00	4.00	3.23	0.60	Good
Assisting farmers understand market contracts	13	2.00	4.00	3.00	0.71	Good

Excellent (mean: 3.6-4)

Good (mean: 2.6-3.5)

Average (mean: 1.6-2.5)

Poor (mean: 1-1.5)

The extension officers indicated that they performed well in most of the activities they do, as shown in Table 4.6. However, the standard deviation was high on the ability to form cooperatives (0.99); securing market contracts (1.09); and organise tractors, seeds and fertilisers for farmers (0.99), which shows that their consensus was weak in their ability to do these activities.

Table 4.6 also shows that the extension officers acknowledged that they were not good in training farmers to draw business plans (mean: 2.54); managing conflicts and disputes in farmer groups (mean: 2.31); and finding cheaper inputs providers for farmers (mean: 2.54).

4.2.1.3 General perceptions of extension officers

Tables 4.7 to 4.12 below summarise some of the perceptions that extension officers had about the extension system. The analyses in the tables are based on mean values, where 1-1.5 is ‘strongly agree’; 1.6-2.5 is ‘agree’; 2.6-3.5 is ‘neutral’; 3.6-4.5 is ‘disagree’; and 4.6-5 is ‘strongly disagree’.

a) Perceptions about themselves

Table 4.7 shows that EOs perceived themselves as being simply government messengers to farmers, who are given much work to do (mean: 2) and they also felt that they were underpaid (mean: 4.15). They also believed that they were well-trained to assist farmers (mean: 2.00) in the vegetable production business, but the standard deviation (1.23) shows that their agreement was weak in this regard. They had much interest in working and recruiting more farmers into the business. The extension officers also noted that their department was poorly organised (mean: 1.39) and under-resourced (mean: 1.67), which made their work very difficult and reduced their effectiveness and efficiency.

Table 4.7: Perceptions of Extension Officers (EOs) about themselves and their work

Perception	n	Minimum	Maximum	Mean	Std. Dev.	Comment
EOs are just government messengers	13	1.00	4.00	2.54	0.97	Agree
EOs are well trained for the job	13	1.00	5.00	2.00	1.23	Agree
Most EOs are aged personnel	13	1.00	5.00	2.85	1.21	Neutral
Eos are satisfied with their remuneration	13	1.00	5.00	4.15	1.35	Disagree
EO have lost interest in their job	13	2.00	5.00	3.67	0.89	Disagree
Ext. Department is under-resourced	13	1.00	4.00	2.39	0.97	Agree
The RDAs are under-resourced	13	1.00	4.00	1.67	0.89	Agree
Ext. Department is poorly organized	13	1.00	5.00	1.39	1.12	S. Agree
Ext. program has lost effectiveness	13	1.00	5.00	2.85	1.14	Neutral
EOs have become irrelevant because of other sources of information	13	2.00	5.00	3.77	0.83	Disagree
EOs are given a lot of work beyond their contractual scope	13	1.00	4.00	2.00	1.00	Agree
EOs only to train about new farming technique	13	2.00	5.00	3.77	1.09	Disagree
EOs are not well trained in conflict management	13	2.00	5.00	3.31	0.86	Neutral
EOs are able to recruit new farmers	13	1.00	4.00	2.15	0.90	Agree

b) Perceptions about Government

Extension officers thought that the government viewed their department as being the least important (mean: 1.69), as shown in Table 4.8 below. Although they were not decided on how senior government officials treated them, some felt that they were disrespected sometimes, when we consider the mean and standard deviation.

Table 4.8: Perceptions of EOs on government in relation to their work

Perception	n	Minimum	Maximum	Mean	Std. Dev.	Comment
Government regard extension department as least important	13	1.00	4.00	1.69	0.95	Agree
Senior government officials disrespect EOs	13	1.00	4.00	2.62	1.04	Neutral
Government policies are oppressive to smallholder farmers	13	2.00	4.00	2.92	0.86	Neutral

c) Perceptions about farmers

EOs believed that both young and old farmers needed extension officers to help them, as shown on Table 4.9 below. They also noted that most farmers were always keen to participate in their programme (mean: 2.39), although mainly when they are promised inputs (mean: 2.39). The EOs did not come to a clear consensus on whether farmers are interested in coming together as farmer groups, cooperatives, or unions (mean: 3.0). They further expressed the lack of appetite on the part of the youth to replace retiring farmers (mean: 2.31), and without EOs, vegetable production might stop (mean: 2.0).

Table 4.9: Perceptions of EOs about farmers

Perception	n	Minimum	Maximum	Mean	Std. Dev.	Comment
Without EOs vegetable production may stop	13	1.00	4.00	2.00	0.82	Agree
Farmers have more knowledge than EOs	13	3.00	5.00	3.69	0.75	Disagree
Farmers no longer consult EOs, they scout knowledge elsewhere	13	2.00	5.00	3.54	0.97	Disagree
Farmers are old and well experienced, hence do not need EOs	13	2.00	4.00	3.54	0.66	Disagree
Young farmers are not ready to replace old retiring farmers	13	1.00	4.00	2.31	0.95	Agree
Farmers are reluctant to work together	13	2.00	4.00	3.00	0.91	Neutral
Farmers participate fully in the Extension programs and training	13	1.00	4.00	2.39	0.87	Agree
Farmers participate in extension programs when they are promised inputs	13	1.00	5.00	2.39	1.26	Agree

d) Perceptions about other organisations

EOs viewed NGOs and other international organisations as being helpful to farmers and the Extension Department as a whole, as shown in Table 4.10 below. Although they denied, on average, that NAMBoard was exploitative of farmers (mean: 3.08), their consensus was weak (standard deviation: 1.26). The farmers' union (SNAU) was viewed as being slightly helpful or neutral (mean: 2.69) to farmers, but the extension officers held significantly different views on that.

Table 4.10: Perceptions of EOs about other organisations working with farmers

Perception	n	Minimum	Maximum	Mean	Std. Dev.	Comment
SNAU is not able to help smallholder farmers	13	1.00	4.00	2.69	1.25	Neutral
NAMBoard is exploitive to farmers	13	1.00	5.00	3.08	1.26	Neutral
Financial institutions avoid giving loans to smallholder farmers	13	1.00	4.00	2.46	0.88	Agree
NGOs are helpful to farmers and ext. system	13	1.00	3.00	1.85	0.56	Agree

e) Perceptions on vegetable production as a business

As shown in Table 4.11 below, EOs thought that vegetable production, as a business, was profitable and that is why 69.2% believed that they can encourage more farmers to join the business. However, some of the extension officers (23.1%) thought that their recruitment could only be a drive to achieve food security, as a means to earn a living for rural dwellers, and not for income.

Table 4.11: Reasons for extension officers to encourage farmers to venture into vegetable production.

Responses		Reason for encouraging farmers		Total	% Ext. Officers
		Its profitable	For food security		
Would you encourage more farmers to venture into vegetable production?	Yes	9	3	12	92
	As a last resort	0	1	1	8
Total		9	4	13	100
% Extension Officers		69.2	30.8	100	100

4.2.1.4 Challenges faced by extension officers

The extension officers listed the following challenges that they encountered in their Department:

1. Lack of transport to visit the large number of farmers and assist them to address their needs;
2. Lack of office and field facilities, such as internet-connected computers, appropriate clothing, demonstration facilities, and communication and travelling allowances;
3. They were understaffed (1 extension officer for over 500 farmers) to effectively assist all farmers in time, which reduces effectiveness and compromises efficiency;
4. Extension officers left the department at a high rate because they felt government was neglecting their welfare;
5. Farmers faced many challenges where the solutions rest mainly with government, yet government seemed to be not bothered about the smallholder vegetable farmers. This was viewed as a big let-down to the extension officers' efforts;

6. Lack of rigorous workshops and in-service training to capacitate extension officers;
7. Very unsatisfactory remuneration of extension officers by government was identified as the biggest setback in the department;
8. New extension officers found angry farmers and collapsing farmer groups, who have been receiving empty promises from government / parastatals and NGOs for years;
9. Climate change made it difficult to advise farmers, mainly on when to plant and the best cultivars to plant; and
10. Farmers were moving in and out of farming, which made it difficult to keep a register of farmers such that when assistance came, it was difficult to identify the right beneficiary. This also made it difficult to plan training programmes for farmers.

4.2.1.5 Suggested solutions to extension officers' challenges

The extension officers suggested the following interventions as being the best possible means by which the extension system could be revamped:

1. Government must provide at least two 4x4 vehicles for each RDA and motorbikes for extension officers;
2. Government must prioritise vegetable farming, not only in terms of budget, but also in public statements and policies;
3. Office facilities for extension officers must be furnished with internet-connected computers for research and information storage;
4. Extension officers should be assisted by receiving further training sessions and workshops, mainly in Agribusiness Management; Agricultural Extension and Farm Management;
5. Government must improve the remuneration of extension officers to retain them in the department;
6. The need for holding workshops on climate-change-coping strategies, for both farmers and extension officers, was also noted;

7. Government, NGOs and UN agencies should commit themselves to helping farmers in a more sustainable manner, and keep their promises;
8. Government should seriously look into the welfare of farmers before they all shy away from vegetable farming; such intervention should focus on the provision of water, lucrative and sustainable markets, and access to inputs; and
9. Community leadership and extension officers must work together and actively in the management and supervision of communal farmer groups.

4.2.2 Farmers' landscape in Swaziland

4.2.2.1 Farmers' demographics

There were 82 farmers who participated in the interviews. A large number (36) of them came from the Ntfontjeni RDA, while the Madlangaphisi RDA had the least (9) farmers, as shown in Table 4.12 below. The Motshane RDA contributed 21 farmers, while the Mayiwane RDA contributed 16 farmers. The majority of the farmers were females, who accounted for 65.9%, with male farmers constituting 34.1% of the sample.

Table 4.12: The number of respondent farmers per RDA and gender

RDA		Farmer's gender		Total	%
		Male	Female		
Farmer's RDA	Motshane	8	13	21	25.6
	Ntfontjeni	11	25	36	43.9
	Mayiwane	9	7	16	19.5
	Madlangaphisi	0	9	9	11.0
Totals	Total of Farmers	28	54	82	100
	Total % of Farmers	34.1	65.9	100	100

A total of 63.4% of the farmers were above 50 years of age, and the modal age (43.9%) group fell within 61–70 years. The youth (below 31 years of age) accounted for 6.1%, as shown in Figure 4.5 below.

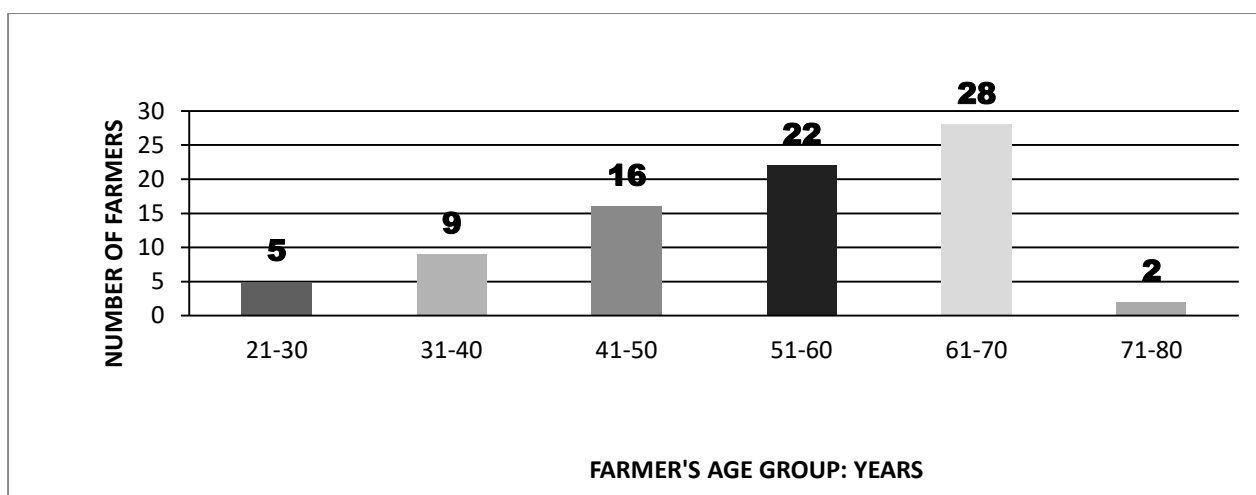


Figure 4.4: The number of farmers, as categorised in age groups

According to Table 4.13 below, most of the farmers were female, across all the age groups except at age group 21–30, which was the youth group. The dominance of female farmers may mean that males have better access to non-farm jobs than females do. The gap between the two sexes widened from age group 31–60 years, while it converged at age groups of 61 years and above. This may reflect that even males start farming after retiring from their off-farm jobs since the retirement age in Swaziland is 60.

Table 4.13: The relationships between farmers’ age groups and their gender

Gender		Farmer's Age Groups						Total	% Total
		21 - 30 Years	31 - 40 Years	41 - 50 Years	51 - 60 Years	61 - 70 Years	71 - 80 Years		
Farmer's gender	Male	4	2	1	8	13	0	28	34.2
	Female	1	7	15	14	15	2	54	65.8
Total		5	9	16	22	28	2	82	100
Total % Farmers		6.1	11.0	19.5	26.8	34.2	2.4	100	100

A total of 65.9% of the farmers were married, while only 10% were still single. What is worth noting is that 92.5% of the farmers had families, which include those who were in a de facto partnership, married and widowed, as shown in Figure 4.6 below. Table 4.34 (Appendix 5) shows that marital status was positively correlated with farmers age ($r=0.416$, $p=0.000$) and with farmers’ gender ($r=0.337$, $p=0.002$), at 99% confidence level. These results show that more female farmers were aged and married than male farmers were.

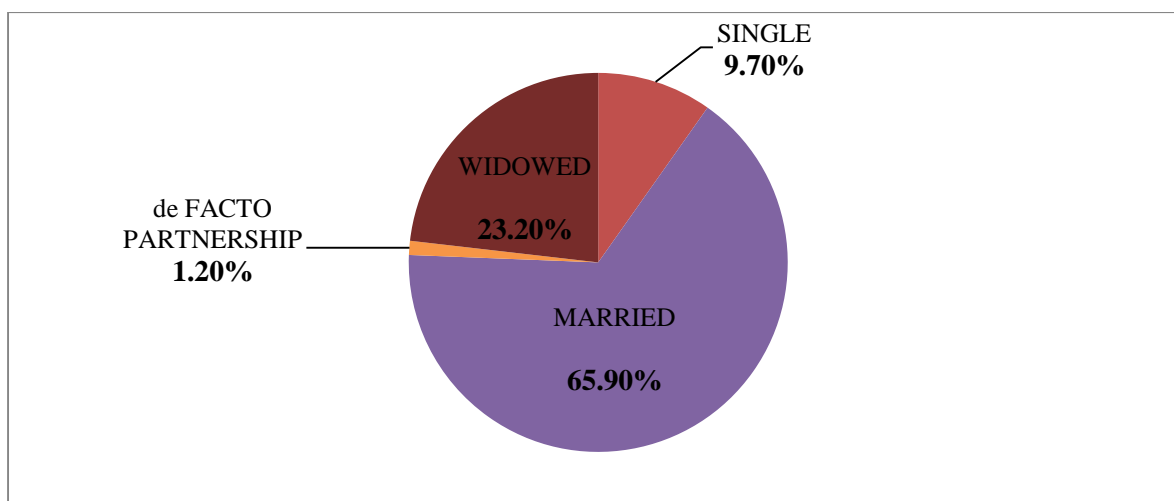


Figure 4.6: The marital status of farmer respondents

The farmers who participated in the study were well-experienced in farming (Table 4.14). More than 70% had farming experience of between 6 and 10 years. Nineteen percent (19%) of the farmers had been farming for more than 30 years. Notable is the fact that female farmers were generally more experienced in farming than their male counterparts were.

Table 4.14: The experience farmer respondents had in the farming business in relation to gender

Experience		Farmer's Gender		Total	% Farmers
		Male	Female		
Farmer's farming experience	0 - 5 Years	11	13	24	29
	6 - 10 Years	5	13	18	22
	11 - 15 Years	2	8	10	12
	16 - 20 Years	4	4	8	9
	25 - 30 Years	1	6	7	9
	31 - 35 Years	1	3	4	5
	36 - 40 Years	2	2	4	5
	41 - 45 Years	2	5	7	9
Total		28	54	82	100
% Farmers		34.1	65.9	100	100

According to Figure 4.7 below, about 60% of the farmers had dropped out of school at and below the lower secondary level of education. Only 3.7% had tertiary education, while the percentage of those who never went to school at all stood at 14.6%.

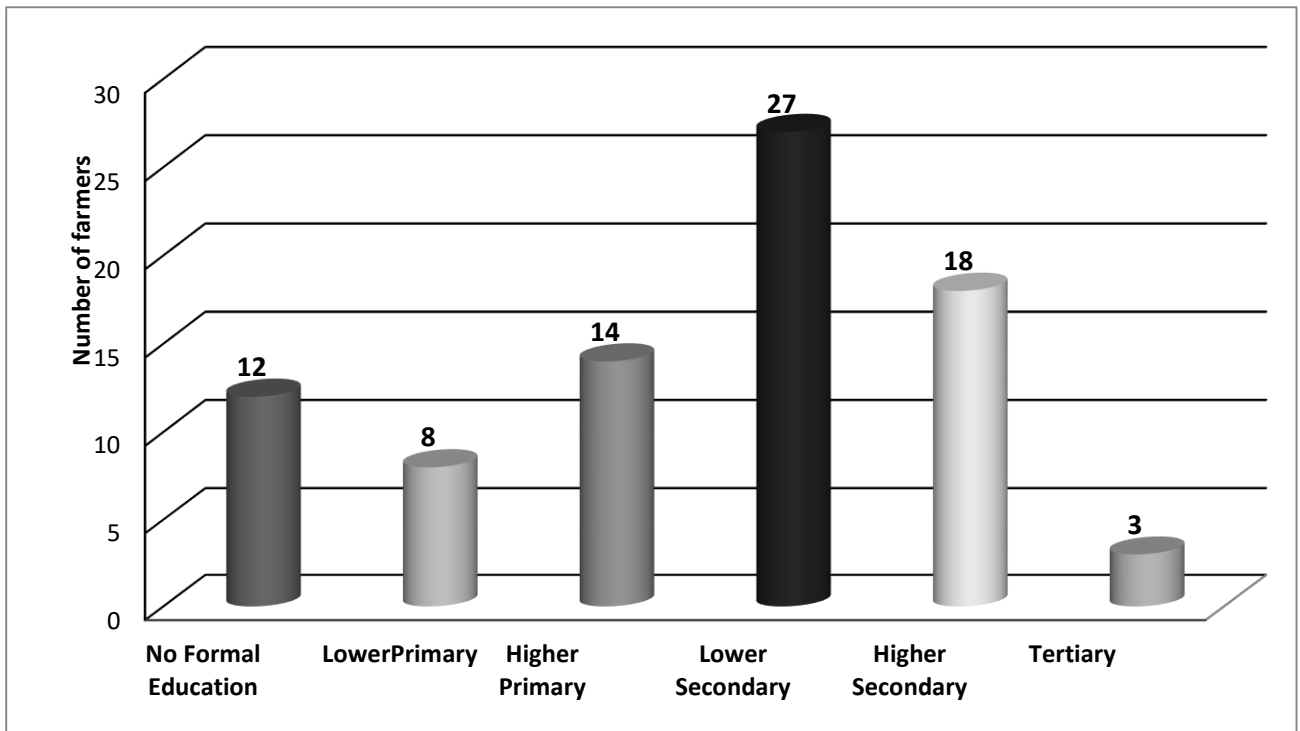


Figure 4.5: Level of education achieved by farmer respondents

Male farmers had more access to formal education than female farmers did, as shown in Table 4.15 below. The most alarming statistic is that 92 % of the farmers who had never been to school were females; however, at higher secondary levels of education, the numbers of female and male farmers were equal. Table 4.34 indicates negative correlations between highest level of education and farmers' age ($r=-0.294$, $p=0.007$) and marital status ($r=-0.378$, $p = 0.000$), at 99% confidence level. Moreover, marital status was also negatively correlated with farming experience ($r=-0.261$, $p=0.018$); gender ($r=-0.262$, $p=0.017$); and working as an individual or a group ($r=-0.278$, $p=0.011$), at 95% confidence level. These correlation results confirm that most of the farmers were older women who did not have formal education and had been farming for a long time. However, the negative relationship on how farmers are organised (individual or a group) shows that the more educated the farmers were, the less likely they were to work as individuals. Table 4.15 and Figure 4.8 demonstrate some of these findings.

Table 4.15: Comparison between male and female farmers with regard to access to formal education

		Farmer's highest level of education						Total	% Farmers
		No formal education	Lower primary (G1 - G4)	Higher primary (G5 - G7)	Lower secondary (F1 - F3)	Higher secondary (F4 - F5)	Tertiary Level		
Farmer's gender	Males	1	2	4	11	9	1	28	65.9
	Females	11	6	10	16	9	2	54	34.1
Total		12	8	14	27	18	3	82	100
% Farmers		14.6	9.8	17.1	32.9	22	3.7	100	100

Figure 4.8 demonstrates the trend between males and females in as far as access to education is concerned, as identified in Table 4.15. There were more female dropouts at the lower levels of education than males; however, the disparity reduces at the higher secondary level to tertiary level.

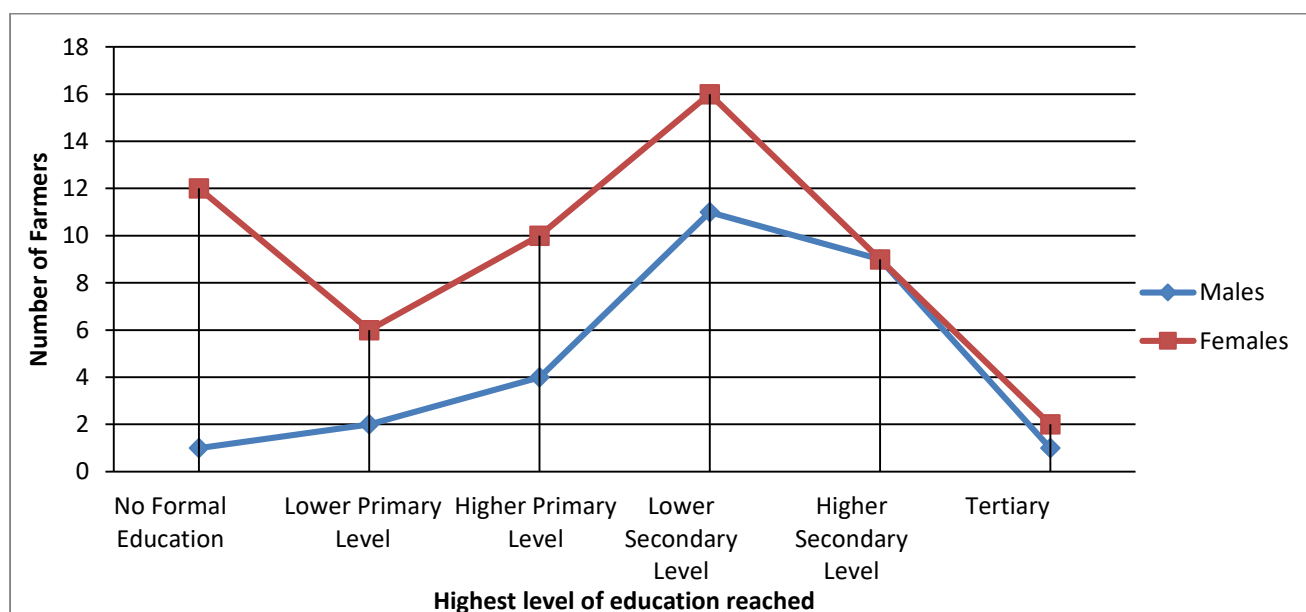


Figure 4.6: The trend with regard to access to education between male and female farmer respondents

4.2.2.2 Farmers' Operations

The farmers mainly produced conventional vegetables such as tomatoes, cabbages, spinach, lettuce, carrots, green beans, onions and beetroot. They usually grow these vegetables in winter, while in summer they planted maize, rice, beans and sweet potatoes in their fields. Only a few

farmers planted heat-tolerant cultivars of vegetables in summer. About 91.5% of the farmers used tractors to plough the land, while 7.3% used hand and hoe to prepare the land, and only 1.2% used oxen. It was noted during the interviews that oxen were mainly used for secondary land preparation.

Almost all the farmers (81) used chemical fertilisers, while 33 farmers also added kraal manure, 11 farmers used chicken manure, and only 4 used compost, as shown in Figure 4.9 below. Chemical fertilisers were said to be expensive, but farmers commented that the organic fertilisers were nevertheless not an alternative since they had also become scarce.

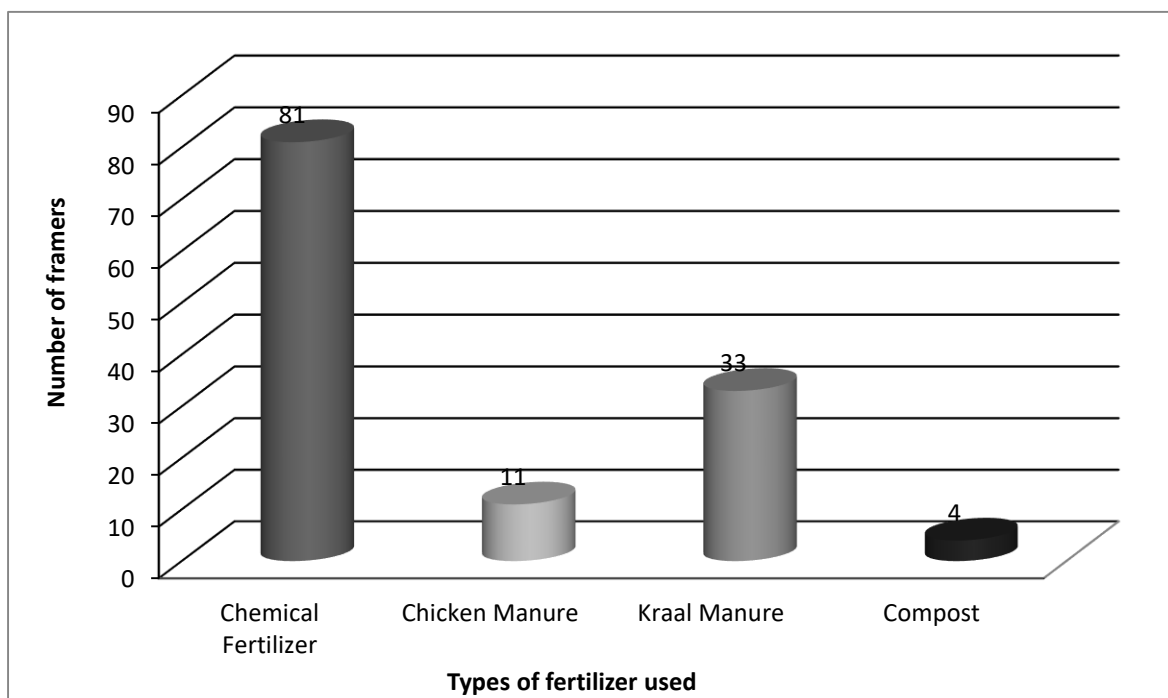


Figure 4.7: The types of fertilisers frequently used by farmer respondents

According to Figure 4.10 below, 63 farmers used farrow irrigation, followed by flood irrigation (27 farmers). These types of irrigation caused soil erosion, wasted water and are labour intensive. During the interviews, it was gathered that this information was known by the farmers, but systems such as drip irrigation were relatively a more expensive systems for the farmers. Moreover, some farmers complained that pipes were stolen in the fields, so it ended up being a waste of money to buy them.

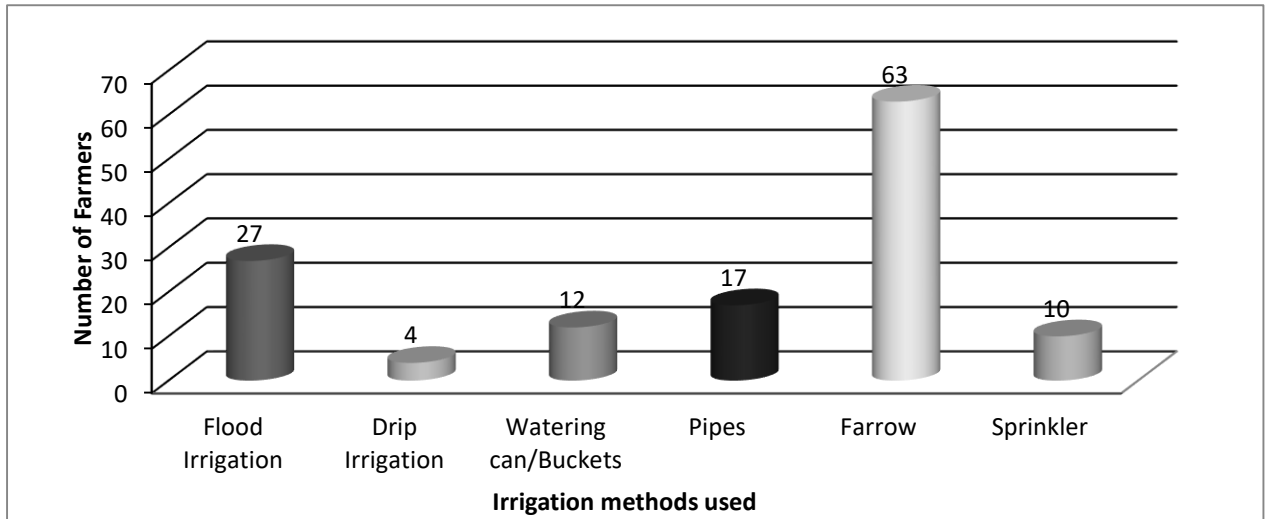


Figure 4.8: The methods of irrigation used, according to farmer respondents

About 93 % of the farmers were full-time farmers, as shown in Figure 4.11 below, and for them, vegetable production was both an income provider and a source of food. The 7% who were part-time farmers were mainly those who have formal employment, in either government or the private sector. The possibility that a farmer was a full-time or part-time farmer was positively correlated with the farm size ($r=0.280$, $p= 0.011$), at 95% confidence level (Table 4.34). This means that the larger a land size is farmed, the more likely it is that a farmer would be a full-time farmer.

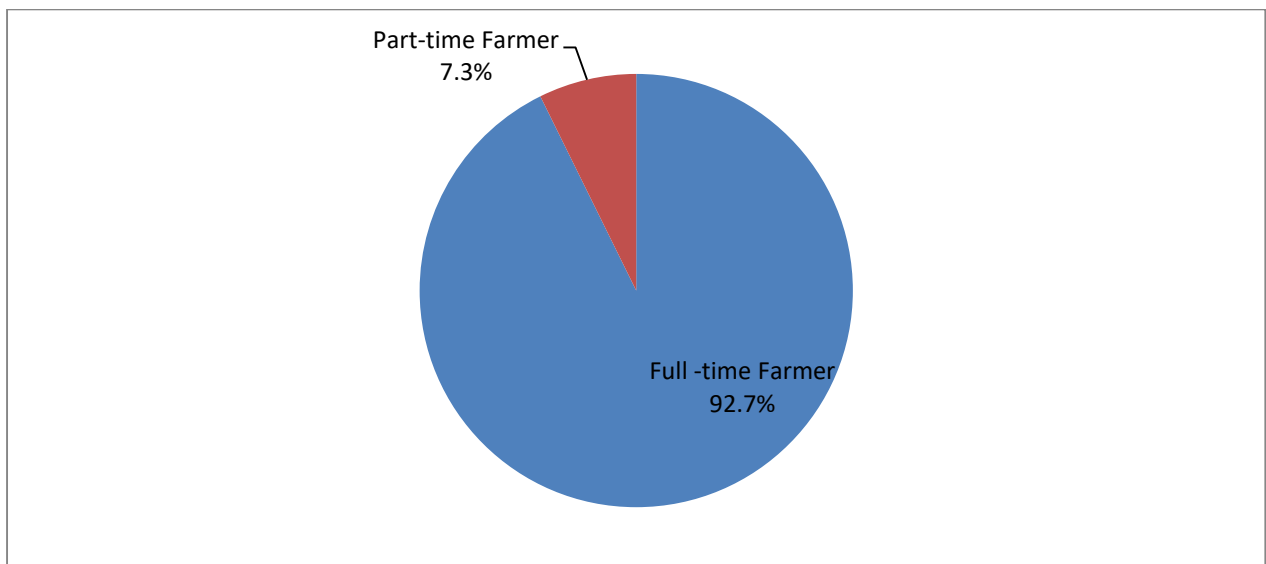


Figure 4.9: The percentage of farmers who are full-time and those that are part-time farmers

Table 4.16 below shows that farmers still perceive that vegetable production is a viable business, as both full-time and part-time farmers agree to a significant extent. Only 17% of the full-time and 17% of part-time farmers perceived this enterprise as unviable. This can be also supported by the fact that the farmers are still persistent in their efforts, despite all the challenges they face.

Table 4.16: How do full-time and part-time farmers view the viability of vegetable production?

Categories of farmers		Do you think vegetable production is a viable business?			
		Yes	No	Total	Percentage
Are you a full-time farmer	Yes	62	13	75	91.5
	No	6	1	7	8.5
Total		67	14	82	100
Percentage		82.9	17.1	100	100

As shown in Table 4.17 below, 97.6% of the smallholder vegetable farmers held the Swazi Nation Land (SNL) type of land tenure. Forty-four percent (44%) of them were organised into communal farmer groups (schemes) where they were allocated land that ranged from 0.3 ha to 1 ha. However, 30.5% had obtained the land through the customary *khonta* system, hence they had full responsibility over the land and could use it for anything as permitted under customary law.

A total of 85.4% of the farmers rated their production level as being average and above. Farmers sold their produce to the local community and local shops (72%) and urban vendors (6.1%) in most cases. Only 8.5% sold to NAMBoard, while 12.2% sold to urban supermarkets and for export, as shown in Table 4. 17. A majority (40.2%) thought their production would decrease in the coming five years, while 25% thought it would stay the same. However, 34.1% were optimistic that their production would increase over the same period.

Table 4.17: Characteristics of the farmers' projects, in general

Characteristics	Variables	Frequency	%
Type of land tenure	Swazi Nation Land	80	97.6
	Title deed Land	2	2.4
Acquisition of land	Bought it (Title Deed)	1	1.2
	Personally <i>khonta</i> -ed	25	30.5
	Belongs to my family	19	23.2
	Borrowed by neighbour or friend	1	1.2
	Communal farmer group fields	36	43.9
Farm size	<1ha	55	67.1
	1ha	18	22.0
	2ha	3	3.7
	>3ha	6	7.0
Target market	Export	1	1.2
	Local homestead & shops	59	72.0
	Urban Vendors	5	6.1
	NAMBoard	7	8.5
	Urban shops and Export	10	12.2
Possession of any marketing contract	Yes	19	23.2
	No	63	76.8
Rate current production	Poor	1	1.2
	Below Average	11	13.4
	Average	36	43.9
	Above Average	31	37.8
	Excellent	3	3.7
5-year projection of yield	Increase	28	34.2
	Same	21	25.6
	Decrease	33	40.2

A total of 51% of the farmers were organised into communal farmer groups with individual fields, and 41.5% were working as individual farmers on his/her own fields (Table 4.18 below). The percentages of farmers who wished to work through a cooperative (46.3%) and those who did not want to do that (43.9%) were relatively equal. Table 4.34 shows that there was a negative, highly significant relationship (99% confidence level) between the way farmers are organised and farm size ($r=-0.301$, $p=0.006$) and the availability of an extension officer ($r=-0.289$, $p=0.009$). These statistics mean that if farmers had a small piece of land, they would be more likely to form groups, while those with larger land sizes would be more likely to work individually. Moreover, extension officers were most likely to visit these grouped farmers. There was also a negative correlation between the way in which farmers were grouped and the

level of education ($r=-0.278$, $p=0.011$), at 95% confidence level. This means that the more educated farmers would be more likely to farm alone.

A total of 50% of the farmers did not want anything to do with NAMBoard. The correlation results (Table 4.34) reveal a negative correlation ($r=-0.274$, $p=0.013$) between farmers holding marketing contracts with NAMBoard and farmers working as a group or as individuals. This suggests that farmers working individually were less likely to have a NAMBoard marketing contract. The results further revealed a highly significant (99% confidence level) positive correlation ($r=0.385$, $p=0.00$) between farmers who are members of SNAU and those who had marketing contracts with NAMBoard. This shows that grouped farmers were more likely to get marketing contracts and further join the farmers' union (SNAU).

Table 4.18: How the farmers were organised in the Hhohho region

Organizations	Variables	Frequency	%
Farmer Organization	Individual farmer	34	41.5
	Registered cooperative	6	7.3
	Farmer group with individual fields	42	51.2
Are you willing to work as a cooperative	Not interested	36	43.9
	Not sure	8	9.8
	Definitely interested	38	46.3
Are you registered with NAMBoard	Yes	31	37.8
	Still to register	10	12.2
	Will never register	39	47.6
	Have withdrawn my membership	2	2.4
SNAU membership	Yes	12	14.6
	No	70	85.4

To a large extent, farmers were not members of the Swaziland National Agriculture Union (SNAU) because they did not know about it (48.6%), as suggested in Figure 4.12 below. Table 4.18 above shows that only 15% of respondents were members of the SNAU. During the interviews, it was gathered that even those who had joined were not further engaged with it, as they are just left in the dark on what was happening in the union.

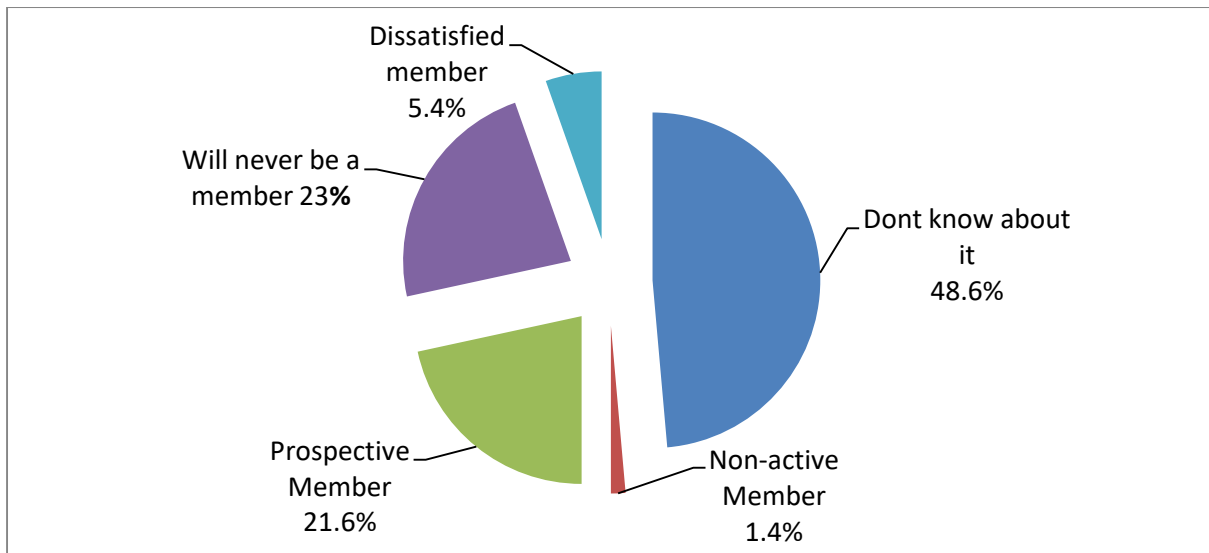


Figure 4.10: Reasons why farmers were not active members of SNAU

The commercial production of vegetables requires that farmers must have a reliable market for their perishable vegetables, hence NAMBoard was established to regulate and assist in that. Figure 4.13 below shows that 37.8% of the farmers sold their produce to NAMBoard, while 47.2% said they would never register with NAMBoard. During the interviews, it was gathered that NAMBoard dictated unsatisfactory prices to farmers and moreover delayed payments to farmers. Those who sold to NAMBoard did so because their produce could be spoiled, as it was perishable.

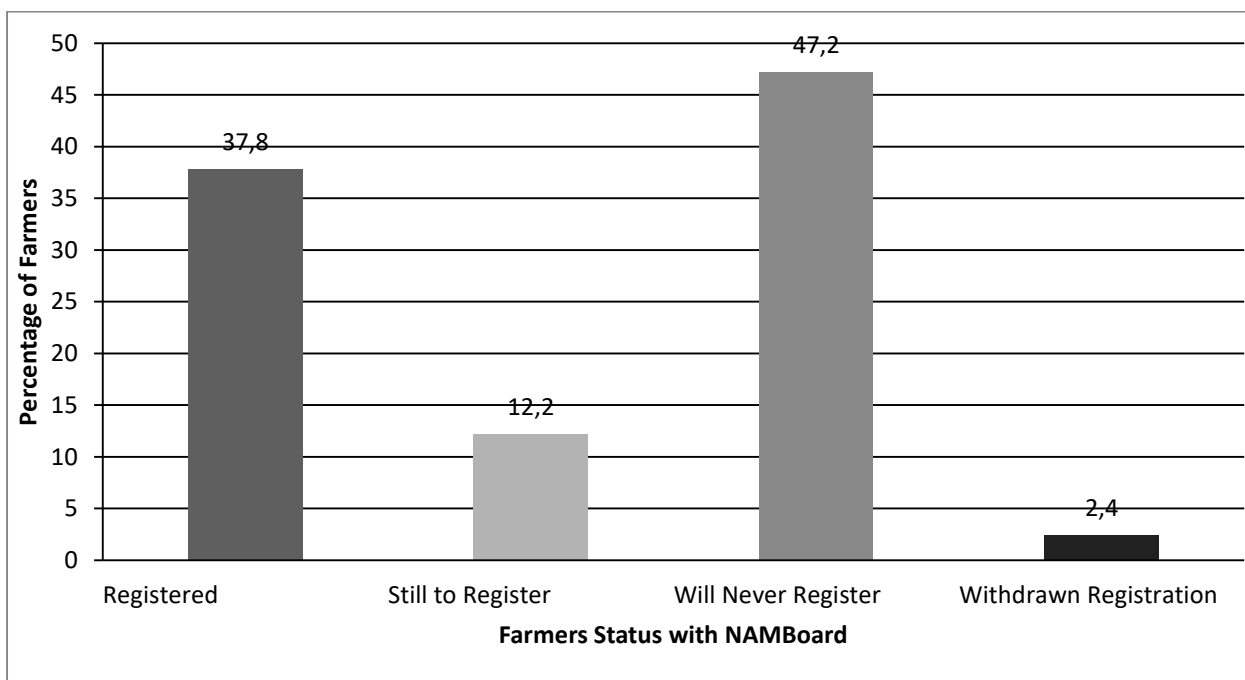


Figure 4.11: The status of farmers with NAMBoard

About 87 % of the farmers viewed NAMBoard as being ‘less helpful’ and ‘not helpful at all’, as shown in Figure 4.14 below. The problems the farmers faced when dealing with NAMBoard left them with no choice but to sell in the community and or wait for town vendors to come and buy their produce. During the interviews, it was gathered that NAMBoard delayed payment and offered low prices for the farmers’ produce.

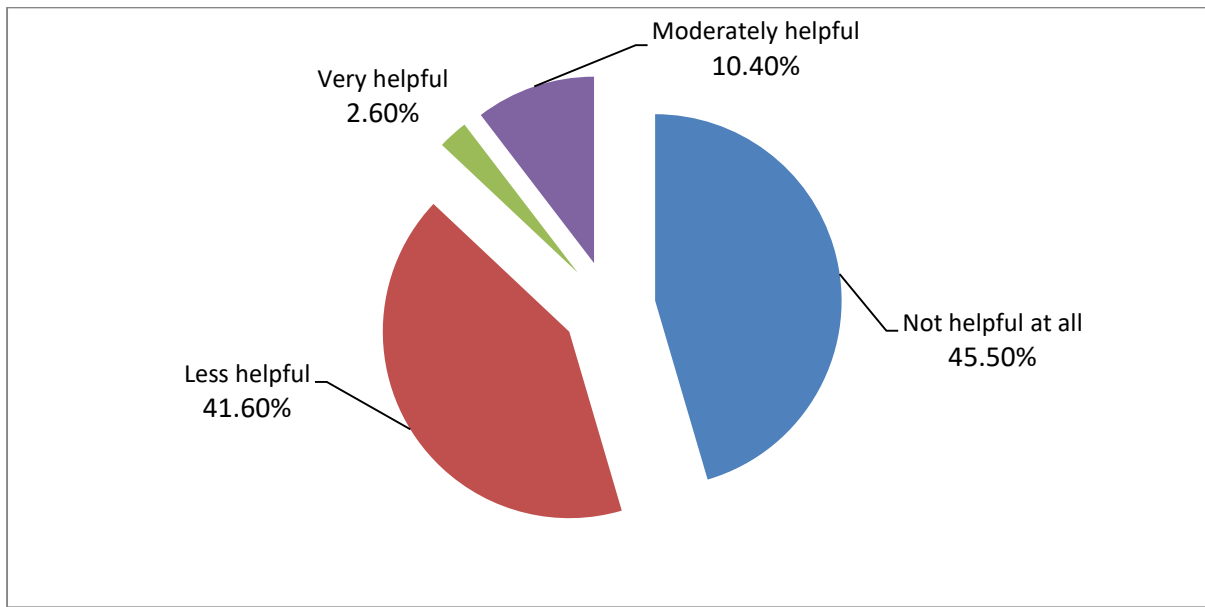


Figure 4.12: How farmers rated the help they received from NAMBoard

Almost 70% % of the farmers stated that the extension officers were always available to them, while 23.5% felt that the extension officers were partially available, and only 8.7% hardly met the extension officer. Table 4.34 shows a negative and highly significant (99% confidence level) relationship ($r=0.289$, $p=0.009$) between the way in which farmers are organised and their likelihood of receiving extension services, which means that extension officers were more likely to visit organised farmers. About 86.7% of the farmers usually met with the extension officer in their fields, while 13.3 % met him or her in the RDA offices, as shown in Figure 4.15 below. In most cases, farmers invited/called the extension officer to ask for help; however, extension officers also made time for farmer visits.

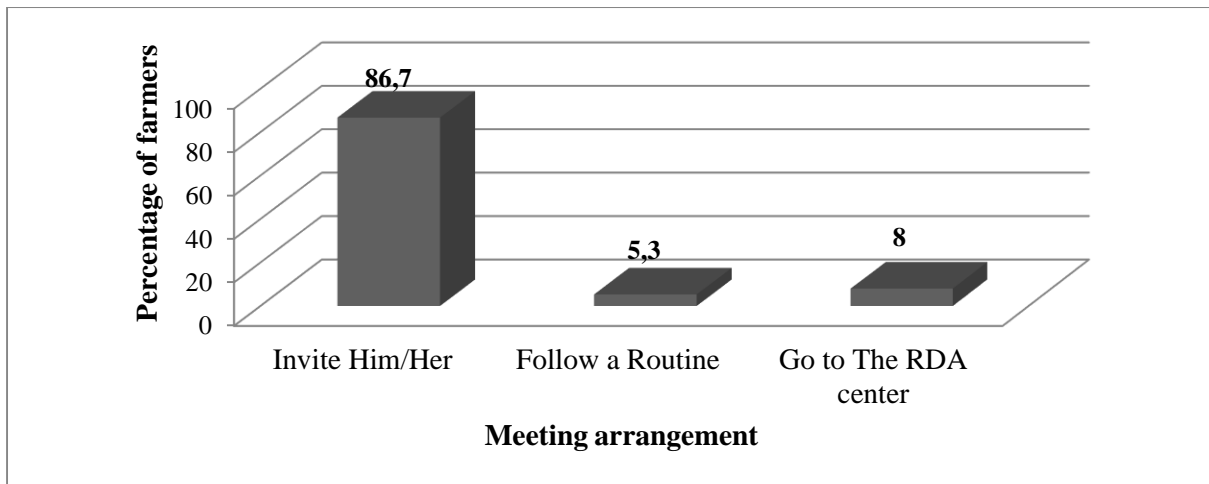


Figure 4.13: Meeting arrangements between extension officers and farmers

Farming is labour intensive in nature and therefore the farmers usually hire local labourers to help them. About 92 % of the farmers employed people to help them during planting, weeding and harvesting. These employees were usually paid in cash, ranging from SZL30 to SZL50 per day. While 90.3% of the farmers paid their employees’ wages, some 7.3% paid them with part of the produce, and 2.4% paid in both wages and part of the produce.

More than 50% of the farmer respondents rely on family labour, as shown in Figure 4.16 below. Some families do not have a significant number of members, and therefore 40.3% of the farmers also employed outside labour to assist the family. Only 7.3% had no family labour available to them.

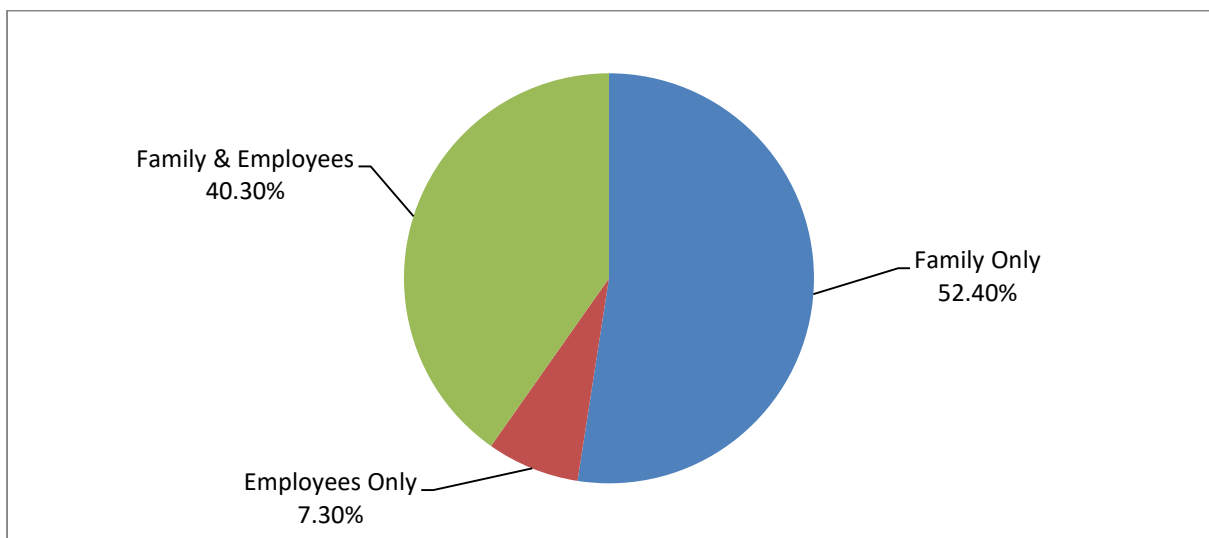


Figure 4.14: The source of labour for farmer respondents.

4.2.2.3 *Farmers' perceptions of extension service and access to resources and services*

Farmers were requested to evaluate their extension officers, as shown in Table 4.19 below. In general, extension officers were deemed to be good on issues that are related to actual field work. Gender and age differences were not significant in regard to perceptions of extension officers in the activities pertaining to actual vegetable production. However, the independent t-test [Table 4.30 (Appendix 5)] revealed that education differences (no formal education and those who completed higher secondary education) were significant, at 95% confidence level, in choosing good varieties ($p=0.009$), soil sampling ($p=0.029$) and controlling pests and diseases ($p=0.029$). The means that that farmers with no formal education valued these services more.

On group management and leadership issues, they were graded as 'fair'. The level of education difference (no formal education and higher secondary education) between individual and grouped farmers was significant ($p= 0.015$) when farmers were asked about the quality of help they received from extension officers in demonstration group sessions (Table 4.30). The mean differences between these groups suggest that farmers with no formal education (mean: 1.00) viewed extension officers as better in handling demonstrations than those with formal education (mean: 1.53) did. However, there were generally no statistical differences on the perceptions about the quality of the extension officers' assistance between those with no formal education and those who had dropped out at higher primary level.

Farmers perceived extension officers as being poor in organising markets and on the business aspects of farming, i.e. finance management (mean: 2.68), drawing business plans and implementation (mean: 2.65), and how acquire business financing (mean: 2.68), as shown in Table 4.19 below. In general, there were no statistical differences in how farmers perceived these limitations. However, gender differences were only significant concerning their views about extension officers' ability to help them in drafting business plans ($p =0.015$, at 95% confidence level) [Table 4.28 (Appendix 5)].

Table 4.19: Farmers rating of the extension officers based on the service they provide to them

Services provided	N	Minimum	Maximum	Mean	Std. Deviation	Comment
Field Work						
Extensions officer's quality of help in choosing varieties	82	1	2	1.20	0.40	Good
Extension officer's quality of help in soil sampling	82	1	3	1.24	0.49	Good
Extension officer's quality of help in fertilizers and lime application	82	1	3	1.24	0.46	Good
Extension Officer's quality of help in planning irrigation system	82	1	3	1.47	0.60	Good
Extension officer's quality of help in crop spacing	82	1	2	1.23	0.42	Good
Extension Officer's quality of help in general crop management	82	1	3	1.23	0.45	Good
Farmer-Group Management						
Extension officer's quality of help in organizing farmers into farmer group or cooperative	82	1	3	1.87	0.72	Fair
Extension officer's quality of help in conflict management within groups	82	1	3	1.83	0.71	Fair
Extension officer's ability in motivating discouraged farmers	82	1	3	1.63	0.71	Fair
Extension officer's ability in handling demonstrations	82	1	3	1.32	0.60	Good
Extension officer's sense of urgency in offering assistance	82	1	3	1.40	0.62	Good
Business aspects						
Extension officer's quality of help in finding good markets	82	1	3	2.40	0.70	Fair
Extension officer's ability to help farmers keep records	82	1	3	2.23	0.71	Fair
Extension officer's ability to help farmers draft business plans	82	1	3	2.65	0.60	Poor
Extension officer's ability to help farmers manage business finance	82	1	3	2.43	0.66	Fair
Extension officer's ability to assist farmers get business financing	82	1	3	2.68	0.67	Poor
Extension officer's ability to source inputs at cheaper prices	82	1	3	2.39	0.60	Fair

Good = mean: 1 - 1.5;

Fair = mean: 1.6 - 2.5;

Poor = mean 2.6 - 3

According to Figure 4.17 below, most extension officers were seen to be doing a good job, hence they were ranked above 60% in terms of general service delivery. This is a positive sign that farmers did receive some sort of assistance, and from capable extension officers.

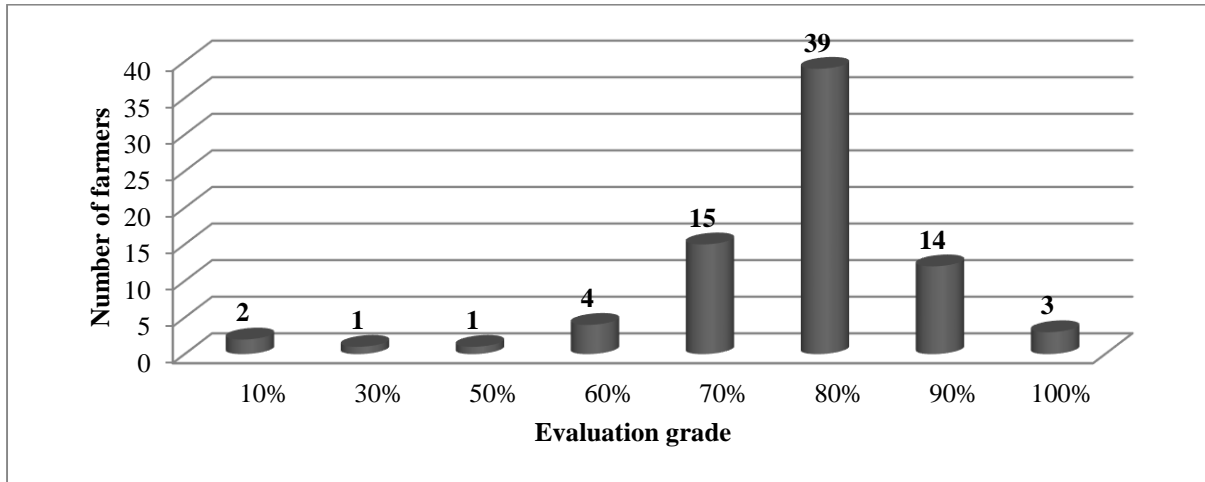


Figure 4.15: Overall evaluation of extension officers' service delivery by farmer respondents

Accessibility is measured in terms of financial access, institutional access, organisational/social access, and physical (distance/position) access. Farmers felt that they had limited access to a large number of the resources they needed to be successful, as shown in Table 4.20 below. Some of the resources that were viewed as not being accessible included insurance cover (mean: 2.90), export opportunities (mean: 2.78), reliable local markets (mean: 2.62), and business loans (mean: 2.64). However, the correlation results (Table 4.34) reveal that there was a high positive relationship ($r=0.402$, $p=0.000$) between the ability of a farmer to access loans and when they have export contracts.

Technical knowledge is the most accessible resource (mean: 1.50), although the standard deviation was a bit wider, which means the consensus between farmers was not as strong as in the other aspects. Table 4.34 shows that access to technical knowledge was highly correlated ($r=0.414$, $p=0.000$) with farm size. Moreover, Table 4.34 shows that access to technical knowledge was highly correlated ($r=0.294$, $p=0.008$) with the availability of extension officers. The results in Table 4.34 show that the availability of extension officers was highly correlated ($r=0.289$, $p=0.009$) with the way in which the farmers are organised (i.e. working individually or grouped). This means that where farmers were grouped, the extension officers would be always available to help them with technical knowledge.

Table 4.24 (Appendix 5) shows the results of an independent t-test on gender differences on the perceptions of farmers, performed at 95% confidence level. In general, gender difference was not significant to the farmer's perceptions of accessibility to farming resources and services. A significant difference was found in two (2) areas, namely the access to inputs, such as fertilisers, seeds, seedlings and pesticides ($p=0.050$), and the access to tractors and other technology ($p=0.029$). In both cases, females are less likely to gain access to these resources. However, the correlation results (Table 4.34) show a negative relationship ($r=-0.263$, $p=0.018$) between farmers' age and access to inputs like seeds, fertilisers, and pesticides, and this negative relationship was highly significant ($r=-0.300$, $p=0.006$) at 99% confidence level, when compared with farmers' farming experience (Table 4.34). This suggests that farmers with more experience in farming had difficulty in accessing inputs. However, there was also a highly significant (99% confidence level) relationship between farmers' age and experience ($r=0.523$, $p=0.000$). Therefore, the overall relationship between experience and access to inputs is that these farmers are aged, and in most cases do not have off-farm income to buy inputs.

There was no statistical significance between married and single farmers, or married and widowed farmers, in their perceptions on access to farming resources, support services and inputs. This means that they faced with similar challenges. When comparing those with no formal education and those with higher secondary education, the independent t-test shows no statistical significance in general, although access to local markets and to agribusiness workshops were significant at ($p=0.003$) and ($p=0.027$) at 95% confidence level, respectively. This means that the more educated farmers had better access to markets and workshops.

Organisations are perceived as providing a platform to gaining access to resources. However, the independent t-test results showed that farmers who were members of SNAU faced similar challenges that non-members did. However, the correlation results (Table 4.34) show a highly significant positive relationship ($r=0.296$, $p=0.007$) between being a member of SNAU and access to technology. On another note, working as an individual farmer and working as a farmer group were significant only in gaining access to local markets ($p=0.027$). Lastly, working with NAMBoard or not was significant for accessing support and inputs, while it was only significant regarding to accessing agribusiness workshops ($p=0.027$). These findings about NAMBoard resonate with the results reflected in Figure 4.14 above, where 87.1% of the farmers saw the Board as being unhelpful. Table 4.34 also shows that members of SNAU were more likely to have NAMBoard contracts ($r=0.385$, $p=0.000$), at 99% confidence level.

Table 4.20: The level of accessibility of important resources to farmers as perceived by farmer respondents

Resources needed by farmers	N	Minimum	Maximum	Mean	Std. Deviation	Comment
How accessible are inputs i.e. seeds, fertilizers, pesticides, seedlings?	82	1	3	1.75	0.56	LA
How accessible are insurance products?	82	1	3	2.90	0.34	NA
How accessible is the labour if needed?	82	1	3	2.21	0.67	LA
How accessible is irrigation water?	82	1	3	1.91	0.60	LA
How accessible are export opportunities?	82	1	3	2.78	0.50	NA
How accessible is information on good markets?	82	1	3	2.64	0.53	NA
How accessible are reliable local markets e.g. shop/restaurants contracts?	82	1	3	2.62	0.56	NA
How much access do you have to technical knowledge?	82	1	3	1.50	0.74	A
How accessible is more arable land?	82	1	3	1.83	0.67	LA
How accessible is the tractor and other new technology?	82	1	3	1.65	0.57	LA
How accessible are business loans for you?	82	1	3	2.64	0.53	NA
How accessible are Agribusiness workshops?	82	1	3	2.05	0.65	LA

Key: A – Accessible (mean: 1.0 – 1.50)

LA – Less accessible (mean:1.51 – 2.5)

NA – Not accessible (mean:2.51 – 3.0)

4.2.2.4 *General perceptions of farmers about the extension system (Table 4.21)*

Most of the farmers have been involved in agribusiness, hence their perceptions are deemed to have some deep, supporting background. Although these perceptions cannot be taken as facts, they express the realities that are felt or experienced by farmers in their day-to-day activities. The general perceptions will be categorised into three (3) categories, namely landscape of their business; extension service, and organisations (Table 4.21).

a) Perceptions about the landscape of their business

The farmers believed that young people dislike the farming business (mean: 2.44) and that they wanted to get urban jobs, as they felt embarrassed when doing farm jobs. During the interviews, some farmers blamed the older/parent farmers for not introducing their children properly into the agribusiness. Some expressed the view that the youth care much about their appearance and so they refuse to be exposed to the heat in the fields. Although there was a sense ('slightly disagree') that the vegetable production business was not profitable (mean: 4.39), farmers still viewed it as a good business, provided the climatic conditions were favourable and a good market was available. The low profitability prospects, however, were cited as one of the reasons why the youth shy away from agribusinesses.

The farmers slightly disagreed (mean: 3.96) that they had decided to venture into vegetable farming because they had nothing else to do. The farmers conduct their business on SNL, and accordingly they perceived (mean: 2.98) that they had no legal rights over the land and water they used. Most of the farmers expressed that it was very easy to lose the land to someone else, as the Chief had the discretion to award the land to someone else.

Table 4.21: General perceptions of farmers about their business

Perceptions	N	Minimum	Maximum	Mean	Std. Dev.	Comment
Landscape of their business						
Old farmers are well experienced than new farmers	82	1	6	3.83	1.51	D
Youth hate farming	82	1	6	2.44	1.69	A
Farmers have enough land to grow crops	82	1	6	3.05	1.18	SLA
Farmers have no legal rights over water and land access	82	1	6	2.98	1.19	SLA
Good variety seeds are scare	82	1	6	2.91	1.15	SLA
Pest and diseases are very difficult to control	82	1	5	2.66	1.21	SLA
Export market is always available to farmers	82	1	6	5.22	1.30	D
Financial institutions fund vegetable farmers	82	1	6	5.09	1.06	D
Farmers can develop and implement budgets and business plans	82	1	6	4.74	1.41	D
Farmers can manage financial accounts of their business	82	1	6	4.34	1.50	SLD
Farmers resort to farming if they have nothing to do	82	1	6	3.96	1.51	SLD
Small scale vegetable production is not profitable	82	1	6	4.39	1.52	SLD
Organizations						
The number of vegetable farmers is increasing	82	1	6	3.54	1.57	SLA
Farmers are reluctant to form cooperatives	82	1	6	3.13	1.47	SLA
Most vegetable farmers are union members	82	1	6	4.48	1.44	SLD
The RDA program is helpful to farmers	82	1	6	2.73	1.35	SLA
The government only help farmers when there international/foreign funding	82	1	6	3.00	1.29	SLA
Cooperatives are better than unions	82	1	6	2.57	1.30	A
NAMBoard is helpful to farmers	82	1	6	4.65	1.48	D
Extension service						
Experienced farmers do not need Extension Officers	82	1	6	5.02	1.12	D
Young farmers have vast knowledge hence do not need Extension Officers	82	1	6	4.85	1.11	D
Government does not really care about small scale farmers	82	1	6	4.10	1.62	SLD
Sugar cane farmers are well looked after by government	82	1	6	2.40	1.42	A
Farmers are not well informed about opportunities available to them	82	1	6	2.80	1.19	SLA
Extension Officers are helpless in Agribusiness issues	82	1	6	3.94	1.45	SLD
The extension service has become helpless over the years	82	1	6	3.94	1.32	SLD

Key: SA – Strongly Agree (1-1.5) A – Agree (1.6-2.5) SLA – Slightly Agree (2.6-3.5) SLD – Slightly Disagree (3.6-4.5)
D – Disagree (4.6-5.5) SD – Strongly Disagree (5.6-6)

Farmers had a sense that the government cared about them, but they thought the government cared more for sugar cane farmers than it did for them (mean: 2.4). They also felt that the government only attended to them when international donors or NGOs were working in their areas. To a large extent, they viewed NAMBoard (a parastatal) as not being helpful to farmers (mean: 4.65) and as an organisation that blocked them from exporting their produce and from gaining access to other good markets.

Farmers disagreed (mean: 5.09) that financial institutions are keen to help them to fund vegetable production. However, they also admitted that they were not able to draw business plans and implement them (mean: 4.74) and to keep financial records or to separate their business finances from their personal finances (mean: 4.34). These might be some of the reasons why financial institutions are not able to fund them. Table 4.34 shows a highly significant positive relationship between access to export markets and access to business loans ($r=0.402$, $p=0.000$).

b) Perceptions about extension services

The farmers accepted that extension officers were still relevant and were helpful to both young and old farmers. Notwithstanding that young farmers may have access to information, and old farmers have vast experience, the extension officers were viewed as still being relevant. Farmers suggested that extension officers did not tell them about all the opportunities available to them (mean: 2.80) that would help them to improve their businesses. Farmers slightly disagreed (mean: 3.94) that the extension service had become helpless over the years. Some of the farmers still feel that government cares about them, as the mean (mean: 4.10) showed that they slightly disagree that government does not care about them.

c) Perceptions about organisations

Farmers were reluctant to join hands and form cooperatives (mean: 3.13) or join the farmers' union (mean: 4.48). Farmers noted that many conflicts arose within cooperatives, as some farmers were generally lazy and uncooperative. However, they preferred the cooperatives to the union (mean: 2.57). The correlation results (Table 4.34) show that the way in which farmers are organised (as a group or as individuals) was negatively correlated with level of education ($r=-0.278$, $p=0.011$); farm size ($r=-0.301$, $p=0.006$); having a marketing contract ($r=-0.228$, $p=0.039$); having a marketing contract with NAMBoard ($r=-0.274$, $p=0.013$); and availability of extension ($r=-0.289$, $p=0.009$). When viewed in line with the data arrangement, these results

suggest that the more-educated farmers, who have large land sizes, usually do not have marketing contracts with NAMBoard, and usually farm as individuals.

d) Gender perception differences

Table 4.28 shows that gender difference was only significant for five (5) perceptions, when performing an independent t-test at 95% confidence level. These include the perception that financial institutions fund vegetable farmers ($p=0.038$), which the farmers disagreed. The results showed that the disagreement of female farmers (mean: 5.25) is stronger than that of their male counterparts (mean: 4.75). The second area where gender difference was significant, was the perception that farmers can implement budgets and business plans ($p=0.022$) (Table 28). Moreover, Table 4.21 shows that female farmers strongly disagreed (mean 5.0) that than their male colleagues (mean: 4.25). The third area was the farmers' perception that farmers can manage the financial accounts of their businesses ($p=0.024$). Table 4.21 shows that males slightly disagreed (mean: 3.79) and female farmers disagreed (mean: 4.63) with that perception. The fourth perception was that the number of vegetable farmers is increasing ($p=0.016$). The male farmers slightly agreed (mean: 2.93), while female farmers slightly disagreed (mean: 3.85) (Table 4.21). The last perception where gender difference had a significant difference on farmers' perceptions was that experienced farmers do not need extension officers ($p=0.001$). Both female (mean: 5.31) and male (mean: 4.46) farmers disagreed with that (Table 4.21).

4.2.2.5 Challenges faced by smallholder vegetable farmers

Extension officers were asked to comment on the challenges faced by the farmers (Table 4.22). Based on the mean scores for the challenges, farmers were seen to face prevalent droughts and hot temperatures (mean: 1.69); had difficulty in managing their finances (mean: 1.85); faced difficulty in accessing funding (mean: 1.92); faced difficulty with record keeping (mean: 1.92); and experienced a lack of workshops from government (mean: 1.92). The extension officers also rarely encountered situations where farmers retires because of HIV or chronic illnesses (mean: 2.77) or businesses collapsing because of poor management (mean: 2.77).

Table 4.22: Challenges faced by farmers as perceived by extension officers

Challenges	N	Minimum	Maximum	Mean	Std. Dev.	Comment
Farmers having limited access to market trends information	13	1.00	4.00	2.00	0.71	Often
Farmers having limited access to export opportunities	13	1.00	4.00	2.08	1.04	Often
Farmers having difficulty to access funding **	13	1.00	4.00	1.92	0.76	Often
Farming having poor roads to transport or market their produce	13	1.00	4.00	2.08	0.95	Often
Farmers having difficulty to access arable land	13	1.00	4.00	2.39	0.77	Often
Farmers facing land ownership disputes	13	1.00	4.00	2.46	0.78	Often
Farmers without irrigation water	13	1.00	4.00	2.23	1.01	Often
Farmers lack transport to good markets	13	1.00	4.00	2.00	0.58	Often
Farmers having difficulty de develop financeable business plans	13	1.00	4.00	2.15	1.07	Often
Farmers having physical and financial to inputs	13	2.00	4.00	2.46	0.52	Often
Farmers having difficulty to get tractors on time	13	1.00	4.00	2.46	0.66	Often
Farmers having difficulty to get production information	13	1.00	4.00	2.54	0.66	Less Often
Farmers having difficulty in managing their finances **	13	1.00	4.00	1.85	0.56	Often
Farmers not able to keep accurate records **	13	1.00	4.00	1.92	0.76	Often
Farmers not given workshops by government **	13	1.00	4.00	1.92	0.76	Often
Farmers have difficulty to meet Extension Officer on time	13	1.00	4.00	2.62	0.87	Less Often
Farmers have competition from imports	13	1.00	4.00	2.00	1.08	Often
Farmers having difficulty to access lucrative market contracts	13	1.00	4.00	2.08	0.86	Often
Farmers have poor land rights	12	1.00	4.00	2.50	0.91	Often
Farmers face a lot of droughts and high temperatures **	13	1.00	4.00	1.69	0.75	Often
Farmers are aged and retiring from work	13	1.00	4.00	2.23	0.73	Often
Farmers lack affordable labour in communities	13	1.00	4.00	2.23	0.73	Often
Farmers retiring because of HIV and other chronic diseases	13	2.00	4.00	2.77	0.60	Less Often
Farmers always engaged in disputes in their communities	13	1.00	4.00	2.69	0.75	Less Often
Poor business management resulting to collapse of business	13	2.00	4.00	2.77	0.73	Less Often
Children of deceased farmers refusing to lease or land	13	1.00	4.00	2.46	0.78	Often

Very Often (mean: 1 – 1.5)

Often (mean: 1.6 – 2.5)

Less Often (mean: 2.6 – 3.5)

Never (mean: 3.5 – 4)

NB: ** refers to most prevalent challenges (mean of less than 2)

During the interviews, farmers were also asked to state the challenges they face in their businesses, as perceived by them. They reported various challenges, summarised as follows:

1. Farmers lacked a reliable and free market for their produce, such as exports and big shop contracts;
2. Climate change was beating hard on farmers in terms of heat stress on crops, shortages of irrigation water, uneven distribution of rainfall, and change in the conventional seasons;
3. Lack of water storage facilities or reservoirs;
4. Difficulty in accessing capital for fencing, establishing irrigation systems, expensive fertilisers, seeds, and chemicals for controlling the persistent pest and diseases;
5. Lack of harvest storage facilities and transport reduced the ability of farmers to negotiate better prices for their perishable produce;
6. NAMBoard was exploitive of farmers by dictating poor prices and delaying payments;
7. Delay in getting tractor services from the RDA;
8. Inability of farmers to manage business finances or cash flows;
9. Lack of organisation of members into farmer groups (schemes), resulting in poor management and fields being left fallow by disgruntled farmers for years;
10. Retiring farmers in communal farmer groups (schemes) had assumed permanent ownership of the land and refused to lend or handover the land to another farmer, even though if it had been unused for years; and
11. Empty promises by NGOs and Government/Parastatals, which gave farmers false hope.

4.2.2.6 *Suggested solutions to farmers' challenges*

When the farmers were asked as to the way forward for resolving their challenges, they were not clear in bringing forward workable solutions, and therefore a group discussion with senior extension personnel and one-to-one interviews were used to get suggestions from extension officers. These interactions brought forward the following solutions:

1. It was suggested that there was a need to institutionalise the smallholder vegetable sector of farming. This would help to clearly define the qualities needed for a person to become a commercial farmer. Moreover, it would help in their registration for regulation and the subsequent planning of assistance.
2. The need to revitalise the Communal Farmer Groups was highlighted, together with further assistance in infrastructure development, which must include earth dams and water tanks, irrigation pipes, fencing, and storage and packing facilities.
3. There was a great need to recruit young farmers who would be able to run their projects in a proper, business-like manner. The young farmers must be given training in agribusiness and vegetable production.
4. NAMBoard must only regulate the buying and selling of vegetables and assist farmers in gaining access to markets, instead of it buying and selling vegetables.
5. Government must stop focusing more on sugar-cane farmers and also assist vegetable farmers, since they also play a crucial role in the economy.
6. Sustainable development of RDAs must be ensured. There were numerous projects that were running in the RDAs, but their sustainability is questionable because they were funded by foreign donors, e.g. for provision of tractors and soil testing units.
7. There is an urgent need to train farmers on record keeping, cash flow management, business planning, water conservation, and marketing, depending on their cognitive capabilities.
8. There is also an urgent need to establish standards for vegetable production (grading system) and to train farmers on how to produce vegetables that adhere to these standards, which would allow them to attract competitive prices for their produce.
9. Climate change and its challenges have dictated a paradigm shift in vegetable production techniques and varieties. All role players need to take this into account, otherwise food insecurity will worsen.
10. Parents/old farmers need to take an active role in introducing their children into farming more positively and in guiding them into the industry.

11. Some of the challenges facing farmers need a united front that would lobby for the government's commitment, and that could be the union, i.e. SNAU. Therefore, SNAU must market itself better to farmers and put working structures in place.

4.3 Results discussions

The structure of the Extension Department in Swaziland covers a wide range of activities and agribusinesses that are taking place in rural areas. These activities range from crop production, animal husbandry, to support activities like soil testing and providing tractors. This study did not aim to ascertain the effectiveness of this whole range of services, and it focused only on the horticultural (vegetable production) division of the Department. A closer analysis of Figure 4.1 shows that the divisions of the Department cover the whole country (i.e. all four regions of the country) uniformly and that the services are provided through strategic centres called rural development areas (RDAs). This enables the central government to control the activities, and receive reports on a wide range activities, conducted in rural areas across the country. The coordination of the central government with the rural people is highly strategic for the government in planning interventions that would be accurate for addressing the needs of the rural poor, and more specifically farmers, as they remain strategic to economic development in most developing countries (Norton et al., 2010; Todaro & Smith, 2015). The strategic contribution of agriculture in Swaziland to the general socio-economic outlook of Swaziland has been highlighted by the Swazi Government National Development Strategy (Vision 22), AfDB (2005) and in World Bank (2011) reports. Therefore, support systems like extension services remain pivotal for the country for realising the desired economic growth and development, which can be contributed to through intensifying agricultural growth.

Having a compact administrative structure and policies comprises the first step towards delivering an effective and efficient extension programme. The provision of qualified personnel who are aligned with the needs and challenges of the clientele is equally important. The results of this study have shown that, in general, younger extension officers with bachelor's degrees in agriculture are joining the Department. This appears as a good step taken by the government towards revitalising the extension system. However, these new extension officers have not received training specifically for agricultural extension delivery and management. This training should involve the development and management of rural agricultural farmer-groups; the development and management of extension programmes; and the coordination of

farmers with upstream and downstream markets. The need for training extension officers in Swaziland on these aspects was also noted in the strategic plan for the Swaziland Agricultural Development Project (SADP) (see SADP, 2011). This training is pivotal, as the results show that farmers, in general, were older women with low levels of education, and the analysis showed that women were more likely to have no education at all or to have dropped out of school early. (Jele, 2006) also reported the low levels of education among rural adult women. These demographics suggest that the need for the provision of extension services to these farmers is huge, as agribusiness has become more dynamic and complex. Therefore, extension officers need to develop programmes that will help organise and coordinate farmers in forming a formidable front in the prevailing agribusiness climate. Davis (2008) has also emphasised the point that extension services must not only transfer information, but should also manage farmer groups and coordinate the farmers with inputs, outputs, and financial markets. However, without the training of extension officers in these aspects, their contribution would be ineffective, inefficient and insignificant. Therefore, the government should take the lead and facilitate the training of extension officers by NGOs and the private sector.

The training of extension officers in extension delivery and management continues to be important because it also equips them with skills for the development, management and coordination of farmer groups. The results showed that most farmers were organised into farmer groups. However, almost half of the farmer-respondents expressed the view that they were not interested in working cooperatively. This might be because the existing farmer groups were predominantly malfunctioning, clouded with conflicts, and consequently, the farmers withdrew. This has resulted in farmers conducting their operations alone, even though they were in a group, which then deprived them of the benefits of working collectively. These benefits include easier access to extension and services; bulk purchases of inputs and getting discounts; and collective selling of produce, which permits them to meet market requirements and gives them bargaining power. The power of collective action has been highly emphasised by a number of rural development practitioners and researchers, including Louw et al. (2008), Markelova et al. (2008), Ortmann and King (2010), Reardon et al. (2010), and Young and Hobbs (2002). These authors argue that cooperatives continue to constitute a pro-poor business organisation that effectively addresses the access of farmers to inputs, produce and financial markets. Therefore, extension officers need to receive intensive training in the development and management of such organisations in order to assist farmers in this regard. Moreover, these highly institutionalised organisations need extension officers to be an integral part of their

administration to provide assistance in the management and strategic planning of these organisations.

The poor management of farmer groups and cooperatives in Swaziland has been reported by Hlatjwako (2010), Levin (1984), and Masuku et al. (2016). Levin's argument is that the failure of farmer groups was based on issues of land rights, while the author also touched on the point that farmers were reluctant to cooperate and were fully dependent on external support to finance their activities. The external supporters of the groups were able to keep them going by providing them with a reliable market. The results of this study found that grouped farmers were more likely to gain access to markets and extension services. Most of the market facilities for the produce were provided by the National Agricultural Marketing Board (NAMBoard). Therefore, the revival of the farmer groups in the country may improve the efficiency of extension and farmers' access to produce markets. However, farmer groups were not correlated to export market access and access to finance. The growing coordination of markets (see Gulati et al. 2005; Lee et al., 2010; Trienekens, 2011; Kirsten & Sartorius, 2002) demands that farmers should organise themselves into formal groups to enable them to enter into these coordinated agribusiness chains. However, regarding finance, there is a growing body of literature that suggests that cooperatives are limited in providing access to additional finance because of ill-defined property rights (see Cook, 1995; Lyne & Collins, 2008; Sykuta & Cook, 2001; Young & Hobbs, 2002). Moreover, this lack of access to additional finance affects cooperatives in the long run, and could be addressed through lobbying for the transformation of the cooperatives legislation to allow for hybrid structures of cooperatives (i.e. a new generation cooperatives) in Swaziland. Therefore, extension officers need to understand these issues and determine strategies on how they might transform and strategically position farmers so as to overcome these challenges without a heavy reliance on government and NGOs.

The environment in which the extension officers work is also paramount for the successful revitalisation of the extension service in Swaziland. The study found that the RDAs, where the extension officers are stationed, are insufficiently equipped. They lack internet access for extension officers, means of transport, computers for typing and storing information, and laboratories, and are under-staffed. These issues are detrimental to the effectiveness and efficiency of extension service delivery. For instance, the internet is critical, as extension officers need to update their knowledge and training tools on their own. This results in extension officers relying on external agents, like NGOs, for knowledge updates. If extension officers could have access to the internet, they would be able to access market information,

learn about pests and diseases, new seeds, innovations, and other strategic issues in the industry. Moreover, the lack of transport was also viewed as being detrimental, as each extension officer was obliged to help an undefined (inconsistent) number of farmers, of up to 500, yet they were understaffed. Some of these farmers are found in places that are awkward to reach and are working individually. This poor working environment, together with the understaffed Extension Department, has been reported by a number of authors, including Dube (1993), Keregero (2000), and Connolly et al. (2011). This mainly reflects the general neglect by governments towards the public extension service, which was reported by Connolly et al. (2011) in Swaziland and by Davis (2008), globally.

The perceived neglect of the Extension Department was also noted by both extension officers and farmers in the study. Extension officers expressed the view that they thought that government was looking down upon them. The reasons for this perception were the poor working conditions of the RDAs and their poor welfare. For instance, extension officers were paid less than teachers and other extension officers in parastatals, yet they had similar qualifications. This has led to a huge staff turnover, as extension officers have left the Department after getting better offers from the private sector, NGOs and parastatals doing similar jobs. The staff turnover is a huge skills drain from the department and results in a lack of transformation, as the staff members in most cases are newly qualified. The new staff members are usually met with challenges and conflicts that started in the past, which they can do little about, as some of the challenges arose from communal conflicts that affected the farmer groups. Logically, it takes longer for the new officers to adapt and develop working relationships with the farmers. Therefore, on top of improving the working conditions, the government needs to also provide or facilitate the improvement of the officers' welfare in order to reduce staff turnover. Moreover, the involvement of community leadership in farmer-group management might play a key role, as the leadership is respected in the jurisdictions.

NGOs and parastatals are contributing to the sustainability of farmers through forming groups, providing inputs, and assisting in market issues. However, these projects have lacked sustainability and they collapsed after the external support ceased. These instances have left extension officers in the dark as to how to continue assisting the farmers who had been receiving better services from NGOs. Therefore, as the government is developing an extension policy through the SADP, it must provide a suitable platform for the operation of pluralistic extension strategies. The extension literature, in general, is in support of pluralistic extension approaches and shows consensus that the government has to provide a good platform for this

extension approach (Christoplos, 1996; Groenewald et al., 2011; Raidimi & Kabiti, 2017). The role of government might be to provide suitable institutions and incentives and to promote excursions.

Parastatals like NAMBoard, which plays a regulatory function of horticultural products in the country, also provide vegetable markets for farmers. The farmers viewed NAMBoard as being exploitative and opportunistic, as noted in the discussions. This is because the Board has failed to pay farmers on time and did not honour contractual agreements (on prices) for produce sales. World Bank (2011) and SNAU (2010) reports have also criticised the Board's participation as a regulator while also participating in the mainstream horticultural value chains. They argue that the Board should concentrate on institutional and regulatory issues. Moreover, the Board should develop and institutionalise the certification of farmers' products so as to give them access to export markets and other affluent markets in the country. Such access to export markets by smallholders might result in them gaining access to finance, as the results showed a highly significant correlation between having an export market contract and access to bank loans.

Extension officers reported their view that farmers would stop farming without the benefit their extension services. This assertion was supported by farmers themselves, as they expressed the view that they need extension officers, regardless of their level of education and experience in farming. However, farmers observed that the quality of the service they receive had greatly declined, and they urged the government to assist extension officers in their endeavours. A large number of the farmers did not have off-farm jobs, which means they rely heavily on farming as a livelihood strategy and income-generation enterprise. Although they viewed farming as a viable business, they regretted the losses caused by climate change and the lack of reliable markets, in respect of which extension officers have little help to give. This shows that if extension officers were to be well supported through training and provision of resources, they could have a significant impact on farmers.

Despite the challenges that the farmers and extension officers faced, they were committed to continuing with their endeavours to transform their businesses. The results showed that the extension officers were committed to helping as many farmers as possible and to recruiting more farmers. Most of the challenges faced by the farmers can be addressed/alleviated through improving the extension programmes and farmer coordination. The farmer coordination aspect

could also improve the provision of extension services. Therefore, the formation and management of strong farmer cooperatives is central to extension revitalisation. The strength of farmer cooperatives rests on the provision of business-oriented extension training and assistance from qualified extension officers. The failure to support extension services has a cyclic effect on agricultural growth for smallholder farmers. Thus, the poor transformation in smallholder farming is a consequence of poor extension support. Good extension services might bring about the formation of a sustainable farmer organisation that could transform the agribusiness landscape in rural areas and improve the farmers' welfare.

CHAPTER 5: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of the most important findings

This research study was set in place to describe and analyse the landscape of the agricultural Extension Department, extension officers and smallholder vegetable farmers. It has also highlighted some perceptions of the extension officers and farmers regarding the operation, and challenges facing the extension system in Swaziland, and how it could be revitalised. The overall objective is to identify interventions that can be employed to revitalise and transform the extension service in Swaziland.

It was found that the Extension Department is controlled by the national government, and is decentralised to all four regions of the country. The RDA centres are established in the regions, where extension officers are stationed to help farmers with a range of activities. The farmers were not organised and inconsistent in the horticultural value chains. Farmers who were part of farmer-groups were conducting their businesses as individuals, as the farmer-groups were not functional and clouded with conflicts, and almost half the respondents were negative regarding working collectively. Other NGOs and parastatals have provided extension services and assistance to farmers to form groups and to assist them in production; however, these endeavours were short lived and unsustainable. Therefore, the government needs to provide a suitable framework for pluralistic extension approaches.

Extension officers were predominantly young men with bachelor's degrees in agricultural courses. They lacked training in agricultural extension and were inefficient in agribusiness issues and coordinating farmers with markets. On the other hand, the farmers were mostly older women with low levels of education. Women farmers were predominantly more experienced in farming, while towards the retirement age, the number of male farmers came up to parity with that of female farmers. This could mean that farming was done by people who could not find off-farm jobs or had retired from their off-farm jobs. The number of young farmers was very low.

Extension officers were keen to do their work, but had challenges regarding their facilities, such as with transport, communication allowances, internet access, computers, and laboratories. They were also demotivated by their poor remuneration, as compared with that of the civil servants (in government and parastatals) who had similar qualifications as they did.

This prompted them to think that the government was looking down on their work. The farmers acknowledged and valued the assistance provided by extension officers; however, the extension officers' limited scope in dealing with agribusiness issues (organisational, coordination, and market related) was a setback. The need for in-service training in extension and agribusiness aspects was the most highlighted area for attention.

Farmers were selling their produce through NAMBoard, although they viewed the Board as being opportunistic and unreliable. Moreover, this market could not guarantee them access to finance, and only export market contracts could guarantee them access to finance, as shown by the results of the analysis. Farmers even suggested that NAMBoard should assist them in gaining access market and stop being the market and thereby competing with them. Other organisations, like the farmers' union, were known to a few farmers, although the work and impact of the union was not clear to farmers. Farmers, in general, felt that the government had neglected them and were only focused on sugarcane smallholders. Therefore, the government, NAMBoard and SNAU need to clearly come to the fore and assist the farmers.

Apart from poor market access and malfunctioning farmer-groups, the farmers experienced challenges including climate change effects, expensive inputs, and delays in the provision of subsidised government tractor services. In addition to poor remuneration, poor office infrastructure, and lack of transport and in-service training on extension and agribusiness issues, the extension officers had to service a large number of farmers in conflict-prone farmer-groups.

The development of formal farmer-groups and the improvement of the welfare of extension officers were found to be key solutions for the revitalisation of extension services. Moreover, the development of institutionalised or programmed extension services was seen as paramount, as it would alleviate the impact of the high staff-turnover in the department and allow for innovation and transformation.

5.2 Conclusions

Based on the results of this study, the following conclusions can be drawn:

1. Extension officers and farmers have good relationships, even though the extension officers are mainly young and new in the Department. Extension officers perceived

farmers as being participative and cooperative, while the farmers graded their extension officers' service as generally good.

2. Extension officers were perceived as being hardworking and generally available to help farmers when they needed that help, although they lacked a clear programme of operation on the ground, in the form of extension methods and programmes.
3. The Extension Department had delayed for some time in recruiting extension officers, and so the farmers had been facing many challenges without any urgent help. This has resulted in the dysfunctional farmer groups in which the members were engulfed in conflicts and surrounded by general discouragements.
4. Extension officers did not train farmers on business management and marketing, mainly because they lacked the capacity to do so.
5. Research was not directly incorporated into the extension structure, yet agricultural research must be part of the extension service so as to enable the challenges faced by farmers in their farms to be urgently and clearly solved.
6. Smallholder vegetable farming could help sustain the livelihoods of rural people by providing affordable food, income, self-employment and temporary employment, and could create a micro-economic climate if it were to be properly supported and managed.
7. Farmers were reluctant to work in groups or together because of old conflicts and bad experiences with other farmers, organisations and unions.
8. Farmers lacked access to reliable markets, hence they found themselves confined to selling to NAMBoard, although the Board seemed to be taking advantage of the perishability of their produce and delayed payments.
9. Both farmers and extension officers thought that vegetable production could be a profitable enterprise, if the marketing field could be levelled, by the government, and NAMBoard in particular, helping them in good faith.
10. Drought and heat waves were beating hard on the farmers' crops, and farmers and extension officers were desperate as to what to do.
11. Young people in Swaziland seem to shy away from vegetable production, hence it is dominated by older farmers who have less formal education or training.
12. The welfare of both farmers and extension officers was found to be generally poor. This prompted the extension officers to think that their work was looked down on by government.
13. The NGOs' community projects for farmers were helpful, but they were not sustainable after the NGOs' time elapsed.

14. The RDAs were too under-resourced and under-staffed to meaningfully help farmers. They lacked transport, internet access, laboratories, extension personnel, vehicles, and workshops.
15. Research seemed to have been excluded from the whole extension structure, which reduces its impact and relevance to farmers. This makes conducting on-farm research difficult, yet it is beneficial to farmers.
16. Farmers were not well organised and institutionally regulated by any general standards of production. Their participation in farming was inconsistent (on-and-off). This created challenges on how to assist farmers when assistance was sought.

5.3 Recommendations

Based on the conclusions and discussions reported in this study, the following recommendations can be made:

1. The government should lead in facilitating the physical and financial support of smallholder farmers, together with NGOs and the private sector, because these farmers play a key role in rural development.
2. The Government should institutionalise and help farmers to organise themselves in the communities so that the assistance that government provides in the form of inputs and training is well directed and given to the right farmers. Moreover, there is a need to establish grades and standards for vegetable products which will enable farmers to enter supermarket value chains and export markets. This institutionalisation and governance of vegetable production/market chains should be the main focus of NAMBoard, and not the buying and selling of vegetables.
3. The Government, NGOs and private companies should join forces in rigorously providing further training, in-service training and workshopping for extension officers in those areas where there is a need, i.e. agribusiness management, market intelligence, and extension service development. The University of Swaziland should actively train extension officers and regularly offer short courses for extension officers.
4. The extension methods need to be well defined and tailor made to suit the situations of the farmers and extension officers. This must be done alongside the strategic cooperation of research, with clearly aligned memoranda of understanding with NGOs.

5. Development agencies and the government should improve the RDAs and capacitate them with the relevant infrastructure and equipment needed, i.e. cars, motorbikes, internet access, vegetable storage facilities, well-furnished laboratories, and tractor workshops.
6. The NGO projects should be aligned with government plans and other related projects so that they are rendered sustainable, even beyond the NGOs' operational periods.
7. Extension officers must be well remunerated to ensure sustainability in the sector, and recruitment must be done faster, such that if an extension officer leaves the department there must be timely replacement for the vacancy. Government should recruit professionally qualified extension personnel for all the positions to enable professionally guided rural development for vegetable farmers.
8. The NAMBoard should stop being both a regulator and a middleman to vegetable producers; it should rather regulate marketing and assist farmers to access good and sustainable markets. This might be achieved through providing market information (even data bases) for farmers, and assisting farmers to coordinate with market. Moreover, NAMBoard should be entrusted with developing and enforcing grades and standards for vegetable farmers, and providing certification which could enable farmers to gain access to markets (local and exports).
9. Farmers should form groups or cooperatives because this makes it easier to provide extension services, to access markets and to pull resources together. This strategy should be supported by flexible institutions that allow cooperatives to evolve from traditional structures which are underinvested. The underinvestment emanates from ill-defined property rights (Cook, 1995) that deter members from adding additional capital, and they also deter outside investment and loans for investment in value-adding activities (Lyne & Collins, 2008).
10. Other researchers could investigate in detail why younger people shy away from farming, so that strategies for recruiting them could be devised.
11. The socio-economic potential of communal farmer groups (schemes) in communities should be evaluated to ascertain whether they could be strengthened to alleviate farmers' challenges.
12. There is a need to investigate crop production coping strategies to counter the effects of climate change impacts: studies should be conducted to identify the coping strategies that are most relevant and practical for the socio-economic characteristics of the farmers.

13. A thorough investigation of the relationships between NAMBoard, farmers, and extension service providers is needed. It should aim at developing a fair platform for the relationships or a repositioning of NAMBoard's role towards smallholder farmers.

LIST OF REFERENCES

- Adekunle, A.A., Ellis-Jones, J., Ajibefun, I., Nyikal, R.A., Bangali, S., Fatunbi, O. and Ange, A., 2012. Agricultural Innovation in Sub-Saharan Africa: Experiences from Multiple Stakeholder Approaches. *Forum for Agricultural Research in Africa*, viewed 30 April 2014, www.fara-africa.org
- Adesina, A.A. and Zinnah, M.M. 1993. Technology characteristics, farmers' perceptions and adoption decisions: A Tobit model application in Sierra Leone. *Agricultural Economics*, 9 (1993): 297-311.
- African Development Bank, 2005. *Kingdom of Swaziland, Country Strategy Paper 2005 – 2009*. Mbabane, Swaziland, viewed 10 October 2014, www.afdb.org/fileadmin/uploads/afdb...
- AfDB, OECD, UNDP and UNECA, 2012. *African Economic Outlook*. Swaziland, viewed 23 October 2013, www.africaneconomicoutlook.org
- Ajzen, I. 2002. Perceived Behavioural Control, Self-Efficacy, Locus of Control, and the Theory of Planned Behaviour'. *Journal of Applied Social Psychology*, 32(4): 665-683.
- Alther, C., 2008. *Sustainability of Rural Development Projects in Swaziland: Why Projects Fail*, Sustainability of Agriculture Health Education and the Environment, Swaziland. Viewed 12 November 2014, www.sahee.org/.../Rural-development-
- Arcury, T.A. and Quandt, S.A., 1998. Qualitative Methods in Arthritis Research: Sampling and Data Analysis. *The American College of Rheumatology*, 11(1): 66 – 74
- Ashely, C. and Maxwell, S. 2001. Rethinking rural development. *Development Policy Review*, 19(4): 395 – 425.

- Belay, K. and Abebaw, D., 2004. *Challenges Facing Agricultural Extension Agents: A Case Study from South-western Ethiopia*. The African Development Bank, Blackwell Publishing Ltd. viewed 24 March 2014, www.researchgate.net/publication/22...
- Benjamin, A.M.N., 2013. Farmers Perception of Effectiveness of Agricultural Extension Delivery in Cross River State, Nigeria. *IOSR Journal of Agriculture and Veterinary Science*, 2(6): 1 – 7.
- Bhuyan, S. 2007. The People” Factor in Cooperatives: An analysis of Members’ attitude and behaviour. *Canadian Journal of Agricultural Economics*, 55(2007): 275-298.
- Blake, R., Coupe, S., Pasteur, K., Phillips, E. and Warbaton, H., 2011. Innovations in Extension and Advisory Services International Conference (eds), *Bridging the Gap between resource poor farmers and Extension Offices: Role of Community Based Extension System, Practical Action*. CTA Netherlands. Viewed 07 April 2015, <http://extensionconference2011.CTA.Netherlands>
- Birkhaeuser, D., Everson, R.E. and Feder, G., 1991. The Economic Impact of Agricultural Extension. *A Review, Economic Development and Cultural Change*, 39(3): 607 – 650
- Connolly, M., Ndlangamandla, G. and Skhondze, W., 2011. Innovations in Extension and Advisory Services International Conference, *Natural Agricultural Extension Policy Development in Swaziland*. CTA, Netherlands. Viewed 07 – 04 – 15, <http://extensionconferenceAdvisoryServices>
- Cook, M.L. 1995. The future of US cooperatives: A Neo-Institutional Approach. *Journal of Agricultural Economics*, 77(5): 1155 – 1159.
- Cook ML & Iliopoulos C, 1999. Beginning to inform the theory of cooperative firm: Emergence of the new generation cooperative. *The Finish Journal of Business Economics*, 4(1999): 525-535.

- Christoplos, I. (1996). *Poverty, pluralism and extension practice*. IIED, Gatekeeper series No.64. Viewed 20 April 2017, from www.1996-pubs.iied.org
- Davis, K.E., 2008. Extension in Sub-Saharan Africa: Overview and Assessment of Past and Current Models, and Future Prospects: International Food Policy Research Institute. *Journal of International Agricultural and Extension Education*, 15(3): 15 – 28
- Davis, K.E., 2009. *Extension in Sub-Saharan Africa: Overview and assessment of past and current models, and future prospect*. International Food Policy Research Institute, Addis Ababa, Ethiopia. Viewed 20 May 2014, www.researchgate.net/.../241204419 ...
- Dey, I., 1993. *Qualitative Data Analysis: A User – Friendly Guide for Social Scientists*. Routledge Taylor and Francis Group, London and New York.
- Dube, M.A. 1993, *Perceptions of field officers, extension officers and farmers regarding agricultural extension education in Swaziland*, Retrospective Theses and Dissertations, Iowa State University, USA. Viewed 16 June 2016 on www.lib.dr.iastate.edu/cgi/viewcontent.cgi?article=11421&context=rtd
- Düvel, G., 1996. Institutional Linkage Structures for Effective Participatory and Coordinated Cooperative Rural Development. *Journal International Agricultural and Extension Education*, 3(1): 3 – 4.
- Eicher, C.K. and Staatz, J.M., 1998. *International Agricultural Development*, 3rd Edition. The Johns Hopkins University Press, Baltimore and London
- Egziabher, K.G., Mathijs, E., Deckers, J., Gebrehiwot, K., Bauer, H., and Maertens, M., 2013. *The Economic Impact of a New Rural Extension Approach in Northern Ethiopia*. Bioeconomics Working Paper Series 2013/2. Viewed 30 April 2014, www.ees.kuleuven.be/bioecon/working-paper2013/2

- FAO, 2001. *Strategic Approaches to HIV Prevention and AIDS mitigation in Rural Communities and Households in Sub-Saharan Africa*, F.A.O. Viewed 12 December 2014, http://www.fao.org/sd/2001/KN0402a3_en.htm.
- FAO, 2004. *Rural Households and Resources: A pocket Guide for Extension Workers. Socio – Economic and Gender Analysis Programme*. Vialle delle Terme di Caracalla, Rome, Italy
- Farrington, J., 1998. *Organizational Roles in Farmer Participatory Research and Extension: Lesson from Last Decade*, Overseas Development Institute, London, England. Viewed 04 May 14, www.odi.org.uk/nrp/27.html
- FEDWGA, 2006. *The Role of Agriculture and Rural Development in Poverty Reduction. A Position Paper of NGOs*, Am Michaelshof 8-1053177 Bonn, Germany. Viewed 10 June 2014, www.forumue.development
- Gadlala, T.T., 2008. *Price Trends Analysis and Market Channel Efficiency of Vegetables in Swaziland: A survey* M.Sc. thesis, The University of Swaziland Faculty of Agriculture, viewed 22 April 2014 www.uniswa.sz/./GADLELA%2520T.T.pdf
- GFRAS, FAO, Farming First, IFPRI and World Farmers' Organization, 2012. *Building knowledge Systems in Agriculture: Five Key Areas for Mobilising the Potential of Extension and Advisory Service*, Position Paper. Viewed 08 August 2015, www.g-fras.org
- Groenewald, I., van Niekerk, J.A., Whitefield, K.P. and Zwane, E.M., 2011. 'Innovations in Extension and Advisory', *Services International Conference: Public – Private Extension Approaches: case study of the East Cape Citrus Industry*, Centre for Sustainable Agriculture and Rural Development, CTA, Netherlands. Viewed 07 April 2015 <http://extensionconferenceAdvisoryServices>

- Gulati, A., Minot, N., Delgado, C. & Bora, S., 2005. Growth in high value agriculture in Asia, and the emergence of vertical links with farmers: Presented in a workshop on *Linking small-scale producers to markets: Old and new challenges*. The World Bank. Viewed 20 June 2016 <http://www.worldagroforestry.org/treesandmarkets/hvc07meet/othermaterials/IFPRI%20HV%20Ag%20Asia.pdf>
- Hatch, S.W., 2009. Optometric Care within the Public Health Community. *Old Post Publishing*, New York. Viewed 26 November 2013, www.webpages.charter.net/oldpostpublishers.pdf
- Hlajwako C., 2010. Economic empowerment of Swazi society through cooperative development. Viewed 10 June 2016 www.ilo.org/.../ent/coop/africa/download/wpno13cooperativesinswazi.pdf
- Hoyt, A., 1996. *And then three were seven: Cooperatives principles updated*. Viewed 10 February 2016, <http://www.uwcc.wisc.edu/staff/hoyt/princart.html>
- Isaac, S. and Michael, B.W., 1997. *Handbook in Research Evaluation: A collection of Principles, Methods and Strategies Useful in the Planning, Design, and Evaluation of Studies in Education and the Behavioural Sciences*, 3rd Edition. Educational and Industrial Testing Services, San Diego, California.
- Jele, D., 2006. Youth and Adult Learning and Education in Swaziland. *Open Society Initiative for Southern Africa (OSISA), divv international*. Swaziland. Viewed 20 – 08 – 13. www.oasis.org/sites/default/files/swaziland.pdf
- Keregero, K.J.B. 2000. Reaching Swazi Nation Land Farmers: Challenges to the credibility of agricultural extension in Swaziland. *UNISWA Journal of Agriculture*, 2000 (9): 79 – 89
- Kirsten, J. F. and Sartorius, K., 2002. Linking agribusiness and small-scale farmers in developing countries: Is there a new role for contract farming? *Development Southern Africa*, 19(4): 503-529

- Kumar, G.D.S. and Popat, M.N., 2009. Development of a Scale to Measure Farmer's Perceptions on Quality of Groundnuts. *Indian Research Journal for Extension and Education*, 9(1): 11 – 13
- Lee, J., Gereffi, G. & Beauvais, J., 2010. Global value chains and agrifood standards: Challenges and possibilities for smallholders in developing countries. *Proceedings of National Academy Sciences of the USA*, 109(31): 12326- 12331.
- Levin, M., 1987. *Land tenure agreements on agricultural production schemes in Swaziland*. Viewed 27 June 2016 on www.usaid.gov/pdf_docs/PNABB584.pdf
- Louw, A., Jordaan, D., Ndanga, L. & Kirsten, J.F., 2008. Alternative marketing options for small-scale farmers in the wake of changing agri-food supply chains in South Africa. *Agrekon*, 47(3): 287 – 308.
- Lyne, M. & Collins, R. 2008. South Africa's New Cooperative Act: A Missed Opportunity for Small Farmers and Land Reform Beneficiaries. *Agrikon*, 47(2): 108-197.
- Magagula, G.T. and Faki, H.M., 1999. *Agriculture, Natural Resources and Rural Enterprise Office of Sustainable Development Bureau for Africa U.S. Technical Paper No. 103 Agency for International Development, Centre for Agricultural Research and Policy Analysis University of Swaziland, Faculty of Agriculture*. Viewed 13 April 2014 <http://dx.doi.org/10.5296/jas.v1i2.3748>
- Magagula, S.D.M., Dlamini, E.V., and Mkhwanazi, E.M., 2001. *Modern Agriculture in Swaziland*, 2nd Edition. Oxford University Press Southern Africa, Cape Town.
- Magambo, R., Muigai, S., Ngungi, J., Odweso, F., 2011. Gender Responsive Approach to Extension Service Delivery Experiences from New Projects in Kenya. *Innovations in Extension and Advisory Services International Conference*, Kenya Agricultural and Agribusiness Project. CTA, Netherlands. Viewed 07 April 2015, <http://extensionconferenceAdvisoryServices>

- Markelova, H., Meinzen-Dick, R., Hellin, J., & Dohrn, S. 2008. Collective action for smallholder market access. *Food Policy* 34 (2009): 1–7.
- Mahlahat, N., 2012. *Swaziland, A Profile of Higher Education in Southern Africa: Volume 2. Swaziland*. Viewed 30 June 2013, www.sarua.org/files/countryreports/
- Manyatsi, A.M., Thomas, T.S., Masarirambi, M.T., Hachigonta, S. and Sibanda, M.S., 2013. ‘Swaziland’, in S. Hachigonta, G.C. Nelson, T.S. Thomas and L.M. Sibanda, *Southern African Agriculture and Climate Change*. The International Food Research Policy Institute (IFRI), Washington DC, USA
- Masuku, T.A., Masuku, M.B. and Mutangira, J.P.B., 2016. Performance of multipurpose cooperatives in the Shiselweni Region of Swaziland. *International Journal of Sustainable Agricultural Research*, 3(4): 58 – 71.
- Mathiyazhagan, T. and Nandan, D., 2010. *Survey Research Method*, Media Mimansa, New Delhi, India. Viewed 15 March 2014, www.mediamimansa.com/14-15-16%252010
- Mavimbela, P., Masuku, M.B. & Belete, A., 2010. Contribution of savings and credit cooperatives to food crop production in Swaziland: A case study of smallholder farmers. *African Journal of Agricultural Research*, 5(21), 2868- 2874.
- Ministry of Tourism and Environment Affairs (MoTEA), 2011. *Swaziland’s Second National Communication to the United Nations Framework Convention for Climate Change Final Report*. MoTEA, Swaziland. Viewed 29 September 2013, www.unfccc.int/./swznc2.pdf

- MNM Consultants, 2002. *Report on the Social Aspects of the Usuthu River: Swaziland Mozambique, Strategic Environment Assessment*. Department of Water Affairs and Forestry, Republic of South Africa. Viewed 10 January 2014, <http://www.dwaf.gov.za/sfra/sea/usutu-mhlathuze%20wma/Social%20%20Component/Final%20Draft%20Mozambique%20and%20Swaziland%20Social%20Report.pdf>
- Mwaniki, A., 2006. *Achieving Food Security in Africa: Challenges and Issues*. Cornell University, U.S. A. Viewed 20 October 2013 http://www.food-security.nl/sites/default/files/resource/achieving_food_security_in_africa.pdf
- Mzizi, J.B., 2006. *Political Movement and the Challenges for Democracy in Swaziland*, EISA Research Report No. 8, EISA, Auckland Park Johannesburg, South Africa. Viewed 14 October 2013, www.eisa.org.za/PDF/rr18.pdf
- NAMBoard, 2009. *Annual Report for National Agricultural Marketing Board*, NAMBoard, Manzini, Swaziland. Viewed 20 February 2014, www.microthink.org/./3343
- NAMBoard, 2016. *The National Agricultural Marketing Board*. Viewed 4 September 2016 <http://www.namboard.co.sz/inspectorate.html>
- NERCHA, 2006. *Situational Analysis of Orphans in Swaziland*. NERCHA, Mbabane, Swaziland. Viewed 2 November 2012 http://www.nercha.org/sd/2004/KN0402a3_en.htm
- Nkambule, B.L. and Dlamini, C.S., 2013. Towards Sustainable Smallholder Irrigation Development Projects: A Case Study of the Maplotini Irrigation Scheme, Swaziland. *Journal of Agricultural Extension and Rural Development*, 5(7): 216 – 224.
- North, D.C., 1991. Institutions. *Journal of Economic Perspectives*, 5(1): 97 – 112.

- Norton, G.W. and Alwang, J., 2005. *Introduction to Economics of Agricultural Development* (Custom Edition), McGraw-Hill Inc. Ney York. Virginia,
- Norton, G.W. Alwang, J. and Masters, W.A., 2010. *Economics of Agricultural Development World Food Systems and Resource Use*, 2nd Edition, Routledge Tylor and Francis Group, London and New York
- Oladele, O.I., Lepetu, J. and Subair, S.K., 2009. SWOT analysis of extension systems in Southern African countries. *Journal of Agriculture and Environment for International Development*, 103(4): 309 – 320.
- Oladele, O.I., 2011. Agricultural Extension Policy: The Missing Link in Innovation, Extension and Advisory Services’, *Innovations in Extension and Advisory Services International Conference: North West University CTA, Netherlands*. Viewed 07 April 2015, <http://extensionconference2011.CTA.Intenational>
- Ortmann, G.F. and King, R.P., 2010. Research on Agri-Food Supply Chains in Southern Africa Involving Small – Scale Farmers: Current Status and Future Possibilities. *Agrikon: Agricultural Economics Research, Policy and Practice in Southern Africa*, 49(4): 397 – 417
- Oseni, T.O. and Masarirambi, M.T., 2011. Effects of climate change on maize (*Zea mays*) production and food security in Swaziland. *American Eurasian Journal of Agriculture and Environmental Sciences*, 11(3): 385-391.
- Paul, N.C.A., 2011. The Role of Extension in Implementing Trade Agreements and Improving Trade in the Caribbean. *Case Study, Innovations in Extension and Advisory Services International Conference: Shridath Ramphal Centre for International Trade Law, Policy and Services, University of West Indies. CTA, Netherlands*. Viewed 07 April 2015, <http://extensionconference2011.CTA.Intenational>

- Pilot, L., 2013. What are the Factors Influencing Perceptions?' *Solvembaassignment blog*, web log post 21 February. Viewed 05 October 2015, www.solvedmbaassignment.blogspot.com
- Raidimi, E.N. & Kabit H.M. 2017. Agricultural extension, research and development for increased food security: The need for public-private sector partnership in South Africa. *South African Journal of Agricultural Extension*, 45(1): 49 – 63.
- Reardon, T., Timmer, C.P. & Minten, B., 2010. Supermarket revolution in Asia and emerging development strategies to include small farmers. *PNAS*, 109(31): 12332 – 12337.
- Reingold, E.M. and Merikle, P.M., 1998. On demonstrating unconscious perception. *Journal of Experimental Psychology: General*, 127(3): 304-310.
- Rommelzwaal, A., 2006. Swaziland Country Environmental Profile: Draft Report. EUROPEAID/ 119860/C/SV/multi Lot 6: Environment Request of Service: 116781. *AGROTEC S.p.A.*, Swaziland. Viewed, 19 September 2013, www.ceas.europa.eu/delegation/swaziland.pdf
- Responsive Management, 2007. *Measuring Perception and Attitudes towards Litter in Georgia's Local Communities*, Keep America Beautiful Inc., and The Georgia Department of Community Affairs, Georgia, USA. Viewed 10 October 2015, www.responsivemanagement.com
- Ricketts, C. and Ricketts, K., 2009. *Agribusiness Fundamentals and Applications*, 2nd Edition, Delmar, Cengage Learning, New York, USA.
- Rivera, W.M., Qamar, M.K., 2003. *A New Extension Vision for Food Security – Challenges to face*. FAO, Sustainable Development Department, Rome, Italy. Viewed 10 August 2014, www.fao.org/a-y5107e.pdf

- Rupela, O.P., 2008. *The Way Forward for Smallholder Farmers*, Discussion Document, 22 August 2008, Andhra Pradesh, India. Viewed 22 April 2014, www.fao.org/fsnforum/sites/default/...
- SADP, 2011. *Swaziland Agricultural Development Programme: Mid-Term Evaluation, Final Report*, Ministry of Agriculture and Cooperatives, Swaziland. Viewed, 11 January 2014, http://www.fao.org/fileadmin/user_upload/oed/docs/1_Swaziland%20Agricultural%20Development%20Programme_2011_ER.pdf
- SADP, 2012. *It's all About Smallholders*, Ministry of Agriculture and Cooperatives, Mbabane, Swaziland. Viewed 12 April 2014, www.fao.org/./ap602e.pdf
- Salam, A. and Mamba E., 2012. Approach used by Government and Non-Governmental Organizations in Promoting Crop Production and its Implications on Food Security and Hunger in Rural Swaziland: A case Study of Sthobela Area. *Journal of Sustainable Development in Africa*, 14(3): 53 – 71
- Salkind, N.J., 2009. *Exploring Research* 7th Edition, Pearson Education Inc., Upper Saddle River, New Jersey, USA.
- Samuel, S., 2008. *Towards Finding an Appropriate and Relevant Financial Delivery System to Support Small Cane Growers in Swaziland, a survey*, M.Sc. thesis, University of Pretoria, South Africa. Viewed 10 October 2014. www.up.ac.za/Stieneke%20Samuel.pdf
- SEA, 2002. *Swaziland's Report to the World Summit on Sustainable Development*, SEA, Mbabane, Swaziland. Viewed 03 March 2014 www.un.org/jsummit/html/prep_proces...
- Seitz, W.D., Nelson, G.C., Halcrow, H.G., 1994. *Economics of Resources, Agriculture and Food*, McGraw – Hill Book and Co., Singapore.

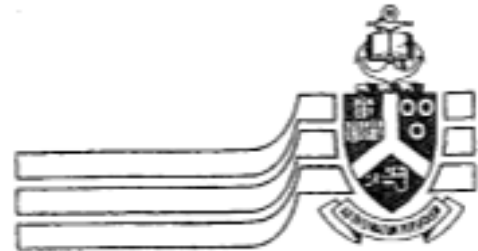
- Sibandze, S., 2013. NAMboard Gives 6 500 Fruit Trees to Farmers. *Swazi News*, 1 April 2013. Viewed 12 December 2013, www.times.co.sz/business/89007-300-
- SNAU, 2010. Validation of SWOT and PEST (LE) and Way forward on Agricultural Policies, *Workshop by Dr. C. Dlamini on a Report*, Mbabane, Swaziland. Viewed 02 May 2014, http://www.sfoap.net/fileadmin/user_upload/sfoap/docs/Report%20on%20Agricultural%20Policies%20workshop%20in%20Swaziland.pdf
- SPSS, 2001. SPSS Software for Windows Version 11.0 Inc., Chicago,
- Stevens, J., 2013. *AGV 713 Principles and Approaches of Development and Agricultural Extension Lecture 2, The Role of Extension in Farmers Development*, Course Study Guide Manual. University of Pretoria, Faculty of Agricultural Economics, Extension and Rural Development.
- Stockbridge M, Doward A, Kydd J, Morrison J & Poole N, 2003. *Farmer organizations for market access: an international review*. Viewed 27 May 2007, from https://assets.publishing.service.gov.uk/media/57a08cb140f0b6497400138e/R827540518_IntlRev_FO_MktAccss.pdf
- Swanson, B. E., 2011. Developing Innovative Pluralistic Extension System in Changing Global Economy, *Innovations in Extension and Advisory Services International Conference*: University of Illinois, CTA Netherlands. Viewed 07 April 2015, <http://extensionconference2011.CTA.International>
- Swaziland –European Community, 2005. *Joint Annual Report*. Mbabane, Swaziland. Viewed 03 May 2014, www.ec.europa.eu/./jar05_sz_en.pdf
- Sykuta, M.E. and Cook, M.L., 2001. A New Institutional Economics Approach to Contracts and Cooperatives. *American Agricultural Economics*, 83(5): 1273 – 1279

- Tathdil, F.F., Boz, İ. and Tatlidil, H. 2009. Farmers' Perception of Sustainable Agriculture and its Determinants: A Case Study in Kahramanmaraş Province of Turkey. *Environment Sustainability Development*, 11(2009): 1091-1106.
- Taylor-Powell, E., 1998. Program Development and Evaluation. *Texas Agricultural Extension Service*, The Texas A&M University System College Station, Texas. Viewed 18 October 2013, www.leaningstore.uwex.edu/pdf/g3658-2.pdf
- Todaro, M.P. & Smith, S.C. (2015). *Economic development 12th*. New York: Pearson.
- Trienekens, J.H., 2011. Agricultural Value Chains in Developing Countries: A Framework for analysis. *International Food and Agribusiness Management Review*, 14(2): 51 – 82.
- Vodonle, S., 2011. Contractualization as a New Principle in the Agricultural Advisory Service Policy in the Republic of Benin, *Innovations in Extension and Advisory Services International Conference*, CTA, Netherlands. Viewed 07 April 2015, <http://extensionconference2011.CTA.International>
- Vorster, H.J., Stevens, J.B. and Steyn, G.J., 2008. Production Systems of Traditional Leafy Vegetables: Challenges for Research and Extension. *South African Journal of Agricultural Extension*, 37(1): 86 – 96
- World Bank, 2011. Swaziland Rural Sector Review: The Livestock and Horticulture Value Chains in Swaziland: Challenges and Opportunities. Report No. 70201 – SZ. *Agricultural and Rural Development Unit (AFTAR)*, Country Department AFCS1, Africa Region. Viewed 15 April 2015, www.documents.worldbank.org/curated/en/ ...
- World Bank, 2016. The World Bank Data on Countries. Viewed 05 April 2016, www.data.worldbank.org

- Xaba, B.G. and Masuku, M.B., 2012. An Analysis of the Vegetables Supply Chain in Swaziland: Sustainable Agriculture Research. *Canadian Centre of Science and Education*, 2(2): 1 – 10.
- Xaba, B.G. and Masuku, M.B., 2013. Factors affecting the productivity and profitability of vegetables production in Swaziland. Microthink Institute. *Journal of Agricultural Studies*, 1(2): 37 – 52.
- Young M.Y. and Hobbs, J.E. 2002. Vertical Linkages in Agri-Food Supply Chains: Changing Roles for producers, Commodity Groups and Government Policy. *Review of Agricultural Economics*, 24(2): 428-441.
- Zegeye, A.D., Steenhuis, T.S., Blake, R.W., Selamyihun, K., Collick, A.S. & Dadgari, F. (2010). Assessment of soil erosion processes and farmer perception of land conservation in Debre Mewi watershed near Lake Tana, Ethiopia. *Ecohydrology for Water Ecosystems and Society in Ethiopia*, 2(4): 279-306.

APPENDICES

Appendix 1: Letter from supervisor requesting for permission and cooperation in data collection.



University of Pretoria

Pretoria 0002 Republic of South Africa Tel (012) 420 4523
Fax (012) 420 3247 E-mail: fanie.terblanche@up.ac.za
yvonne.samuels@up.ac.za

**Faculty Natural-and Agricultural
Sciences**

**Dept Agricultural Economics, Extension
and Rural Development**

6 May 2014

**To: The Principal Secretary
Ministry of Agriculture and Cooperatives
P O Box 162
Mabane
Swaziland**

Re: S M Simelane; Student number: 13320582

The above student is enrolled for his MSc Agric Extension degree at the University of Pretoria.

The objective of his Masters Research study is to conduct a study of the extension system in the Hhohho region in Swaziland.

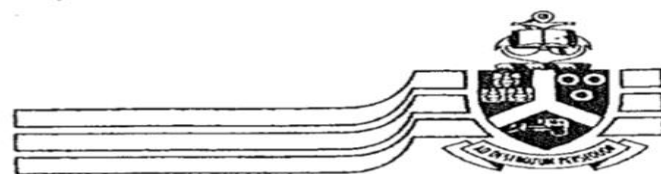
We hereby request your support to him and specifically the support from staff members in the Ministry to provide him with farmer and agricultural data that he need for his study.

We thank you for your support.

You're sincerely,

**Dr S E TERBLANCHE
Senior Lecturer and Supervisor**

Appendix 2: Letter of consent to extension officers and farmers



University of Pretoria

Pretoria 0002 Republic of South Africa Tel (012) 420 4623
Fax (012) 420 3247 E-mail: fanie.terblanche@up.ac.za
yvonne.samuels@up.ac.za

**Faculty Natural-and Agricultural
Sciences**

**Dept Agricultural Economics, Extension
and Rural Development**

07 – 09 – 15

Dear Farmer/ Extension Officer

Informed Concert Letter

My name is Sicelo Simelane, a registered Masters Student in the University of Pretoria, Faculty of Natural and Agricultural Sciences; Department of Agricultural Economics, Extension and Rural Development. I have enrolled for the M.Sc. in Agricultural Extension and thus my study is based in this field, and entitled;

SMALLHOLDER VEGETABLE FARMERS AND EXTENSION OFFICERS' PERCEPTION OF THE EXTENSION SERVICE INN THE HHOHHO REGION, SWAZILAND

The main **purpose** it to get the insights of farmers and extension officers on how they view the extension service and their work as a whole.

Importance of the research findings

1. Improve and or align extension system
2. Help farmers and extension officers do self – evaluation and provide a platform to suggest solutions
3. Contribute in refining and drafting of Agricultural policies

We request your attention, objectivity and honesty when responding to the questionnaire items so that the research can achieve the above-mentioned importance.

Please note

1. The questionnaire may take 25 – 30 minutes to respond to
2. We assure you confidentiality and anonymity of your responses
3. You are free to decline to participate or withdraw in any case you feel uncomfortable with participating in the study
4. All data collected is purely to be used in the study not for financial gain or be given to your employer.

Researcher	Supervisor	Co – Supervisor
Sicelo Moses Simelane	Dr. S.E. Terblanche	Prof. M.T. Masarirambi
P.O. Box 2	The University of Pretoria	University of Swaziland
Msahweni	Faculty of Natural and Agric. Sciences	Faculty of Agriculture
Pigg’s Peak, Swaziland	Agric. Annexe Building, Room 2 – 2	P. O. Luyengo M205
Cell: +268 76330729	Tel: +27 12420 5768	Cell: +268 76128026
E – mail : s_sicelo@yahoo.com	E – mail: fanie.terblanche@up.ac.za	E – mail: mike@uniswa.sz

Thank you in advance for being the key role player in the research.

.....

Mr. Simelane S.M.	Dr. Terblanché S.E.	Prof. Masarirambi M.T.
-------------------	---------------------	------------------------

Appendix 3: Questionnaire for extension officers

Overview of the Extension System in Swaziland with Regard to Vegetable Production (for extension officers)

Aim: Describe the interaction of Extension Officers and Vegetable Farmers to identify their challenges and suggest sustainable solutions to the challenges

Questionnaire Number

1. Which RDA do you belong to?

RDA	Tick One	
Motshane		1
Ntfontjeni		2
Mayiwane		3
Madlangamphisi		4

2. Please indicate your gender by putting a tick in the corresponding box

Male Female

3. How old are you? years

4. How long have you been an Extension Officer?

5. A) What is your position in the extension field?

Position	Tick one	
Senior Extension Officer		1
Assistant Senior Extension Officer		2
Field Extension Officer		3
Other (indicate)		

For Office Use

V1

V2

V3

V4

V5

V6

6. a) Rank the job description according to the level of relevance to your job

1 most relevant 2 relevant 3slightly relevant 4 irrelevant

	1	2	3	4
Training farmers how to grow vegetables				
Advising farmers on how to market their produce				
Advising farmers on pest and disease control				
Training farmers how to draw business plans				
Training farmers on financial management				
Unionising farmers				
Organising farmers into group/ cooperatives				
Securing marketing contacts for farmers				
Securing land and water rights for farmers				
Community development officer				
Distribution of food aid				
Finding cheaper inputs providers				
Other				

For Office Use

V7	
V8	
V9	
V10	
V11	
V12	
V13	
V14	
V15	
V16	
V17	
V18	
V19	

b) Rate your efficiency with regard to the following aspects of your job

1 Excellent 2 Good 3 Fair 4 Poor

	1	2	3	4
Training farmers how to grow good quality vegetables				
Advising farmers on how to market their produce				
Advising farmers on pest and disease control				
Training farmers how to draw business plans				
Training farmers on financial management				
Unionising farmers				
Organising farmers into group/ cooperatives				
Securing marketing contacts for farmers				
Securing land and water rights for farmers				
Community development officer				
Distribution of food aid				
Finding cheaper inputs providers				

V20	
V21	
V22	
V23	
V24	
V25	
V26	
V27	
V28	
V29	
V30	
V31	
V32	

7. A) What is your highest tertiary qualification in Agricultural Extension?

Qualification	Tick one	
Certificate		1
Diploma		2
Bachelor		3
Honours		4
Masters		5

For Office Use

V33

b) If you have any other tertiary qualification (s) other than the extension qualifications, indicate them below.
.....

V34

c) i) When last did you attend a short course?

Time	Tick One	
Never		1
A month ago		2
3months ago		3
6 months ago		4
A year ago		5

V35

ii) If you did attend a short course, name the short course and the organization offering it.

Name of short course	Organization

V36
V37

iii) Rate the short course with the scale below.

Rank	Tick one	
Very informative		1
Informative		2
Nothing New		3
Waste of time		4

V38

iv) Who paid for the tuition?

Yourself Government NGO

For office use

V39

d) i) When last did you attend and participate in a workshop

Time	Tick one	
Never		1
A month ago		2
3months ago		3
6 months ago		4
A year ago		5

V40

ii) What was the workshop about?

	Tick one	
Agricultural technicals		1
Agricultural Extension		2
Research		3
Policies		4
Other.....		

V41

v) Please rate the workshop in relation with your learning experience

Rank	Tick one	
Very informative		1
Informative		2
Nothing New		3
Waste of time		4

V 42

8. i) Which NGOs or UN agencies assist in your extension area?

NGOs/ UN agencies	Tick
FAO	
USAIDS	
WFP	
NGOs	

V42	<input type="text"/>
V43	<input type="text"/>
V44	<input type="text"/>
V45	<input type="text"/>

ii) What type of assistance do you get from each organization?

1 Infrastructure 2 Training 3 Finance 4 Marketing
5 Inputs 6 Research

NGOs/ UN agencies	Tick						
	1	2	3	4	5	6	7
FAO							
USAIDS							
WFP							
NGOs							

For Office Use

V	
V	
V	
V	

iii) Rate the assistance with regard to the extent at which you are satisfied.

1 Very dissatisfied 2 Dissatisfied 3 Slightly dissatisfied
4 slightly satisfied 5 Satisfied 6 very satisfied

Level of satisfaction	Tick one					
	1	2	3	4	5	6
Infrastructure						
Training						
Finance						
Marketing						
Inputs						
Research						

V		
V		
V		
V		
V		
V		
V		

9. A) How many farmers do you assist? farmers.

b) How often do you visit them per month?

c) How often are you suppose or expected to visit them

d) Where do you meet in most cases?

Place	Tick one
RDA centre	1
Farmer's place/ farm	2
Group Field days	3
Farmer Field School	4

V

V

V

V

e) How do you and famer arrange to meet in most cases?

Famers call me I visit farmers in a routinely

Other (Specify).....

For Office Use

V

f) Which is the most frequently used method of communication?

Communication Means	Tick
Call	
SMS	
E – mails	
Chat networks	
One – on – one	
Groups/ cluster meeting	

V

10. A) i) State the 8 most important challenges you face in executing your job as an extension officer.

ii) Rank the challenges; 1 representing the least significant challenge.

Challenge	Rank

11. Do you think vegetable production is a viable enterprise in Swaziland?

Yes Somehow No

V

12. In your RDA is the number of vegetable farmers increasing or decreasing or stagnant?

Increasing 1 Stagnant 2 Decreasing 3

13. a) Why would you encourage more farmers to get into this business?

Yes No

b) Why would you encourage them to be vegetable farmers?

	Tick One	
Because it's profitable	<input type="checkbox"/>	1
Because it's my mandate	<input type="checkbox"/>	2
Just to keep people busy	<input type="checkbox"/>	3
For food security	<input type="checkbox"/>	4

14. Please indicate the extent to which the following challenges and concerns negatively affect your work

1 very significant 2 Significant 3 Slightly significant
4 slightly insignificant 5 insignificant 6 very insignificant

	1	2	3	4	5	6
Administrative Challenges						
Being understaffed						
Lake of transport to visit farmers						
Involvement in non-extension jobs						
Dominance of Government Parstatals and NGOs						
Poor organization linkages with other role players						
Poor institutional linkages with other role players						

For office use

v

v

v

v	<input type="checkbox"/>
v	<input type="checkbox"/>
v	<input type="checkbox"/>
v	<input type="checkbox"/>
v	<input type="checkbox"/>
v	<input type="checkbox"/>
v	<input type="checkbox"/>

For Office Use

Extension Workers Related Challenges						
Lack of workshops						
Lack of opportunities to be upgraded						
No facilities to access current information eg. Internet						
Salaries and benefits too little						
More and more farmers are becoming more educated than us						
Farmers Related Challenges						
Farmers reluctant to form cooperatives						
Farmers have lost faith in extension workers because they do get assistance promptly						
Farmers blame extension workers if their enterprise fail						
Difficulty to organise farmers because they have their own daily plans						
Some farmers are illiterate hence it is difficult to train them on new technology						
Farmers think extension workers can solve all their problems, even those outside farming.						
Farmers reluctant to adopt technologies because of personal perceptions and beliefs						
Farmers scattered and sometimes in very awkward places i.e. poor roads						
Other						
Poor communication with farmers who have poor digital network receptions						
Draughts						
Pest and disease epidemics						
Farmers can only access poor soils to do meaningful farming						
Poor infrastructure for farmers						

V	
V	
V	
V	
V	

V	
V	
V	
V	
V	
V	
V	
V	

V	
V	
V	
V	
V	

15. List the main five (5) improvements that you think can make your job easier as you continue help farmers. Rank them according to their importance i.e. #6 being the very important and #1 the least important

Improvement	Rank

For Office Use

1. On your own experience, how frequent do the farmers you work with face the following challenges?

1 Very Often 2 Often 3 Less Often 4 Never

Challenges	1	2	3	4
Access to current market information and trends				
Access to export opportunities				
Difficulty in accessing funding				
Poor roads to farms				
Difficulty to access arable land				
Land ownership disputes among families/friends				
Access to irrigation water				
Lack of transport to good markets				
Difficulty to develop financeable business plans				
Physical and financial access to production inputs				
Difficulty to get tractors in time for ploughing				
Difficulty in accessing production information				
Difficulty to manage business finances				
Inaccuracy and inconsistency in keeping record				
Lack of government funded workshops for farmers				
Difficulty to access advice from Extension Officer on time				
Competition from imports				
Difficult to access lucrative marketing contracts				
Poor land rights				
Droughts and heat				
Retiring of farmers because of age				
Lack of affordable labour in communities				
Retiring in farming because of HIV and other chronic diseases				
Prevalence of dispute in cooperatives and communities				
Children of aged farmers mismanaging business hence it collapse				
Children of deceased farmer refusing to farm or lease land				

V	
V	
V	
V	
V	
V	
V	
V	
V	
V	
V	
V	
V	
V	
V	
V	
V	
V	
V	
V	
V	
V	
V	
V	
V	
V	

Appendix 4: Interview guide for farmers

**Overview of the Extension System in Swaziland with Regard to
Vegetable Production (for farmers)**

For Office Use

Aim: Describe the interaction of Extension Officers and Vegetable Farmers to identify their challenges and suggest sustainable solutions to the challenges

Questionnaire Number

V1

SECTION A

1. Which RDA do you belong to?

RDA	Tick One	
Motshane		1
Ntfontjeni		2
Mayiwane		3
Madlangamphisi		4

V2

2. Please indicate your gender by putting a tick in the corresponding box

Male 1 Female 2

V3

3. How old are you? years

V4

4. How many years have you been farming?years

V5

5. What is your highest level of education?

Level of Education	Tick One	
No Formal Education		1
Lower Primary Level (G1 – G4)		2
Higher Primary level (G5 – G7)		3
Lower Secondary level (F1 – F3)		4
Higher Secondary Level (F4 – F5)		5
Tertiary Level of Education		6

V6

6. Are you a member of the Swaziland National Agricultural Union?

Yes 1 No 2

V7

7. A) Describe your usual production patterns according to this table.

Vegetable/Crop	Allocation (ha)	Production (kg)

For Office Use

V

b) What is your total farm size?ha?

V

c) What is the purpose of you engaging in this business? (*tick one*)

Sell 1 Household food 2 Both 3

V

d) How would you rate your current vegetable production?

	Tick one	
Poor	<input type="checkbox"/>	1
Below Average	<input type="checkbox"/>	2
Average	<input type="checkbox"/>	3
Above average	<input type="checkbox"/>	4
Excellent	<input type="checkbox"/>	5

V

e) How many percent out 100% (best production) would you rate your current production?%

V

f) Using the same scale (1 – 100 %), where do you see your production in 5 years time? Make your answer in (e) as your reference point.....

V

8. A) Indicate the way you operate/organised

Organization	Tick one	
Individual		1
Cooperative		2
Farmer group with individual farm		3
Other (specify)		

For Office Use

V	
---	--

9. A) Are you a member of the Swaziland National Agricultural Union (SNAU)

	Tick One	
Yes		1
Still to join		2
Will never Join		3
An X- member		4

V

--

b) If you are a member what do you benefit?

Benefits	Tick
Just to be in company with other farmers I see no benefit	
To make my voice heard by government policies	
To share production experiences	
Share market experiences	
Provide a united front against any obstacle related to farming	
Union members are first to benefit when there is external assistance	

V	
V	
V	
V	
V	
V	

c) If you are still going to join, provide your reasons for considering that.

For Office Use

	Tick
Pressure from fellow farmers	
It is difficult to get assistance from service providers if you are not a member	
I have just heard about it	
I think it will improve the lives of farmers through collective lobbying for better policies	
It will provide a platform for interaction with experienced farmers	

V	
V	
V	
V	
V	

d) If you say you will never join the Union, why wouldn't you?

	Tick
I just have a bad experience with unions	
The subscriptions are high	
I always hear the members complaining	
The current leadership is just not credible	
The union members are not better than non-union members	
The union has never achieved anything meaningful to help farmers	

V	
V	
V	
V	
V	
V	

e) To those who have dropped, why did you do so?

	Tick
I saw no direction in the union	
I was dismissed for political reason	
The subscriptions were high for me	
The leadership is misusing their position for their own gain	
The leadership is misusing funds	
I was treated unfairly	
There is no professionalism in the organisation	

V	
V	
V	
V	
V	
V	
V	

10. To what extent are you willing to farm in a cluster or cooperative or farmers group to work together with other farmers for inputs & market?

	Tick one	
Not interested at all		1
I will think about it		2
Definitely interested		3

For Office Use

V

11. A) Are you registered with NAMBoard?

	Tick One	
Yes		1
Still to register		2
Will never register		3
Have withdrawn my membership		4

V

B) If you registered or an X – member what do/did you receive from NAMBoard?

Type of Assistance	Tick
Nothing at all	
Inputs	
Technical Assistance	
Financial assistance	
Markets	
Linkages with service providers	

V		
V		
V		
V		
V		
V		

C) How would you value the assistance you receive from NAMBoard?

Value	Tick One	
Very Helpful		1
Moderately helpful		2
Less helpful		3
Not helpful at all		4

V

d) Who is your main market?

	Tick One	
Local Community		1
Vendors from local town		2
Supermarkets/ restaurants		3
Schools/ Hospitals		4
NAMBoard		5
Export		6

For Office Use

V

12. The land you farm on is it Swazi Nation Land or Title Deed Land?

Swazi Nation Land 1 Title Deed Land 2

V

13. a) Do you have employees or only the family works in the farm?

Family only 1 Employees 2 Both 3

V

b) When do you employ workers to work in the farm?

	Tick
At Planting	
Weeding and fertilizing	
Harvesting	
Packaging	
Selling	

V
V
V
V
V

b) If you have employees indicate how many (number) you employ.

Permanent (working all year round)	Seasonal (employed for specific activities)

V
V

c) How do you remunerate your employees? (*tick one*)

Wages 1 Part of the prod 2 Both 3 Other

Specify for other

2. a) How often do you meet with the Extension Officer per month?.....

b) How many times would you like to see the Extension Officer per month?

c) Where do you meet in most cases?

Place	Tick
RDA centre	
Farmer's place/ farm	
Group Field days	
Farmer Field School	
Other (specify)	

d) In most cases, how do you and the Extension Officer arrange to meet?

(*tick one*)

I invite him 1 Extension officer come routine 2

e) Which is the most frequently used method of communication?

Communication Means	Tick One	
Call		1
SMS		2
E – mails		3
Chat networks		4
One – on – one		5
Groups/ cluster meeting		6

For Office Use

V

V

V

V	
V	
V	
V	
V	

V

V

3. A) Please indicate your level of **satisfaction/dissatisfaction** with regard to the following aspects of assisting you in your business.

For Office Use

1 Very unsatisfied 2 Satisfied 3 Slightly satisfied
4 Slightly dissatisfied 5 Dissatisfied 6 Very dissatisfied

	1	2	3	4	5	6
Government Related Assistance						
Provision of funding						
Provision of infrastructure eg roads						
Provision of subsidies						
Farmer friendly taxes						
Access to land and water						
Access to local markets						
Access to export markets						
Control of imports competition						
Access to land						
Provision of training opportunities						
Extension Service Related Assistance						
Assistance in developing business plans						
Assistance in soil testing and improving						
Assistance in planning irrigation systems						
Assistance in planting crops						
Assistance in pest and disease management						
Assistance in eco – friendly agricultural practices						
Advice on which crops to grow						
Advice on specific crop management						
Access to information technology						
Frequency of Extension Officer contacts						
Promptness of assistance from Extension Officers						
The overall extension workers' assistance						

V	
V	
V	
V	
V	
V	
V	
V	
V	
V	
V	
V	

V	
V	
V	
V	
V	
V	
V	
V	
V	
V	
V	

b) Rank the level to which you have **access** to the following services for your business.

1 Poor 2 Fair 3 Good 4 Excellent

	1	2	3	4
Inputs e.g. fertilisers, seeds, pesticides, electricity				
Insurances for your products				
Labour				
Irrigation water				
Direct exports				
To market information i.e. new market trends				
Local lucrative and reliable markets				
Technical knowledge				
To arable land				
To tractors and other new technology				

For Office Use

V	
V	
V	
V	
V	
V	
V	
V	
V	
V	

14. List at list six (6) main challenges that you think are a big threat to the vegetable business. Rank them; #6 to represent the most detrimental challenge, and #1 to represent the least

Challenges	Rank

15. Funding/financing is major problem for many agribusinesses, where do you get yours? (*tick all possible options*)

Source	Tick
Commercial banks loans	
Local Government fund	
International organizations	
Local NGOs	
Own savings	
Cooperative	
Relatives/friends	
Other (specify)	
Other (specify)	

For Office Use

V		
V		
V		
V		
V		
V		
V		
V		
V		
V		

16. Suggest the most important things that you think can be done to improve vegetable production. Start with the most important or list them and rank them, make the most important #6 and the least important #1

Way Forward/ Solution	Rank

17. Do you think vegetable production is a viable business in Swaziland despite the challenges?

Yes 1 No 2

For Office Use

V

18. Do you see yourself as a big farmer in the next five years?

Yes 1 Maybe 2 No 3

V

19. On your own view is the vegetable production business growing or declining or stagnant

Growing 1 stagnant 2 Declining 3

V

20. Are you able to meet your basic livelihoods or to provide your family's basic needs with the profits you get?

Not at all 1 struggling 2 Yes 3

V

21. Would you encourage other to get in to this business?

	Tick One	
Definitely Yes	<input type="checkbox"/>	1
If they have nothing to do	<input type="checkbox"/>	2
Definitely No	<input type="checkbox"/>	3

V

22. In your own observation and understanding can you rate the significance the following challenges faced extension officers?

**1 very significant 2 Significant 3 Slightly significant
4 slightly insignificant 5 insignificant 6 very insignificant**

For Office Use

	1	2	3	4	5	6
Being understaffed						
Lake of transport to visit farmers						
Involvement in non-extension jobs						
Dominance of Government Parastatals and NGOs						
Poor organization linkages with other role players						
Poor institutional linkages with other role players						
Lack of workshops						
Lack of opportunities to be upgraded						
No facilities to access current information						
Salaries and benefits too little						
More and more farmers are becoming more educated than us						
Farmers reluctant to form cooperatives						
Farmers have lost faith in extension workers because they do get assistance promptly						
Famers blame extension workers for their failure						
Difficulty to organise farmers because they have their own daily plans						
Some farmers are illiterate hence it is difficult to train them on new technology						
Farmers think extension workers can solve all their problems, even those outside farming.						
Farmers reluctant to adopt technologies because of personal perceptions and beliefs						
Farmers scattered and sometimes in very awkward places i.e. poor roads						

V	
V	
V	
V	
V	
V	

V	
V	
V	
V	
V	

V	
V	
V	
V	
V	
V	
V	

Appendix 5: Table for data analysis

Table 4.23: Significance of gender difference on general perceptions (Group statistics)

Group Statistics					
Farmers' General Perceptions	Farmer's Gender	N	Mean	Std. Deviation	Std. Error Mean
Old farmers are well experienced than new farmers	Male	28	3.68	1.806	.341
	Female	54	3.91	1.336	.182
Youth hate farming	Male	28	2.39	1.641	.310
	Female	54	2.46	1.734	.236
Farmers have enough land to grow crops	Male	28	3.11	1.286	.243
	Female	54	3.02	1.124	.153
Farmers have no legal rights over water and land access	Male	28	2.82	1.307	.247
	Female	54	3.06	1.123	.153
Good variety seeds are scare	Male	28	3.14	1.297	.245
	Female	54	2.80	1.053	.143
Pest and diseases are very difficult to control	Male	28	2.61	1.166	.220
	Female	54	2.69	1.241	.169
Export market is always available to farmers	Male	28	5.25	1.143	.216
	Female	54	5.20	1.379	.188
Financial institutions fund vegetable farmers	Male	28	4.75	1.143	.216
	Female	54	5.26	.975	.133
Vegetable farmers can develop business plans	Male	28	4.25	1.624	.307
	Female	54	4.87	1.401	.191
Farmers can implement budgets and business plans	Male	28	4.25	1.578	.298
	Female	54	5.00	1.259	.171
Farmers can manage financial accounts of their business	Male	28	3.79	1.641	.310
	Female	54	4.63	1.350	.184

Farmers resort to farming if they have nothing to do	Male	28	3.75	1.838	.347
	Female	54	4.07	1.315	.179
Small scale vegetable production is not profitable	Male	28	4.32	1.701	.321
	Female	54	4.43	1.435	.195
Farmers can find information on their own so extension service is no more relevant	Male	28	4.50	1.478	.279
	Female	54	4.57	1.075	.146
The number of vegetable farmers is increasing	Male	28	2.93	1.654	.313
	Female	54	3.85	1.433	.195
Farmers are reluctant to form cooperatives	Male	28	3.14	1.508	.285
	Female	54	3.13	1.467	.200
Most vegetable farmers are union members	Male	28	4.32	1.657	.313
	Female	54	4.56	1.327	.181
The RDA program is helpful to farmers	Male	28	2.68	1.416	.268
	Female	53	2.75	1.329	.183
The government only help farmers when there international/foreign funding	Male	28	2.89	1.548	.292
	Female	54	3.06	1.140	.155
NAMBoard is helpful to farmers	Male	28	4.61	1.571	.297
	Female	54	4.67	1.441	.196
Experienced farmers do not need Extension Officers	Male	28	4.46	1.453	.274
	Female	54	5.31	.773	.105
Young farmers have vast knowledge hence do not need Extension Officers	Male	28	4.89	1.066	.201
	Female	54	4.83	1.145	.156
Government does not really care about small scale farmers	Male	28	4.18	1.765	.334
	Female	54	4.06	1.547	.211
Sugar cane farmers are well looked after by government	Male	28	2.75	1.624	.307
	Female	54	2.22	1.284	.175

Cooperatives are better than unions for farmers	Male	28	2.57	1.260	.238
	Female	54	2.57	1.326	.180
Farmers are not well informed about opportunities available to them	Male	28	2.75	1.323	.250
	Female	54	2.83	1.129	.154
Uniting farmers is very difficult	Male	28	3.36	1.496	.283
	Female	54	2.98	1.325	.180
Extension Officers are helpless in Agribusiness issues	Male	28	4.32	1.467	.277
	Female	54	3.74	1.417	.193
Income from vegetables is very small and disappointing than in other businesses	Male	28	4.11	1.524	.288
	Female	54	3.57	1.487	.202
The extension service has become useless over the past 10 years	Male	28	3.93	1.412	.267
	Female	54	3.94	1.280	.174

Table 4.24: Significance of gender difference on general perceptions

Farmers' General Perception		Independent Samples Test								
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper	
Old farmers are well experienced than new farmers	Equal variances assumed	9.238	.003	-.650	80	.517	-.229	.352	-.929	.471
	Equal variances not assumed			-.592	42.726	.557	-.229	.387	-1.009	.551
Youth hate farming	Equal variances assumed	.566	.454	-.177	80	.860	-.070	.397	-.860	.719
	Equal variances not assumed			-.180	57.517	.858	-.070	.390	-.850	.710
Farmers have enough land to grow crops	Equal variances assumed	1.561	.215	.322	80	.748	.089	.275	-.459	.636
	Equal variances not assumed			.309	48.726	.759	.089	.287	-.489	.666
Farmers have no legal rights over water and land access	Equal variances assumed	1.528	.220	-.846	80	.400	-.234	.277	-.785	.317
	Equal variances not assumed			-.806	48.046	.424	-.234	.290	-.818	.350
Good variety seeds are scare	Equal variances assumed	3.706	.058	1.304	80	.196	.347	.266	-.182	.875
	Equal variances not assumed			1.221	45.874	.228	.347	.284	-.225	.918
Pest and diseases are very difficult to control	Equal variances assumed	.263	.609	-.276	80	.784	-.078	.283	-.642	.486
	Equal variances not assumed			-.281	57.891	.780	-.078	.278	-.634	.478
Export market is always available to farmers	Equal variances assumed	.920	.340	.152	80	.879	.046	.304	-.558	.651
	Equal variances not assumed			.162	64.448	.872	.046	.286	-.525	.618
Financial institutions fund vegetable farmers	Equal variances assumed	.077	.782	-2.114	80	.038	-.509	.241	-.989	-.030
	Equal variances not assumed			-2.009	47.763	.050	-.509	.253	-1.019	.000
	Equal variances assumed	2.570	.113	-1.799	80	.076	-.620	.345	-1.306	.066

Vegetable farmers can develop business plans	Equal variances not assumed			-1.717	48.203	.092	-.620	.361	-1.347	.106
Farmers can implement budgets and business plans	Equal variances assumed	3.176	.079	-2.342	80	.022	-.750	.320	-1.387	-.113
	Equal variances not assumed			-2.181	45.247	.034	-.750	.344	-1.443	-.057
Farmers can manage financial accounts of their business	Equal variances assumed	5.548	.021	-2.491	80	.015	-.844	.339	-1.518	-.170
	Equal variances not assumed			-2.341	46.365	.024	-.844	.360	-1.569	-.118
Farmers resort to farming if they have nothing to do	Equal variances assumed	9.117	.003	-.920	80	.360	-.324	.352	-1.025	.377
	Equal variances not assumed			-.829	41.739	.412	-.324	.391	-1.113	.465
Small scale vegetable production is not profitable	Equal variances assumed	1.725	.193	-.293	80	.770	-.104	.356	-.814	.605
	Equal variances not assumed			-.278	47.337	.782	-.104	.376	-.861	.652
Farmers can find information on their own so extension service is no more relevant	Equal variances assumed	4.845	.031	-.259	80	.796	-.074	.285	-.642	.494
	Equal variances not assumed			-.235	42.210	.815	-.074	.315	-.710	.562
The number of vegetable farmers is increasing	Equal variances assumed	3.182	.078	-2.624	80	.010	-.923	.352	-1.624	-.223
	Equal variances not assumed			-2.506	48.373	.016	-.923	.368	-1.664	-.183
Farmers are reluctant to form cooperatives	Equal variances assumed	.000	.985	.038	80	.970	.013	.345	-.673	.700
	Equal variances not assumed			.038	53.439	.970	.013	.348	-.685	.711
Most vegetable farmers are union members	Equal variances assumed	3.837	.054	-.695	80	.489	-.234	.337	-.905	.436
	Equal variances not assumed			-.648	45.394	.520	-.234	.361	-.962	.494
The RDA program is helpful to farmers	Equal variances assumed	.449	.505	-.240	79	.811	-.076	.318	-.708	.556
	Equal variances not assumed			-.235	52.121	.815	-.076	.324	-.726	.574
The government only help farmers when there international/foreign funding	Equal variances assumed	6.970	.010	-.541	80	.590	-.163	.301	-.761	.436
	Equal variances not assumed			-.491	42.599	.626	-.163	.331	-.831	.505
NAMBoard is helpful to farmers	Equal variances assumed	.757	.387	-.172	80	.864	-.060	.346	-.748	.629
	Equal variances not assumed			-.167	50.749	.868	-.060	.356	-.774	.655
	Equal variances assumed	11.335	.001	-3.470	80	.001	-.851	.245	-1.338	-.363

Experienced farmers do not need Extension Officers	Equal variances not assumed			-2.893	35.121	.007	-.851	.294	-1.447	-.254
Young farmers have vast knowledge hence do not need Extension Officers	Equal variances assumed	.080	.778	.228	80	.820	.060	.261	-.459	.578
	Equal variances not assumed			.234	58.340	.816	.060	.255	-.450	.569
Government does not really care about small scale farmers	Equal variances assumed	.795	.375	.325	80	.746	.123	.378	-.630	.876
	Equal variances not assumed			.312	48.846	.756	.123	.394	-.670	.916
Sugar cane farmers are well looked after by government	Equal variances assumed	5.258	.024	1.610	80	.111	.528	.328	-.125	1.180
	Equal variances not assumed			1.494	44.916	.142	.528	.353	-.184	1.239
Cooperatives are better than unions for farmers	Equal variances assumed	.004	.952	-.009	80	.993	-.003	.304	-.607	.602
	Equal variances not assumed			-.009	57.298	.993	-.003	.299	-.601	.596
Farmers are not well informed about opportunities available to them	Equal variances assumed	.695	.407	-.299	80	.766	-.083	.279	-.638	.472
	Equal variances not assumed			-.284	47.758	.778	-.083	.293	-.673	.507
Uniting farmers is very difficult	Equal variances assumed	2.041	.157	1.165	80	.248	.376	.322	-.266	1.017
	Equal variances not assumed			1.120	49.263	.268	.376	.335	-.298	1.049
Extension Officers are helpless in Agribusiness issues	Equal variances assumed	.002	.965	1.739	80	.086	.581	.334	-.084	1.245
	Equal variances not assumed			1.720	53.100	.091	.581	.338	-.097	1.258
Income from vegetables is very small and disappointing than in other businesses	Equal variances assumed	.066	.798	1.527	80	.131	.533	.349	-.162	1.228
	Equal variances not assumed			1.515	53.598	.136	.533	.352	-.173	1.239
The extension service has become useless over the past 10 years	Equal variances assumed	2.124	.149	-.051	80	.959	-.016	.309	-.630	.599
	Equal variances not assumed			-.050	50.252	.960	-.016	.319	-.656	.624

Table 4.25: Significance of age difference between male and female farmers (group statistics)

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Age	Female	54	53.5370	11.76774	1.60139
	Male	28	46.1071	14.63972	2.76665

Table 4.26: Significance of age difference between male and female farmers (Independent Samples Test)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Age	Equal variances assumed	5.728	.019	2.491	80	.015	7.42989	2.98300	1.49353	13.36626
	Equal variances not assumed			2.324	45.519	.025	7.42989	3.19668	.99347	13.86632

Table 4.27: Significance of gender difference on farmers' perceptions on the quality of help they get from extension officers (group statistics)**Group Statistics**

	Farmer's gender	N	Mean	Std. Deviation	Std. Error Mean
Extensions officer's quality of help in choosing varieties	Male	26	1.15	.368	.072
	Female	49	1.22	.422	.060
Extension officer's quality of help in soil sampling	Male	26	1.19	.491	.096
	Female	49	1.27	.491	.070
Extension officer's quality of help in fertilizers and lime application	Male	26	1.19	.402	.079
	Female	49	1.27	.491	.070
Extension Officer's quality of help in planning irrigation system	Male	26	1.62	.697	.137
	Female	49	1.39	.533	.076
Extension officer's quality of help in crop spacing	Male	26	1.19	.402	.079
	Female	49	1.24	.434	.062
Extension Officer's quality of help is general crop management	Male	26	1.31	.549	.108
	Female	49	1.18	.391	.056
Extension officer's quality of help in controlling pests and diseases	Male	26	1.38	.571	.112
	Female	49	1.24	.434	.062
Extension officer's quality of help in finding good markets	Male	26	2.54	.582	.114
	Female	49	2.33	.747	.107
Extension officer's quality of help in organising farmers into farmer group or cooperative	Male	26	2.08	.688	.135
	Female	49	1.76	.723	.103
Extension officer's quality of help in conflict management amongst groups	Male	26	1.85	.784	.154
	Female	49	1.82	.667	.095
Extension officer's ability in motivating discouraged farmers	Male	26	1.69	.736	.144
	Female	49	1.59	.705	.101
Extension officer's ability in handling demonstrations	Male	26	1.38	.637	.125
	Female	49	1.29	.577	.082
Extension officer's sense of urgency in offering assistance	Male	26	1.42	.578	.113
	Female	49	1.39	.640	.091
Extension officer's ability to help farmers keep records	Male	26	2.19	.801	.157
	Female	49	2.24	.662	.095

Extension officer's ability to help farmers draft business plans	Male	26	2.42	.758	.149
	Female	49	2.78	.468	.067
Extension officer's ability to help farmers manage business finance	Male	26	2.27	.724	.142
	Female	49	2.51	.617	.088
Extension officer's ability to assist farmers get business financing	Male	26	2.46	.706	.138
	Female	49	2.49	.649	.093
Extension officer's ability to source inputs at cheaper prices	Male	26	2.00	.566	.111
	Female	49	2.14	.612	.087

Table 4.28: The significance of gender differences on farmers' perceptions on the quality of help they got from extension officers (independent samples test)

Independent Samples Test									
	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Extensions officer's quality of help in choosing varieties	2.271	.136	-0.721	73	.473	-.071	.098	-.266	.125
			-0.752	57.441	.455	-.071	.094	-.259	.118
Extension officer's quality of help in soil sampling	1.007	.319	-0.613	73	.542	-.073	.119	-.310	.164
			-0.613	50.996	.543	-.073	.119	-.312	.166
	1.927	.169	-0.651	73	.517	-.073	.112	-.296	.150

Extension officer's quality of help in fertilizers and lime application	Equal variances not assumed										
Extension Officer's quality of help in planning irrigation system	Equal variances assumed	4.656	.034	1.579	73	.119	.228	.144	-.060	.515	
	Equal variances not assumed			1.454	40.857	.153	.228	.157	-.088	.544	
Extension officer's quality of help in crop spacing	Equal variances assumed	1.118	.294	-.512	73	.610	-.053	.103	-.257	.152	
	Equal variances not assumed			-.524	54.669	.602	-.053	.100	-.254	.148	
Extension Officer's quality of help is general crop management	Equal variances assumed	5.332	.024	1.132	73	.261	.124	.110	-.094	.342	
	Equal variances not assumed			1.022	38.814	.313	.124	.121	-.121	.369	
Extension officer's quality of help in controlling pests and diseases	Equal variances assumed	5.583	.021	1.186	73	.240	.140	.118	-.095	.375	
	Equal variances not assumed			1.091	40.714	.282	.140	.128	-.119	.398	
Extension officer's quality of help in finding good markets	Equal variances assumed	3.068	.084	1.257	73	.213	.212	.169	-.124	.548	
	Equal variances not assumed			1.357	62.822	.180	.212	.156	-.100	.524	
Extension officer's quality of help in organising farmers into farmer group or cooperative	Equal variances assumed	1.489	.226	1.865	73	.066	.322	.173	-.022	.666	
	Equal variances not assumed			1.894	53.291	.064	.322	.170	-.019	.663	

Extension officer's quality of help in conflict management amongst groups	Equal variances assumed	1.459	.231	.173	73	.863	.030	.172	-.313	.373
	Equal variances not assumed			.165	44.445	.870	.030	.181	-.335	.394
Extension officer's ability in motivating discouraged farmers	Equal variances assumed	.020	.888	.579	73	.565	.100	.174	-.246	.446
	Equal variances not assumed			.571	49.183	.571	.100	.176	-.253	.454
Extension officer's ability in handling demonstrations	Equal variances assumed	1.082	.302	.681	73	.498	.099	.145	-.191	.388
	Equal variances not assumed			.660	46.884	.512	.099	.150	-.202	.400
Extension officer's sense of urgency in offering assistance	Equal variances assumed	.056	.814	.235	73	.815	.035	.150	-.264	.335
	Equal variances not assumed			.243	55.790	.809	.035	.146	-.256	.327
Extension officer's ability to help farmers keep records	Equal variances assumed	2.079	.154	-.304	73	.762	-.053	.173	-.397	.292
	Equal variances not assumed			-.287	43.457	.776	-.053	.183	-.422	.317
Extension officer's ability to help farmers draft business plans	Equal variances assumed	16.608	.000	-2.488	73	.015	-.352	.142	-.635	-.070
	Equal variances not assumed			-2.163	35.413	.037	-.352	.163	-.683	-.022
Extension officer's ability to help farmers manage business finance	Equal variances assumed	.701	.405	-1.515	73	.134	-.241	.159	-.558	.076
	Equal variances not assumed			-1.442	44.492	.156	-.241	.167	-.578	.096
Extension officer's ability to assist farmers get business financing	Equal variances assumed	.301	.585	-.174	73	.862	-.028	.162	-.352	.295
	Equal variances not assumed			-.170	47.501	.866	-.028	.167	-.363	.307
	Equal variances assumed	2.002	.161	-.987	73	.327	-.143	.145	-.431	.146

Extension officer's ability to source inputs at cheaper prices	Equal variances not assumed			-1.011	54.734	.316	-.143	.141	-.426	.140
--	-----------------------------	--	--	--------	--------	------	-------	------	-------	------

Table 4.29: Significance of formal education reached by farmers on their perception of extension officers help (Group statistics)

Group Statistics					
	Farmer's highest level of education	N	Mean	Std. Deviation	Std. Error Mean
Extension officer's quality of help in choosing varieties	No formal education	11	1.00	.000	.000
	Higher secondary (F4 - F5)	15	1.40	.507	.131
Extension officer's quality of help in soil sampling	No formal education	11	1.09	.302	.091
	Higher secondary (F4 - F5)	15	1.53	.640	.165
Extension officer's quality of help in fertilizers and lime application	No formal education	11	1.18	.603	.182
	Higher secondary (F4 - F5)	15	1.33	.488	.126
Extension Officer's quality of help in planning irrigation system	No formal education	11	1.27	.467	.141
	Higher secondary (F4 - F5)	15	1.60	.632	.163
Extension officer's quality of help in crop spacing	No formal education	11	1.18	.405	.122
	Higher secondary (F4 - F5)	15	1.27	.458	.118
Extension Officer's quality of help is general crop management	No formal education	11	1.18	.405	.122
	Higher secondary (F4 - F5)	15	1.47	.640	.165
Extension officer's quality of help in controlling pests and diseases	No formal education	11	1.09	.302	.091
	Higher secondary (F4 - F5)	15	1.53	.640	.165
Extension officer's quality of help in finding good markets	No formal education	11	2.82	.405	.122
	Higher secondary (F4 - F5)	15	2.27	.799	.206
Extension officer's quality of help in organising farmers into farmer group or cooperative	No formal education	11	2.09	.831	.251
	Higher secondary (F4 - F5)	15	1.93	.704	.182
Extension officer's quality of help in conflict management amongst groups	No formal education	11	2.09	.831	.251
	Higher secondary (F4 - F5)	15	1.87	.743	.192
Extension officer's ability in motivating discouraged farmers	No formal education	11	1.55	.688	.207
	Higher secondary (F4 - F5)	15	1.87	.743	.192

Extension officer's ability in handling demonstrations	No formal education	11	1.00	.000	.000
	Higher secondary (F4 - F5)	15	1.53	.743	.192
Extension officer's sense of urgency in offering assistance	No formal education	11	1.45	.688	.207
	Higher secondary (F4 - F5)	15	1.47	.743	.192
Extension officer's ability to help farmers keep records	No formal education	11	2.27	.647	.195
	Higher secondary (F4 - F5)	15	2.20	.676	.175
Extension officer's ability to help farmers draft business plans	No formal education	11	2.73	.467	.141
	Higher secondary (F4 - F5)	15	2.87	.352	.091
Extension officer's ability to help farmers manage business finance	No formal education	11	2.45	.688	.207
	Higher secondary (F4 - F5)	15	2.47	.640	.165
Extension officer's ability to assist farmers get business financing	No formal education	11	2.45	.820	.247
	Higher secondary (F4 - F5)	15	2.53	.640	.165
Extension officer's ability to source inputs at cheaper prices	No formal education	11	2.18	.603	.182
	Higher secondary (F4 - F5)	15	2.20	.561	.145

Table 4.30: Significance of formal education reached by farmers on their perception of extension officers help (independent samples test)

Independent Samples Test											
	Levene's Test for Equality of Variances			t-test for Equality of Means							
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference			
								Lower	Upper		
Extensions officer's quality of help in choosing varieties	243.692	.000	-2.602	24	.016	-.400	.154	-.717	-.083		
			-3.055	14.000	.009	-.400	.131	-.681	-.119		
Extension officer's quality of help in soil sampling	16.680	.000	-2.119	24	.045	-.442	.209	-.873	-.011		
			-2.346	21.057	.029	-.442	.189	-.835	-.050		
Extension officer's quality of help in fertilizers and lime application	.704	.410	-.708	24	.486	-.152	.214	-.593	.290		
			-.685	18.811	.502	-.152	.221	-.615	.312		
Extension Officer's quality of help in planning irrigation system	3.016	.095	-1.448	24	.161	-.327	.226	-.794	.139		
			-1.518	23.990	.142	-.327	.216	-.772	.118		
Extension officer's quality of help in crop spacing	1.025	.321	-.490	24	.629	-.085	.173	-.442	.273		
			-.500	23.068	.622	-.085	.170	-.436	.266		
Extension Officer's quality of help is general crop management	6.202	.020	-1.295	24	.208	-.285	.220	-.739	.169		
			-1.387	23.603	.178	-.285	.205	-.709	.139		
Extension officer's quality of help in controlling pests and diseases	16.680	.000	-2.119	24	.045	-.442	.209	-.873	-.011		
			-2.346	21.057	.029	-.442	.189	-.835	-.050		

Extension officer's quality of help in finding good markets	Equal variances assumed	8.876	.007	2.094	24	.047	.552	.263	.008	1.095
	Equal variances not assumed			2.302	21.776	.031	.552	.240	.054	1.049
Extension officer's quality of help in organising farmers into farmer group or cooperative	Equal variances assumed	.765	.391	.523	24	.606	.158	.301	-.465	.780
	Equal variances not assumed			.509	19.439	.616	.158	.310	-.489	.804
Extension officer's quality of help in conflict management amongst groups	Equal variances assumed	.219	.644	.723	24	.477	.224	.310	-.416	.864
	Equal variances not assumed			.710	20.203	.486	.224	.316	-.434	.882
Extension officer's ability in motivating discouraged farmers	Equal variances assumed	.013	.911	-1.123	24	.273	-.321	.286	-.912	.269
	Equal variances not assumed			-1.137	22.618	.267	-.321	.282	-.906	.264
Extension officer's ability in handling demonstrations	Equal variances assumed	39.252	.000	-2.367	24	.026	-.533	.225	-.998	-.068
	Equal variances not assumed			-2.779	14.000	.015	-.533	.192	-.945	-.122
Extension officer's sense of urgency in offering assistance	Equal variances assumed	.098	.757	-.042	24	.967	-.012	.286	-.602	.578
	Equal variances not assumed			-.043	22.618	.966	-.012	.282	-.597	.573
Extension officer's ability to help farmers keep records	Equal variances assumed	.001	.976	.276	24	.785	.073	.264	-.471	.617
	Equal variances not assumed			.278	22.247	.784	.073	.262	-.470	.615
Extension officer's ability to help farmers draft business plans	Equal variances assumed	3.020	.095	-.869	24	.393	-.139	.160	-.470	.192
	Equal variances not assumed			-.832	17.847	.417	-.139	.168	-.492	.213
Extension officer's ability to help farmers manage business finance	Equal variances assumed	.061	.807	-.046	24	.963	-.012	.262	-.553	.529
	Equal variances not assumed			-.046	20.758	.964	-.012	.265	-.564	.540

Extension officer's ability to assist farmers get business financing	Equal variances assumed	1.117	.301	-.275	24	.785	-.079	.286	-.669	.512
	Equal variances not assumed			-.265	18.314	.794	-.079	.297	-.703	.545
Extension officer's ability to source inputs at cheaper prices	Equal variances assumed	.019	.892	-.079	24	.938	-.018	.230	-.492	.456
	Equal variances not assumed			-.078	20.742	.938	-.018	.232	-.502	.465

Table 4.31: Significance of formal education level reached by farmers on their perceptions about the extension officers help (Group statistics)

Group Statistics

	Farmer's highest level of education	N	Mean	Std. Deviation	Std. Error Mean
Extensions officer's quality of help in choosing varieties	No formal education	11	1.00	.000 ^a	.000
	Higher primary (G5 - G7)	13	1.00	.000 ^a	.000
Extension officer's quality of help in soil sampling	No formal education	11	1.09	.302	.091
	Higher primary (G5 - G7)	13	1.23	.599	.166
Extension officer's quality of help in fertilizers and lime application	No formal education	11	1.18	.603	.182
	Higher primary (G5 - G7)	13	1.15	.376	.104
Extension Officer's quality of help in planning irrigation system	No formal education	11	1.27	.467	.141
	Higher primary (G5 - G7)	13	1.38	.650	.180
Extension officer's quality of help in crop spacing	No formal education	11	1.18	.405	.122
	Higher primary (G5 - G7)	13	1.08	.277	.077
Extension Officer's quality of help is general crop management	No formal education	11	1.18	.405	.122
	Higher primary (G5 - G7)	13	1.15	.376	.104
Extension officer's quality of help in controlling pests and diseases	No formal education	11	1.09	.302	.091
	Higher primary (G5 - G7)	13	1.23	.439	.122
Extension officer's quality of help in finding good markets	No formal education	11	2.82	.405	.122
	Higher primary (G5 - G7)	13	2.38	.768	.213

Extension officer's quality of help in organising farmers into farmer group or cooperative	No formal education	11	2.09	.831	.251
	Higher primary (G5 - G7)	13	1.54	.776	.215
Extension officer's quality of help in conflict management amongst groups	No formal education	11	2.09	.831	.251
	Higher primary (G5 - G7)	13	1.69	.751	.208
Extension officer's ability in motivating discouraged farmers	No formal education	11	1.55	.688	.207
	Higher primary (G5 - G7)	13	1.62	.768	.213
Extension officer's ability in handling demonstrations	No formal education	11	1.00	.000	.000
	Higher primary (G5 - G7)	13	1.15	.376	.104
Extension officer's sense of urgency in offering assistance	No formal education	11	1.45	.688	.207
	Higher primary (G5 - G7)	13	1.31	.480	.133
Extension officer's ability to help farmers keep records	No formal education	11	2.27	.647	.195
	Higher primary (G5 - G7)	13	2.23	.725	.201
Extension officer's ability to help farmers draft business plans	No formal education	11	2.73	.467	.141
	Higher primary (G5 - G7)	13	2.54	.776	.215
Extension officer's ability to help farmers manage business finance	No formal education	11	2.45	.688	.207
	Higher primary (G5 - G7)	13	2.46	.660	.183
Extension officer's ability to assist farmers get business financing	No formal education	11	2.45	.820	.247
	Higher primary (G5 - G7)	13	2.46	.660	.183
Extension officer's ability to source inputs at cheaper prices	No formal education	11	2.18	.603	.182
	Higher primary (G5 - G7)	13	2.08	.494	.137

Table 4.32: Significance of formal education level reached by farmers on their perceptions about the extension officers help (Independent samples test)

		Independent Samples Test								
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Extension officer's quality of help in soil sampling	Equal variances assumed	2.267	.146	-0.701	22	.491	-.140	.199	-.554	.274
	Equal variances not assumed			-0.738	18.292	.470	-.140	.189	-.537	.258
Extension officer's quality of help in fertilizers and lime application	Equal variances assumed	.199	.660	.139	22	.891	.028	.202	-.390	.446
	Equal variances not assumed			.133	16.187	.895	.028	.210	-.416	.472
Extension Officer's quality of help in planning irrigation system	Equal variances assumed	1.314	.264	-.475	22	.639	-.112	.235	-.600	.376
	Equal variances not assumed			-.489	21.501	.630	-.112	.229	-.587	.363
Extension officer's quality of help in crop spacing	Equal variances assumed	2.395	.136	.751	22	.461	.105	.140	-.185	.395
	Equal variances not assumed			.727	17.262	.477	.105	.144	-.199	.409
Extension Officer's quality of help is general crop management	Equal variances assumed	.123	.729	.176	22	.862	.028	.159	-.303	.358
	Equal variances not assumed			.174	20.720	.863	.028	.160	-.306	.362
Extension officer's quality of help in controlling pests and diseases	Equal variances assumed	3.694	.068	-.893	22	.382	-.140	.157	-.465	.185
	Equal variances not assumed			-.921	21.210	.367	-.140	.152	-.455	.176
	Equal variances assumed	8.612	.008	1.682	22	.107	.434	.258	-.101	.968

Extension officer's quality of help in finding good markets	Equal assumed	variances not assumed			1.766	18.742	.094	.434	.245	-.081	.948
Extension officer's quality of help in organising farmers into farmer group or cooperative	Equal assumed	variances not assumed	.000	.993	1.682	22	.107	.552	.328	-.129	1.234
	Equal assumed	variances not assumed			1.672	20.776	.110	.552	.330	-.135	1.240
Extension officer's quality of help in conflict management amongst groups	Equal assumed	variances not assumed	.018	.895	1.234	22	.230	.399	.323	-.271	1.069
	Equal assumed	variances not assumed			1.223	20.454	.235	.399	.326	-.280	1.077
Extension officer's ability in motivating discouraged farmers	Equal assumed	variances not assumed	.273	.607	-.233	22	.818	-.070	.300	-.692	.552
	Equal assumed	variances not assumed			-.235	21.910	.816	-.070	.297	-.686	.547
Extension officer's ability in handling demonstrations	Equal assumed	variances not assumed	10.955	.003	-1.354	22	.189	-.154	.114	-.389	.082
	Equal assumed	variances not assumed			-1.477	12.000	.165	-.154	.104	-.381	.073
Extension officer's sense of urgency in offering assistance	Equal assumed	variances not assumed	2.094	.162	.614	22	.545	.147	.239	-.349	.643
	Equal assumed	variances not assumed			.596	17.482	.559	.147	.246	-.372	.666
Extension officer's ability to help farmers keep records	Equal assumed	variances not assumed	.181	.675	.148	22	.883	.042	.283	-.545	.629
	Equal assumed	variances not assumed			.150	21.920	.882	.042	.280	-.539	.623
Extension officer's ability to help farmers draft business plans	Equal assumed	variances not assumed	3.245	.085	.705	22	.488	.189	.268	-.367	.745
	Equal assumed	variances not assumed			.734	20.060	.471	.189	.257	-.348	.725
Extension officer's ability to help farmers manage business finance	Equal assumed	variances not assumed	.018	.895	-.025	22	.980	-.007	.276	-.579	.565
	Equal assumed	variances not assumed			-.025	21.026	.980	-.007	.277	-.582	.568

Extension officer's ability to assist farmers get business financing	Equal variances assumed	.750	.396	-.023	22	.982	-.007	.302	-.633	.619
	Equal variances not assumed			-.023	19.169	.982	-.007	.308	-.651	.637
Extension officer's ability to source inputs at cheaper prices	Equal variances assumed	1.040	.319	.469	22	.644	.105	.224	-.359	.569
	Equal variances not assumed			.461	19.365	.650	.105	.228	-.371	.581

Table 4.33: Correlation between farmers' characteristics

		Farmer's gender	Farmer's age	Farmer's faming experience	Farmer's marital status	Farmer's highest level of education	Size of the farmer's land	How are you organized	Are you a member of SNAU
Farmer's gender	Pearson Correlation	1	-.037	.074	.337**	-.262*	.002	.144	-.080
	Sig. (2-tailed)		.742	.511	.002	.017	.985	.198	.476
	N	82	82	82	82	82	82	82	82
Farmer's age	Pearson Correlation	-.037	1	.523**	.416**	-.294**	.004	-.031	.042
	Sig. (2-tailed)	.742		.000	.000	.007	.972	.782	.711
	N	82	82	82	82	82	82	82	82
Farmer's faming experience	Pearson Correlation	.074	.523**	1	.232*	-.261*	.094	.002	.119
	Sig. (2-tailed)	.511	.000		.036	.018	.400	.989	.289
	N	82	82	82	82	82	82	82	82
Farmer's marital status	Pearson Correlation	.337**	.416**	.232*	1	-.378**	-.127	.166	-.026
	Sig. (2-tailed)	.002	.000	.036		.000	.254	.135	.814
	N	82	82	82	82	82	82	82	82
Farmer's highest level of education	Pearson Correlation	-.262*	-.294**	-.261*	-.378**	1	.056	-.278*	-.077
	Sig. (2-tailed)	.017	.007	.018	.000		.615	.011	.491
	N	82	82	82	82	82	82	82	82

Size of the farmer's land	Pearson Correlation	.002	.004	.094	-.127	.056	1	-.301**	-.111
	Sig. (2-tailed)	.985	.972	.400	.254	.615		.006	.319
	N	82	82	82	82	82	82	82	82
Do you have a contract with any shop or organization	Pearson Correlation	-.030	-.045	.069	-.033	-.015	-.039	-.228*	.509**
	Sig. (2-tailed)	.791	.691	.538	.766	.893	.726	.039	.000
	N	82	82	82	82	82	82	82	82
How are you organized	Pearson Correlation	.144	-.031	.002	.166	-.278*	-.301**	1	-.016
	Sig. (2-tailed)	.198	.782	.989	.135	.011	.006		.884
	N	82	82	82	82	82	82	82	82
Are you a member of SNAU	Pearson Correlation	-.080	.042	.119	-.026	-.077	-.111	-.016	1
	Sig. (2-tailed)	.476	.711	.289	.814	.491	.319	.884	
	N	82	82	82	82	82	82	82	82
Are you registered with NAMBoard	Pearson Correlation	-.077	.005	.091	-.100	.190	-.070	-.274*	.385**
	Sig. (2-tailed)	.489	.965	.418	.372	.087	.534	.013	.000
	N	82	82	82	82	82	82	82	82
Is the Extension Officer always available when you need him/her	Pearson Correlation	.081	-.025	.063	.174	-.053	-.021	-.289**	.048
	Sig. (2-tailed)	.470	.822	.575	.120	.640	.854	.009	.670
	N	81	81	81	81	81	81	81	81

Table 4.34: Correlation of farmers’ characteristics and their perceptions on accessibility of farming resources and inputs.

Farmer's gender
Farmer's age
Farmer's faming experience
Farmer's marital status
Farmer's highest level of education
Size of the farmer's land
Do you have a contract with any shop or organization
How are you organized
Are you a member of SNAU
Are you registered with NAMBoard
Is the Extension Officer always available when you need him/her
How accessible are inputs i.e. seeds, fertilisers, pesticides
How accessible is the labour if needed
How accessible is irrigation water
How accessible are export opportunities
How accessible is information on good markets
How accessible are reliable local markets eg shop/restaurants
How much access do you have to technical knowledge
How accessible is the tractor and other new technology
How accessible are business loans for you
How accessible are Agribusiness workshops

Farmer's gender	Pearson Correlation Sig. (2-tailed)	1	-.037	.074	.337**	-.262*	.002	-.030	.144	-.080	-.077	.081	.237*	.034	.113	.197	.048	-.127	-.181	.242*	.097	-.065
	N	82	82	82	82	82	82	82	82	82	82	81	81	81	81	81	81	81	81	81	81	81
Farmer's age	Pearson Correlation Sig. (2-tailed)	-.037	1	.523**	.416**	-.294**	.004	-.045	-.031	.042	.005	-.025	-.263*	-.024	.027	-.090	-.088	-.160	.007	-.061	-.051	.239*
	N	82	82	82	82	82	82	82	82	82	82	82	81	81	81	81	81	81	81	81	81	81
Farmer's faming experience	Pearson Correlation Sig. (2-tailed)	.074	.523**	1	.232*	-.261*	.094	.069	.002	.119	.091	.063	-.300**	-.218	.049	.037	.014	-.072	-.201	.050	-.048	.096
	N	82	82	82	82	82	82	82	82	82	82	81	81	81	81	81	81	81	81	81	81	81
Farmer's marital status	Pearson Correlation Sig. (2-tailed)	.337**	.416**	.232*	1	-.378**	-.127	-.033	.166	-.026	-.100	.174	.013	.045	.255*	.015	.051	.078	-.125	-.002	-.042	.026
	N	82	82	82	82	82	82	82	82	82	82	81	81	81	81	81	81	81	81	81	81	81
Farmer's highest level of education	Pearson Correlation Sig. (2-tailed)	-.262*	-.294**	-.261*	-.378**	1	.056	-.015	-.278*	-.077	.190	-.053	-.122	.002	.009	-.012	-.117	-.158	.189	-.008	.068	.137
	N	82	82	82	82	82	82	82	82	82	82	81	81	81	81	81	81	81	81	81	81	81
Size of the farmer's land	Pearson Correlation Sig. (2-tailed)	.002	.004	.094	-.127	.056	1	-.039	-.301**	-.111	-.070	-.021	.072	.090	-.086	.024	.063	-.112	-.153	-.111	-.062	-.074
	N	82	82	82	82	82	82	82	82	82	82	81	81	81	81	81	81	81	81	81	81	81
Do you have a contract with any shop or organization	Pearson Correlation Sig. (2-tailed)	-.030	-.045	.069	-.033	-.015	-.039	1	-.228*	.509**	.293**	.079	-.036	-.133	.214	-.130	.121	-.014	.122	.175	.066	.178
	N	82	82	82	82	82	82	82	82	82	82	81	81	81	81	81	81	81	81	81	81	81
How are you organized	Pearson Correlation Sig. (2-tailed)	.144	-.031	.002	.166	-.278*	-.301**	-.228*	1	-.016	-.274*	-.289**	.120	-.001	.103	-.040	.068	.235*	-.133	.054	-.094	-.111
	N	82	82	82	82	82	82	82	82	82	82	81	81	81	81	81	81	81	81	81	81	81

Are you a member of SNAU	Pearson Correlation	-.080	.042	.119	-.026	-.077	-.111	.509**	-.016	1	.385**	.048	.190	-.078	.057	-.047	.046	-.037	.064	.296**	.046	.032
	Sig. (2-tailed)	.476	.711	.289	.814	.491	.319	.000	.884		.000	.670	.090	.490	.616	.679	.682	.743	.567	.007	.682	.778
	N	82	82	82	82	82	82	82	82	82	82	81	81	81	81	81	81	81	81	81	81	81
Are you registered with NAMBoard	Pearson Correlation	-.077	.005	.091	-.100	.190	-.070	.293**	-.274*	.385**	1	.160	-.007	-.083	-.152	-.066	-.219*	-.156	.141	.153	.144	.187
	Sig. (2-tailed)	.489	.965	.418	.372	.087	.534	.008	.013	.000		.153	.954	.460	.175	.560	.049	.165	.208	.174	.201	.094
	N	82	82	82	82	82	82	82	82	82	82	81	81	81	81	81	81	81	81	81	81	81
Is the Extension Officer always available when you need him/her	Pearson Correlation	.081	-.025	.063	.174	-.053	-.021	.079	-.289**	.048	.160	1	-.095	-.280*	-.083	.016	.130	-.007	.294**	.073	.145	-.128
	Sig. (2-tailed)	.470	.822	.575	.120	.640	.854	.484	.009	.670	.153		.401	.012	.463	.885	.249	.948	.008	.522	.201	.258
	N	81	81	81	81	81	81	81	81	81	81	81	80	80	80	80	80	80	80	80	80	80
How accessible are inputs i.e. seeds,fertilisers,pesticides,seedlings	Pearson Correlation	.237*	-.263*	-.300**	.013	-.122	.072	-.036	.120	.190	-.007	-.095	1	.074	.048	.069	-.049	.133	.109	.237*	.035	-.172
	Sig. (2-tailed)	.033	.018	.006	.909	.278	.525	.748	.284	.090	.954	.401		.513	.673	.538	.666	.235	.334	.033	.755	.124
	N	81	81	81	81	81	81	81	81	81	81	80	81	81	81	81	81	81	81	81	81	81
How accessible are insurance products	Pearson Correlation	.095	-.220*	-.123	-.074	.083	.062	.097	.069	.084	.155	.017	.265*	.148	-.043	.016	.079	-.004	.062	.079	.009	.136
	Sig. (2-tailed)	.399	.048	.274	.511	.461	.583	.389	.538	.456	.167	.880	.017	.186	.705	.885	.485	.971	.584	.482	.934	.227
	N	81	81	81	81	81	81	81	81	81	81	80	81	81	81	81	81	81	81	81	81	81
How accessible is the labour if needed	Pearson Correlation	.034	-.024	-.218	.045	.002	.090	-.133	-.001	-.078	-.083	-.280*	.074	1	.046	.067	.074	-.017	-.051	-.070	-.244*	-.024
	Sig. (2-tailed)	.760	.829	.051	.692	.982	.422	.238	.993	.490	.460	.012	.513		.681	.554	.513	.883	.650	.537	.028	.830
	N	81	81	81	81	81	81	81	81	81	81	80	81	81	81	81	81	81	81	81	81	81
How accessible is irrigation water	Pearson Correlation	.113	.027	.049	.255*	.009	-.086	.214	.103	.057	-.152	-.083	.048	.046	1	.019	.256*	.087	.077	.314**	-.217	.140
	Sig. (2-tailed)	.315	.813	.662	.022	.933	.446	.055	.360	.616	.175	.463	.673	.681		.869	.021	.441	.496	.004	.051	.212
	N	81	81	81	81	81	81	81	81	81	81	80	81	81	81	81	81	81	81	81	81	81
How accessible are export opportunities	Pearson Correlation	.197	-.090	.037	.015	-.012	.024	-.130	-.040	-.047	-.066	.016	.069	.067	.019	1	.214	.362**	-.183	-.097	.402**	-.158
	Sig. (2-tailed)	.077	.426	.743	.897	.916	.832	.246	.722	.679	.560	.885	.538	.554	.869		.055	.001	.102	.390	.000	.159
	N	81	81	81	81	81	81	81	81	81	81	80	81	81	81	81	81	81	81	81	81	81

How accessible is information on good markets	Pearson Correlation	.048	-.088	.014	.051	-.117	.063	.121	.068	.046	-.219*	.130	-.049	.074	.256*	.214	1	.373**	-.019	.081	-.017	.052
	Sig. (2-tailed)	.671	.437	.899	.648	.298	.575	.281	.549	.682	.049	.249	.666	.513	.021	.055		.001	.865	.472	.881	.646
	N	81	81	81	81	81	81	81	81	81	81	80	81	81	81	81	81	81	81	81	81	81
How accessible are reliable local markets eg shop/restaurants contracts	Pearson Correlation	-.127	-.160	-.072	.078	-.158	-.112	-.014	.235*	-.037	-.156	-.007	.133	-.017	.087	.362**	.373**	1	.044	-.067	.122	-.119
	Sig. (2-tailed)	.260	.153	.524	.489	.158	.319	.900	.034	.743	.165	.948	.235	.883	.441	.001	.001		.698	.554	.279	.290
	N	81	81	81	81	81	81	81	81	81	81	80	81	81	81	81	81	81	81	81	81	81
How much access do you have to technical knowledge	Pearson Correlation	-.181	.007	-.201	-.125	.189	-.153	.122	-.133	.064	.141	.294**	.109	-.051	.077	-.183	-.019	.044	1	.348**	.044	.152
	Sig. (2-tailed)	.107	.954	.072	.268	.091	.172	.279	.238	.567	.208	.008	.334	.650	.496	.102	.865	.698		.001	.696	.175
	N	81	81	81	81	81	81	81	81	81	81	80	81	81	81	81	81	81	81	81	81	81
How accessible is more arable land	Pearson Correlation	-.072	.077	.030	-.137	.164	-.116	-.100	-.073	-.109	.095	.197	-.049	-.058	.025	.108	-.177	-.079	.414**	.201	.035	.135
	Sig. (2-tailed)	.523	.493	.791	.223	.142	.302	.372	.515	.334	.401	.080	.665	.607	.826	.336	.115	.484	.000	.072	.758	.229
	N	81	81	81	81	81	81	81	81	81	81	80	81	81	81	81	81	81	81	81	81	81
How accessible is the tractor and other new technology	Pearson Correlation	.242*	-.061	.050	-.002	-.008	-.111	.175	.054	.296**	.153	.073	.237*	-.070	.314**	-.097	.081	-.067	.348**	1	-.001	.281*
	Sig. (2-tailed)	.029	.591	.657	.982	.947	.325	.117	.633	.007	.174	.522	.033	.537	.004	.390	.472	.554	.001		.993	.011
	N	81	81	81	81	81	81	81	81	81	81	80	81	81	81	81	81	81	81	81	81	81
How accessible are business loans for you	Pearson Correlation	.097	-.051	-.048	-.042	.068	-.062	.066	-.094	.046	.144	.145	.035	-.244*	-.217	.402**	-.017	.122	.044	-.001	1	.052
	Sig. (2-tailed)	.389	.654	.669	.713	.547	.584	.558	.404	.682	.201	.201	.755	.028	.051	.000	.881	.279	.696	.993		.646
	N	81	81	81	81	81	81	81	81	81	81	80	81	81	81	81	81	81	81	81	81	81
How accessible are Agribusiness workshops	Pearson Correlation	-.065	.239*	.096	.026	.137	-.074	.178	-.111	.032	.187	-.128	-.172	-.024	.140	-.158	.052	-.119	.152	.281*	.052	1
	Sig. (2-tailed)	.564	.031	.393	.820	.224	.513	.113	.326	.778	.094	.258	.124	.830	.212	.159	.646	.290	.175	.011	.646	
	N	81	81	81	81	81	81	81	81	81	81	80	81	81	81	81	81	81	81	81	81	81

Significant at 99% = **

Significant at 95% = *

