

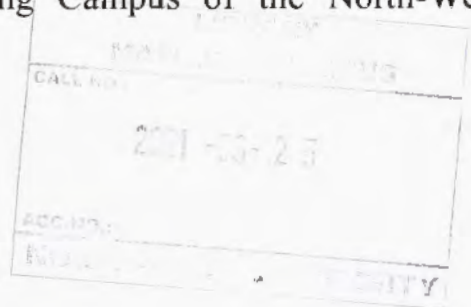
Dynamics of communicating with smallholder farmers in the Gweru district of Zimbabwe.

by

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A thesis submitted in fulfillment of the requirements of the degree Doctor of Philosophy in Communication at the Mahikeng Campus of the North-West University



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October 2016

NORTH WEST UNIVERSITY

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Date: 06 May 2016

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The journey of life is what matters the most and not the destination. The idiom “no man is an island” befits my life journey. I would not have travelled this far had it not been for my dedicated supervisor, Professor Abiodun Salawu’s extensive knowledge and wisdom which saw him provide me with extraordinary guidance and support in this research project. By God Almighty, let him be blessed.

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DEDICATION

For Edlyne Leane Moyo and Floyd Moyo. Will you pass this legacy on?

ABSTRACT

Communication is an important facet of every development sphere and sufficiently so in the agriculture sector which is the main source of livelihood in many developing countries like Zimbabwe. The implications of communication in agriculture have a large bearing on the success or failure of agricultural development projects. While the diffusion of innovations theory has been criticised for its linear nature, the participatory theory has been questioned for its definitional and practical ambiguity in agricultural communication. However, this study argued that agricultural development goals can be realised if these two theories are combined together into a hybrid mode. Thus the diffusion of innovations and participatory theories underpinned the current study in exploring the dynamics of communicating with smallholder farmers in the Gweru district of Zimbabwe. The goal was to determine the smallholder farmers' communication needs and challenges faced in agricultural communication between agricultural extension personnel and the farmers. The research problem was a concern that there was lack of information, education and training during the Fast Track Land Reform Programme (FTLRP) and consequently low agricultural production hence the continuing food insecurity in the country.

The study adopted a mixed research design in order to gain an in-depth understanding of the state of agricultural communication in the Gweru district. A quantitative survey was conducted through a questionnaire to collect data from the Gweru district smallholder farming community to determine their agricultural communication needs and preferences. Simple random sampling was used to determine the sample. A qualitative semi-structured interview by purposive sampling was used to collect data from agricultural extension workers in the district to determine the effectiveness and challenges faced with available communication media and methods in disseminating knowledge and information.

The Gweru district was used as the study population since it is in one of the regions indicated in the literature to be affected by food insecurity, the Midlands region. The study findings were adequate enough to conclude that smallholder agricultural communication in the context of the Gweru district FTLRP of Zimbabwe is not effective due to multiple resource constraints. Thus, from the study findings, it was recommended that agricultural communication should be multifaceted: top-down, bottom-up and horizontal and be contextualised as much as possible if development goals are to be realised. The study has therefore developed some models to improve on current communication practices, which could consequently promote increased productivity. These are: multimedia and multi-strategy approaches to smallholder agricultural communication, detailed smallholder farmers' stakeholder analyses and smallholder agriculture stakeholder mobilisation.

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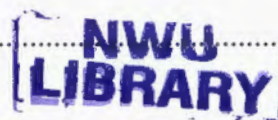
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LIST OF ABBREVIATIONS AND ACRONYMS

AGRITEX.....	Agricultural, Technical and Extension Services (Zimbabwe)
AREX	Agricultural Research and Extension (Zimbabwe)
BEFS	Bio-energy and Food Security Projects
CA	Conservation Agriculture
CD-ROM.....	Compact Disc – Read Only Memory
ConTill.....	Conservation Tillage Project (Zimbabwe)
F.A.O	Food and Agricultural Organisation
FFS.....	Farmer Field School
F.T.L.R.P	Fast Track Land Reform Programme (Zimbabwe)
GDP.....	Gross Domestic Product
G.M.O	Genetically Modified Objects
GoZ.....	Government of Zimbabwe
HIV/AIDS.....	Human Immuno Virus – Acquired Immune Deficiency Syndrome
ICTs	Information and Communication Technologies
IDB.....	International Development Bank
IDRCC.....	International Development Research Centre in Canada
ITDG.....	Intermediate Technology Development Group (Zimbabwe)
IPM.....	Integrated Pest Management
IPPM.....	Integrated Pest and Production Management
L.R.R.P	Land Reform and Resettlement Programme (Zimbabwe)
IRDEP.....	Integrated Rural Development Programme (Zimbabwe)

MLA.....Ministry of Lands and Agriculture (Zimbabwe)

MOVE.....Moderation and Visualisation for Group Events

N.G.O Non-Governmental Organisation

NR.....Natural Region

NWICO New World Information and Communication Order

OECD.....Organisation for Economic and Corporation Development

PEA.....Participatory Extension Approaches

PLWHA.....People Living with HIV & AIDS

POTRAZ.....Postal and Telecommunication Regulatory Authority of Zimbabwe

PTC.....Postal and Telecommunications

SITE Indian Satellite Instructional Television

SMS Short Message Services

SPSS Statistical Package for the Social Sciences

TV.....Television

T & VTraining & Visit

UN United Nations

UNESCO.....United Nations Educational, Scientific and Cultural Organisation

UNDP.....United Nations Development Programme

U.S.A United States of America

USAID.....United States Aid

WHO.....World Health Organisation

ZANU PF.....Zimbabwe African National Union – Patriotic Front

Z.A.P.F.....Zimbabwe Agricultural Policy Framework

ZARNet.....Zimbabwe Academic Research Network

ZBC.....Zimbabwe Broadcasting Corporation

Zim Vac.....Zimbabwe Vulnerability Assessment Committee

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DEFINITION OF KEY TERMS

Associated media: additional media usually used as supplementary material to a communication programme such as pamphlets, flyers, charts, books.

Communication: “a social process designed to bring together senders and receivers of information as co-creators of knowledge.” (Mgbenka *et al.*, 2013: 242-243). Therefore, communication is a two way process whereby both communication agents and smallholder farmers create knowledge.

Communication channels: “the means by which messages travel from a source to a receiver” (Rogers and Shoemaker cited by Chauhan, 2007: 6). The means through which messages are transmitted should be tailor-made for the intended beneficiaries who in this case are resettled smallholder farmers.

Communication media: “used to represent the traditional buyable space for commercial messages, typically advertising space but is also used in similar ways to channels” (Houghton, Kemp and Pattison, undated).

Communication need: “effective communication” (Chauhan, 2007: 13). Farmers need effective communication for them to adopt agricultural innovations. Effective communication is determined by the communication medium used. Thus, McLuhan’s (1964: 23) assertion that “the medium is the message” is adopted in the current study.

Communication strategy: Mutual attempt by two interlocutors to agree on a meaning (meaning structures would include both linguistic structures and socio-linguistic rule structures) (Tarone, 1981). There is need for mutual a understanding to ensure effective communication with the relevant stakeholders.

Development communication: From an agricultural and rural development perspective, Castello and Braun (2006: 4) view development communication as “a social process designed to bring together agricultural technicians and farmers in a two way process and people are both senders and receivers of information and communicators of knowledge”.

Folk media: “informal or traditional methods of conveying messages, creative medium for community ideas appropriate, applicable in participatory and discovery-based teaching and

learning environment such as songs, storytelling, dancing, drama, games, rituals, announcements” (Khisa, 2004: 48).

Innovation: “an idea, practice or project perceived as new by an individual or another unit of adoption” (Rogers, 2003: 13). In the study, “innovation” does not necessarily denote newness only but ideas and technologies that are crucial for agricultural development and need to be effectively communicated to farmers.

Mass media: (radio, television, newspapers, periodicals, websites) that reach large audiences.

Attached to the meaning of this term, however, is the erroneous view that large agglomerations of people are one-dimensional or homogeneous. As research on media audiences has shown, this is hardly the case (Danesi, 2009: 188). In agricultural communication, mass media have been found effective at the knowledge stage.

New media: “a wide range of changes in media production, distribution and use (technological, textual, conventional and cultural characterised by digital, interactive, hyper-textual, virtual, networked and simulated functions”, (Lister *et al.*, 2009). The study inquires the extent to which new media is used for agricultural communication and its effectiveness.

Participatory communication: “an approach based on dialogue, which allows sharing of information, perceptions and opinions among the various stakeholders and therefore facilitates their empowerment, especially for those who are most vulnerable and marginalised”, (Tufte and Mefalopulos, 2009: 17). The study explores the extent to which participatory communication is used in communicating agricultural information to smallholder farmers and its effectiveness.

Smallholder farmers: “those farmers owning small-based plots of land on which they grow subsistence crops, and one or two cash crops, relying almost exclusively on family labour.” (Directorate Co-operative and Enterprise Development, 2012: 1). In the study, smallholder farmers are categorised as A1 farmers and they occupy the majority of arable land in Zimbabwe.

CHAPTER 1: INTRODUCTION

1.1 The importance of communication in agricultural development

Communication is a crucial aspect of every development facet. Without it, development cannot be realised. Therefore, effective communication can be viewed as a fountain for sound development in societies. Viewed in this light, communication processes should be prioritised in development programmes in order to realise the anticipated development goals. The concept of development is particularly significant in less developed countries, therefore, all stakeholders should converge in order to come up with the best strategies to promote development in these countries. Zimbabwe is one example of such countries that are grappling with development issues. To this end, the current study explores development in the agricultural sector which is the dominant economic activity of Zimbabwe from a development communication perspective. The study conceptualises that the Fast Track Land Reform (FTLRP) has played a leading role in the declining agricultural productivity of the country based on the argument that there was a lack of information, education and training during the implementation process. As such, literature echoes continued food insecurity in the country (Food Security Brief, 2012; The Emergency Appeal, 2012).

Notably, smallholder farmers have increased in Zimbabwe after the year 2000 FTLRP in which the Government of Zimbabwe acquired approximately eleven million hectares of land from previous owners, most of whom were white commercial farmers. The government redistributed this land under the contested Zimbabwe Agricultural Policy Framework's (ZAPF) objectives of achieving food security (Manyeruke, *et al.*, 2013: 278- 279). Smallholder farmland, which is categorised under the A1 model in Zimbabwe, is whereby typically, each white farm was divided into forty to fifty farm units of six hectares of arable land (Manjengwa, *et al.*, 2014: 3). Model A1 was intended to decongest communal areas and was targeted at land-constrained farmers in communal areas. This model is based on existing communal area organization, where peasants produce mainly for subsistence (Manjengwa *et al.*, 2014: 4.) Yet research indicates that food shortages continue to prevail in the country (Food Security Brief, 2012; The Emergency Appeal, 2012).

The anticipation is that food productivity could be improved in the country if farmers are actively engaged in the communication of agricultural development. This could be made possible through effective strategies and relevant as well as accessible communication media channels and methods enhanced by relevant technologies (Chhachhar *et al.*, 2014: 281). However, farmers are not benefiting from communication technologies to learn about agricultural innovations due to lack of knowledge, information and training about them (Chhachhar *et al.*, 2014: 281). Therefore, exploring the dynamics of communicating with smallholder farmers could guide agricultural extension agents on how to design tailor-made communication media, channels, methods and approaches to impart agricultural innovations as well as to teach and encourage smallholder farmers to embrace new media technologies for the communication of their farming development.

The study focuses on smallholder farmers resettled under the FTLRP in Zimbabwe due to the concern that the rushed and haphazard nature by which farmers were resettled made it impossible for adequate training and personnel that could enhance immediate take off and improved productivity (Mlambo cited by Murisa, 2013: 267). Therefore, in order to regain food security, these farmers should aim to maintain the standards of the previous farm owners which saw the country being the bread basket of Southern Africa hence the need for effective communication that enhances adoption of high yielding agricultural innovations.

The study sought to explore those challenges related to the communication of information for development as there is not much literature on the challenges faced by smallholder farmers with regard to communication of agricultural knowledge and information in Zimbabwe. Nonetheless, research has shed some light on smallholder farmers' constraints particularly in developing countries. As such, Fan *et al.* (2013: 6) cite some of the major challenges as follows: limited access to market for both inputs and outputs; geographic dispersion and limited access to infrastructure (including transport networks and market facilities); limited access to productivity-enhancing technologies grounded in an environment where national research systems do not sufficiently prioritise smallholder-friendly technologies; and lack of access to education, which could help build the skills needed to manage on-farm and off-farm production systems more efficiently and raise smallholder adoption of innovative and high return technologies.

Based on these broad challenges which impede smallholder agricultural activities by lowering productivity, it is imperative to explore the communication challenges faced in receiving relevant

information through accessible media and methods in the Gweru district as it is among the areas threatened by food insecurity (Food Security Brief, 2012; The Emergency Appeal, 2012). Smallholder farmers need risk-mitigating skills and information on diversification alternatives hence the critical importance of effective communication. Hornik (1988) argues that the need for feed-forward is most acute in the agriculture sector. Agricultural research agencies are unresponsive to the needs of smallholder farmers, in part because they have no regular means of hearing from those farmers through influential channels. To this end, Rogers (1983: 233) reiterates that communication channels used to diffuse a new idea or innovation may have an influence on the innovation's rate of adoption. Therefore, the study seeks to get to the grassroots levels by finding out the media, methods and technologies most accessible and desirable to these smallholder farmers which could also enhance feed-forward. As such, the study focuses on both the communication infrastructure and the agricultural knowledge and information.

More importantly, Rogers (1983: 210) proposes five characteristics of innovations that are universally relevant in influencing the adoption of innovations which are: relative advantage, compatibility, complexity, trialability and observability. A pilot survey conducted in the Gweru district revealed that smallholder farmers consider mainly those aspects of the above characteristics that are self-benefiting in adopting new farming ideas, with little regard to the broader picture of contributing to the food security of the country and the Southern region at large. It is such a concern that the current study seeks to explore ways of improving communication with smallholder farmers for the benefit of the Gweru district and other communities with the same characteristics.

Communication for development in the agriculture sector is a desirable prerequisite. Yet, Jean cited by Yao (2012: 15) comments that "The challenge of development communication is to get governments and organizations listening to what people want in terms of communication and information opportunities." In light of the above observed challenge, Kumar (2011: 3) suggests the following prerequisites for development communication: human and localised approach to communication rather than abstract and centralised; credibility and communication links; and access to communication. Based on the above prerequisites suggested by Kumar, the current study sought to determine the availability of communication links, their effectiveness as well as access to communication by Gweru district smallholder farmers in the light of the FTLRP.

Quebral (1975) describes the genesis of the term development communication and its parameters as located the field of agriculture communication. This position has prompted the current study to explore the concept in the agricultural context due to the concern that agriculture is the backbone of most developing economies. Yet in the study context, literature has indicated that the Midlands region, where Gweru district falls, is among the other regions threatened by food shortages in Zimbabwe (Food Security Brief, 2012; Emergency Appeal, 2012; Manyeruke *et al.*, 2013). The study is premised on the fact that there is a lack of appropriate communication strategies to disseminate smallholder agricultural knowledge and information for development hence the relevance of studying the communication processes involved.

1.2 Why agricultural communication?

Agriculture is a socio-economic activity in the Sub-Saharan Africa region, sustaining about 80% of the population (Feyissa, 2007: 103). Declining agricultural productivity among smallholder farmers in Africa remains a major threat to the continent's development despite considerable advances in technology (Uganai, 1993 cited by Nyagumbo and Rurinda, 2012: 21). Notable levels of insecurity are being experienced in most parts of Lesotho, Central and Southern Malawi, Southern and Central Zimbabwe, Central and Southern Mozambique and parts of Angola (Food Security Brief, 2012: 2).

Before the 2000 land reform programme, Zimbabwe had a thriving agriculture sector and was a net exporter of food, the majority of agriculture production being large commercial and white-owned farms (Ignowski, 2012: 3). Since the onset of the reform programme, the agriculture sector has been performing poorly due to poor rains, structural changes and consecutive years of drought (The Emergency Appeal, 2012: 2). In an effort to address these challenges, the Zimbabwe Agricultural Policy Framework (ZAPF) prioritised achieving food security as one of the national target areas for the period, 1995-2020 (Manyeruke *et al.*, 2013). With the hope of achieving food security, the ZAPF set out the long-term policy objectives for the agriculture sector. There was a number of policy imperatives for agriculture development, one of which was land and agrarian reform to ensure productive use of land (Manyeruke *et al.*, 2013: 278). To this end, the Land Reform and Resettlement Programme (LRRP) of 2000 was part of ZAPF's objectives which resulted in broadening of the potential agriculture production base through land redistribution to more people (Manyeruke *et al.*, 2013: 279).

However, after the year 2000's FTLRP, the government of Zimbabwe lacked a sound food security policy, resulting in failure of previously adopted strategies such as the ZAPF to develop into a consistent framework for addressing food insecurity in the country (Manyeruke *et al.*, 2013: 279). Thus, the slow pace at which the new resettled farmers commenced agricultural activities due to lack of information, education and training are all perceived as significant contributors in inducing the country's food shortages.

According to Hove and Gwiza, 2012: 287), the implementation of the FTLRP triggered food shortages in the country, thereby forcing the government to purchase food from its neighbours and depend on the donor community. Hove and Gwiza further argue that the way in which the government-led FTLRP was implemented was a significant constraining factor on domestic food production thereby denting the country's food security. This was exacerbated by different sets of laws, administrations and policies on multiple tenure systems that have created grounds for conflicts resulting in adverse impact on agricultural productivity (Rukuni *et al.*, 2006: 532-535). Therefore, the current study was concerned with the agricultural communication processes since research asserts that communication is the foundation for knowledge and change in agriculture (Castello and Braun, 2006: 4; Mgbenka *et al.*, 2013: 242-243; Rogers, 1983: 233).

According to Langyintuo and Sitemela (2009: 378-383), the Zimbabwe government embarked on various schemes aimed at boosting the capacity of newly resettled farmers. These novel schemes involved the distribution of subsidized farming inputs such as seeds, fertilizers and chemicals to resettled farmers; acquiring farming implements such as tractors, planters, disc harrows and ploughs. Nonetheless, Langyintuo and Sitemela (2009: 378-383) were quick to point out the unfair criteria by which these facilities were distributed to the beneficiaries, a factor which impacted negatively on productivity in general. Langyintuo and Sitemela (2009: 378-383) further observe that Non-Governmental Organisations (NGOs) who mostly distribute these resources have limited time for intensive engagement with beneficiaries. There is a knowledge gap on the procurement and utilisation of these resources. This gap demands a needs analysis which can only be achieved through an appropriate communication strategy.

Despite the efforts made by the Zimbabwe government to promote adequate food production, The Emergency Appeal (2012: 2) reiterates that the level of food insecurity for 2012/2013 is a 7% increase from the 2011/2012 season where 12% of the rural population was insecure in terms of

food. Therefore, from a development communication perspective, these statistics reveal food shortages in Zimbabwe. This has prompted exploration of smallholder farmers' communication needs with the aim of seeking ways to develop smallholder agricultural productivity. It should not be overlooked that a couple of years after the commencement of the FTLRP, some of these resettled farmers might still lack the necessary knowledge and skills to exploit agricultural communication in the light of safeguarding the country's food security. As such, exploring the communication of knowledge and information with smallholder farmers could reveal other ways of curbing the recurrent food shortages in the country.

1.3 The research problem

Despite the fact that many people have their own farmland, particularly after the year 2000 FTLRP programme in Zimbabwe, there is concern that there are continuing food shortages in the country and that this could increasingly be threatening the food security of the country. This observation is supported by the Food Security Brief's (2012: 2) assertion that notable levels of food insecurity are currently being experienced in southern and central Zimbabwe, the latter in which Gweru district is situated.

The fact that there was a lack of information, education and training as well as technological resources to facilitate take off after the redistribution of land has impacted negatively on agricultural productivity which is already under threat by other factors such as climate variability (Intergovernmental Panel on Climate Change cited by Zerbe, 2004: 598). Yet, agriculture remains the dominant economic sector in Zimbabwe's economy, providing income to over 75% of the population (Ignowski, 2012: 1) and it being the highest contributor (18%), in 2009, to the Gross Domestic Product (Leete *et al.*, 2013: 2).

The literature does not shed much light on the effectiveness of disseminating agricultural innovations to the resettled smallholder farmers in the Gweru district and adoption by the recipients therein, considering that some of the resettled people do not have an agricultural background. Therefore, the current study worked on the premise that the smallholder farmers' communication needs are not being met by the department of agriculture through its agricultural extension workers who are responsible for designing communication strategies and imparting knowledge and skills to farmers. Yet one of the major premises of development communication is

that development communication activities and the materials selected and produced have to be relevant to the intended audiences (Colle, 2002: 12).

This study sought to survey the dynamics of communicating with the resettled smallholder farmers in the Gweru district of Zimbabwe. This was in a bid to explore the challenges faced by the agricultural extension personnel in the dissemination of agricultural knowledge and information. Farmers' communication needs were also explored in order that the extension workers align these with their communication strategies as a way of promoting effective communication and consequently increased smallholder farming productivity in the district, the region at large and the country in general.

1.4 Research aim

The study aimed to explore the dynamics of communicating with smallholder farmers in the Gweru district of the Midlands region, Zimbabwe, in the light of the FTLRP programme and food security, with the goal of addressing the communication challenges being faced thus seeking ways of improving smallholder communication and consequently farming productivity in the district and the region at large. The aim was achieved by exploring the following objectives:

1.4.1 Research objectives

The objectives of the study were to:

1. Determine the communication needs of smallholder farmers resettled under the FTLRP in the Gweru district in order for them to increase their agricultural output.
2. Find out the effectiveness of communication strategies available for disseminating agricultural knowledge and information to the smallholder farmers.
3. Find out whether or not the demographic variables of the farmers are associated with their adoption of agricultural innovations.
4. Determine how the characteristics of the agricultural innovations influence their adoption by the farmers.
5. Determine possible strategies of effective communication between agricultural extension workers and the Gweru district smallholder farmers.

1.4.2 Research questions

The study sought to explore the following research questions:

1. What are the communication needs of Gweru district smallholder farmers resettled under the FTLRP in order for them to increase their agricultural output?
2. How effective are the communication strategies available for disseminating agricultural knowledge and information to the smallholder farmers?
3. Are the demographic variables of the farmers associated with their adoption of agricultural innovations?
4. What characteristics of the agricultural innovations influence their adoption by the farmers?
5. What are the possible strategies of effective communication between agricultural extension workers and the Gweru district smallholder farmers?

1.5 Scope and limitations

The study surveyed communication dynamics involved in diffusing agricultural knowledge and information to smallholder farmers resettled under the year 2000 FTLRP in Gweru district of the Midlands region, Zimbabwe. The study was limited to Gweru district and no other districts in the Midlands region due to limited financial resources to extend the self-funded study. The Midlands region falls under one agro-ecological climatic belt, region three, and the climate of all the districts in the region is similar, making Gweru district a representative of all the other districts in the Midlands agro-ecological region.

1.6 Significance of the study

This study was important because agriculture is an essential and critical activity particularly in developing countries. Feyissa (2007: 103) indicates that in 2005, 2.5 billion people, contributing nearly half of the economically active people in developing countries, relied on agriculture for their livelihood. These statistics are convincing that an effective agricultural communication strategy should be developed in Africa, and Zimbabwe in particular so as to equip smallholder farmers with the knowledge and skills that they need to improve production, a move which could curb food shortages in the country. The study argued that if communication is disseminated in the best interests of the relevant farmers, the practice improves farming productivity to a large extent. Knowing the communication needs of farmers also adds to the knowledge base of agricultural extension workers who work directly with farmers and that consequently helps policy makers

craft policy on agricultural communication and development. The study also helped to build on theory of communication for development.

1.7 Ethical issues

The research was conducted in a community with its own social structures. Therefore, it was ethical to seek authorisation to conduct the research in the Gweru district of Zimbabwe from the North West University through the Faculty of Human and Social Sciences and the Department of Communication leadership. The researcher sought permission to collect data in the study community through its leadership. The University research ethics policy was followed and voluntary participation sought. Participating members were requested to complete the ethics consent form and were assured of confidentiality of the information they gave to the researcher. Confidentiality was achieved by responding to the questionnaire anonymously and by assuring the questionnaire respondents as well as the interviewees that the data collected would be used for academic purposes only. Although, they agreed to participate, both the interview and questionnaire respondents did not sign the consent form indicating fear of political victimisation despite the fact that the researcher indicated that the study was an academic one and had nothing to do with politics.

1.8 Structure of the thesis

Chapter one presents the introduction and background to the study of communication for development with particular reference to smallholder agriculture in Zimbabwe as well as procedures for conducting the research.

Chapter two reviews the history, origin, evolution and state of communication for development in the agriculture sector at a global level, with particular reference to smallholder agricultural development and in the light of the food security challenges.

Chapter three focuses on the state of communication for development and the diffusion of agricultural innovations to smallholder farmers in Zimbabwe in the light of the FTLRP.

Chapter four dwells on the theoretical framework underpinning the study, exploring the effectiveness and suitability of the diffusion of innovations theory and the participatory theory for agricultural communication in the study context.



Chapter five describes the research methodology adopted in conducting the study, which is, the mixed research methods consisting of both the quantitative and qualitative research designs.

Chapter six presents and analyses, then discusses the findings with regard to the Gweru district smallholder farmers' communication needs for agricultural development, the agricultural extension workers' communication of agricultural knowledge and information with smallholder farmers, the challenges faced and the suggested solutions.

Chapter seven presents the summary of findings, contributions, conclusion and recommendations in the area of communication for development in the agriculture sector.

CHAPTER 2: A GLOBAL OVERVIEW OF COMMUNICATION FOR DEVELOPMENT IN THE AGRICULTURE SECTOR

2.1 Introduction

In the previous chapter, the background to the study and an overview clarifying the procedures used in conducting the study was presented. In this chapter, related literature was reviewed, situating the concept of communication in agricultural development debates for increase in outputs across the globe and in developing countries, particularly Africa. These are countries whose livelihoods are mainly based on agriculture (Feyissa, 2007: 103). The study focused on smallholder farmers and literature has revealed that these occupy most of the arable land in developing countries such as Zimbabwe where the study was conducted (Manyeruke *et al.*, 2013: 278-279).

This review was guided by the diffusion of innovations theory embedded in the modernisation or dominant paradigm of development communication and the participatory theory informed by the alternative paradigm of development communication. Both theories underpinned the current study. Though the diffusion of innovations theory has been criticised for its linear nature and the participatory theory for its conceptual and practical ambiguity, the study made a case that if these theories are carefully contextualised and integrated, they could help improve agricultural communication. Therefore, communication was examined with regard to diffusion and adoption of agricultural information and technologies and the role of the farmers' participation therein. The development of participatory theory from diffusion theory is reviewed, determining whether or not there is some improvement in the adoption of agricultural innovations using participatory approaches. Thus an overview of these theories is discussed subsequently in order to determine the extent to which they have been explored at global and local levels thereby identifying gaps which justify the current study.

Furthermore, an overview of the concept of communication was presented. The evolution of concepts of development and development communication, the latter which is the main thrust of the study was traced. A global overview of smallholder agriculture was inquired in the light of increasing agricultural outputs and food security thereby highlighting smallholder farmers' challenges which hinder productivity. Agricultural extension policy and work and its

communication of agricultural development messages with particular reference to smallholder farming, was explored. Literature on development communication tools was reviewed, citing examples where these have been utilised and their effectiveness. Empirical studies of agricultural communication were reviewed to determine the gaps between theory and practice. Basically, the literature captured the extent to which communication for development has been researched in the agriculture sector, globally and locally, in order to identify the communication gaps and pave a way forward for many developing countries that, according to (Food Security Brief, 2012: 2) continue to be threatened by food insecurity.

2.2 Overview of the concept of communication

The concept of communication has existed since time immemorial and its role in engineering social change should be appreciated. The word communication is derived from the Latin word, “communis”, which means “common”. The definition underscores the fact that unless a common understanding results from the exchange of information, there is no communication (Lunenburg, 2010: 1-2). There is not one-all-inclusive definition of the term, communication. Various communication theorists have conceived the term in different ways. A few general definitions were reviewed. DeVito (1986: 61) writes that communication is “the process or act of transmitting a message from a sender to a receiver, through a channel and with the interference of noise”, elaborating that communication is referred to as a process, emphasising that it is always changing and in motion (DeVito, 1986: 239). Keyton, (2011) slightly differs from DeVito’s reasoning in his definition that communication is “the process of transmitting information and common understanding from one person to another.” Unlike DeVito, who views communication as a totally one way whereby the receiver could fail to interpret the message, Keyton highlights the notion of reaching a common understanding, which is more favourable in a communication act. However, the idea of information transmission in both DeVito and Keyton’s definitions denotes a transfer of knowledge whereby messages are developed and disseminated to recipients without involving the latter in the development of the messages, a gap noted in these earlier theorists’ views. These definitions could be viewed as echoing the diffusion of innovations theory. However, the theory was later revised to incorporate aspects of participation as reviewed consequently.

Notably, other communication scholars have shifted towards what are viewed as emancipating definitions of communication which follow a two way model of communication and are therefore viewed as participatory in nature. Such models, as discussed subsequently give communication participants equal roles as both the senders and receivers of messages and are active agents and therefore likely to be embraced by the stakeholders concerned. For example: The FAO (2006 cited by Mgbenka *et al.*, 2013: 242) views communication as “a two way process in which data and information are sent and received between two or more parties, each with an inherent knowledge and understanding about how the data and information are to be used.” In similar vein, Mgbenka *et al.* (2013: 242-243) define communication as “a social process designed to bring together senders and receivers of information as co-creators of knowledge.” From an agricultural and rural development perspective, Castello and Braun (2006: 4) view communication as “a social process designed to bring together agricultural technicians and farmers in a two way process and people are both senders and receivers of information and communicators of knowledge.” Explicit in the three latter definitions above is the idea of co-creation of knowledge, which is in harmony with the participatory theory. Both Mgbenka *et al.* (2013) and Castello and Braun (2006) point out that the social institution is an important component of communication. This component of the social institution is a crucial consideration of the communication process since it guides the communication policy. A global overview of extension policy is discussed in the subsequent segments in order to examine its promotion of effective communication.

One communication scholar, Lossee (1999: 2), propounds that the study of communication phenomena be divided into the experimental and the theoretical categories. Technische (2006: 18) contends with Lossee’s view of communication by reiterating that communication methods, instruments and techniques have been both, theoretically founded and field-tested in practice. Lossee (1999: 2) further asserts that experimental studies of communication phenomena on the one hand examine how informative processes work and precisely what information is provided by them. Statements are particular to a specific situation or domain and generalisation often becomes problematic. Therefore, contextualising communication processes is ideal in determining situation specific problems.

Lossee (1999: 2) argues that theoretical studies of communication, on the other hand, address on a more abstract level, the nature of processes and their outputs, as well as the inter-relationships between processes and their inputs and outputs. Furthermore, Lossee (1999: 2) posits that when communication is defined in terms of informative processes, which is the theoretical category, one can study both the information that is conveyed and the processes that carry it. Viewed in this way, communication aims at structural changes achieved through co-operative efforts of individuals or groups, usually in a geographically defined community (Technische, 2006: 18). The foregoing view is in harmony with one of the major premises of development communication that development support communication activities and the materials selected and produced have to be relevant to the intended audiences (Colle, 2002: 12). The current study focused on both the communication processes and the information disseminated.

The distinction between communication and information is worth articulating. Technische (2006: 12) argues that communication by definition incorporates feedback whereas information does not. Therefore, communication, which is the main focus of the current study, is the transmission belt between information dissemination and action planning. To this end, transmission of information is embedded in the communication processes involved. Technische (2006: 12) defends the feasibility of studying communication when he disagrees with what he terms hard, technical fields' mistrust of communication that it deals with unpredictable human behaviour. Rather, he argues that communication is "a professional field well rooted in and drawing from experiences in development and environmental communication, non-formal and environmental education, agricultural extension, family planning, community development, health and other fields" (Technische, 2006: 18). Consequent gains and changes in knowledge, attitudes and practices are part of this process. Therefore, relevant communication targets should be defined from the beginning of a project within the context of a vision and the concept of sustainable development (Technische, 2006: 18). This implies that in agriculture, extension services should satisfy farmer demands and that extension workers should reform from teaching the latter to learning with them through practical applications. This approach to education, where learning is continuous and a unique product constructed as each individual combines new information with existing knowledge and experiences is labelled a constructivist approach by (Coldevin, 2003: 4).

The shift from teaching to learning with farmers calls for effective communication strategies for smallholder farmers to understand and be able to use the knowledge and information. This helps cater for the heterogeneous study population of the Gweru district where some resettled farmers did not have prior agricultural knowledge. Therefore, the following question becomes significant: "What is effective communication"? The Rockefeller Foundation (1999 cited by Technische, 2006: 31) defines effective communication as "a process of public and private dialogue through which people define who they are, what they want and how they can get it", its initiative being informed by principles of tolerance, self-determination, equity, social justice and active participation for all. This proposition by the Rockefeller Foundation is also supported by researchers like (Cheney, 2011; Keyton, 2011) and it echoes the characteristics of participatory communication for development which is said to be emancipating. Since the goal of the study was to promote agricultural development, it was worth tracing the evolution of the concept of development

2.3 History and evolution of the concept of development

The term development has been evolving for a long time and its evolution has been viewed as multifaceted. As such, term is qualified and specified in different ways: economic development, human development, sustainable development (Bellu, 2011: 2), all of which though converging, can be measured according to certain standards. Therefore, development could be viewed as the organised intervention in collective affairs according to a standard of improvement (Pieterse, 2010: 3). Development could be largely enhanced by effective communication thus prompting this tracing of the history and evolution of the development concept over time in order to identify the communication gaps.

Rogers (1976b: 121) points out that the concept of development grew out of certain historical events such as the industrial revolution in Europe and the United States, the colonial experience in Latin America, Africa and Asia, the quantitative empiricism of North American social science, and capitalistic economic and political philosophy. Overtime, the term development has carried very different meanings as emphasised by Salawu's statement that the concept of development has undergone a kaleidoscopic treatment over the decades (Salawu, 2004: 59). Notwithstanding, development theories basically analyse and attempt to address problems of underdevelopment and development in societies, offering possibilities for development perspectives with the focus

largely entrenched in economic, social, political and cultural factors all of which independently or interactively have a bearing on societal development. According to Pieterse (2010: 9), each development theory can be read as hegemony or a challenge to hegemony while others are agenda setting, mobilisation and coalition building. Nonetheless, tracing the evolution of the development concept should shed light on the communication gaps which hamper productivity particularly in developing countries.

According to Paolo (2008: 44), since the Second World War, the following theoretical approaches have dominated the development context and consequently the field of development communication: the modernisation theory and the dependency theory, including its subset of world system theory. These theories are embedded in the dominant paradigm of development. Although there are other perspectives in the dominant paradigm, this thesis focused on the above mentioned theories. Later, the alternative paradigm of development emerged, seeking improvement to the former. The alternative paradigm consists of theories such as the neo-liberal and post post-modern theories of development. An overview of each of the theories is given in order to identify the communication gaps in each of them which justify development of the latter theories.

The dominant paradigm was evident in nineteenth century England, when development referred to remedies for the limitations and problems of progress, involving questions such as population (according to Malthus), joblessness (for the Luddites), the social question (according to Marx and others) and urban squalor (Al Mamun, 2008: 7). During that period, development was considered largely synonymous with industrialisation, the ultimate goal being to raise incomes and in the process give poor people access to various goods and services then widespread in developed societies (Rapley, 2007: 1). Rapley echoes Mowlana and Wilson's (1988: 7) view that especially in the 1950s and the 1960s, the term "development" became synonymous with growth, modernisation, change, democracy, productivity, industrialisation and a score of similar Western historical changes. Servaes (1995, 2002) concurs that within the framework of modernisation, "development" was defined in economic terms as a form of evolution.

An implicit thought of modernisation theory was that the reason for poorer nations' underdevelopment was their cultural beliefs and practices that hindered economic growth and

advancement Gumucio-Dagron and Tufte (2006: 16), a view which has been criticised largely as the development concept evolves. The modernisation theory has its beginnings in the classical evolutionary explanation of social change whereby Rostow (1960) identifies five stages of development which move societies from traditional to modern societies. Under Rostow's model, societies were believed to go through similar phases to achieve utopia. However, Rostow's 1960 model is criticised for undervaluing exogenous factors of underdevelopment and dispensing a top-down approach, while regarding indigenous means to development irrelevant. Rostow's 1960 view implies that only international institutions can handle the problems of underdevelopment. In the light of Rostow's model, modernisation was virtually synonymous with westernization Pieterse (2010: 22-23), whereby there was social contriving from developed countries and an operation of political containment rather than democratisation. American modernisation projects such as community development and the Green revolution exemplify this character of the white revolution (Pieterse, 2010: 24). Eventually, with the weakening of United States' hegemony and the end of the post-war boom, and in the context of social theory, modernisation theory lost its appeal, giving birth to the keyword "development", which was generally short for economic development (Pieterse, 2010: 25).

As many third world countries came to independence poor, they eagerly adopted models by development theorists such as that by Rostow that assigned the state a leading role in the economy. Discontent with such models, Al Mamun (2008) laments the conceptualisation of the development discourse as a part of Western development thinking which has always attempted to influence the course of history and development in many countries of the world both in pre- and post-independent states (Al Mamun, 2008: 10). Zimbabwe is no exception to such unfortunate circumstances, leading to the radical redress of colonial imbalances as the FTLRP.

In the resultant dependency theory, the core meaning of development, as conceived by modernisation theory, was economic growth based on national accrual of resources to curb underdevelopment (Al Mamun, 2008: 7). The main supporters of this approach such as Schiller (1979) emphasise global structure in the perspective of communication and development, arguing that the international socio-political-economic system determines the course of development within each nation. Development in this context means progress of productive forces mainly through importation of technology; capital accumulation; penetration of local economies by

foreign enterprises; increasing numbers of wage-earning groups and intensification of social division of labour.

However, dependency theory has been criticised on the basis that it is unrealistic that capitalist development will solve basic problems for the majority of the population. With the example of Latin America, although dependence imposed by external financing is characterised by an expanding, mainly short term debt, diversification and production levels may seem very high but both capital flow and economic decisions are controlled from abroad (Cardoso and Faletto, 1979: 160). Even when production and marketing are done in dependent economies, the profits go to central economies. What drives the course of development is the fact that a modern process of industrialisation in peripheral nations require large capital input, a large store of technological knowledge and a highly skilled managerial organisation and the fact that central nations have these available stiffens the bonds of dependence (Cardoso and Faletto, 1979: 160: 161).

Emerging from the dependency theory is the world system theory which within sociology is associated with Wallerstein (1990) who makes a somewhat similar set of assumptions to that of the dependency theory. The world is seen as developed and underdeveloped states, or zones, the interaction of which, through unequal exchange processes, produces a global core-periphery division of labour (Featherstone: 1990: 70). However, Featherstone (1990: 71) argues that the element of force and power, the political and economic dominance of the European core over the rest of the world, is missing in Wallerstein's exposition which seems as if the core-periphery scenario is a natural phenomenon. Rather, it would be logical to note that there are global production relations in the form of the ownership and control of colonial social formations by core states that constrain and determine the societal modes (Featherstone, 1990:73). From this viewpoint, individual core states collectively constitute a class of states that have a common political and economic relation to the rest of the world. These relations define a world mode of production which frames and structures Wallerstein's core-periphery economic exchanges (including unequal exchange). Colonies are not sovereign actors and do not freely trade nor get caught in unequal exchanges because there is no exchange in the first place (Featherstone, 1990:74). This means there is only one mode of production, a global mode of production (Featherstone, 1990: 75).

The three theories above, informed by the dominant paradigm of development, have been widely criticised. Thus, the assumption in the modernisation theory that the benefits of economic advancement, even if initially concentrated in the metropolitan centres, would eventually trickle down to the periphery, is unrealistic. Furthermore, the treatment of people as passive recipients of information in the dependency theory and world system theory does not promote growth and change in society (Salawu, 2004: 59; Adams 2006: 172). These researchers rather argue that economic growth does not translate to the well-being of the citizens. The shortcomings of the early theories evolved alternative paradigms of development whose indicators are documented as: appropriate health programmes, increased food production, housing, higher income, environmental health, mass and adult literacy, urban and rural development, justice, democracy, unity and enhancement of culture Salawu (2001); Goulet (1973 cited by Salawu, 2004: 59), and participatory process of social change (Rogers, 1976b: 133). Conceived thus, the onset of alternative development thinking brought about new understanding of development, focusing on social and community development (Al Mamun, 2008: 7). Therefore, the participatory theory is perceived as capable of addressing the development and communication gaps in these earlier theories.

Al Mamun (2008: 7) identifies two radically different perspectives on development that emerged around the same time when alternative development thinking was born: neo-liberalism and post-development thinking. Al Mamun (2008: 7) asserts that the central objective in the neo-liberal perspective is economic growth to be achieved through structural reform, deregulation, liberalisation and privatisation - all of which are to disarm government and reduce market-distortion interventions. One of the conventional core meanings of development is retained – economic growth. It is argued that neo-liberalism is an anti-development perspective in terms of means as in post-development thinking which also puts forth a radical anti-development position whereby the state is accused of authoritarian engineering, and disconnected economic growth and the results deemed a failure for the majority of the population (Rahnema and Bawtree, 1997 cited by Al Mamun, 2008: 8).

However, the point of departure from the neo-liberal perspective is that in the post-development approach which draws upon among others, Foucault (1966), the notion of an objective reality is a misconception. The post-development approach examines how people use particular types of

language and imagery to represent themselves and others in particular ways (Booth *et al.*, 2006: 12–13), which is a constructionist perspective. Yet the privilege to define reality is a crucial aspect of power and one of the major means by which certain groups are prejudiced (Booth *et al.*, 2006: 12–13).

Post-modern thinking, as Seers (1972) suggests can be addressed by asking the following questions: “What has been happening to poverty? What has been happening to unemployment? What has been happening to inequality? Seers argues that if all of these three have become less severe, then this has been a period of development for the country concerned” (Seers, 1972: 24). However, if these problems have been growing worse, there is no development, even if per capita income has risen (Seers, 1972: 24). Torado (1974: 207) seem to be answering these questions when they recognise the indicators of development as “the appropriate production and more equitable distribution of resources such as food, income and quality social services, including education and health”, views which are supported by Sen (1999: xii, 1 & 18). Critiques of the post-modern conceptualisation of development focus on its perceived individualism and largely the assumption that all Southern social movements are emancipating (Kiely, 1999; Parfitt, 2002; Pieterse, 2000).

Martinussen (1997: 3) then deduces different ways of comprehending this shift of meanings of development over time. He says that one way is to view the development debate as a deconstruction or critique of development; the other is to treat it as part of the historical context for it is quite sensible for development to change meaning in relation to changing circumstances, and that the third option is to fit the different development dimensions as part of a development mosaic and thus to reconstruct development as a synthesis of components. Martinussen’s view of reconstructing development as synthesis of components in order that the components can be intertwined to fit the developmental context seems feasible.

Situating the development concept in the agricultural context, beginning in the 1960s, a major revision in development thinking argued for a central role of agriculture as a driver of growth, especially in the early stages of industrialisation (Johnston and Mellor, 1961). This view of agriculture’s leading role, stimulated in large part by the emerging experiences in Asia, was founded on the following contributions: First, it was recognised by leading scholars such as

Schultz (1964) and Hayami and Ruttan (1991) that traditional agriculture could be transformed rapidly into a modern sector through the adoption of science based technology, thereby making a large contribution to overall growth. More importantly, rising incomes of rural households were seen as vital to providing a market for domestically produced products and services (Adelman, 1984). In addition, technological change and productivity growth in agriculture were linked to lower food prices in a closed economy model, which in turn held down urban wage costs and stimulated competitive exports of industrial products (Hsieh and Sadoulet, 2007). Following the Green Revolution experience in Asia, it was argued that these growth and employment linkages are most powerful when agricultural growth is driven by broad-based productivity increases in a rural economy dominated by small farms, as in much of Asia (Mellor, 1976). Attention should then be paid towards increasing local productivity. In that light, it is argued that effective communication of agricultural innovations is the foundation of productivity.

Even if there is general agreement on the importance of agriculture in economic growth in the early stages of development, it is sometimes argued that rapid agricultural growth will be difficult in Africa because of an inherently unfavourable agro-ecological base, degraded soils, low population density, poorly functioning markets, and competition from the rest of the world (Maxwell *et al.*, 2001). Critiquing the diffusion perspective and modernisation, critical studies have questioned the purpose of the entire development enterprise (Escobar, 1995). This critique underlies recent calls to drop the notion of “development” in favour of “social change” and “social justice”. The view that “development” is seen as undeniably tainted by the demeaning ideology of modernisation and is beyond restoration (Waisbord, 2008: 506) is rather extreme because development can be restored if carefully contextualised. Waisbord argues that the conceptual premise is that to assess the impact of academic research in development, it is necessary to situate communication as a field of practice in the institutional settings of programmes and agencies (Waisbord, 2008: 506). Understanding institutional dynamics and mandates inside development organisations is required, which apparently, has not drawn much interest from communication literature, a remarkable gap considering the perennial interest among scholars to bridge theory and practice (Waisbord, 2008: 507).

Waisbord (2008: 13) regrets that as long as development goals are defined in terms of specific indicators in technical areas, communication is expected to support, rather than to lead,

programmes thus being given a subsidiary role. For example, agricultural specialists may request communication to promote the use of new seeds and fertilizers (Waisbord, 2008: 513). In this way, communication is expected to meet programmatic goals and utilise approaches that fit existing conceptions among technical staff. Whether communication interventions actually promote participation is less important than their contributions to technical goals (Waisbord, 2008: 514).

Waisbord's argument suggests the importance of situating the notion of communication as a basis for agricultural growth since communication processes determine the success or failure of development endeavours. Therefore, the following section traces the origin and evolution of the concept of development communication in order to establish the failures in early theories so as to appreciate the present theories, identify gaps and map a way forward in the context of smallholder farming development. Suffice it to say, communication and development are viewed as closely interwoven phenomena, where one guarantees the other (Sosale, 2008: 85) hence the coining of the term development communication.

2.4 Origin and evolution of the development communication concept

Development communication is a term derived from theories of development and social change that identified the main problems of the post-war world in terms of a lack of development or progress equivalent to western countries (Waisbord 2001: 1; Yao, 2012: 10). It is documented that among the earliest pioneers in the field of development communication was a United Nations (UN) unit called the Development Support Communication Service which operated under the auspices of the United Nations Development Programme (UNDP) (Colle, 2002: 5). According to Technische (2006: 12), development communication as a field "was set up in the early 1960s and first applied to nation building, rural development, agricultural extension, health and sanitation, as well as family planning".

Development communication (Wilkins, 2008), is also known as communication for development (Servaes, 2007, 2002, 1999), or communication for social change (Dragon and Tufte, 2006; Wilkins and Enghel, 2012: 9). These terms shall be used interchangeably in the current study. Development communication is primarily associated with rural problems but is also concerned with urban problems (Kumar, 2011: 1). Three main ideas which are said to define the philosophy

of development communication and make it different from general communication are that development communication is purposive communication, value laden and pragmatic (Kumar, 2011: 2).

One important observation by Manyozo (2006: 80) regarding the origin is that even though Quebral has been acknowledged by the Clearing House on Development Communication as the originator of the term development communication and for having defined it for the first time, in death, Everett Rogers (1962, 1983, 1995) was termed the “father of development communication” or the “pioneer in the field of communication for development”. There are two paradigms of development communication as in development, equally called the dominant paradigm and the alternative paradigm (Salawu, 2004: 59).

Melkote (1991) identifies three communication approaches of the dominant paradigm which are: Communication effects approach, Diffusion of innovations approach, and Mass media and modernisation approach. However, the dominant paradigm was widely criticised for being one way, without giving a voice to the voiceless, a gap which saw the birth of the alternative paradigm of development communication. The new paradigm stresses access to the communication media, participation in communication activities and content relevance to the socio-cultural context embedded in the use of traditional media and knowledge systems to mobilise the local masses for desirable change (Salawu, 2004: 60-61). One main communication approach arising from the alternative paradigm is the participatory approach which has evolved from the diffusion of innovations and therefore addresses the gaps in the former, thus making these two theories apt in guiding this study.

In the beginning, it is documented that development communication studies were dominated by modernisation theory which stipulates that the main causes of development problems are related to the culture of developing countries which needed to be addressed through economic assistance (Waisbord, 2001: 3). Some of the communication theories which were developed to deal with the problem of information included: The Shannon and Weaver model of sender-receiver originally developed in engineering studies that set out to explain the transmission of information among machines. It is said to have become influential in communication studies. The other was the propaganda model developed during World War Two according to which the mass media had

“magic bullet” or “hypodermic needle” effects in changing attitudes and behaviour (Waisbord 2001: 3). Waisbord (2001: 3) states that from a transmission view, communication was understood as a one way process where messages were sent through media channels to passive receivers. As a result, mass media such as newspapers, radio, cinemas, and television were very critical in promoting modernisation (Lerner, 1958; Schramm, 1964; Waisbord, 2001: 3). The transmission view has indisputably failed to influence behaviour change as discussed subsequently.

Broadly, Manyozo (2006) deliberates the evolution of development communication in plural and in six schools: Latin American (1940), Bretton Woods (1950), Los Baños (1950s), Anglophone Africa (1960), Indian School (1970) and the Participatory Development Communication School (1980), each of which evolved as a result of the limitations in the former. Notwithstanding, the latest school, “Participatory Development Communication School, despite its conceptual and practical impediments, is being embraced by both small, non-governmental organisations, and large institutions, though in problematic forms as documented”, (Huesca, 2002: 24-25).

Based on the various divergent schools, development communication has been conceived from various perspectives which are not mutually exclusive: The propounding father of development communication, Quebral (1972), conceives of development communication broadly as, strategies and principles of communication to bring about positive social change. Since then, several definitions of the concept have emerged. From an agricultural and rural development perspective, Castello and Braun (2006: 4) view communication as “a social process designed to bring together agricultural technicians and farmers in a two way process and people are both senders and receivers of information and communicators of knowledge.” Wilkins and Moody (2001 cited by Manyozo, 2006: 83), in almost similar terms define development communication as “a process of strategic intervention toward social change initiated by institutions and communities.” Explicit in all three definitions is the idea of social change. However, the concept of participation which is anticipated to influence change positively is rather implicit in the other two but Castello and Braun’s definition.

A recent definition according to an article on communication for development by the FAO explains the main goal of development communication in more elaborate terms thus:

A social process based on dialogue using a broad range of tools and methods. It highlights the importance of raising awareness, the cultural dimensions of development, local knowledge, experiential learning, information sharing and the active participation of rural people and other stakeholders in decision making (FAO, 2011: 3).

The latter definition by the FAO encompasses the aspects of methods and media diversity, cultural context, indigenous knowledge and largely active participation which constitute an integrated communication strategy in the best interest of the relevant stakeholders, factors which characterise both diffusion and participatory theories of communication and could therefore yield an effective communication strategy.

Communication for development then, is a broad ranging concept based on key principles:

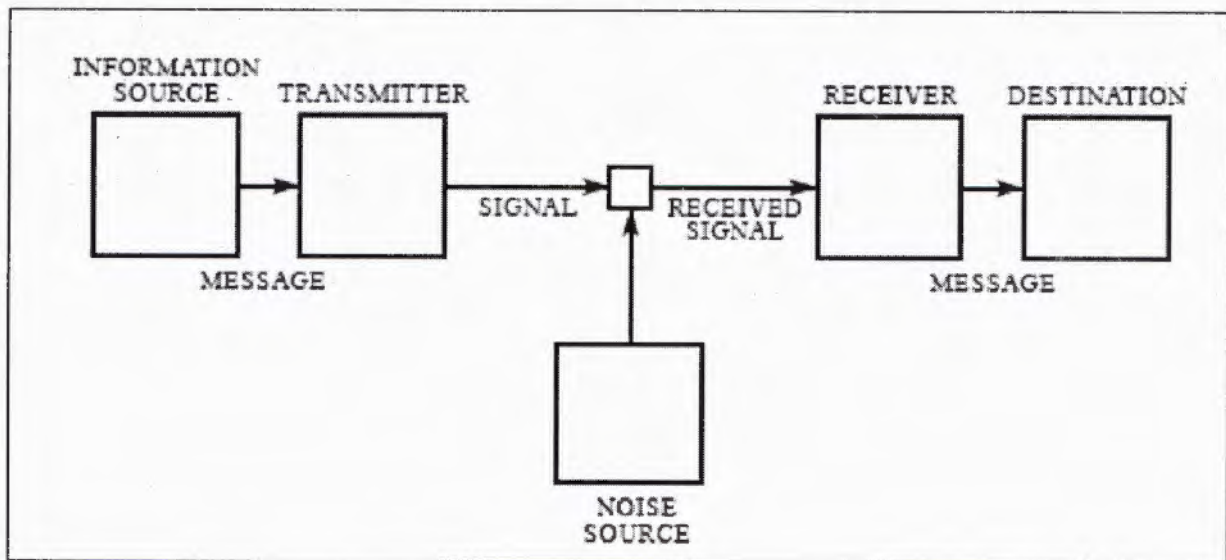
that it is participatory in all aspects of content production and dissemination; it is communication that originates from the subjects of the communication itself; and it is not at its inception mediated, translated or editorialised by external parties (such as the mass media or intermediaries), in the process of distribution it may be repackaged by these parties, but only as a redistribution service. It is bottom-up and inclusive (Davis, 2004: 6).

There are at least three categories of approaches which have dominated the field of communication and development over the last four decades which can be seen to be embedded in the six development schools mentioned earlier which are referred to as: liberal/capitalist models, Marxist/socialist models and monistic/participatory models (Mowlana and Wilson, 1988: 13). The first approach to communication and development is the liberal/capitalist models, based on the notion of “modernisation” in the West and within the capitalist economic system (Mowlana and Wilson, 1988: 13). This approach is based primarily on the socio-economic theories of Marx Weber which emphasise the role of the economic elite in development, while paying particular attention to the factors of information, knowledge and innovation. One of the characteristics of these types of models is that they emphasise on rational bureaucracy, formal institutions, and modern Western governmental systems. Mass media and mass communication are recognised as fundamental organising powers, and such models of communication and culture as the “Triple M. Theory” (mass media, mass culture, and mass society) and the technological determinist approach are the outcome of this process (Mowlana and Wilson, 1988: 13).

Cited as “the dominant model”, the liberal/capitalist approach to communication and development is best illustrated in the theoretical, conceptual, and methodological works of writers such as Daniel Lerner, David Riesman, Harold Lasswell, Paul Lazarsfeld, Karl W. Deutsch,

Lucian W. Pye, Ithiel de Sola Pool, Frederick W. Frey, Wilbur Schramm, David C. McClelland, Everett Hagen, Everett M. Rogers and a number of their colleagues and students whose research dominated the field for over two decades (Mowlana, 1988: 13). One model that clearly represents the flow of information under the dominant paradigm advocated by these liberal/capitalist approaches is Shannon and Weaver's transmission model illustrated below which indicates one way or transmission and passive receiver communication process.

Figure 2.1: Shannon and Weaver's 1949 model of communication



Adapted from Flensburg (2009)

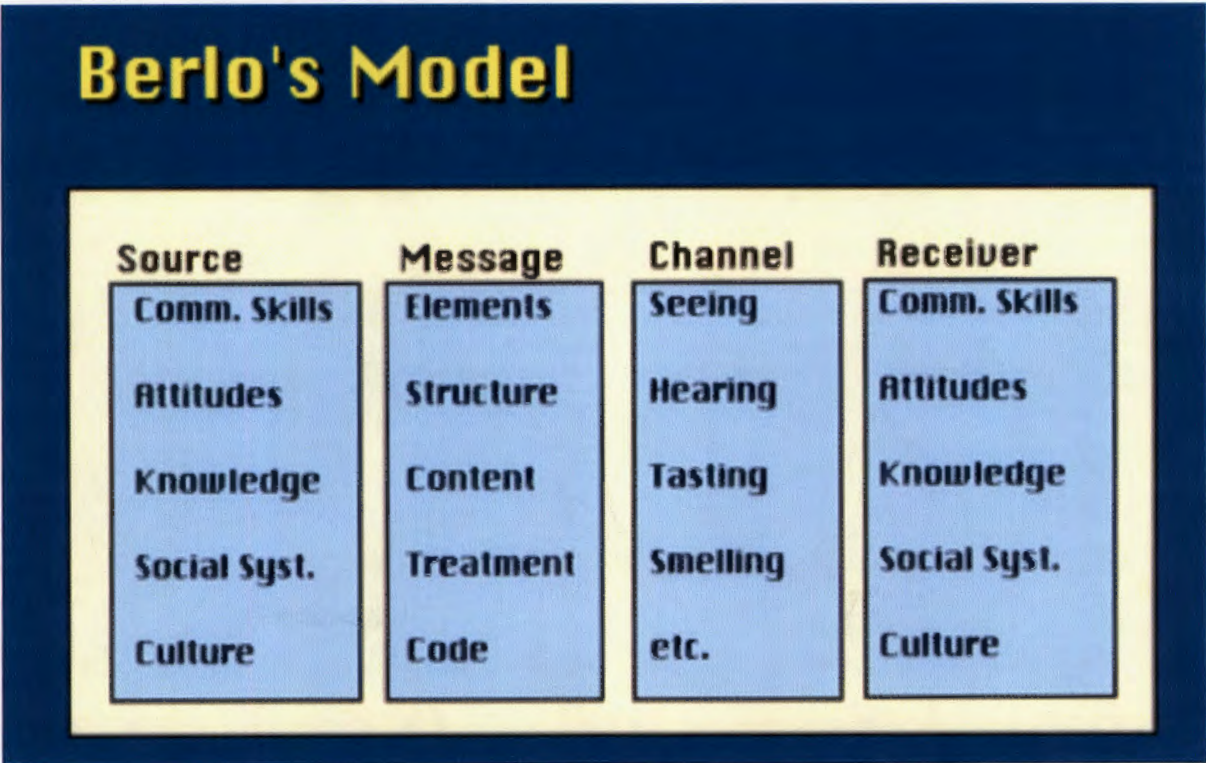
The Shannon-Weaver model of sender-receiver originally developed in engineering studies that set out to explain the transmission of information among machines. It became extremely influential in communication studies. Shannon and Weaver's model, along with other transmission models have been criticised for not taking the meaning, intention and context of the communication as well as the channel and the relations between sender and receiver into account (Flensburg, 2009: 41). For example, Fish (1980 cited by Flensburg, 2009: 41) criticises the models arguing that meaning is not natural, waiting to be transmitted to passive receivers but rather the reader's active construction of meaning is central to the communication process. This implies that agricultural information could only make sense based on the farmers' initiative and interpretation which then determines adoption or rejection of innovations.

A more elaborate model that is embedded in the Marxist/socialist model of communication for development is that of Berlo (1960). According to Flensburg, the emphasis is placed on meaning thus:

meanings are in people; communication consists of transmission of messages, not meanings; meanings are in the message users, not in the messages; only people mean, not words; people can have similar meanings only to the extent that they have had or can anticipate to have similar experiences; meanings change as experience changes; and that no two people can have exactly the same meaning for anything (Flensburg 2009: 41).

The emphasis in Berlo's model, according to Flensburg (2009: 41) is that meaning is based on mutual understanding among the communication participants concerned and that it is contextual and is therefore a negotiated transactional process. Berlo's 1960 model is illustrated below:

Figure 2.2: Berlo's 1960 model of communication



Adapted from Flensburg (2009)

Flensburg acknowledges Fish and Berlo's view that the receiver has a great role but he also thinks that the sender has the responsibility of finding a suitable form, structure and context in order to make the meaning of the message easy to understand (Flensburg, 2009: 42). Flensburg's

view suggests that the receiver has to be consulted right from the construction of the message, a gap which is noted in Berlo's model and generally in mass media and justify the evolution by theorists to emancipatory models which are said to be participatory in nature. In the same vein, Leeuwis acknowledges the gap in the subjective model, which is similar to Berlo's model embedded in the Marxist/Socialist models. Leeuwis (2004: 122) argues that despite communication workers' efforts to anticipate their clients' frame of reference and modes of thinking, the latter would, in some cases still refuse to accept the meanings proposed by change agents and would ignore their advice. Therefore, if the emancipatory model, which is discussed below, has to be adopted, then, farmers should also initiate messages for their development.

A third model, the monistic/emancipatory model, based on the notion of participation, has been emerging and is said to be a response to both the liberal/capitalist and the Marxist/socialist models of communication and development (Mowlana and Wilson, 1988: 14). This model is described as a revolutionary, a humanistic, and a spiritual movement which emphasises quality over quantity and calls for equality and balance in the international system. Although there are variations of this model which might be tailored to fit the specific cultural and social settings of different societies, all the writing in this area "promotes self-determination, and has its roots in more humane, ethical, traditionalist, anti-bloc, self-reliance theories of social development" Mowlana and Wilson (1988: 14).

In liberal/capitalist and, to a great extent, in Marxist/socialist conceptions, development manifests itself in the notion of the state, bureaucracy, rational behaviour, stages of growth, and strategies set up to enable the system to move toward economic development, political change and ecological and environmental control. On the contrary, development in the monistic/emancipatory form is the all-inclusive social unity. The emphasis here is placed on the "community rather than the nation state, on monistic universalism rather than nationalism, on spiritualism rather than secular humanism, on dialogue rather than monologue, and on emancipation rather than alienation", (Mowlana and Wilson, 1988: 14). Viewed this way, communication mobilises communities to participate in development activities and it enlarges peoples' choices and enhances accessibilities to information.

Castello and Braun (2006: 4) reiterate the above theorists' support for horizontal communication by giving a summative premise of development communication that "successful rural development calls for the conscious and active participation of the intended beneficiaries at every stage of the development process". Yet, Castello and Braun observe the communication gap in rural areas of developing countries which have also been cited by Sobowale (1988 cited by Imoh, 2013: 24) and Dogony and Mkandawire (2003: 33-34), characterised by:

a dearth of information (absence of providers and of local communication content); conflicting messages (difficult to know what is relevant/correct information); a fragmented market of information with many individual clients or client groups; relatively few clients scattered over a large area; structural transformations leading to constantly changing channels and content and a lack of the necessary communication skills; as well as a lack of well-developed ICT infrastructure and low levels of ICT skills (Castello and Braun, 2006: 4).

Development communication was introduced as an integral part of rural development in Africa in the 1950s and 1960s to promote and facilitate participation of the rural poor in the sharing of the benefits of development as well as the responsibility for development decision making (Imoh, 2013: 15). To mobilise for development among the vast illiterate masses of the rural areas in Africa, extensive change in knowledge, attitudes and behaviour are needed (Moemeka 2012: 134). Therefore, the shift from liberal/capitalist to emancipatory approaches of communication for development could be justified based on the observed failures of early theories. Since the majority of smallholder farmers in Zimbabwe are in the rural areas, they perfectly suit this proposition for their development. It was therefore relevant to discuss the issue of development communication in the rural context.

Evidently, the spread of literacy, communication technology and urbanization has not led to the liberation of the rural people in Africa (Balit, 1988). Balit argues that the level of literacy which is a proven indicator of development is still very low in Africa. The picture is described as pathetic in the rural communities where development extenders and facilitators such as schools, roads, electricity, essential services, radio receivers and other infrastructures do not exist to enable the innovation trickle down from the urban to the rural areas (Balit, 1988). This observation by Balit contradicts statistics by (Chisita, 2010; Musingafi and Chiwanza, 2012: 1) which indicate high literacy levels of 90 percent in Zimbabwe. Nonetheless, Balit's assertion that there are resource constraints is particularly true in the study context of the FTLRP in Zimbabwe

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where the process was such a rushed one to the extent that it was not possible to provide the necessary infrastructure and resources for stable agricultural productivity. Such constraints are compelling that effective communication strategies are required since literature is robust on the importance of communication for development.

Conversely, sometimes the involvement of the local people in the formulation and execution of development programmes has been seen as a threat to the beneficent role of government and their functionaries. Yet, a situation in which government agencies see themselves as dispensers of aid to the people creates conditions of dependency. This unequal, centralised, top down and authoritarian approach to development communication has not yielded the desired results in rural development (Bordenave, 1981; Imoh, 2013: 21) as it has adopted the early paradigm of development with all its communication gaps noted earlier. This has led to the mobilisation for participatory approaches to communication despite the fact that the latter is not a panacea for development.

Significantly, several factors, seen as an elaboration of Castello and Braun's (2006) observations of communication challenges, have been identified by Imoh (2008) as gaps in the communication strategies used for rural development in Africa. These include: technological challenges; lack of integration of rural development programmes; ineffective programme evaluation; inefficient communication channels; lack of interpersonal skills and expertise among personnel and disregarding of cultural orientations in communicating development knowledge (Imoh, 2008). In a nutshell, the failure of most development programmes targeting rural population in Africa can be linked to the flow of communication and the knowledge and communication gaps between the socially, economically and politically disadvantaged and the segments of the population with higher socio-economic and political status (Donohue 1972). However, some democratic approaches to development communication have been proposed, for example by FAO. Nonetheless Awa (1988 cited by Imoh, 2013: 28) points out a gap in practice that despite the democratisation of the communication process, it is evident in most development communities' projects that the planners rarely consult indigenous knowledge and women in rural development. The merging of modern and traditional systems to produce more appropriate approaches that suit the economic and technical capabilities of the people as well as their cultural values, could be a

desirable solution to this gap (Balit, 1988). Whether such integration occurs and its effects on smallholder farmers' development are yet to be explored since literature on that is scanty.

In recent years, although some development organisations such as the World Health Organization (WHO) have increased their allocations to communication activities, they have not changed the profile of the staff in charge (Gumucio-Dagron, 2008: 79). Gumucio-Dagron points out that only a few international development organisations have an understanding of the profile of communicators that are needed to deal with development issues. Notably, two United Nations agencies, Food and Agricultural Organisation (FAO) and United Nations Education Scientific and Cultural Organisation (UNESCO) have made important contributions in terms of training and setting up projects where participatory communication is the major driving force, for example: the video centres that FAO has supported for long periods in Peru, Mexico and Mali (Gumucio-Dagron, 2008: 80). In the light of such important observations by Gumucio-Dagron, the role of agricultural extension workers in smallholder farming was probed to determine whether their profile promotes effective communication. Suffice to say, communication service providers should demonstrate an understanding of and demand for needs between provider and client to survive in a competitive environment (Castello and Braun, 2006: 19).

2.5 Diffusion of innovations theory

The diffusion theory, developed in the United States by rural sociologist, Rogers (1983), is an important model describing a process of change: the diffusion of innovations into a community. It attempts to predict the adoption behaviour of individuals by looking at their personal characteristics, the time factor and the characteristics of the innovation itself. The model was considered the main theoretical model for agricultural extension and the development of agricultural advisory services for a long time (Albrecht 1980; Padel, 2001: 40). Therefore, it influences the success or failure of agricultural development programmes. The conventional wisdom is that constraints to the rapid adoption of innovations involve factors such as the lack of credit, limited access to information, aversion to risk, inadequate farm size, inadequate incentives associated with farm tenure arrangements, insufficient human capital, absence of equipment to curb labour shortages preventing timeliness of operations, chaotic supply of complementary inputs (such as seed, chemicals, and water), and inappropriate transportation infrastructure (Feder *et al.*, 1985: 255). Having these challenges in mind, communication should be harnessed as one

major tool for social engineering with the goal of improving access to agricultural knowledge and information.

2.5.1 Critique of diffusion of innovations theory

The diffusion of innovations theory has been criticised on many fronts but chiefly for overlooking the importance of interpersonal communication in the diffusion process (Inagaki, 2007: 6). However, later versions of the theory incorporated this criticism and elaborated the roles played by different types of communication channels. The mass media were found more effective in creating knowledge of innovations whereas interpersonal media are more effective in forming and changing attitudes towards new ideas, thus influencing the decision to adopt or reject a new idea (Rogers, 1983: 21). Notably, the communication channels and methods effective at the various stages in the diffusion process have been largely unexplored and yet that could help improve the adoption process. Based on the argument that the diffusion of innovations was widely criticised for its linear nature, farmers have not adopted technology and innovations that have been available due to, among other reasons, poor extension and policy making (Pembere, 1996). For example, research is designed and conducted under controlled conditions on research stations which more often are different from environmental situations surrounding the farmers. According to Franzel and Houten (1992), nothing can be gained by reorganising farmers' existing activities because they already manage their arable land efficiently. Instead, researchers should focus on introducing new technologies to farmers, taking cognisance of the conditions surrounding them which may hamper effective adoption.

It has also been noted that knowledge cannot be transferred and that learning is always an act of self-search and discovery - one may be stimulated and assisted but cannot be taught (Rogers, 1995). Cernea *et al.* (1983) argues that the work of agricultural extension workers is not on passing knowledge but helping farmers to discover and create their own knowledge. In many countries, research workers decide for themselves topics for their attention without regard of problems facing those farming the land (Cernea *et al.*, 1983). Furthermore, organisational forms are imported from other countries without being adapted to the cultural norms of the community to be served and without consideration of capital resources availability (Arnon, 1989). The conventional type of agricultural extension has been associated with the problem of poor management and communication among field staff and headquarters, lack of support and

supervision of field staff and absence of realistic detailed work plans (Adams, 2006). This leaves agricultural extension workers with problems of what to emphasise and what not to.

Literature reiterates that the problem of poor communication within systems is worsened by the downward decisions carried out by agents who do not have discretion to adjust the programmes to the specific socio-economic and ecological conditions in the areas under their jurisdiction (Armon, 1989). In Zimbabwe, these problems are worsened by the reduction of the number of formal training years for the agricultural extension workers from three years to one year, which is aimed at meeting the demand for extension resulting from the increased number of resettled farmers without considering the expertise required to deliver extension services. Extension-based on transfer of information tends to destroy the indigenous learning systems (Rogers, 1995). In that light, to facilitate the adoption, farmers need to be involved rather than being passive recipients of new technology.

It was the passing of the dominant paradigm of development that diffusion research came to be evaluated by its critics in the 1970s, and found lacking (Rogers, 1976). The publication of the famous text "Communication and Development: the Passing of the Dominant Paradigm" by Everett M. Rogers (1976), was regarded by many as signalling the collapse of the modernisation perspective and the beginning of a more participatory and complex paradigm (Barranquero, 2011: 166). In fact, the founding fathers of diffusionism and the modernising paradigm recognised, with the passing of time, that the influence of Beltrán and Bordenave had been determinant in the rejection of the vertical, ahistorical and ethnocentric character of the first frameworks (Berlo, 1980; Rogers, 1976). Furthermore, research of the diffusion approach, like the modernisation theory, suffers from an over-emphasis on quantitative criteria to the exclusion of social and cultural factors (Servaes, 2002: 6). As a result, the manner in which foreign media hardware and software interact within the cultural context is largely unexplored.

Bagozzi (2007: 245) warns that the study of technology adoption or rejection is reaching a stage of chaos, and knowledge is becoming increasingly fragmented with little coherent integration. As Rogers (2003: 116) cautioned, "diffusion scholars would do well to remember that individuals' own perceptions count in determining their innovation behaviour". Therefore, it is important to consider the respective stakeholders' perceptions in designing development programmes. Rogers

(2003) acknowledges that the adoption of new ideas, even when it shows clear advantages, is a difficult process. According to Rogers (2003), many innovations require a certain period of time before being adopted by wider users (Simin and Jankovich, 2014: 519), an observation which calls for more research on communication approaches most effective and influential in behaviour change. In this way, the diffusion theory can be seen to be the building block to the consequent participatory theory which seeks to address the gaps noted. The diffusion of innovations theory is detailed in chapter four.

2.6 Participatory theory

Chambers, one of the leading figures in the participatory tradition, has written that development agencies and professionals are becoming more participatory (Waisbord, 2008: 508). Participation in development is defined by (International Development Bank, 1996: 2 cited by Douthwaite, *et al.*, 2001) in broad terms as “the process through which people with a legitimate interest (stakeholders) influence and share control over development initiatives, and the decisions and resources which affect them” This definition complements Tufte and Mefalopulos (2009: 17) view that participatory communication is mainly concerned with empowerment of people, particularly, the vulnerable and marginalised. Barranquero, 2011: 156) echoes earlier research that Latin America is a pioneering continent in alternative and participatory communication experiences, which were often contrary to cultural expressions of the elite exercising power. All this is said to have advocated a research committed to the struggle for cultural independence and the search for alternative models to the dominant persuasive-informational one, in the hope of a more inclusive and democratic communication. Barranquero (2011: 156) notes that by the late 1980s, the notion of participatory development in which poor communities are directly engaged in defining their own problems and solutions, had gained considerable recognition within many development organisations, especially NGOs.

Participatory development has also been considered in the agriculture sector, steering the notion of participation in the communication of agricultural knowledge and information. Yoon (2003) states that participatory communication’s focus is on people, their liberation and self-reliance, the goal being to improve the quality of life, conserve and enhance the peoples’ values, beliefs and cultures, in order to ensure social justice, freedom and sustainable development. The participatory model, also known as the multiplicity model, stresses that development has to be situation

specific since every society is distinct in its historical, socio-cultural and economic conditions (Imoh 2013: 28). Therefore, a multiplicity of strategies will have to be used, based on each society's initial conditions (Imoh 2013: 28). The conditions of the FTLRP in Zimbabwe have been constraining to the extent that a lot of resources have to be pooled in order to boost adequate communication with the geographically scattered resettled farmers.

It is documented that Latin America is where the main distinction between information (strategic exchange of ideas and meanings with persuasive purposes at the service of a transmitter) and communication (horizontal dialogue between interlocutors, which contributes to reinforce consciousness and social transformation in the long run) was first posed (Barranquero, 2011: 156-157). Martin-Barbero (1981) and Beltrán (2000), having discovered the non-democratic implications of the Aristotelian uni-linear thinking which prevailed until the 1960s, proposed new perspectives and models to redefine communication aiming at a genuine democracy. However, despite being promoted by many post-modern theorists, participatory communication has not been without critique.

2.6.1 Critique of participatory theory

The concept of participation has been largely criticised. Deshler and Shock (cited by White, 1994: 16) conducted an early study on the participatory approach in development and concluded that it is difficult to measure, conceptualise or determine indicators of participation, as the conceptual framework for the approach was lacking. The concept has been criticised alike. For example, many authors on participatory communication offer the criticism that participation is difficult to define and implement, as there is no single generally accepted definition of "participation" (Mato, 1999: 58; Gumucio-Dagron, 2001: 8; Jacobson, 2003: 3; Snyder, 2002: 462-463; Waisbord, 2003: 21). This vagueness in terms of the implementation of participation is viewed as a negative aspect because development practitioners are not offered a procedure to implement a participatory programme.

According to Tufte and Mefalopulos (2009: 19), critiques of populist participatory approaches include difficulty in managing a decision-making process with large numbers of people involved; and addressing technical, theoretical, political and conceptual limitations in unfolding participatory methods. From a different perspective, Dipholo (2002: 66) argues that the term

participation is used as a propaganda tool by external funding agents to victimise national governments by making it a condition criterion for financial support, thereby encouraging agents of change to include superficial participation in their projects. As such, some critics argue that participation has consequently become meaningless in a system that continues to keep states, agencies, and experts in control of development programmes (Waisbord, 2008: 508). It is argued that even many supposedly pro-participation development agencies are exceedingly powerful and explicitly reluctant to release control, resulting in participation being a conflicting and, sometimes, violent process in which the less powerful must struggle for increased control over their lives (Mohan, 2001: 4). This practice hampers exploration and maximum participation as prescribed by normative principles (Leeuwis (2004: 254). Instead of empowerment, often, the result is fragmented communities (Yoon, 1996: 13). This is seen as a problem primarily faced for instance, when NGOs or other organisations leave communities in the middle of a project and withdraw without new structures having formed in the community.

Furthermore, critical scholars point out that participation is incompatible with informational techniques routinely used in development programmes and the overall goals of the development sphere, such as the promotion of global trade and the opening of economic and financial markets (Melkote and Steeves, 2001). Also noted is that within the current structure of the development aid system, it is rather difficult to have a high degree of participation where rigid management procedures and tight deadlines for planning and funding required for approving and implementing projects allows little flexibility needed for participatory processes (Tufte and Mefalopulos, 2009: 17). Also, difficulties are encountered in targeting the needy (Maposa *et al.*, 2013: 145). In more precise terms, Neef (2003: 489) summarises the critiques of participation pointing: (1) methodological limitations and lack of scientific rigour; (2) naivety about the complexity of communication processes, group dynamics and power relations; (3) reduction of participatory methods to the diagnostic stage; (4) myth of instant analysis of local knowledge; (5) “tyranny of technique” and instrumental character of participatory methods; (6) underestimation of the costs of participation; and (7) participation as a substitute for good governance. Explicit in these critiques is a lack of a blueprint for participation.

Literature has also documented challenges with the participatory approach in Zimbabwe, for example, Maposa *et al.* (2013: 144) say that in spite of its effectiveness, participatory approach is

rarely undertaken because it is a mammoth task due to challenges such as extension worker-farmer ratio among several other challenges, citing the example of Congela in Kwekwe where one officer is responsible for one hundred farmers. Challenges of lack of extension personnel expertise in the light of the newness of participatory approaches in Zimbabwe have also been cited (Hanyani-Mlambo, 2002: 6; Mandizadza, 2009: 84).

The critiques above could be surpassed in some ways. Concerning conceptual and definitional ambiguity, Habermas defends participatory approaches despite the critiques saying that owing to the postmodernist nature of the participatory process, it would be inappropriate to expect specific requirements regarding implementation of the participatory approach (Habermas, 1984). A lasting theoretical premise of participatory communication can be found in the theory of communicative action of Habermas (1984). In development communication theory, Jacobson (2003a: 89) uses Habermas' theory of communicative action to address the definitional problems regarding participatory communication. Within this theory, action towards reaching understanding is the ideal form of interaction in which "all participants harmonise their individual plans of action with one another and thus pursue their illocutionary aims without reservation" (Habermas, 1984: 294). Habermas's argument seems to be a counter-critique of participation's definitional ambiguity on the basis that what suffices is a harmonisation of the communication participants' plans rather than conceptualising the notion of participation (Habermas, 1984: 294). This view of grouping participants is supported by Tufte and Mefalopulos (2009: 19) who argue that tough community based solutions are often the answer to successful participatory approaches. Therefore, development and communication practitioners should be aware of the environment and treat the community as a sum of different groups rather than a homogeneous entity in order to achieve development goals.

One notable critique of Habermas's view above is that by Mitrovic (1999: 221) who argues that Habermas requires the abolishing of compulsion and universal ethics in communication but rather the development of adequate democratic procedures for communication (Mitrovic, 1999: 221). As such, it could be fruitful to adapt such perspectives from Huesca (2002: 25) and Dipholo (2002: 76) that contextualise the participatory communication process in problematic forms as documented based on the assumption that horizontal channels could better promote increased agricultural productivity than hierarchical ones. Importantly, research should consider both

qualitative and quantitative impact of participatory communication. On a positive note, Castello and Braun (2006: 43) have suggested ways of improving participation in communication, citing the following:

assessing and understanding different 'stakeholders' levels and modes of existing participation and interfaces, perception of participation and different communication modes; adaptation of suitable methods to local situations with emphasis on giving voice to vulnerable groups; raising awareness and lobbying for participatory approaches in institutions, organisations and ministries; convincing decision makers to introduce and support participatory approaches for communication by inclusion of such approaches in strategies, programmes and funding; and development of formal and informal institutional processes flexible enough to accommodate evolving changes in communication and participation needs, methods and partners (Castello and Braun, 2006: 43).

To sum up, Castello and Braun's suggestions above imply the need for stakeholder mobilisation to promote participation as much as possible. Leeuwis (2004: 256) further suggests the need to deal with the risks and problems arising from the participatory trajectories and to communicate honestly about and reflect critically on externally imposed boundaries and conditions, political realities and leadership needs. A point reckoned in the above suggestions for improved participation is that "a demand driven mechanism is needed for farmers to demand and receive the best quality of agricultural research and extension services they require" (Castello and Braun, 2006: 48). To achieve that, agricultural departments should lobby for private-public partnerships to boost agricultural support and the conduct of participatory research where the respective farmers identify their own problems and suggest solutions. Participation then must be conceived as a challenge that needs to be promoted in the face of competing processes (Dipholo, 2002: 76). Thus, exploring the dynamics of communicating with smallholder farmers might shed light about the communication media and methods extension personnel could use to communicate effectively with smallholder farmers in the Gweru district. The participatory theory is explicated in detail in chapter four.

2.7 An overview of smallholder agricultural challenges

Netting (1993 cited by Mudhara, 2010: 4-5) describes the key characteristics of smallholder farming saying that these are rural activities practising intense, permanent, diversified agriculture on relatively small farms in areas of dense population, with family members being the major corporate social unit for mobilising agricultural labour. Netting, contending with Cousins (2009) asserts that smallholder farmers produce both for consumption and for the market and undertake

small-house industry or other off-farm employment. Therefore, agricultural production is the backbone of smallholder livelihoods and should not be seen as a substitute of other activities that occur (Mudhara, 2010: 6). African smallholder farmers can be categorized on the basis of (i) the agro-ecological zones in which they operate; (ii) the type and composition of their farm portfolio and landholding; or (iii) on the basis of annual revenue they generate from farming activities (Salami et al., 2010). The current study focuses on smallholder farmers in one agro-ecological zone, the Midlands region of Zimbabwe, who occupy about 6 hectares of land each partitioned during the FTLRP (Directorate Co-operative and Enterprise Development (2012: 1).

Despite the important observation by Mudhara (2010) and other authors alike, that agriculture is the cornerstone of smallholder farmers, there is a lag in infrastructural development in Africa, when compared, for example, with Asia (Mudhara, 2010: 11-12). In South Africa, for example, the apartheid policies undermined the productive and innovative potential of the smallholder farmers (Mudhara, 2010: 13). Similarly, infrastructure development has been a major challenge of smallholder farmers in Zimbabwe since the FTLRP did not allow acquiring of resources to develop infrastructure. Mudhara (2010: 17) points out a new challenge, particularly for smallholder farmers, that emerging from climate change such as an increased year-to-year variability in rainfall, resulting in increases in both droughts and heavy precipitation events. The effect is described as lower agricultural production and consequently negative impact on income and food security, with households having to adapt to the changes, such as cropping and planting practices, grain storage and land management including erosion control and soil protection. Research, then, should focus on developing technologies that are appropriate for smallholder farmers and which address their multiple objectives (Mudhara, 2010: 17) and this can be made possible through effective communication.

According to Farm Africa (cited by Munyua and Jensen (2008: 708-709), national policies have not adequately addressed the needs of small-scale farmers. World Bank (2007 cited by Salami *et al.*, 2010: 12) accounts for the low productivity of the average farmer in sub-Saharan Africa, “producing only one ton of cereal per hectare – less than half of what an Indian farmer produces, less than a fourth of a Chinese farmer’s production, and less than a fifth of an American farmer’s production”. The African countries have particularly achieved their agricultural growth more through expansion of cultivated areas than through yield increases. This reflects limited

technology adoption and out-dated agricultural practices, in marked contrast with other parts of the world, where almost all agricultural growth is the result of yield increases (Salami *et al.*, 2010: 13). Zimbabwe is a typical example that considered such a resolution through its FTLRP which seemingly has not made a significant impact in curbing food insecurity in the country.

Elsewhere, in Asia, smallholder farmers have shown increased productivity despite land constraints. For example, India's smallholder farmers (those owning less than 2.0 ha of farmland) are said to comprise 80 percent of the country's farmers, but own only 33 percent of the total cultivated land. Nonetheless they produce 41 percent of the country's food-grains Salami *et al.* (2010: 13), which is significant. In both China and India, commercially oriented small farms were major beneficiaries of the public interventions, particularly land policies, grain marketing, support services, and agricultural research and development. These issues should be prioritised in the more fragile and diverse African agro-ecosystems as well (Hazell *et al.*, 2007; and Singh, *et al.*, 2006).

Importantly, smallholder farmers, (Ashley and Maxwell, 2001: 406-407), make efficient decisions such as intensive family labour use to avoid costs; maximum land usage; successful innovation; successful participation in marketing chains; less environmental damage than large farms; and spending more of incremental income on locally produced goods and services, thus maximising growth linkages. Based on the above narration of capabilities of smallholder farmers, their contribution to productivity and food security should not be underrated. Importantly, many African countries like Zimbabwe depend on agriculture. Yet, it is notable that agricultural extension systems in these countries are underfunded and have had mixed effects, with much of the extension information being found outdated, irrelevant and not applicable to small farmers' needs, leaving such farmers with very little information or resources to improve their productivity (Lucky and Achebe, 2013: 12).

Killick (2001: 175), in a review of evidence of the impact of globalisation on the rural poor, questions with concern the long-term ability of many poor smallholder farmers to respond adequately to population pressures, growing international competition and agricultural commercialisation. Similarly, Rosegrant *et al.* (2001b: 36) point out that smallholder agriculture in Mexico, Central America and Brazil forgoes the benefits of specialisation and scale economies.

The concern in the FTLRP context of the Gweru district should be that of regaining household and national food security prior to looking beyond the borders.

Smallholder productivity is limited by a variety of constraints. For example, Macnamara (2009: 1) and Salami *et al.* (2010: 1) contend that the following are prevalent: low productivity stemming from factors such as poor soils, unpredictable rainfall, lack of access to and imperfect markets, as well as lack of access to productive resources, financial services, or infrastructure. Salami *et al.* (2010: 1) cite other constraints such as the aspects of land tenure and volatile food and energy prices and recent global financial crisis. Macnamara (2010: 1) further cites lack of information about market prices, available crop varieties, production techniques, and methods of disease management - information that pertain specifically to local conditions. Macnamara further points out that smallholders lack timely information such as news reports; early warning communication about weather; pest outbreaks and other seasonal risks and services that could help address these. It is such observations of lack of information and timely information as cited by Macnamara that communication has to be prioritised in agricultural development. Even though information has become abundant as cited by other authors, it can be argued that farmers need relevant and timely information, a gap noted in the literature (Tecnische, 2006: 12).

Swanson (2008: 14) postulates that small-scale, subsistence farmers are the largest and yet the most difficult farm group for agricultural extension and advisory systems to access. He cites causes of smallholders' constraints, pointing out that these farmers tend to have the least education and lack the self-confidence to seek out new information, making communicating with them more problematic. Furthermore, Swanson notes that most of these subsistence farmers have smaller and more marginal land resources that are mostly located farther from villages, paved roads and even water resources. Therefore, their limited physical and economic resources influence them to be opposed to risk associated with trying new technologies or products, resulting in these farmers pursuing subsistence food production strategies for sufficient staple food crops (Swanson, 2008: 14).

Agricultural policy is another indicated factor affecting smallholder production and despite the number of sound agricultural policies adopted by most countries, implementation has been reported lagging (Salami *et al.*, 2010). For example, with regard to land tenure, access rights and

land management, Salami *et al.* (2010: 14) notes that in East Africa, uncertainties regarding land tenure and the inadequate access to land have been a critical challenge to smallholder farming. The constraints related to the tenure system, such as insecurity of land tenure, unequal access to land, lack of a mechanism to transfer rights and consolidate plots, have resulted in under-developed agriculture, high landlessness, food insecurity, and degraded natural resources (Salami *et al.*, 2010: 14). Such constraints have also been noted in Zimbabwe.

Salami *et al.* (2010: 15) further articulate the lack of financial and credit access in the four countries they studied in East Africa (Kenya, Ethiopia, Uganda and Tanzania), citing that the share of commercial banks' loans to agriculture has been very low compared to manufacturing. Access to input and output markets is also another cited challenge to smallholder farming in developing countries, particularly Africa. For example: according to Salami *et al.* (2010: 19), a 2005/2006 household survey conducted in Uganda revealed that 30 percent of communities did not have access to roads that were passable even in the dry season and two-thirds of communities lacked bus or taxi connections. In most East African countries, more than half the population lives five hours or more from a market centre (Salami *et al.*, 2010: 19), a factor which impacts negatively on marketing of agricultural products some of which are perishable.

Salami *et al.* (2010) further note that market constraints are that smallholder farmers trade in small quantities, often have variable and sub-standard quality products to sell, lack market information and have few links with buyers in the marketing chain. These limitations can offset the efficiency advantages of small farms as producers, a problem exacerbated by market liberalisation and globalisation. Favourable agricultural policies could help curb such restraints. In order that smallholder farmers address the various challenges mentioned earlier, there is need for an effective communication policy by all the relevant agricultural communication stakeholders as a way of promoting food security, considering that smallholder farmers occupy most arable land in developing countries (Manyeruke *et al.*, 2013: 278-279).

2.8 An overview of Food security

The concept of food security can be applied at various levels: for individuals, households, nations and ultimately at global level. Food availability at national level, for example, does not imply food security at individual level. For those living in or close to poverty, food insecurity can often

be seasonal (Ignowski, 2012: 1-7). Typically, in the period leading up to the harvest, some smallholder households run out of their basic food supplies and enter the food market, pushing up food prices and thus making access to sufficient food difficult for those living below the poverty line. Food insecurity can be a lasting, on-going condition, closely associated with the poverty of those affected. However, there can be more short-lived incidents of food insecurity in which much larger numbers of people become temporarily food insecure, in reaction to a setback in the food system (Ignowski, 2012: 1-7, Moseley and Logan, 2001: 224-227).

Eighty percent of the hungry live in developing countries, with 50 percent being smallholders (World Bank, 2007). Therefore, smallholders rather than large-scale commercial farmers are the backbone of global food security (Tshamtke *et al.*, 2012: 54). In the case of Southern Africa, for instance, the combination of harvest failures in 2001 and 2002 and the consequences of policies on storage, food trading and land redistribution, were challenges that plunged large numbers of people into food insecurity (Wiggins, 2004: 37-38).

However, Swanson (1998: 4) acknowledges that more countries and donors were refocusing their attention and resources on improving rural livelihoods to achieve food security and to improve the quality of life of rural families at the household level. Swanson (2008: 10-11) suggests that to achieve food security at the household level, it is essential to organise farmers into different groups of farmer-based organisations to help solve various problems, ranging from improving human nutrition to watershed management. Swanson elaborates that the world food system is becoming increasingly integrated, and world food prices now reflect the changing supply and demand for all types of food and agricultural products. As a result, the focus of extension and advisory systems is said to be shifting from national food security towards improving rural livelihoods and achieving household food security by strengthening farmers' ability to adapt more rapidly to changes in markets. Therefore, it is necessary to differentiate among these major clientele groups that can be served by a more pluralistic extension system (Swanson, 2008: 12-13).

Among the people who are most vulnerable to food insecurity are the nearly half a billion women and men who help produce the food we all depend on - waged agricultural workers (De Schutter, 2009: 9). The resource-constrained smallholder farmers and urban workers who depend on

buying agricultural produce also fall under the same category. One common observation is that generally, governments do little to uplift the livelihood of small-scale farmers through policies that increase their access to resources, such as land, continued education, proper infrastructure and financing (Aker, 2010: 8; Eicher, 2007: 11; Magnusson, 2013: 8). Such policies could promote sustainable agriculture. The FAO (cited by Lee, 2005: 1325) posits that sustainable agriculture has the following major attributes: it is resource conserving of land, water, plant, and genetic resources; environmentally non-degrading; technically appropriate; and economically and socially acceptable. These attributes are promoted through effective communication to equip smallholder farmers with conservation skills.

Numerous development practitioners posit that sustainable agriculture has been embraced by many nongovernmental organisations and civil society groups as a focus of general community development efforts and social activism directed toward the needs of rural communities and the rural poor (Lee, 2005: 1327). Situation analysis and problem identification; audience and knowledge, attitude and practices analyses; communication objectives; communication strategy development; participation of strategic groups; media selection and mix; message design; media pre-testing and production; media performances and field implementation as well as process documentation and monitoring and evaluation Technische (2006: 36-43), are the guiding principles of sustainable development. Therefore, for communication processes in development to be continuous and effective, it is imperative to conceptualise “sustainable communication for a sustainable development” (Gumucio-Dagron, 2006). Development communication thus is about discussions, involvement of the people and the sharing of knowledge and information. Therefore, Pretty (2002) suggests an integration of communication approaches to realise adoption of innovations for the promotion of increased food productivity and security.

The view that causes of food insecurity have information and communication challenges that should be addressed by use of development tools Bello and Aderbigbe (2014: 509) is apt. Yet, for most developing countries, one major challenge is that the private sector is now playing an increasingly important role through the sale of proprietary technologies (such as genetic, biological, chemical, mechanical, information) in rapidly growing markets (Bello and Aderbigbe, 2014: 509). In these cases, technical advice tends to be more-product driven (where the dealer can make the most money) rather than farmer-driven (giving good technical advice that will

maximise farm income). Swanson (2008: 20) suggests that for less developed countries, there is need for much closer public-private partnerships that will help increase agricultural productivity across the entire agricultural community. This can be made possible by developing favourable extension policies.

2.9 An overview of agriculture extension policy and implications for communication

The importance of extension policy was recognised by the FAO's Global Consultation on Agricultural Extension when it recommended that all national governments should develop and periodically review their agricultural extension policy (Swanson, 1990: 11). This policy should include the goals of agricultural extension, the responsible agencies and personnel, the clientele to be served, the broad programmatic areas to be addressed, and other relevant guidelines. The consultation further recommended that the FAO, in cooperation with the donor community, should engage in policy dialogue with national governments to stress the importance of agricultural extension in national agricultural development and the need to have an explicit and formally enacted agricultural extension policy (Swanson, 1990: 11).

Yet a major challenge noted by Contado (1998: 131) with the discharging of extension services is the diverging perceptions of extension that on the one hand, farmers view extension as a form of assistance to help them improve their knowledge and skills and consequently their productivity. On the other hand, politicians, planners, and policy makers in many developing countries view extension as a policy instrument to increase agricultural production, to achieve national food security and at the same time help alleviate poverty at the rural levels of society. From yet another perspective, some economists view extension as a policy instrument that will contribute to human capital development and economic growth. Contado (1998: 131) states that meanwhile, to the practitioner, agricultural extension enhances and accelerates the spread of useful know-how and technologies to rural people, with the expectation of increased and sustained productivity, increased income and well-being of farm people, and the promotion of national food security and economic growth.

Apparently, the above views are divergent in the sense that while policy makers and economists seem to focus mainly on national food security and economic productivity respectively, farmers and practitioners are more inclined to the well-being of the clientele, who are the farmers. These

divergent views pose challenges for extension as top-down communication continues to be perpetuated by national governments. In a bid to promote productivity, Contado (1998: 132) suggests that policy makers should address the following factors: the population factor in light of the view that world population growth is expected to increase 57 percent from 5.3 billion in 1990 to 8.3 billion by the year 2025 (UN-World Population Prospects). Contado (1998: 132) elaborates that since the bulk of these major population increases are occurring in developing countries, particularly in Africa and Asia, this implies an increase in the demand for food and more pressure on fragile and marginal lands, increased land fragmentation, and larger numbers of landless people in rural areas. These problems point to the need for more information, education and technical support to farm households, to increase productivity and at the same time preserving natural resources, a factor which is particularly urgent in the FTLRP context of a heterogeneous group of smallholder farmers in Zimbabwe.

The issue of natural resources and environmental conservation is a cause for concern and should be prioritised by extension policy makers. Contado (1998: 132) reiterates earlier research that population pressure and the demand for increasing food output are now commonly associated with the degradation, depletion, and pollution of soil, water, and other natural resources. Numerous actions are required for a society to conserve, protect, rehabilitate, and manage its land, water, and other natural resources. Therefore, extension has a central role to play in disseminating sustainable agricultural technology with a view to conserve natural resources and hence the need for an effective communication strategy.

According to Swanson (1990: 11), the Global Consultation on Agricultural Extension asserts that agricultural extension policy should be consistent with and supportive of national agricultural development policy and goals. The following are some of the most common policies:

Provisional Extension Policy: This is viewed as the most common form of extension policy in most developing countries. In the absence of more formalised extension policies, or at the time when the formally enacted policy has been suspended, a provisional or "ad hoc" policy comes into play. For example, Mozambique in the early 1980s did not have a national policy for agricultural extension. When the agricultural development policy shifted from a reliance on state farms to the involvement of small family farms, a provisional extension policy was formulated to provide farmers and the cooperative sector with improved training and technology. To develop

and test this provisional policy, a UNDP/FAO-supported project assisted the government in defining a national agricultural extension policy and developing a programme of implementation (Contado, 1998: 135-136).

Decrees and Proclamations: Decrees and proclamations are policies issued by the head of state or by the executive officer of government. Generally, this approach does not go through the process of consultation and debate involving various stakeholders and beneficiaries. An example of this form of policy was the Brazilian government decree abolishing the national agricultural extension authority and transferring some of its functions and staff to the national agricultural research authority. Also, it empowered the state-level rural extension authorities to continue their respective programmes (Contado, 1998: 135-136).

Notably, extension policies embodied by the country's highest law-making authority (such as, congress or parliament) are common in many developing countries. However, countries that have enacted extension policy through legislative action tend to have well-organised, financially stable extension systems that have sustained effectiveness and a cumulative impact (Contado, 1998: 36). For Example, the Department of Agricultural Technical and Extension Services (AGRITEX) in Zimbabwe which was established by law in 1981, although a relatively young institution, gradually built up its extension staff and its government funding (Contado, 1998: 136). Arguably, the dawn of the FTLRP could be responsible for the unstable agriculture extension policy in Zimbabwe. Such observations, which demonstrate the relationship between formal extension policy and successful extension systems, led the Global Consultation on Agricultural Extension to recommend that "where possible, agricultural extension policy should be formally enacted through legislative action to provide a stable policy foundation, an explicit mandate, and clear direction for developing and executing programmes" (Swanson, 1990: 11).

Although extension is said to have a standard and universal meaning (Contado, 1998: 136), its mission and goals may need to be adjusted according to national objectives, the context and stage of agricultural and rural development in a given country. The mission should be reflected in a statement of goals and objectives that are agreed upon and assigned to extension in a supporting policy document which should be periodically reviewed by policy makers and representatives from stakeholder groups (Contado, 1998: 136). Policy is only effective if it is based on a widely

shared consensus. From this perspective, it is easy to see why many environmental policies which rely on coercion, control, and transfer have failed Roling and Pretty (1997), a fact which calls for rethinking of agricultural extension policy in Zimbabwe.

2.9.1 The role of agricultural extension in farming

The major role of extension workers is to communicate agricultural knowledge and information to farmers. Although the knowledge provided by extension workers may not totally be objective with respect to information on expected performance, they serve as one important source of information on how and when to use a new technology. It is therefore hypothesised that farmers who acquire more information, relevant to making innovative decisions, are more likely to be innovators than those who acquire less information (Abdulai and Huffman, 2005: 652).

Following the participatory approach, Tire (2006: 14), the agent is no longer seen as the expert with all the useful information and technical solutions but rather the clients' own knowledge and initiative is recognised as a major resource. Therefore, according to Tire (2006: 14), an important consideration by agricultural extension is to find out the needs of the target audience and adapt these to suit local conditions as well as incorporating local knowledge. Tire reiterates previous studies which show that clientele preferences are a reality and that these vary according to the kind of audiences being served. The challenge is finding the most appropriate strategy that will make a positive impact on the lives of the target group (Tire, 2006: 18). Therefore, finding out farmers' communication needs could help extension workers group them and design tailor-made communication strategies.

Albrecht *et al.* (1989 cited by Fischer, 2004: 5-6) were among the first to give a comprehensive definition of extension work saying: "It is the process whereby the extension worker tries to motivate his extension partner and to give him the capability with the help of encouragement and ideas to act to solve his acute problems." The emphasis is that of a reciprocal relationship between the extension worker and the farmer as promoted by the participatory model. Bambridge (1993 cited by Aker, 2010: 6) views agricultural extension more elaborately as a field of professional education in pursuit of the following: educating people about new farming techniques in their own setting and guiding them on how to identify their own farming needs and problems; developing leadership and organisational skills among rural communities; assisting

farmers to acquire technical and managerial skills to address their needs and problems, and encourage them to act in an informed manner. Considering the broad spectrum of knowledge needed by farmers, the role of agricultural extension in communicating farmer information and knowledge should be promoted.

However some challenges have been noted with the delivery of effective extension services. One reiterated challenge with dissemination of technical knowledge, which is more complex than material technology, to large numbers of poorly educated farmers who operate in different agro-ecological zones, is extension personnel's lack of expertise. Swanson (1998: 215) comments that although in most cases, the private sector is best suited to produce and distribute material technology, private sector firms in developing countries have very limited technical capacity to train farmers in these product-related skills and knowledge. Therefore, the transfer of most knowledge-based technologies is, by intention or by avoidance, left to the national or provincial extension systems that may be challenged by lack of expertise. As documented in literature, this is typical of the Zimbabwean situation (Mandizadza, 2009: 84). This challenge points to the need to upgrade extension workers' skills and to revise extension policy in the best interest of the farmer to promote adoption of both material and technical knowledge.

Eicher (2007: 1-2) asserts the important role of agricultural extension in the design of information and knowledge systems for smallholders. This new development calls for research on private and new forms of private-public extension models. Aker (2010: 12) says that agricultural extension models can take several forms, and are typically supported by governmental and non-governmental organisations, citing Training and Visit (T&V), FFS and Fee for Service as the most common models while Eicher (2007: 5) cites the following models: the Commodity Extension and Research model, the NGO model and the Private Extension model. Binns *et al.*, (1997: 4-5) who supports the Participatory Rural Approach, made a selection of the most useful participatory rural approach techniques, including direct observation and "do it yourself", discussion with key informants, group discussions, case studies and stories, participatory mapping and modelling, transect walks, time-lines and trend and change analysis, as well as seasonal calendars. Determining what participatory methods are used as well as their effectiveness in the diffusion and adoption of innovations among smallholder farmers could help identify gaps in communication.

Evenson (2001) and Anderson and Feder (2007) provide a review of the impact of agricultural extension services, with mixed results according to the programme, context and the outcome variable (Aker, 2010: 7). For example, earlier studies on the impact of agricultural extension training and visit in India found that it had no significant impact on rice production but increased economic returns in wheat by 15 percent (Feder and Slade, 1986,-; Feder *et al.*, 2001). Yet similar studies of training and visit in Pakistan found only little impact on wheat (Bylerlee and Heisey, 1994). Based on the above-mentioned complexities surrounding agricultural extension, it should be contextualised as much as possible for the benefit of the farmer.

2.9.2 An overview of agricultural extension challenges

A worldwide review of public extension systems by Rivera *et al.* (2001) found that many agricultural extension systems were inadequate. Anderson and Feder (2007 cited by Aker, 2010: 8) identify several different reasons for this state of affairs. Some of these reasons are briefly explained as follows: There are high costs, limited geographic scale and poor sustainability in countries where the farm sector is comprised of small-scale farmers who require face-to-face interaction, but often live in geographically dispersed areas. Many developing countries have constraining policy environments which not only dictate the type of information provided, but also the relative importance of agriculture within the economy. If the terms of trade are tilted against agriculture, infrastructure is poor and there are inadequate input supplies, this reduces the value of the information provided via extension.

Another challenge noted is weak linkages between research centres, universities and agricultural extension systems in developing countries unlike extension services in the US and Europe that are often linked with the university system. Consequently, the incentives of these institutes in developing countries are often not aligned with agricultural priorities in the country. A study by (Fischer, 2004: 28) of description of the extension situation in Northern Thailand, showed the very complex character of this field which make it impossible to find quick and simple solutions for the problem of selecting appropriate methods and media for communication in extension and development work. Although a critical analysis and comparative evaluation of currently used methods and media was carried out in the study, still no consensus could be reached on the most suitable tool for Northern Thailand.

Furthermore, macroeconomic challenges are cited by Clark, (2002: 357), arguing that in poorer countries such as those in Sub-Saharan Africa, publicly financed extension systems have difficulty coping with the demands made on them. This is due to challenges ranging from shortages of adequately trained human resources to operational difficulties of organising and managing the complexities of new technological packages that reach a receptive audience of a reasonable proportion of the relevant farm population (Clark, 2002: 357). An examination by Clark (2002: 357) reveals that extension is generally reaching a small percentage of smallholder farmers because it is under-funded and this was found to be one of the challenges in the Zimbabwean situation of the heterogeneous and geographically spaced FTLRP smallholder population.

Quality performance is further exacerbated by low educational qualifications and lack of advancement possibilities (Swanson *et al.*, 1990: 55-64). An attempt to address the above challenge (Fischer, 2004: 29), is that development processes that takes place in the whole country basically affects all members of society, so the methods as well as the media used in extension work, training or public information, should also be adapted to the current situation as heterogeneous as this adaptation process could be. This response suggests that agricultural extension should consult with all the relevant stakeholders in order to find a middle ground as much as possible to communicate in the best interests of client, who is the farmer. Possibly, the view that extension programmes should be participatory from inception to evaluation could be seen as reasonable as this is likely to mobilise uptake of innovations although this has been criticised based on resource challenges. Having a clear understanding and knowledge of communication media and methods for agricultural development could help extension personnel in designing the most suitable strategies for the respective clients.

2.10 Communication media and methods for agricultural development

No one media can be regarded the best in communication. Therefore, Servaes (2008: 212) considers multimedia approaches the most effective, and that behavioural change is seldom the result of exposure to media alone. As such, audience research, which, among other considerations, establishes a knowledge base regarding the type of media rural people have access to, those they like and those they would love to own, determines to a large extent the proposed choice of media (Servaes, 2008: 212). Communication for development utilises all

available communication tools, including ICTs, traditional tools and the convergence of old and new technologies. In this way, it is innovative and revolutionary (Davies, 2006: 7). Communication for development agents choose their communication tools according to what is available to them within their context, and also what is accessible according to their capacity, confidence and utility (Coldevin, 2003: 9). The One-World workshop on communication for development based on the outcomes of a regional workshop in Africa during 1996, nominated the mass media, with FAO remaining firm in its conviction that “radio remains the most popular, accessible, and cost-effective means of communication for rural people which can overcome the barriers of distance, illiteracy and language diversity better than any other medium” (Coldevin, 2003: 13).

Gumucio-Dagron (2008: 73) supports the use of radio saying that it is generally the most successful communication tool in developing countries and usually the first to be experimented by communities that are seeking emancipation. He gives the following advantages of radio: cheap production of programmes, good for visually challenged people, cheap to access, does not need complete attention, and is portable. However, its constraints are acknowledged that there is a listening time constraint, that radio is less attractive than television and that it is non-interactive (Gumucio-Dagron, 2008: 73). The assertion that radio does not need complete attention can be viewed as a disadvantage since farmers may not take the messages seriously, resulting in poor adoption or rejection of innovations. Notwithstanding, community radio in India is said to be assisting in providing relevant information and knowledge to farmers by combining radio with mobile phones to send nuggets of information (audio) and SMSs to registered learners (Forum on Communication for Development and Community Media for Family Farming, 2014: 7). Some other good examples of community media mentioned are: Video Volunteers, Digital Green, Video SEWA, Dristi, all based in India and have demonstrated that community radio and community video can aid family farming in the region. In Nepal, radio talk show program “JTa ra Tapae ko Budi Ama” (meaning, junior technical assistant and old Grandmother) initiated by the department of agriculture is an interesting and enjoyable way to disseminate information related to agriculture and livestock to the farming community, explaining in layman's terms (Forum on Communication for Development and Community Media for Family Farming, 2014: 7). The use of such combined and localised media has to be researched in the study context.

Multimedia has been found effective based on well documented campaigns that have also been supported by FAO, such as for rat control in Bangladesh and Malaysia, for integrated weed management in Malaysia, and for pest surveillance in Thailand (Coldevin, 2003: 16). In each campaign, baseline surveys as well as focus group interviews for additional qualitative information were undertaken. Overall, the results of all campaigns were found impressive. For example, the rat control campaign in Bangladesh during 1983 raised the adoption of rat control practices among wheat farmers from 10 to 32 percent, resulting in an average harvest gain of 54 kg/hectare in treated fields. A follow-up campaign in 1984 with all types of farmers showed 47 percent practicing rat control before and 67 percent after the exercise, with average harvest gains of 44 kg/hectare (Coldevin, 2003: 16).

Theorists like Bello and Abe (2014: 510) and Coldevin (2003: 21) purport that ICTs have also made a strong case for using participatory methods to bring formed farmer groups' technology information needs to tele-centres. These theorists argue that relevant databases are available through the Internet that provide usable recommendations, and then packaging the results to respond to local demands and disseminating it through a variety of conventional media, and especially community radio, for maximum reach. According to Coldevin (2003: 21), FAO's initial experience with using the Internet for rural development started in Latin America in the early 1990s when farmer-operated information networks were established in Chile and Mexico. Coldevin explains that the networks provide data on crops, inputs, markets, weather forecasts, and credit facilities, among other essential topics. Internet is described as an efficient and cost-effective way for farmers to access local, regional, national and even global sources. For example: transmitting price and market information through computer-based networks has proven to be 40 percent more economical than using traditional extension methods (Coldevin, 2003: 21). Michiels and Van Crowder (2001) define ICTs as a range of electronic technologies which when converge in new configuration, are flexible, adaptable, enabling and capable of transforming organisations and redefining social relations. Therefore, ICTs are an expanding assembly of technologies that can be used to collect, store and share information between people using multiple devices and multiple media (Michiels and Van Crowder cited by Lucky and Achebe, 2013: 11). As such, ICTs should be considered where possible for heterogeneous farmer groups to accord them choice.

According to Gumucio-Dagron (2008: 78), the tele-centres in Gasaleka and Mamelodi in South Africa, the Nakaseke tele-centre in Uganda, the “InfoDes” project in Peru, the experience of “El Limón” in Dominican Republic, are a few growing community-based experiences that are using new technologies of information and communication. This finding indicates that although ICTs can be effective in communicating agricultural knowledge, most developing countries are still lagging in their use of ICTs and Zimbabwe is no exception considering the economic constraints facing the country. Nonetheless, Rao (2007) asserts that the effective deployment of ICTs can lead to increased agricultural competitiveness through cuts in production and transaction costs, raising production efficiencies and farm incomes, conserving natural resources, and by providing more information, choice and value to stakeholders. Furthermore, (Rao, 2007) notes that ICTs can help to track and tag agricultural products with corresponding information on environmental conditions and impacts through the international value chain. Such tracking can be particularly useful in the new globalisation era to capture niche markets, and meet international export obligations. Positive results of ICTs in South America have been mentioned, for example, where farmers who use emails every day to submit reports on irrigation programmes have been successful (May *et al.*, 2007: 19).

Research indicates that typically, farmers rely on accumulated experience and the support of local organisations (such as: input suppliers, rural credit agencies, extension services, NGOs) for information related to both farm and non-farm decisions (Rao, 2007). Often, this system is inadequate and many decisions are made with limited information. The decisions are also subject to high transaction costs and time delays. The role of ICTs in such a scenario is to provide timely information, increase choice, reduce transaction costs, and contribute to improving the efficiency of decision making to raise rural incomes and improve the quality of life of the rural populations (Rao, 2007). For example, Gantt and Cantor (2010) cite that the work by Grameen Foundation in Uganda shows that use of mobile application has given farmers a broad range of information. The foundation works with a network of community knowledge workers who provide farming advice, market data, pests and diseases control training as well as weather forecasts.

While infrastructure investments are described as remaining problematic in developing countries, one of the dramatic changes over the course of the past decade has been an increase in mobile phone coverage and adoption in developing countries. While there were 16 million subscribers in

sub-Saharan Africa in 2000, the number grew to 376 million in 2008, representing one third of the population (Aker, 2010: 9). In particular, mobile phones have recently enjoyed increasing attention as a result of their availability, affordability, and adaptability, as platforms for a broad range of information and transaction services (Macnamara, 2009: 2). For example, Jenny Aker studied the impact of the mobile phone rollout on grain markets in Niger, and found that mobile phone service had reduced grain price dispersion across markets by a minimum of 6.4 percent and reduced intra-annual price variation by 10 percent, primarily by reducing search costs for traders (Macnamara, 2009: 2). In Zimbabwe, for example, Mushawevato (2013) notes that the number of Zimbabweans with access to a telephone has risen by 16 percent, according to the 2013 figures released by the Postal and Tele-communications Regulatory Authority of Zimbabwe (POTRAZ). The e-International Telecommunications Union ICT Development index (2010) report indicates a rapid increase in tele-density as reflected by high mobile penetration in rural areas. For example; in Zimbabwe, it stands at 90 percent (Chisita and Malapela, 2013/2014: 63). However, the use of telephones and mobile phones for agricultural information in Zimbabwe remains largely unexplored.

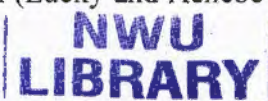
The use of ICTs is being embraced by African countries for agricultural communication. However, in a study in Uganda on mobile phone use, Martin and Abortt (2011: 19) argue that local social norms and values are likely to influence the productive use of mobile phones (compatibility). Studying the gender differences in mobile phone uses in rural Uganda reveal mixed results, for instance: Scott *et al.* (2008) found that many women were not using mobile phones because of the cost of making a phone call and their lack of knowledge of how to use the device. However, a 2010 study by Masuki *et al.* (2008) on the use of mobile phones to aid agricultural development in south-western Uganda revealed that, while women used the phone less than men, they were more likely to use the mobile phone to access agricultural information. Largely, adoption of communication technologies for agricultural information is a complex web of interrelated factors. Significantly, interpersonal technical channels are most frequently reported change agents, especially through extension agents who play a central role in diffusing new technology (Lucky and Achebe, 2013: 13). The findings by Lucky and Achebe (2013) reveal a gap in the use of ICTs for agricultural communication.

A more recent FAO development, as part of its World Agriculture Information Centre (WAICENT) initiatives, has been the Virtual Extension, Research and Communication network (VERCON), designed as an open network to improve communication between research and extension and, for those with access, farmers themselves. By linking a farmer network to a VERCON, farmers can have better access to technical expertise (Coldevin, 2003: 21). Furthermore, ICTs such as web-based email, websites and list-serves have the advantage of freedom of access; unlimited, multi-media capacity; two-way flow; virtual networking; speedy communication; low entry barrier; reach and flexibility; cross language; wide variety of content, and can be searched according to need (Gumucio-dagron, 2008: 73). However, problems of access and capacity, cost of being online, language difficulty, lack of content on some issues, and for some areas, relevance of content, as well as perceived threats have been cited (Gumucio-dagron, 2008: 73). These problems limit the use ICTs for agricultural knowledge, a situation found to be true among the resettled smallholder farmers in Zimbabwe.

Yet another significant communication media for development is what Coldevin (2003: 6) terms group media which facilitates group learning. Coldevin maintains that training for rural producers, involving extension or subject matter specialists as vital interpersonal links, has tended to rely on group media such as slides, film-strips, audio-cassettes, flip-charts, village theatre, and video. The most advantageous aspect of group media cited by Coldevin (2003: 6) is the possibility for immediate feedback from the audience and establishment of a two-way flow of information. There are many cases where FAO has produced film-strips and slides with audio commentaries for extension meetings, the presentations being reinforced by booklets which depict the visuals used in the script with accompanying dialogue and these can be stored for future use (Coldevin, 2003: 6). The pre-recorded audio-cassette is another low-cost medium, which FAO has reportedly promoted extensively. The cassette's chief advantage over radio Coldevin (2003: 6) is the control that a group facilitator has over information flow and the ability to pause, and repeat messages and allowing farmers to give feedback.

The use of group media is supported by authors like Lucky and Achebe (2013: 14) who contend that flip-charts have proved particularly useful as extension discussion tools. Lucky and Achebe acknowledge that although research at the field level is scarce, a 1998 FAO study in Namibia showed that the use of two flip-charts to explain the benefits of using certified millet seeds along

with recommended agricultural practices was positive. When compared to farmers who had not been exposed to the visual materials and extension agent explanations, farmers who were part of the extension communication programme increased their planting of certified seeds by 24 percent, and seeding in rows and use of fertilizers each by 23 percent. Lucky and Achebe (2013: 14) further support the success of film slide and mobile road side, citing the example of Nigeria which has used them in conjunction with films. Road show, for example, is used to go round the village and invite people to the venue of the film or slide. The Ministry of Agriculture and Natural Resources in the various states of Nigeria, with the cooperation of the respective Ministries of Information, have been going round villages to show some agricultural films to people, after which important agricultural information is transmitted to them (Lucky and Achebe (2013: 14).



Of all the group media, video has been viewed as the lead medium of choice for supporting participatory farmer training in a variety of FAO rural development projects (Coldevin, 2003: 6). Its many advantages, surpassing other media include: its production immediacy, with instant replay in the field to check on shooting details; its ability to add commentary in local languages; its ease of editing, and its convenience, as well as its flexibility using battery or generator operated playback equipment where electricity is lacking (Coldevin, 2003: 6). Coldevin cites the example of extensive long-term projects in Peru, Mexico, and Mali, where FAO is reported to have perfected a complete video learning package. Positively, more related with an institutional framework, several video projects with a participatory component have been reported successful in engaging a long-term process of education and communication (Gumucio-Dagron, 2008: 74). The use of such group media remains largely unexplored in the FTLRP context in Zimbabwe.

When choosing traditional, new or convergence tools, communicators are urged to consider their capacity, their access and their needs in terms of cost, language and what will result in the most credible communication for their chosen audiences, (Coldevin, 2003: 11). The farmers, according to Davis (2006: 22), need to know that they have a voice and means to communicate, and to this end, there is a need for awareness raising for communication for development, and an enabling political climate, one where there is media freedom and freedom of expression, the issue of media ownership being viewed as a challenge in this context. According to Swanson (1998: 214), most small-scale farmers in developing nations operate relatively complex farming systems in each

agro-ecological zone of the country so farmers in different agro-ecological zones need access to a wide variety of locally validated technologies if they are to increase their productivity. Considering that agricultural technology is a complex blend of materials, processes, and knowledge warranting different institutional arrangements to transfer different types of technology to users, there is need for more pooling of resources to achieve that. In Zimbabwe, this might not have been accomplished considering the complexity surrounding the FTLRP.

Nonetheless, challenges related to the use of various media and methods for agricultural communication have remained. While radios are used across all segments of the population (over 55 percent of sub-Saharan African households listen to the radio weekly), they generally provide a limited range of information (Aker, 2010: 10). Newspapers are primarily concentrated in urban areas and are expensive (the cost of private newspapers in Mozambique average US\$1), and are inaccessible to illiterate populations. Less than 19 percent of individuals in sub-Saharan Africa read a newspaper at least once per week, with a much smaller share in rural areas (Aker, 2010: 10). Access to other search mechanisms, such as fax machines, e-mail, and internet, is similarly low, primarily due to their dependence upon landline infrastructure. Worse still, personal travel to different villages and markets to obtain information requires transport costs, and time, especially in the context of unpaved roads and vast distances (Aker, 2010: 10) hence the need to determine the best media mix for the respective smallholder farmers. Since literature has indicated the complexity of factors influencing communication and adoption of innovations for development, it is worth reviewing some examples of empirical studies in order to capture these complex factors. A review of these empirical studies of the communication of agricultural information and technologies is also crucial to determine the gaps between theory and practice.

2.11 Empirical studies of agricultural communication

Literature has revealed that different factors influence communication and adoption of agricultural information and technologies by farmers. These factors include characteristics of innovations comprising relative advantage, complexity, compatibility, trialability and observability as proposed by Rogers (1983). Similarly, Odalele (2005: 250) encapsulates that social scientists investigating farmers' adoption behaviour have accumulated considerable evidence showing that demographic variables, technology characteristics, information sources, knowledge, awareness, attitude, and group influence affect adoption behaviour. However, these

variables are not mutually exclusive in their influence of diffusion and adoption of innovations and therefore shall be reviewed in their complex manner in the respective contexts of the empirical studies (Adesina and Baidu-Forson, 1995: 7; Hycenth-Tim, 2014: 54; Schipmann and Quain, 2010: 363). The most important stage in communicating agricultural information is that the innovations are adopted by the recipients (Colyvas and Jonsson 2011: 31). Suffice it to say, effective communication strategies at each stage of the knowledge dissemination process should be researched. An overview of some empirical studies is given to broaden the scope of findings on communication and adoption of agricultural knowledge and information and then subsequently, two particular cases studies are reviewed in more detail.

Douthwaite *et al.* (2001: 834) confirm that studies conducted have shown that the adoption rate and impact of some new technologies depend upon the motivation and success of the people who directly benefit from an innovation. Douthwaite *et al.* elaborate that when properly managed, the early release of a new technology could be a rapid way to generate improvements resulting from a synthesis of scientific and local knowledge, which could make widespread adoption and impact more likely. However, the stage at which key stakeholder participation can be effective depends upon the extent to which the technology is seen as an improvement of an existing technique (a micro-invention) or a new technique that challenges existing beliefs and cultural practices (a macro-invention) (Douthwaite *et al.*, 2001: 835). In the latter, key stakeholder participation is likely to be effective only when an effective model has been produced. Therefore, the relative advantage of an innovation plays a defining role in the rate of adoption and should be optimised prior to launch (Rogers, 1983).

In order to attest to the above observation on adoption, Rogers (1983: 153), indicates that a consistent finding from past researchers on the diffusion phase is that individuals' socio-economic status, a sub-dimension of relative advantage, is highly related to their degree of innovativeness. For example: a study by Rogers in 1981 on the diffusion of home computers among farmers in Shelby and Todd Counties in Kentucky indicated that all current adopters were very large and well educated farmers and this socio-economic relationship with the adoption of home computers was partly due to the relatively high cost of a home computer and that few software programmes appropriate for farm business were available (Rogers, 1983: 154). However, widespread adoption could be seen to be quite a challenge in an environment

characterised by critical shortages of resources as in the FTLRP of Zimbabwe. As such, effective communication could be one way of improving adoption.

Trialability and observability are other important factors that could influence adoption of innovations. One example is that of a study by (Leitgeb *et al.*, 2011: 359) in which one farmer, Casimiro, who lives in Sancti Spiritus Province and owns a 10 hectare farm where he cultivates a variety of different crops and keeps livestock, devised a way of reducing workload. To reduce the workload on the labour intensive crop cultivation, Casimiro began to build a new version of a plough for animal traction to improve the American iron plough and the wooden creole plough he was using. He adapted the tool to his farming conditions after three years of experimentation accompanied by continuous observation and intermediary evaluation of the plough's performance in the field. Finally, Casimiro developed an iron plough with 28 different usages for tillage and weed control that helps him to save labour and costs by increasing the operating speed (Leitgeb *et al.*, 2011: 359). Considering that some of the resettled farmers in the whole of Zimbabwe did not have prior agricultural knowledge, teaching farmers using demonstration and trial farms could achieve much positive gain in adoption of technologies. This implies improvement of extension services which apparently have proved to be lacking.

Howley *et al.* (2012: 172) conducted a study in relation to advanced breeding technologies such as AI, sexed semen and embryo transplants by Ugandan dairy farmers. An analysis of the use of AI revealed that the age of the farmer (demography), years of awareness of the AI technology (compatibility), total farm-milk production and sales (observability), extension visits per year, and quality of AI services provided to the farmers (communication channels) were positively associated with adoption and use of AI technology. Therefore, it was concluded that experience with AI is positively associated with the likelihood of a farmer using AI in a given year probably because once farmers have experience with AI, then the process becomes much easier in subsequent years thus making them more likely to continue with its use. Age was negatively associated with AI use in that relatively older farmers were found to be much less likely to use AI than younger age cohorts. It was hypothesised that younger farmers may be better educated and therefore more aware of the benefits of reproductive technologies and that older farmers may be more conservative, less flexible and more skeptical about the benefits of AI utilisation (Howley *et al.*, 2012: 174). On the contrary, a survey by Hahnke (2007: 56) of 80 randomly selected

households in two Black Thai villages in Northern Vietnam showed that farmers tend to be more innovative when they are older and have higher education. Generally, the interaction of factors in the adoption process has proved complex and subjective in other studies as well such as that of fish farming in Cameroon by (Hycenth Tim, 2014), and that by Adesina and Baidu-Forson (1995) on adoption of sorghum technology improvement in Burkina Faso and mangrove rice varieties in Guinea. Schipman and Quain (2010: 364) also found a complex interaction of factors in a study on adoption of sweet pepper in Thailand by between 1999 and 2007. The revealed complex interrelation of factors from the various empirical studies calls for extension workers and communication agents' expertise in order that they integrate all these to the farmers' benefit in their in their communication.

Concerning gender (compatibility), several factors have been found restricting rural women's ability to improve yield, profit, and efficiency in agriculture, including women's legal and cultural status, which affect the degree of control over property rights and inheritance laws, which govern access to and use of land and other natural resources, and gender-determined responsibilities such as feeding the family (Jiggins *et al.*, 1998: 94-95). This has been found likely true in Islamic areas where women are in partial or total seclusion (Jiggins *et al.*, 1998: 95). Nonetheless, extension services targeted specifically to and staffed by women field agents have been reported successful. Jiggins *et al.* (1998: 99) states that the Tamil Nadu Women in Agriculture (TANWA) project, India, for example: aims to provide small and marginal farm women with improved technical skills and technology through a training-cum-extension programme. Over a seven-year period, a core team of thirty qualified women agricultural officers has been recruited, and more than 14,000 women have received training, with significant improvements in food security, income, and productivity. Hiring of female extension workers has also been promoted in Tanzania though this preference has not been found universal since male extension agents may be able to provide equally effective services (Heyman and Kendrick 2011: 57-58). The male-female extension worker ratio should be balanced where possible in order to counter such compatibility challenges.

Paying particular attention to communication media, interpersonal channels have been hailed for their influence in behaviour change. An example is a study conducted by Pandey in India on communication behaviours of farmers in training and visit extension system which revealed that contact and non-contact farmers mainly depend on the personal "localite" sources: neighbours

and friends, family members and also on the village extension workers for their farm information inputs (Dubey and Srivastava, 2008: 111). Similarly, a survey conducted by Lokanathan and Kapugama (2012: 21) in Bangladesh revealed that when it came to communication with the information source, face-to-face communication trumped all other communication modes.

On the contrary, Hornik (1988: 7-8) promotes media integration, arguing that taking advantage of the special qualities of a variety of media through carefully designed software may supersede even high quality face-to-face instruction. An example of media integration is a case study of "Masagana 99", translating to "bountiful harvest" undertaken earlier during 1974 in Phillipines (Sison, 1985 cited by Coledvin, 2001: 53), with the project objective being to increase rice production. The channel mix included radio broadcasting, variety of print materials (bulletins, posters) and intensively trained farm technologists and it is documented that by 1977, national requirements of rice yields were more than met and the country began exporting its excess harvest.

However, the challenge noted with the use of a variety of media in most developing countries is not only a lack of adequately qualified agricultural extension personnel but also lack of equipment to meet the challenges of its operations (Soola, 1988: 86). Therefore, most governments turn to mass media to reach the thousands of farmers in a swoop even though research has shown that mass media are poor in influencing people for attitude change (Soola, 1988: 86). Nevertheless, success stories have been documented on the use of mass media for development communication in developing countries, for instance, using radio. An example is "Don Manuma", translating to "For Farmers" which is an encouraging innovative agricultural programme on the air of radio Kaduna in Nigeria (Ugboajah, 1986: 13) whereby a farming village "Alabarikawa" has been created using airtime drama. The programme has succeeded to be an effective way of teaching rural peasants the procedures and rules of mechanized farming, nutrition and how to cater for new crops. The combination of a variety of media, even though viewed as a challenge by Soola above, could be ideal in resource constrained environments such as Zimbabwe in order to widen the reach of agricultural communication.

Where extension approaches have been effectively implemented, they have proved to have a positive effect. For example, the FAO (cited by Coldevin, 2010: 20) conducted a controlled study

among rice farmers in West Sumatra, Indonesia, during the wet season of 1992-1993 (December to May). The study compared costs of rice farming inputs and outputs among ten farmers who had participated in Integrated Pest Management Farmer Field Schools (IPM-FFS) during the previous wet season with practices and outputs of ten farmers who had never participated in farmer field schools. The two groups of farmers were matched by location, farm size and land tenure. The only treatment variable was the IPM-FFS training. Observations and discussions with both sets of farmers were held on a weekly basis. IPM training had stressed: growing a healthy crop (improved seed varieties, balanced fertilization, proper plant spacing in straight rows), conservation of beneficial insects (low pesticide use), and weekly field observations to determine management actions. The foregoing training focus was determined to be the major difference between IPM and non-IPM farmers. The comparative results on a number of key variables were based on actual harvest.

Overall, the IPM farmers achieved 21 percent more rice harvest yield on a per hectare basis (6.9 tons versus 5.7 tons), for 97 percent of production costs, when compared to their non-IPM farmer counterparts. The significantly lower input costs for IPM farmers were largely attributed to minimal usage of commercial pesticides. Labour costs were also slightly lower for IPM farmers, possibly because of better management actions (FAO, 1993 cited by Coldevin, 2010: 20). The study findings suggest that FFS had a positive effect in influencing adoption. It can be concluded that if this innovation was to spread to more farmers, it would have been adopted for its relative advantage of cheap input costs and low labour costs.

2.11.1 A case study of India

The case study conducted by Rao (2008) indicates that the ITC e-Choupal is one of the earliest and the most successful private sector ICT-enabled initiatives in the year 2000 in India. This initiative was started in the state of Madhya Pradesh to overcome the inefficiencies in the soybean supply chain. The model is based on the traditional Choupal system where farmers gather in a group, mostly in the evening, to discuss village level issues. The company recognised the importance of this traditional social knowledge sharing platform while designing effective information technology based knowledge dissemination centres, named e-Choupals whose initiative aims to empower the Indian farmers through information and knowledge dissemination on improved agricultural practices and price discovery for effective decision-making. By

providing them with farming know-how services, timely and relevant weather information, transparent price discovery and access to wider markets, e-Choupals significantly contribute towards enhancing the economic capacity and capability of the farming communities.

The study findings, Rao (2008: 153), indicated that e-Choupal user farmers, in general, were likely to make better decisions on various agricultural practices as compared to non-user farmers. Users of e-Choupals were more educated, belonged to higher social category with higher income and had larger landholdings. These factors may also have a positive impact on the quality of decision making. Therefore, in order to test the effect of these differences, another set of analysis was done on various decision-making processes by comparing users and non-users having similar profiles.

The findings indicated that the quality of decision-making is not much different on most activities across users and non-users if they are either illiterate or less educated. When education levels of users and non-users were higher (graduate and above), the quality of decision-making was significantly different in seven activities out of thirteen included in the study. The seven activities on which these two groups of farmers significantly differed included production planning related activities (crop rotation and multi-cropping), cultivation practices (certified seeds and irrigation practices) and post-harvest and marketing related activities (record keeping, sorting and grading, and market analysis). A general observation was that, e-Choupal user group farmers make significantly better decisions as compared to their counterparts, on all activities except three (crop nutrition management, cost minimisation, and storage), when their level of education is higher (Rao, 2008: 153-154). These findings are said to be in line with some previous studies such as that by (Agwu, *et al.*, 2008) which have indicated that educated farmers are more likely to make better-informed decisions on agricultural practices and they are expected to adopt ICTs for their information requirement (Rao, 2008: 154). The above findings show that it is not just the services provided by ICT enabled initiatives which impact the quality of decision-making, but the socio-economic background of the users also matters.

Rao (2008: 154) concludes that in most developing countries, information on improved agricultural technologies and practices is primarily delivered by the publicly funded agricultural extension services. Rao elaborates that as effectiveness of agricultural extension services has been

questioned in most developing countries, including India, the introduction of ICTs has added a new dimension in delivering advanced and timely information to the farmers. The study by Rao (2008) examined the impact of ICTs enabled systems for information and service deliveries on quality of decision making by doing a comparative analysis of users and non-users of ITC e-Choupals. The findings, though based on only one transactional based private sector initiative, have strong implications for policy planning and implementations in the field of information delivery.

Based on the findings, three major recommendations were made. It was suggested that a model information delivery system needs to be designed keeping in view the demographic profile of the users. Second, along with making information and knowledge available to farming communities, some efforts need to be made to increase the levels of education of the user groups. Though governments throughout the world make efforts in this direction, the findings highlight the need for speedier implementation in the context of effectiveness of ICT enabled solutions. Third, the findings have implications not only for India but also for all developing countries with similar agrarian structures. Similar ICT based innovative models need to be expanded in these countries for timely information delivery to farming communities with proper structural arrangements and linkages at various levels of the agricultural supply chain (Rao, 2008: 154-155). Although ICTs could be very effective in delivering real-time information and could be viewed as ideal in such heterogeneous contexts as the FTRLP of Zimbabwe, two major constraints limit its use: lack of literacy in ICTs among both the farmers and extension workers as well as lack of ICT infrastructural development (Postnote, 2006). These challenges have to be tackled first.

2.11.2 A case study of Kenya

The study conducted by Spurk and Schanne (2013: 18) in Kenya on access to communication media by smallholder farmers revealed that radio was the favourite channel for farmers, 95% of respondents had radio access. Thus, radio is regarded as an important media channel for sharing information with small-scale farmers. Television had a share of 28%, and print was quite rare in rural areas. Only 14% of respondents had access to newspapers, and 5% to magazines. However, a significant two thirds of respondents had access to a mobile phone, which is almost the average of mobile phone penetration in rural Kenya, confirmed by other studies. On preferences, 83% preferred the radio as a media channel, but only 21% preferred the mobile phone as a media

channel. There was a clear pattern between education level and media preferences: The higher the education level, the more TV and newspapers were preferred and the less radio. But still, radio led by far also in the highest education sub-group with 76% (Spurk and Schanne, 2013: 18). The use of the mobile phone was correlated to education level in an expected way. Furthermore, the use of text messages and of applications was more frequent in the higher education level group (Spurk and Schanne, 2013: 21).

The general conclusions reached were that radio was by far the media channel mostly used by small-scale farming households in Kenya for receiving agricultural information. The mobile phone was much less used for receiving agricultural information although it is regarded by Western donors and modern NGOs as being the new media channel for farmers. On the contrary, any communication to farmers that wants to reach a large audience needs to be built around the radio, then, an appropriate media mix (newspapers, brochures, mobile services) can complement the information supply by radio (Spurk and Schanne 2013: 21). The study showed that the government extension is the most trusted source among information providers regarding agriculture though not meaning that farmers are content with those services. Mostly, Spurke and Schanne (2013: 21) report that the respondents criticised the reduction of public extension services and also complained that extension officers are difficult to approach. Nonetheless, the quality of the information provided by the government is unquestioned.

Based on their findings, Spurke and Schanne recommended radio to be given a central role in communicating with farmers, and that radio needs regularity and integration of extension service in a critical way. Information needs to be localised, specific, and at the same time useful and implementable. They also recommended that agricultural journalists that are knowledgeable of farming issues and of farmers' needs work in those radio stations so that they can enter into a useful dialogue with extension officers and researchers (Spurk and Schanne, 2013: 37). Elsewhere, mass media has proved successful in agricultural communication. Therefore, since government sources have been regarded as the most credible information sources, a consideration of close liaison of the two bodies (media and agricultural institutions) could improve communication, particularly in Zimbabwe to curb the media censorship indicated in literature (Chisita, 2010).

2.12 Comment on reviewed literature

The literature reviewed has revealed that generally, no theory is a panacea for development or for communication. The post-modern theory of development which emerged as a result of the birth of the alternative paradigm of development to address the gaps of former theories is itself criticised for perceived individualism and assumption that all Southern social movements are emancipating (Kiely, 1999; Parfitt, 2002; Pieterse, 2000). In that regard, Waisbord (2008: 506) suggests that an understanding of institutional dynamics and mandates inside development organisations is required. He elaborates that this has not drawn much interest among scholars to bridge theory and practice. Therefore, inquiring from extension workers the approaches used to disseminate agricultural information could help address such institutional dynamics. One major communication gap cited is that communication is given a subsidiary role instead of a leading role in development programmes (Waisbord, 2008: 513), so getting to the grassroots and finding out smallholder farmers' needs could assist extension workers and other relevant communication agents design effective communication strategies. ICTs, in particular, have been regarded as effective in disseminating diverse and timely information, Gumucio-Dagron (2008: 78), yet only a few developing countries are embracing ICTs for agricultural communication (Rao, 2008). Although the number of Zimbabweans with access to telephones and mobile phones has increased, Mushawevato (2013), use of phones for agricultural communication remains largely unexplored. The current study inquired ICT use for agricultural information and found similar results in the Gweru district.

Furthermore, literature has revealed that agricultural extension systems have outdated information which is irrelevant to smallholder farmers' needs exacerbated by lack of expertise among extension personnel in latest agricultural and communication technologies thereby incapacitating these farmers (Lucky, 2013: 12). There is need for favourable extension and communication policies that embrace smallholder farmers who occupy most arable land in developing countries (Manyeruke *et al.*, 2013: 278-279) and operate relatively complex farming systems (Swanson, 1998: 214). Furthermore, there are extension challenges such as high costs, limited geographic scale and poor sustainability of face to face interaction in geographically dispersed areas (Anderson and Feder, 2007 cited by Aker, 2010: 87). Inquiring how extension workers ensure and evaluate the success of their communication programmes could influence policy in a positive way.

An overview of empirical studies of agricultural communication has shown complex patterns of factors influencing adoption. In the case study of India, the adoption of e-choupals was positively related to the educational levels of adopters. The more educated the farmers are, the higher the likelihood of adopting e-choupals and hence making better and informed decisions regarding their agricultural activities (Rao, 2008). The case study of Kenya revealed that radio is the most widely used media for agricultural information and that the government extension is one most trusted extension source. However, it was suggested that regularity of agricultural programmes need to improve on radio and that the quality of extension needs to be improved (Spurke and Schanne, 2013). The major issues emerging from the overview of empirical studies and from both cases is the contextualisation and integration of communication approaches as well as expertise of communication agents for the benefit of the relevant farmers in their own unique situations as suggested by participatory theorists.

Apparently, all the empirical studies reviewed produced mixed and complex results regarding the communication and adoption of agricultural innovations. This indicates that there is no universal approach to communicating agricultural information and different variables influence the findings in contextual situations. Therefore, the view by theorists like Castello and Braun (2006) that communication should be tailor-made to suit the needs of particular farmers seems convincing, though in problematic ways as documented (Huesca, 2002: 24-25). This justified the current study which sought to determine the communication strategies that could be best suited to the Gweru district smallholder farmers in the context of the FTLRP. Considering the problem of continued food insecurity in the country and particularly in the Midlands region, this could bring out supplementary models and inform policy on agricultural communication amidst the constraining factors brought about by policy failures and exacerbated by the FTLRP.

2.13 Chapter Conclusion

In this chapter, the global overview of the concept of communication for development in the agricultural context has been presented. The concepts of communication, development and development communication have been discussed and situated in the agricultural discourse, underpinned by the diffusion of innovations and participatory theories. A global overview of smallholder agriculture has been captured, along with the challenges faced by smallholder farmers. Furthermore, an overview of the state of food security has been discussed, pointing out

food security challenges, particularly in developing countries. The role of extension work, particularly in smallholder farming as well as extension policy in agriculture has been reviewed in light of the impact on communication of agricultural knowledge and information. The communication media and methods proposed by theorists for development and the challenges faced with their use have been discussed. Empirical studies on communication of agricultural knowledge and information have been reviewed to determine the factors influencing adoption of agricultural innovations and communication technologies for agricultural information. In the following chapter, communication of agricultural knowledge and information in the context of the Zimbabwean FTLRP is reviewed.

CHAPTER 3: COMMUNICATION FOR DEVELOPMENT IN AGRICULTURE: THE ZIMBABWEAN CONTEXT

3.1 Introduction

Chapter two is a review of the concept of communication in general and the state of communication for development in the agricultural context globally. The concepts of development, communication and development communication have been reviewed and situated in the agricultural discourse, underpinned by the diffusion of innovations and participatory theories. A global overview of smallholder agriculture has been reviewed, highlighting the challenges faced by smallholder farmers. Furthermore, an overview of the state of food security, particularly in developing countries has been discussed, pointing out food security challenges. The role of extension work as well as extension policy in agriculture has been reviewed in light of the implications for communication of agricultural information. The communication media and methods proposed by development theorists for agricultural development and the challenges faced in their applicability and use have been discussed. Empirical studies of agricultural communication have been reviewed to determine the factors influencing adoption of agricultural innovations and the gaps between theory and practice.

This chapter presents a review of agricultural communication in Zimbabwe with particular reference to smallholder farming and the FTLRP, which is the context of the study. The communication and extension policy of the country is reviewed to determine whether it promotes effective dissemination of agricultural information or not. In the same vein, the food security situation of the country and the communication modes for agricultural communication among smallholder farmers are enquired to justify the need to pursue this research. Empirical studies of communication of agricultural information and technologies are also reviewed to determine gaps between theory and practice. This review is an endeavour to identify the challenges faced with agricultural communication in order to justify the need to research the dynamics of communicating with smallholder farmers in the Gweru district.

3.2 Land reform and redistribution in Zimbabwe: Rise of the FTLRP

Zimbabwe is a landlocked country with a population of about 14 million people on a total land area of 390,757km². Eighty-five percent of the country is agricultural land, and the balance is occupied by national parks, forests and urban settlements. The country has a dual agrarian structure comprising large-scale commercial farming and smallholder farming (which includes small-scale commercial farmers, communal area farmers and resettlement area farmers) (Government of Zimbabwe/United Nations Country Team, 2010: I & 22). The context of the current study is the smallholder farmers resettled under the FTLRP. Over one-third of the population lives in urban areas, while the rest resides in rural areas engaged in small-scale and commercial agricultural activities. Urban farming is also a significant economic activity in Zimbabwe. The country experiences a sub-tropical climate with a rainy season between November and March. Agriculture is the core contributor to the Zimbabwean economy and is critical for food self-sufficiency. The agricultural sector generates 18.5 percent of Gross Domestic Product (GDP) and, at best, 40 percent of total export earnings through the export of tobacco, cotton and horticultural produce, among others. This sector employs 66 percent of the country's labour force (the majority being women); and accounts for about 60 percent of all raw materials for industry. The main agricultural products are maize, cotton, tobacco, wheat, coffee, sugarcane, peanuts, millet, soybeans, sheep, pigs and goats (Moyo, 2000: 6; Mudzonga and Chigwada 2009: 6).

The Midlands region, from where the study population (Gweru District) is drawn, falls under the new Natural Region three (NR III) out of the five natural regions in the country (Mugandani *et al.*, 2012: 367). The Midlands region covers 62,829 km² comprising 16.1% of the whole country. In the previous classification, the area covered 72,975 km² and this equates to 18.7% of the whole country. In this new classification, NR III has been encroached upon by NR IV. Mugandani *et al.* (2012: 367) states that the area now occupied by the NR III has decreased by 3%. Farmers in this NR III mainly concentrate on maize, tobacco, cotton, wheat and cattle ranching. Other characteristics of the new NR III include mean maximum temperature range of 23-26 °C; mean minimum temperature range of 11- 15 °C and mean annual temperature range of 18- 22 °C (Mugandani *et al.*, 2012: 367). The encroaching of the agro-ecological region IV, which is drier, into NR III obviously impacts negatively on agricultural productivity and hence the current study's interest in that region.

The demand for land redistribution in terms of redressing historical inequities has been a consistent feature of Southern African politics and policymaking (Adams *et al.*, 1999; Moyo 2005b). Lahiff (2003) identifies three unifying themes of countries implementing land reform in Southern Africa. These include: a common history of settler colonialism which dispossessed native inhabitants of land, persistence of neoliberal economic policies, and continued impoverishment of the rural areas. Despite these commonalities, the approaches to land redistribution vary (Magnusson, 2013: 8). Moyo (2005b) identifies two main land reform experiences, namely the radical-cum-socialist redistributive land reforms, such as in Mozambique and Angola, and liberal approaches that were a result of negotiated settlements that left the land question relatively unsolved, as in Zimbabwe, Namibia and South Africa (Manjengwa, 2006: 1). A major justification of land redistribution in Zimbabwe was the need to reduce land pressure in crowded communal areas. There was a gross increase in smallholder land areas (of 21%) and the proportions of independent smallholder households resettled onto new landholdings increased, although this varied among the provinces (Moyo and Sukume, 2004).

According to Masiwa (2004: 4), the FTLRP emerged as a quest to redress the imbalances of land acquisition among the majority of the populace perpetuated during the colonial era in Zimbabwe. Masiwa elaborates that this happened following growing dissatisfaction with the delays in land reform by the rural population and rising disappointment over hardships caused by the 1995 Economic Structural Adjustment Programme (ESAP) among the urban dwellers. Masiwa (2004) states that government's response was to re-introduce land redistribution as a priority on the national agenda, thereby amending section 16 of the Lancaster House constitution which had governed the country for a decade since the country's independence in 1980 (Zimbabwe Amendment Act No. 11).

Masiwa (2004: 4) states that according to the amendment, all land, including under-utilised land, was subject to compulsory acquisition. In addition, all land for sale had to be offered to the government first, before being sold to a third party. Government would pay fair compensation within a reasonable time as opposed to prompt and adequate compensation as previously stipulated by the Lancaster House constitution. The amended constitution further indicated that no law shall be called into question by any court on the grounds that the compensation provided by that law is not fair. However, Masiwa (2004: 5) notes that despite these amendments,

progress remained slow in terms of resettling the needy people. Official reasons given by government for the slow progress in land reform were, lack of resources, limited capacity of implementing agencies, constitutional constraints (such as: willing buyer-willing seller basis) and the rise in land prices (Masiiwa, 2004: 5).

Despite the notable progress of the 1980s, Pazvakavambwa and Hungwe (2009: 146) emphasise that the need for further land redistribution remained evident and maintains that with 68 percent of the families yet to be resettled, the programme was far from complete. Meanwhile, the population density in the communal areas continued to increase, and it exacerbated inequalities in the economy. Pazvakavambwa and Hungwe (2009: 146) point out that from its promising start, the case for land redistribution to address the more than 1 million families who lived miserably on 16 million hectares of poor land in communal areas remained a source of social, economic, and political worry in 1990.

Pazvakavambwa and Hungwe (2009:146) further indicate that with the adoption of the 1992 national land policy, land redistribution effectively was to take place in the broader context of agrarian reform. The programme intended to address not only the issues of equitable land distribution and historical justice, but also matters of tenure security, agricultural investment, and sustainable land use. It targeted the establishment of small and efficient landholdings and the retention of a core large-scale commercial agricultural sector. By the early 1990s, the circumstances that had made possible the acquisition of land on a voluntary basis had faded away. The existing legislation on land acquisition came under tremendous challenge, and most of its weaknesses were exposed as farmers sought to exploit the loopholes in the law. Even those farmers who had willingly offered their land for resettlement reportedly approached the courts to seek a reversal of the process.

Moyo (1995) views the Lancaster House Constitution, which governed the country for the first ten years, as a challenge to land acquisition as it only allowed government to acquire land through the conservative means of willing seller-willing buyer. Moyo maintains that even after the expiry of the Lancaster House Constitution on 18 April 1990, the government failed to raise adequate funds to acquire farms for resettlement. Land prices shot up drastically from \$ZW15.67/ha in 1980/81 to about ZW\$92.24 in 1987/88 (Palmer, 1990 cited by Masiiwa, 2004: 5). The

consequent land-grab of 1994, conveniently called the Tenant- Farmer Scheme (Moyo, 1995), demonstrated that the government was not wholly committed to the resettlement programme (Masiwa, 2004: 6).

According to Masiwa (2004: 7), although government directed the programme, the implementation responsibilities were fragmented among government agencies with inadequate co-ordination. For example: land identification was ZANU (PF) driven; land acquisition was done by the Ministry of Lands and Agriculture (MLA); land use planning was done by the Department of Extension Services (AGRITEX); settler selection was done by the Ministry of Local Government and settler placement was done by the Ministry of Rural Resources. Masiwa (2004: 7) argues that this fragmentation created problems of synchronisation and co-ordination so a coherent vision of the programme that would move the resettled farmers out of subsistence into commercial activities failed to emerge as intended. The Land Tenure Commission (1994), among other findings, noted that the insecurity of tenure among the resettled farmers grossly affected their commitment and long-term investment.

In 1997, the British government stopped paying land compensation. Subsequently, the number of land offers dropped significantly (Pazvakavambwa and Hungwe, 2009: 148). Following these developments, Pazvakavambwa and Hungwe feel that the Zimbabwean government felt let down and betrayed by both the British government and local commercial farmers, leading to a political twist regarding the land redistribution programme. The situation worsened when Britain's new labour government announced that Britain had no historical obligation arising from colonialism to support land redistribution in Zimbabwe (Pazvakavambwa and Hungwe, 2009: 149). Consequently, the government's 1998 pronouncement that the war veterans or communities and their traditional leaders who had occupied white-owned land in the Svosve area would remain on the occupied land signalled a more radical approach to land redistribution (Pazvakavambwa and Hungwe, 2009: 149).

In June 1998, the government published the Land Reform and Resettlement Program (LRRP), which incorporated land redistribution into a broader agriculture-driven national strategy for economic growth and development (Pazvakavambwa and Hungwe, 2009: 149). The objectives of the LRRP were cast as aimed to: (1) restore balance in land ownership by removing the racial

inequalities created by colonialism and to empower indigenous people; (2) decongest overcrowded communal areas whose economic and environmental value was in continuous and rapid decline; (3) tackle rural poverty and improve food security at the national and household levels; (4) increase the contribution of the agricultural sector to the GDP; (5) promote environmentally sustainable use of land; (6) develop commercial agriculture within the indigenous community; and (7) create conditions for sustainable economic, political, and social stability. The Zimbabwean government had to craft an alternative strategy to proceed with its land redistribution imperatively (Pazvakavambwa and Hungwe, 2009: 150).

In 1999, the Constitutional Commission was formed to gather views on the draft constitution. One of the aims of the draft constitution was to make it easier for the government to acquire land for resettlement. The Land issue in the draft constitution was handled in Sections 56 and 57 (Masiwa, 2004: 13). In February 2000, a constitutional referendum was held and the draft constitution was ironically rejected by the national majority. Upset with the rejection, war veterans and landless villagers embarked on invading commercial farms, marking the beginning of a complex and contested crisis in Zimbabwe. The commercial farmers were alleged to have campaigned for a no vote against the draft constitution (Masiwa, 2004: 14).

Masiwa (2004: 14) views the inception phase of land redistribution as a substantive failure and that rising pressure from people for land led the government to legitimise the violent farm invasions through an accelerated resettlement programme named "Fast Track". On its part, the government sought to explain the issue at a mini-summit held in New York in early September 2000. The impression given by the government was that the fast track resettlement programme was an elaborate plan for land reform at an accelerated pace. However, Masiwa (2004: 14) argues that there was no elaborate explanation to the programme besides a page draft document entitled "Accelerated Land Reform and Resettlement Implementation Plan" which was distributed at the mini-summit. According to the small draft document, fast track resettlement programme is part of Land Reform and Resettlement Programme (LRRP-II, 1998 onwards), notably a compensation for the pace of the Inception Phase (Masiwa, 2004: 14).

Generally, the reform programme was slow, the land availed for redistribution was said to be of marginal agricultural value and mainly in arid or semi-arid natural regions with minimal

infrastructure. Much of the land was not suitable for intensive arable farming purposes (Mutepe and Cohen 2000 cited by Manjengwa *et al.*, 2006: 5-6). The second phase of the land reform programme began with a donor's conference in September 1998 that intended to enlist more international participation and support (Manjengwa *et al.*, 2006: 6). Out of the conference came a proposal for a donor-supported acquisition of about four million hectares of land. This was for resettlement from farms that had already been designated and gazetted for acquisition for the following two years. However, Manjengwa *et al.* (2006: 6) comments that the process was not successful as only 4 697 families had been resettled on 200 000 hectares of land by June 2000. Manjengwa *et al.* elucidates that the slowness of that cautious approach, compounded by increasing poverty, and the worsening political scenario precipitated the "Fast Track" phase of the land reform programme, the ultimate objective being to accelerate both land acquisition and land redistribution. The Fast Track, launched in July 2000, had been immediately preceded by "jambanja" (havoc), or spontaneous farm invasions (Manjengwa *et al.*, 2006: 6).

The Land Acquisition Act was amended in May and November 2000, to clarify and streamline various procedural aspects of the acquisition process and to prescribe new compensation rules in accordance with the Constitution (Rugube and Chambati, 2001). On November 1, 2000, the Land Acquisition Amendment Bill was passed amid prolonged debate in the Zimbabwean parliament. Masiwa (2004: 20) contends that the bill, which replaced temporary regulations, improved procedures for compulsory acquisition of agricultural land for resettlement. It revoked a section of the Land Acquisition Act that required the administrative court to determine applications for confirmation or authorisation for a compulsory acquisition within 30 days of receipt of the applications unless the court was satisfied that there were special reasons why a longer period should be allowed for determination (Masiwa, 2004: 20).

Despite such an elaborate institutional framework put in place by the government to implement the FTLRP, events unfolding on the ground were chaotic (Masiwa, 2004). They were characterised by nationwide farm invasions and occupations that were initiated by the war veterans. To a large extent, the farm occupations were legally supported by the government which had enacted the Rural Occupiers (Protection from Eviction) Act Chapter 20:10 of March 2001. The act prevents the eviction of people who have invaded a particular farm until the issue is determined in the administrative court. People who demonstrated such a purportedly noble cause

of landlessness through farm invasions and occupations were the first to be allocated land for resettlement (Masiwa, 2004). The narration above clearly indicates the chaotic nature of the FTLRP, a factor which calls into question whether the resettled farmers' communication needs for their productivity, among other factors, have been considered or not.

3.2.1 Impact of the FTLRP on agricultural productivity

During the fast track phase, the objectives and targets of the LRRP were further revised to: (1) acquire from the large-scale commercial sector more than 11 million hectares of land for redistribution; (2) decongest the overpopulated and overstocked wards and villages; (3) enable local indigenous people to take control of the large-scale commercial farming sector through the model A2 scheme; (4) reduce the intensity and extent of poverty among rural families and farm workers by providing them with adequate land for agricultural use; (5) increase the contribution of the agricultural sector to the GDP and to foreign currency earnings; (6) promote environmentally sustainable use of land through agriculture and eco-tourism; (7) develop and integrate small-scale farmers into the mainstream of commercial agriculture; and (8) to create conditions for sustainable economic, social, and political stability (Pazvakavambwa and Hungwe, 2009: 151). However, the fast track programme was implemented with limited resources. Whereas land redistribution in the previous phases was driven by technical assessments and administratively cumbersome procedures, the FTLRP was politically driven, generating tensions that posed a major challenge for government and for the technicians responsible for implementing the redistribution programme (Pazvakavambwa and Hungwe, 2009: 152).

The FTLRP had two models, namely the A1 and A2 models. The A1 model, which the current study focused on, was targeted at the rural landless whereby farmers would be resettled in villages or self-contained small farms of about 5 hectares, depending on the natural farming region (Masiwa, 2004: 15). The self-contained units of the A1 model provide consolidated farm units for individual families for a 99-year lease with an option to buy. The objectives and target groups of this land-use model are just similar to the village model. However, in this scheme, only basic services and infrastructure are provided. The livestock-based A1 model, meanwhile, was designed for the drier parts of the country where there is no irrigation. The objective in this variant is to provide commercial grazing with the long-term aim of increasing the communal

herd. The target group is people in the overcrowded communal areas adjacent to acquired farms in drier natural regions of the country (Masiwa, 2004: 15-16).

The UNDP team sent to determine the feasibility of a sound technical basis for furthering the land reform programme in 2000 noted with concern that the FTLRP was causing severe economic damage because it was done in an unplanned and violent manner (Cliffe *et al.*, 2011: 911; Masiwa, 2004: 22;). Masiwa laments that the programme led to massive unemployment and reduced agricultural production. A drop in production ranging from 20 percent for the traditional food crops to 70 percent for export crops such as tobacco is recorded (Pazvakavambwa and Hungwe, 2009: 159). However Cliffe *et al.* (2011: 926) warns against using output data as a basis for identifying outcomes of the FTLRP saying that such a formulation can easily descend into implying a causal relationship. Rather, Cliffe *et al.* argues that the very finding that the output record varies greatly between crops, regions and strata of beneficiaries in the same area suggests the need for exploring what intervening variables might have explanatory power.

When the accelerated land reform ended in 2003, 11 million hectares of commercial land had been transferred to 52,000 black commercial farmers and 300,000 peasant households (Sachikonye, 2003). The number of A1 beneficiaries in the Midlands region where the study population was drawn as at 2003 was 16, 167, and 229 A2 holders (The Herald, 2003/ 10/29 cited by Masiwa, 2004: 26). Ironically, these new farmers are said to have since failed to feed themselves, let alone the nation and that since 2000, the country has faced severe grain deficits, yet countrywide, allocated farmland lies idle (Thebe, 2010: 93).

On the contrary, Scoones *et al.* (2011: 12) argue that the data they acquired in their study of the FTLRP in Masvingo province show that there has been surprising resilience in production. These authors maintain that in the better rainfall years of 2005-06 and 2008-09, the proportion of households producing more than a tonne of maize – sufficient to feed an average family for a year was significant across all sites. For example, in 2009, two-thirds of such households in the A1 self-contained settlement sites sold over a tonne of maize (Scoones *et al.*, 2011: 12). However, Scoones *et al.* (2011: 9) acknowledge that the agricultural sector has certainly been transformed, and there are major problems in certain areas, yet it certainly has not collapsed. Therefore,

research has to continue in order to uncover these problems with goals such as that of regaining the country's position as the breadbasket of Southern Africa.

Pazvakavambwa and Hungwe (2009) point out such challenges as absence of donor funding during FTLRP which saw a critical shortage of resources exacerbating the decline in productivity. The government concentrated on providing mobility for demarcation teams and the initial resources required for planning. Unlike the previous phases in which lines of credit were established, the FTLRP phase relied, to a large extent, on new farmers funding themselves. On a positive note though, the government provided some incentives through subsidised inputs, including seed, fertilizer, and chemicals through programmes such as "Operation Maguta" and the GMB input scheme (Mudzonga and Chigwada, 2009: 6). Fuel for tillage also was provided, at a subsidised cost (Pazvakavambwa and Hungwe, 2009: 153-154). However, the distribution criteria has often been questioned (Langyintuo and Sitemela (2009: 378-383).

The major emphasis during the FTLRP phase was on allocating land to as many people as possible, regardless of the land's agricultural potential (Pazvakavambwa and Hungwe, 2009: 155). However, the FTLRP experience has shown that adequate funding must be provided for activities associated with land redistribution since the financial constraints associated with the programme made some critical activities unaffordable. Scoones *et al.* (2011: 11), for example, notes that extension workers are few and veterinary care almost non-existent. Instead, people have used their own knowledge, skills and connections in developing their agriculture, often relying on those with Master Farmer qualifications which they had gained in their former homes in the communal areas. As is the general observation, Scoones *et al.* (2011: 14-15) contends with Cliffe *et al.* (2011: 926) that if the new resettlements are to contribute to local livelihoods, national food security and broader economic development, they unquestionably require investment and support. This means infrastructure (dams, roads), financing (credit systems), input supply (fertilizer, seed), technology (intermediate and appropriate) and institutions and policies that allow agriculture to grow. Scoones *et al.* (2011) further assert that the highly varied nature of the land reform outcomes require carefully adjusted institutional and policy responses such as securing the land, fostering local economic development and giving farmers a voice.

The lessened impact of communication of innovations to the smallholder farmers could also be attributed to the political background of the FTLRP where according to Matondi and Dekker (2011: 6), the offer letter given to the A1 settler farmer explicitly states that the offer can be withdrawn at any time, with the government having no obligation to compensate for any improvements which the settler might have made. Recourse to the foregoing, this provision has made the A1 settlement very insecure from an investment angle by the new farmers Matondi and Dekker (2011: 6), a situation which obviously thwarts the farmers' adoption of agricultural technologies. For example, Matondi and Dekker (2011: 6) observe that the number of unproductive farms is large and some allocated farms have been abandoned. They further point out that although crop production was stimulated in A1 resettlement schemes, productivity is low due to poor agronomic practices and lack of inputs and that indicates among other factors, some communication gaps which the current study seeks to investigate from a communication perspective.

To revive the agriculture sector, Pazvakavambwa and Hungwe (2009: 159-163) suggest a number of improvements and the following have been found relevant to the current study:

1. Define an appropriate agricultural policy framework: The agriculture sector has changed significantly, so it is necessary to define and adopt a new agricultural policy framework. The technical assistance of international development partners should be sought to attract, retain, and support critical local staff to bridge Zimbabwe's human resource gap in agriculture. Literature has indicated a shortage of extension personnel Mandizadza (2009: 85); Maposa, *et al.* (2013: 144), so implementing this policy could help boost extension and hence adequate communication of agricultural knowledge and information;
2. Strengthen agricultural support services: Government deliberately should allocate more resources to the agricultural sector to strengthen its capacity to deliver services. In particular, there is need to strengthen agricultural extension services because most of the new farmers rely on the Agricultural Research and Extension Department for assistance. Literature has indicated that there is a lack of expertise among extension personnel in Zimbabwe (Mandizadza, 2009: 84), so allocating more resources could help upgrade personnel's and farmers' skills to keep abreast with the dynamic knowledge and information as well as communication technologies aimed at improving communication with farmers;

3. Provide financial resources for agriculture: Agriculture has been poorly funded since independence. Current efforts by the Agricultural Sector Productivity Enhancement Facility through the central bank are commendable, but new criteria for funding and new methods of defining collateral security must be developed. Institutions such as the Agricultural Development Bank of Zimbabwe should play a leading role in financing the agricultural sector. The Zimbabwe Infrastructure Development Bank, also, should play a significant role in restoring infrastructure in the agriculture sector. Proper infrastructure enhances effective communication with and agricultural practices among smallholder farmers most of whom are resource incapacitated and therefore need adequate skills to increase productivity (Pazvakavambwa and Hungwe, 2009: 159-163).

It can be argued that all the suggestions given by Pazvakavambwa and Hungwe (2009) above, which reiterate previous studies' arguments that aligning agricultural communication policy to the farmers' communication needs could go a long way in increasing productivity (Colle, 2002: 12), and empower the major stakeholders, who are the smallholder farmers.

3.3 Agriculture policy and food security in Zimbabwe

According to Government of Zimbabwe GoZ (2013), Zimbabwe does not have a functional long term agricultural policy as the one that was crafted in 1995 to cover the period up to 2020 was rendered non-operational by the changes brought about by the fast track land reform programme. However, there are key strategic policies that guide the sector. These include; policies reflected in the Zim Asset; the Zimbabwe Agriculture Investment Plan; the Land Reform Policy, and the Environmental Management Act to mention the fundamental ones. Zim Asset policy on agriculture is to ensure food and nutrition security at household and national levels, increased agriculture production, productivity and product quality (GoZ, 2013).

Agriculture is considered a key driver to economic development and growth. Zimbabwe's Medium-Term Plan (2011-2015) policy on agriculture is to ensure food and nutrition security at household and national levels; improve agricultural productivity; increase production for export; strengthen agricultural financing infrastructure and farmer support institutions; promote improved natural resources conservation in the production systems and strengthen research and extension service delivery (GoZ and FAO, 2012-2015: 5). Focusing on the Zimbabwe Agriculture

Investment Plan for example, its most crucial driving factor is improving agricultural research, technology dissemination and adoption (Goz, 2013) as this will align agricultural policy to the socio-political, economic and cultural status of the country.

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Yet the food security situation in Zimbabwe is dire and points to a larger economic decline, low agriculture productivity and deteriorating standards of living, corruption and policy inconsistencies (Zim VAC, 2014: 87). The availability of food is based on production, pricing, marketing, affordability and access. The existence of these interdependencies implies that any policy shift in one sector affects the other sectors. On a positive note though, statistics indicate a decrease in the proportion of households that are food insecure to 6% for the 2014/15 consumption year from 25% the previous consumption year (Zim VAC, 2014: 87). Nonetheless, a study conducted by Zim VAC (2014: 89) to determine household food security status in Zimbabwe in the consumption period 1 April 2014 to 31 March 2015 indicates that during the first quarter of the 2014/15 consumption year, 0.5% of the households already had insufficient incomes to access adequate food. The levels were expected to rise to about 1.6% in the second quarter with the third quarter having 3.4% of the households projected to be food insecure (ZimVAC, 2014: 89).

Musingafi and Chiwanza (2012: 1) and Chisita (2010) note that the agricultural sector has evolved through many changes over the past few decades, especially in the area of land reform. (Masendeke *et al.*, 2010: 2) echo challenges such as economic decline which, among other issues, has seen increasing national food insecurity. They elaborate that the Zimbabwe economy was affected by inflation, shrinking income levels, persistent shortages of foreign currency to buy inputs, and emigration of skilled labour to the private sector and neighbouring countries. In the agriculture sector, the combination of these factors has resulted in the deterioration of the national agricultural extension services, particularly to small-holder farmers as reviewed subsequently. Agriculture productivity could improve if a favourable agriculture policy is designed which would see communication gaps, particularly with smallholder farmers who occupy the most arable land, being addressed.

3.4 Traditional media of agricultural communication in Zimbabwe

In Zimbabwe, the agricultural information services are available mainly through mass media and extension services. Media communication can be accessed via both print and electronic media. Print media include the Herald, the Sunday Mail, the Zimbabwe Standard, the Independent, Kwayedza, among other media which provide articles on developments in agriculture (Chisita, 2010: 11). These media can also be accessed online. Electronic media include radio stations namely, Radio 2 and 4, and national television, which are said to provide agricultural programmes for farmers on a regular basis. The extension medium of communicating agricultural information is through AGRITEX programmes and services, for example: word of the mouth, use of printed material like brochures, pamphlets, flyers, posters, films, drama and song. AGRITEX also provides agricultural information through liaising with other information agencies like schools and colleges and community centres. It also collaborates with other resource endowed institutions to deposit its material in institutional repositories of universities and colleges like the University of Zimbabwe (Chisita, 2010: 11). The following are particular examples of media and methods for agricultural communication.

3.4.1 Print media

According to Mugwisi (2013: 52), print media provide news on current events or address specific topics in agriculture. Business columns may provide information on the marketing of commodities, price indices, and other such topics. The Herald, for example, provides a weekly report on agricultural news. The vernacular “Shona” edition of “Kwayedza” has a weekly column on “Nhau dzevarimi” (Farmers’ news) with the Ndebele version of “Izindaba zabalimi”. The print media in Zimbabwe have agricultural reporters who cover agricultural news. Farmer organisations, input supply companies, and other organisations disseminate information in the form of pamphlets, posters and magazines on various aspects of agriculture, including fertilizer and chemical handling, how to grow certain crops and post-harvest handling (Mugwisi, 2013: 52). Publications include, The Farmer and Kupfuwa huku (poultry keeping), among others. The Seed Company of Zimbabwe, SeedCo, produces agronomy reports and producer manuals which are used by extension workers and farmers. AGRITEX has a publication unit which produces in-house publications, including booklets and manuals, and these are used for training as well as for extension purposes. However, Mugwisi (2013: 52) points out that the challenge noted with print

sources of information is the language of publication, which is mostly English, although materials in Shona and Ndebele are also available. Minority languages like Shangaan, Tonga, Kalanga, Venda and Sotho are often left out (Mugwisi, 2013: 52). The linguistic challenge noted by Mugwisi (2013: 52) in the production of print media in Zimbabwe could be addressed by producing material in the various languages to cater for the heterogeneous groups. However, whether the resettled smallholder farmers have easy access to these print media forms or not has to be researched.

3.4.2 Broadcast media

According to Chisita (2010: 5), in Zimbabwe, radio is widely used as the main communication medium to communicate with a wider audience of listeners even though it is subject to restrictive regulation. Chisita articulates that this medium falls short as a channel for sharing knowledge on demand, because of the politicised and momentary nature of broadcasts. The country's major radio stations run agricultural programmes in the vernacular and these can be accessed by the marginalised people on short wave frequencies on a daily and often weekly basis. These programmes are broadcast in the country's main indigenous languages namely Shona and Ndebele. Nonetheless, the programmes are interactive in the sense that they afford listeners the opportunity to phone in and ask questions pertaining to agriculture, aquaculture and related information (Chisita, 2010: 5).

The following narration from Mugwisi (2013: 53) indicates that the main radio stations, Radio 2 and National FM and the main television station usually invite experts to share their knowledge and experiences with others through live broadcasts. These programmes equip listeners with such knowledge and skills as how to treat plant or animal diseases, planting techniques, agricultural marketing and business management. Agricultural programmes on both radio and television are interactive as they provide listeners with an opportunity to contribute to the programme through phone-in sessions (Chisita, 2010: 53). Zimbabwe has one public broadcaster with four radio channels and two television channels. Two radio channels, Radio Zimbabwe and National FM, include farming news programmes in local languages such as: "Nhau dzevarimi" – Farmers' news (Shona) "Izindaba zabalimi" – Farmers' news (Ndebele) "Kuchengetwa kwezvipfuyo" – Livestock management (Shona) "Ukugcinwa kwezifuyo" – Livestock management (Ndebele) "Tinokushevedzai varimi" – Calling on farmers (Shona) "Sibiza abalimi" – Calling on farmers

(Ndebele). Other minority languages, including Kalanga, Sotho, and Shangaan, also get airtime on the two radio channels (Mugwisi, 2013: 53). Guests are sometimes invited on radio programmes.

Television broadcasting is dominated by the Zimbabwe Broadcasting Channel (ZBC) TV channel, with the newly introduced Channel 2 focusing more on entertainment programmes. The most prominent farmer programme is “Talking Farming”, where guests are invited from AGRITEX, Department of Research and Specialist Services and other private organisations to address specific topics. Viewers get the opportunity to phone in and ask questions or participate in the discussions. The interactive nature of these programmes helps to attract a wider audience (Mugwisi, 2013: 53). However, farmer satisfaction with the duration and frequency of these programmes remains largely unexplored.

3.4.3 Freedom fone project

“Freedom Fone” (Dial up Radio) project was conceived and developed by Kubatana Trust of Zimbabwe in 2008 (Chisita, 2010). The project was funded jointly by Knight Foundation, Internews Europe and Hivos (an international development organisation with head offices in the Netherlands). According to USAID (2012: 1), “Freedom Fone” is an open source, interactive voice-based communications platform that enables users to engage with their audiences across literacy, language, and connectivity barriers. Interactive voice menus can be programmed to provide localised and multi-language agricultural information on demand. Callers can navigate via keypad or voice, and “Freedom Fone” also has a voicemail feature for providing quick audience feedback for future evaluation and/or playback. The software does not require the caller or user to have internet access. The project is benefiting a large number of farmers because it is cheap and flexible. USAID (2012a: 1) confirms that the project has been set nearly 100 times to date, with confirmed usage by 23 projects in 15 countries (Chisita, 2010). Such a communication medium which is relatively cheap suits the profile of resettled farmers who are resource constrained and should therefore be made available to them as much as possible.

3.4.4 Agro-meteorological services

The meteorological department is critical to agriculture because it generates relevant information pertaining to seasonal forecasts, weather updates, crop yields analyses, weather forecasts, timing of planting operations and other data. The meteorological service also publishes information on weather trends in both the print and electronic media as well as providing extension services to farmers to assist them in dealing with weather problems. (Chisita, 2010: 6) confirms that the department provides accurate and reliable weather information to farmers. The meteorological department has computerised its operations in an attempt to provide effective and timely information services and products to its clients in the farming section (Chisita, 2010: 6). However, whether or not such information and products reach the resettled farmers as intended has to be inquired.

3.5 ICT policy and agricultural communication in Zimbabwe

Literature has indicated the increasing role played by ICTs in agricultural communication (Bello and Abe, 2014: 510, Coldevin, 2003: 21). The ICT programme in Zimbabwe was introduced in 1997 by the Research Council of Zimbabwe and it is funded by the government. This programme commenced when the government realised the potential benefits of ICTs and it was initiated to facilitate access to information and to electronic communication facilities. The beneficiaries of this project are academic and research institutions, schools, NGOs, farmers and rural communities who cannot afford high connectivity rates that are provided by the commercial ICT service providers (Mago, 2013: 54). According to Chisita (2010: 4-5), the Zimbabwe Academic Research Network has helped to provide affordable internet access to small-scale farmers. Zimbabwe's high literacy rate of 92% (Chisita, 2010; Musingafi and Chiwanza, 2012: 1), makes it easier and faster for the farmers to use ICTs. However, from the current study findings, smallholder farmers' use of ICTs for agricultural communication has proved to be lacking.

Having realised the potentials that can be brought about by ICTs, the government of Zimbabwe formulated the National ICT Policy. This policy framework was put in place in order to provide guidance and direction to the formulation and implementation of ICT strategies and programmes in all sectors of the economy. The sectors include health, education, agriculture, tourism and environment, mining, manufacturing and transport among others (GoZ, 2005: 2).

The World Bank (2002: 1) defines ICTs as “hardware, software, networks, and media collection, storage, processing, transmission, and presentation of information (voice, data, text, images). These technologies include radios, computers, internet, geographical information services and cell-phones among other communication devices. Emphasis is on the collection of various media forms, storage and dissemination of information. This convergence of media, termed new media by other communication scholars (Thomas, 2001: 71), bring-together all stakeholders concerned in the sharing of information, a view which is in harmony with the participatory approach to communication.

Following a slight historical background of ICTs in Zimbabwe, the government adopted a sector reform policy that allowed access to inexpensive tele-communication and postal services. The policy put in place the need for improvements in service availability and quality and development of new services through de-monopolisation and privatisation (Goz and FAO, 2012-2015). The Postal and Telecommunication Act of 2000 highlighted the implementation of policy objectives. By that time, the government operated the Postal and Tele-communication sector (PTC) and decided to privatise the sector. As a result, PTC was divided into three commercial units, namely, the fixed telephone provider (Tel-one), the mobile cellular company (Net-one) and the public postal operator (Zim-post). After all these changes, the birth of Postal and Communications Regulatory Authority (POTRAZ) was officially registered. According to the report of ICT in Zimbabwe (Government of Zimbabwe, 2012: 2), the POTRAZ mandate was to ensure efficiency in the Posts and Tele-communication sector, its duty being licensing operators and ensuring that the services provided meet the acceptable standard.

Stienem *et al.* (2007) agree that ICTs can have a direct contribution on food security at both national and household levels. Further, the incorporation of ICTs in the development strategies for agricultural development has a potential to improve access to markets for agricultural produce, thereby increasing income. The absence of ICTs and market information has been identified as causing low productivity in agriculture in developing countries such as Zimbabwe (Mago, 2013: 3-4). As such, one observation noted by (Postnote, 2006), contradicting the statistics by Musingafi and Chiwanza (2012: 1) and Chisita (2010) that 92% of Zimbabweans are literate, is that lack of education can be a challenge with ICTs such as internet which can only be accessed using English. Postnote's view above can be said to be valid on the basis of the data

collected for the current study which generally gives the impression that the respondents are not familiar with the use of ICTs for agricultural communication, particularly the Internet, whether they are literate or otherwise. The latter argument above is validated by Mago's observation that in Zimbabwe, infrastructural development is still poor and the rural areas' roads are still very bad, communication facilities are inadequate and electricity is not always available. This infrastructural under-development hampers ICTs development and usage in rural areas. As a result, rural development is realised at a slower rate than expected (Mago, 2013: 6).

It can be said that ICT services in Zimbabwe have been interrupted by the political and economic turmoil facing the country. As recent as 2015, the ICT sector has continued to face a number of challenges in Zimbabwe. These include, inadequate communications infrastructure with broadband coverage in rural and remote areas remaining low; inadequate commercial electricity with a significant population relying on alternative power sources, particularly in rural areas; inadequate ICT skills; fragmented institutional arrangements; inadequate investment capital; low digital literacy levels; an outdated, service specific, licensing regime not aligned with technological developments; and limited local ICT innovation, research and development and entrepreneurship (GoZ, 2015: 13-15). However, since efforts are being made to promote the use of ICTs in the country, it is worth reviewing these efforts since the current study's anticipation is to widen communication media choices among smallholder farmers.

3.5.1 ICT driven projects to promote agriculture in Zimbabwe

Having realised that the country was driving towards an information society, the Zimbabwe Academic and Research Network (ZARNet) was initiated in 1997 by the Research Council of Zimbabwe to promote access to information and electronic communications facilities critical for the appropriate functioning of research and development (Chisita, 2010: 9). Importantly, technologies have helped in bridging the digital gap between technologically endowed and technologically starved people in Zimbabwe. These technologies are anchored on a combination of tele-communication services including tele-communication, internet, e-mail and also office equipment including computers, printers, CD-ROM and multimedia technology like radio and television which are strategically located to provide access to information through utilising ICTs (Chisita, 2010: 9).

3.5.1.1 Internet

Zimbabwe has a total of twelve internet service providers and these are dependent on “Com-One”, which is a government internet-service provider (Chisita, 2010: 5). The use of the internet has become widespread in Zimbabwe, with organisations increasing their visibility through the web (Mugwisi, 2013: 53). Agricultural information is available electronically and can be accessed where connections are available. Some of the organisations maintain websites from which information can be downloaded. This type of information includes profiles, activities, contacts, and manuals and reports, as in the case of SeedCo. The Ministry of Agriculture maintains a website from which information on its activities can be accessed (Mugwisi, 2013: 53). However, Chisita (2010: 5) states that currently “Com-One” has been inactive and has relied on an earth station of a private mobile phone company. The World Bank Report (2007) ranked Zimbabwe in the bottom ten because internet service is slow, rated at 4 bits per second per person compared to a sub-Saharan average of 36 bits. Yet Zimbabwe is said to have a high literacy rate above, 80-90%. This implies that if trained and infrastructure improves, smallholder farmers could also use ICTs for agricultural knowledge and information.

3.5.1.2 Podcasts

Podcasting allows audio content to be downloaded automatically to one’s computer and later transferred to an iPod or other portable MP3 playback device for listening at a convenient time and place. Podcasts are used in Zimbabwe mainly for the purpose of disseminating agricultural information amongst rural farmers. For example: podcasting is being implemented in Mbire rural district in Zimbabwe where rural agricultural activities are predominant (Chisita, 2010). During the rainy season, the area cannot be reached easily and infrastructure like electricity, mobile networks and telecommunications are not available. However, with the use of podcasts, agricultural activities increased (Mago, 2013: 58-59). Generally, information dissemination to the rural small-scale farmers is affected by events such as flooding, or poor communications infrastructure (Gudza, 2010: 1). Nonetheless, according to Gudza (2010), of Practical Action Southern Africa, in Zimbabwe, the podcast project in Mbire has had a positive impact and in quantitative terms, milk production increased from 0.5 litres to 2 litres per cow per day. Gudza further indicates that livestock birth rates have also increased by a remarkable figure of 18 percent. Use of such media as podcasts, video and audio by smallholder farmers should be explored to widen their information accessibility.

3.5.1.3 Tele-centres

Tele-centres have been established to offer services in the rural areas. The services offered include typing, fax, internet, printing and scanning. Centres with computers can be connected to online agricultural databases (Mangena 2011). The first tele-centre was established in 1999 and it was named “GUTU” World Link tele-centre project. Initially, this project was funded by the World Bank aimed at assisting the rural communities to improve their livelihoods (Mago, 2013: 60). Chisita (2010) highlights that there are eleven tele-centres in Zimbabwe and these are changing the lives of the people in rural areas. However, lack of continual financial support is making some tele-centres “white elephants” (Chisita, 2010).

3.5.1.4 Mobile phones

ICTs have also impacted positively on access to information relating to markets, weather, and other essential services because this information can easily be accessed through the use of mobile phones. Ilahiane (2007) notes that mobile phones have transformed the way in which farmers access, exchange and utilise information because they enable farmers to interact easily with markets and extract current and relevant information critical for decision making. In Zimbabwe, mobile phone services are provided for by Econet, Telecel and the government-owned Net-one. On the 28th of August, 2009, the country’s leading mobile operator, Econet, launched the “3G” technology that allows subscribers to access internet on their mobile phones, thus enabling farmers to engage in e-business and e-agriculture (Chisita, 2010: 6). Then, the price of a SIM card had gone down from US\$100 to as low as US\$4, a development that helped to enhance access to mobile phones. Chisita (2010: 6) acknowledges that this technology is being adapted by Zimbabweans as the country moves towards an information technology-driven economy. However, the use of mobile phones for agricultural communication by the smallholder farmers remains largely unexplored. The current study findings indicated that smallholder farmers prefer mobile phones among other new media forms for agricultural communication which means that their use for agricultural communication should be promoted.

3.5.1.5 Social media platforms

Farmers are using cheaper communication platforms such as “Mxit, 2Go, WhatsApp, Nimbuzz” and other platforms, to share agricultural information. Chisita (2012) contends that a snap internet survey shows that Zimbabwean farmers are using social media to circulate agricultural

information. Examples of projects are the “Potato Farming in Zimbabwe Group” and “Aquaculture Zimbabwe Trust” that are promoting community-oriented web-based agricultural systems. These have improved productivity in potato production areas, freshwater aquaculture and fisheries. One challenge indicated is the poor uptake of the technology by the rural farmers (Mago, 2013: 61). Therefore, finding factors that could influence adoption of technology should be a priority among researchers.

3.5.1.6 e-Hurudza programme

The other ICT driven programme is the e-Hurudza which according to Chisita (2010: 5) is an agricultural planning software package developed by a local private company to support the farm mechanization programme. Chisita explains that the systematic application of this software package enables farmers to plan their work and to realise the full potential of their investments. The programme aims to provide timely access to agricultural information to all regions, educational information on how to grow crops peculiar to specific regions, information on planting methods and farm equipment inventory management services. The e-Hurudza project works with AGRITEX whose mandate is to distribute the software and train the users. The prerequisites for running the e- Hurudza programme are the need for a computer and printer and relevant infrastructure, e-literacy programmes and networking. This locally funded and driven programme helps to provide access to agricultural knowledge and information (Chisita, 2010: 5). However, Chisita (2010: 10) notes that despite the endeavours made, farming in Zimbabwe faces many challenges with reference to the use of ICTs, for example: the low connectivity density and the continued energy crisis in Southern Africa impacts heavily on the supply of electrical energy. Chisita also points out the lack of adequate financial resources and ICT facilities including communications infrastructure. The other challenge cited is the need to promote and sustain mutually beneficial synergies between the public and private sector in the development and integration of ICTs in agriculture, health and education in order to develop e-agriculture, e-learning and e-health, which is crucial in a globalised world.

3.6 Extension policy and agricultural communication in Zimbabwe

The practice of agricultural extension was adopted a long time ago by Western countries. Between 1830 and 1840, the process of providing informal adult education to the adult farming population was introduced in Western Europe. In 1850, Germany introduced the process with the

appointment of the first group of extension officers who travelled widely to assist and advise farmers. France enforced the practice through institutionalising it as a law in 1879 (Masendeke *et al.*, 2010: 4). In Zimbabwe, agricultural extension was introduced by Emory D. Alvord in 1927 when he started out with nine agricultural demonstration workers (Alvord, 1958 cited by Hanyani-Mlambo, 2000: 666). At independence, in 1980, the Department of Agricultural, Technical and Extension Services (AGRITEX) was formed and by policy design, it has concentrated on providing agricultural extension services to the smallholder farming sector as an institutional mandate, while servicing large-scale commercial farmers on request (Hanyani-Mlambo, 2000: 666-667).

The main work of the extension services in Zimbabwe is the transmission of suitable techniques to farmers. Thus AGRITEX's main objective is "to implement the agricultural policy of government through the provision of agricultural, technical and extension services, which stimulates the adoption of proven agricultural practices, leading to increased, sustained and profitable production" (Narman, 1991: 77). The flow of information in the communication process follows both the top-down and the bottom-up approaches. Through AGRITEX officers based at the district offices, information is passed on to the AGRITEX extension supervisors and extension workers and then to the farmers. The officers and agricultural extension workers are also responsible for transmitting indigenous knowledge technologies, practices and problems from farmers to specialists and researchers. The department of AGRITEX, 2010 (cited by Mugwisi, 2013: 44) commends that this creates a research-extension network that is critical for appropriate research and extension communication. That is why extension should be seriously considered in agricultural communication.

Hanyani-Mlambo (2000: 667) maintains that lately, AGRITEX's mandate has been to provide general extension services and train farmers in the use of new technologies, with the aim of increasing productivity while maintaining the sustainability of the agricultural production base. AGRITEX uses a variety of extension approaches to service farmers. These include the use of the master farmer training approach, group development areas comprising general development interest groups, commodity interest groups, demonstrations, competitions, field days, study tours and individual farm visits. For some time, an attempt was made to use the Training and Visit (T & V) system, an approach which is basically an extension management system, introduced and

supported by the World Bank. However, Hanyani-Mlambo (2000: 667) points out that the system was abandoned after 10 years of practice when evaluations found that it was inappropriate for a nation where resources are limited, the farmers are more generalist in their activities and the bio-physical environment make the strict following of time-tables impossible.

AGRITEX's effort to offer its services free of charge to other government agencies, non-governmental organisations (NGOs) and private companies that have projects in the rural areas is acknowledged. AGRITEX provides logistics, technical advice and mobilises farmers. However, it is reported that participatory approaches are still at "preaching" stages (Hanyani-Mlambo, 2002: 6), which is a cause for concern. A consistent refrain from all farmers also seems to suggest that the extension agency does not have much new knowledge to transfer to the farmers (Mandizadza, 2009: 84), a factor which prompts the need to upgrade extension personnel skills.

More so, a critical shortage of extension workers has been retold. For example, a study by Marimira (2010: 3) established that "an AGRITEX officer resident at Dunstan farm indicated that he is responsible for about 187 farmers spread in five A1 and seven A2 farms" (instead of a stipulated ratio of 1:50, a shortage also acknowledged by (Maposa et al., 2013: 144 and Mandizadza, 2009: 85). This unbalanced extension worker-farmer ratio calls for the Government to initiate pooling of resources to increase extension personnel in the country as this could improve extension services.

3.6.1 Extension services in Zimbabwe

The farmers in the current study population are situated in peri-urban and rural areas, making it worthwhile to situate the development discourse in the rural context. (Chambers (1994) describes rural development as a strategy to enable poor rural women and men to improve their livelihoods. He elaborates that it involves helping the poorest among those who seek a livelihood in the rural areas to demand and control more of the benefits of development. The group includes small-scale farmers, tenants, and the landless. Grimshaw and Kala (2011: 33) assert that "rural poverty reduction is closely related to increase in agricultural growth and productivity", further elaborating that "research evidence suggests that accurate, real-time information improves farmer livelihoods". Thus, the role of communication in agricultural productivity should not be underrated and hence the importance of extension services to smallholder farmers.

GoZ and FAO (2012-2015: 10) indicate that the average yields of small grains are currently around 300kg/ha. As most of these crops are now produced by smallholders, it is necessary that all relevant stakeholders, particularly agricultural extension, focus on improving productivity, competitiveness and promotion of market linkages to improve commercialisation of the smallholder sector. The creation of small- to medium-sized land holdings (A1 and A2 farms) from what were previously large scale commercial farms, has expanded the mandate of the public extension services. The farmers have become more heterogeneous, both in production orientation and productivity, requiring varied approaches to adequately address their needs (GoZ and FAO, 2012-2015: 10), hence the significance of exploring the communication processes involved in diffusing innovations as this could reveal unexplored avenues of promoting increased productivity.

Extension involves the conscious use of communication of information to help farmers form sound opinions and make good decisions based on their circumstance (Masendeke *et al.*, 2010: 16). In an effort to move forward after the low acceptance of early approaches, another paradigm for rural development emerged with the promotion of active participation, empowerment and poverty alleviation (Masendeke, *et al.*, 2010: 11). Generally, the term participation, according to (Masendeke *et al.*, 2010: 15) refers to the role that has to be played by the beneficiaries of development programmes and projects. Masendeke *et al.*, elaborate that participation is the process of getting the active involvement of the intended beneficiaries in analysing their own situation, identifying problems, prioritising these, searching for their own solutions using their situation-specific indigenous knowledge, which they can blend with outsiders' knowledge and capacities, implementing the solutions as well as monitoring and evaluating their own development. Defined this way, participation makes the beneficiaries the main actors who champion their destiny, while "outsiders" play a facilitative role and also learn from local people (Blackburn and Holland 1998 cited by Masendeke *et al.*, 2010: 15).

In response to the abovementioned, the Zimbabwe AGRITEX in the Ministry of Lands and Agriculture, with support from German Agency for Technical Cooperation piloted and experimented with developing the competence of field-level extension agents in participatory extension approaches (PEA) since 1995 in Masvingo Province. This was an essential part of wider change management through an organisational development programme geared towards

improving service delivery (Hagman *et al.*, 2003: 22). Practical experiences during implementation of participatory processes in pilot activities from 1990 to 1995 provided deep insight into the critical capabilities that extension agents require to facilitate such complex and dynamic learning processes in communities (Hagman *et al.*, 2003: 27). As the case of the Zimbabwe FTLRP has proved, sudden political turnarounds can easily disrupt such processes in a devastating way (Hagman *et al.*, 2003: 36).

Notwithstanding, a number of relatively new agricultural extension approaches are said to have emerged in Zimbabwe, including: participatory extension approaches, participatory learning approaches, participatory rural appraisals, rapid rural appraisals, participatory technology development, farmer field schools, innovative farmers' workshops and look and learn tours (Hanyani-Mlambo, 2002: 6). However, although ARGITEX and some of its innovative agricultural extension agents have already begun experimenting with some of these new approaches, they are still in their trial stages and have not yet been fully adopted at the operational level (Hanyani-Mlambo, 2002: 6).

Although success stories on PEAs have been recorded, challenges have also been experienced with the use of these PEAs, for example: the cases of Shurugwi and Gwanda indicated that the process of identification of projects from the PRA has tended to be rather lengthy at times as a result of limited capacity in critical institutions (Chipika and Friis Hansen, 2004: 76). Critical factors have been cited as the availability of skilled personnel and availability of equipment in good working order (Chipika and Friis Hansen, 2004: 76). To this end, there is not much literature on these agricultural extension approaches in the study context. Nonetheless, some lessons of PEAs have been realised as in the overview of case studies reviewed below which were mainly drawn from draught-prone regions of Zimbabwe.

Although resourcing partners are said to have worked through NGOs to provide some extension services to smallholder farmers, the technical capacities of NGOs have not satisfied the needs of farmers (GoZ and FAO, 2012-2015: 11). Therefore, the public research and extension institutions and farmer organisations need to be strengthened if they are to play their traditional roles effectively. Lack of adequate and timely information is compromising decision-making and coordination at all levels, thus increasing the risks of production and marketing. The most crucial

and reiterated, among factors hindering information collection and analysis in agriculture-related ministries has been lack of resources (GoZ and FAO, 2012-2015: 11). The majority of vulnerable smallholder communal farms are located in the Midlands, Masvingo and Matebeleland regions of central and southern Zimbabwe (Muzari *et al.*, 2013: 226). The fact that the Midlands region where the study is conducted is one of the areas affected by vulnerability of smallholder farmers justifies the study which seeks to find ways of improving communication amidst limited resources with the hope of realising increased productivity in the Gweru district and the region at large. The following are cases of participatory extension in Zimbabwe.

3.6.1.1 PEAs in Chivi District: Masvingo Region

The study by Masendeke *et al.* (2010: 34), in Ward 21 community in Chivi district, which started getting involved with PEA process in the early 1990s has revealed that the number of farmers' clubs in the ward has doubled from 33 in 1993 to 70 in 2009. Women group gardens have also increased from 28 in 1993 to 72 in 2009. Farmers are organising their own field days using their criteria. Farmers are selected from all the villages to get on the panel to judge the best farmers with the assistance of AGRITEX staff for the final judgment using farmer established criteria. Evidence of community self-emancipation has been realised through formative evaluation. Leadership rotates regularly and age, gender and educational levels are integrated fairly in leadership positions (Masendeke *et al.*, 2010: 34).

The case studies of three projects "ConTill; ITDG and IRDEP" conducted by Hagmann *et al.* (1998: 4-5) in Masvingo which aimed at putting the farmers' demands and needs at the centre revealed that the experience and analysis gained through working at field level for several years enabled the three projects to understand extension and to develop alternatives to the conventional transfer of technology paradigm. The following lessons were learnt from these case studies: process-learning approaches are a pre-condition for success in institutional innovation projects; ways must be found to accommodate risk; provoking action is crucial for institutional innovation; there are advantages to working from within a project; the process of institutionalisation of PEA is a highly complex and demanding venture; networking and lobbying are crucial but require favourable conditions; process can be highly dependent on one personality; the broader political framework has an impact upon prospects for change; the biggest challenge is to change attitudes; the ultimate impact of the operationalisation process is unpredictable; participatory extension can

be implemented in a cost-neutral way; case studies and pilot activities are not the centres for spreading up of participatory extension approaches; sustainable operationalisation of participatory approaches requires broad consideration of the institutional environment (Hagmann *et al.*, 1998: 10-12). These lessons indicated that generally, there is a complex interrelation of factors influencing the success of a particular PEA and that each case study could produce unique findings which influence policy and theory in different ways and should therefore be contextualised as such.

3.6.1.2 PEAs in Gwanda District: Matebeleland South Region

A study by Masendeke *et al.* (2010: 32) reveals the following: Mr Tias Sibanda, a farmer of Ward 17 (Manama Ward) reported that as a result of using the participatory approach, they hosted other farmers from within Gwanda district as well as farmers from other districts such as Matobo, Bulilima and Mangwe districts coming to learn about their self-organisational capacity and ways in which they were now able to mitigate against effects of drought through adoption of appropriate technologies; provided farmer-to-farmer training on rainwater harvesting techniques in similar agro-ecological zones such as Ward 12 and Ward 14 in Gwanda district and Gokwe in the Midlands Province; and also established “marula” oil pressing groups which collect and crush the kernels for processing of oil at a later stage. They linked with the department of Veterinary Services and got some of their community members to be trained as para-veterinarians who are now assisting the rest of the community in the treatment of livestock in the ward. They also acquired knowledge and skills in management of small livestock such as goats and indigenous chickens, resulting in lowering of mortality rates. Farmers through sharing their experiences in farming have realised the benefits of planting early in drought prone areas (Masendeke *et al.*, 2010: 32). This study has revealed that extension services can be successfully integrated with indigenous knowledge.

3.6.1.3 PEAs in Chimanimani District: Manicaland Region

In a study by Masendeke *et al.* (2010: 33), Mr Peter Gudyanga, vice chairperson of Nyanyadzi irrigation committee, Ward 19, reported that before being introduced to the PEA process, Nyanyadzi irrigation scheme had many problems which made it dysfunctional. For instance: there were political conflicts which affected the production system in the scheme. Farmers were poorly

organised and could not work together as one community. Access to both input and output markets was a problem. There was poor leadership with no accountability and there was a lack of vision (Masendeke, *et al.*, 2010: 33). However, after going through PEA process for 3 years, a lot of changes have taken place in the irrigation scheme, such as that leadership elections are held regularly; members' meetings are being held once every two months; relationships with extension staff has improved; farmer-to-farmer sharing is being promoted through champion farmers; irrigation canals are being well maintained and schedules for irrigating crops have been developed and are being followed; access to input and output markets has improved and as a result, crop yields are said to have improved tremendously. A different project by Mrs. Joyce Moses Derera of Matiashe Village, Shinja, Ward 9, boasts about the successful "Pass On" indigenous chicken project which started in 2008 with the objective of assisting orphans and people living with HIV/AIDS (PLWHA) and proved a successful and sustainable programme whose written guidelines on how to run the system were developed by the community itself. Many orphans are reported to have gained from the project (Masendeke, *et al.*, 2010: 33). The case studies above indicate that although some challenges have been encountered, some PEAs have been successful in the respective areas they were conducted.

3.7 Empirical studies of agricultural communication in Zimbabwe

Two case studies of the communication and adoption of agricultural innovations in Zimbabwe are reviewed in more detail order to capture the factors influencing adoption of agricultural communication in context. The two case studies are based on Farmer Field School and Farm Visits as communication approaches. These cases have been considered since the study is mainly centred on the role of extension in agricultural communication.

3.7.1 A case study of Sanyati: Midlands Region

A study by Maumbe and Swinton (2000: 4) looked at the adoption of different cotton pest management practices by smallholders in transition from conventional calendar-based chemical pest control to Farmer Field School-Integrated Pest and Production Management (FFS-IPPM) strategy. In particular, it examined the roles of 1) IPM technology awareness and 2) health experience related to pesticide use. Maumbe and Swinton (2000: 4) note that a critical constraint to IPM adoption in Sub-Saharan Africa is the shortage of low-cost IPM technologies that are relevant to the mixed farming systems prevalent on the continent. Furthermore, inadequate

interaction between researchers, extension workers and farmers has inhibited local understanding and adoption of the IPM technologies that are being introduced in Africa (Gallagher, 1998 cited by Maumbe and Swinton, 2000: 10). The empirical model of IPPM adoption among smallholder cotton growers was estimated using cross-sectional data obtained from a survey conducted through personal interviews in Sanyati, one of the leading cotton growing districts in Zimbabwe. It lies in Natural Regions III and IV (Maumbe and Swinton, 2000: 16-17). The leading IPPM practices adopted were pest scouting [89%], field sanitation [97%] and crop rotations [90%], alternating pesticides [32%] and preservation of beneficial insects [30%].

Correlation analysis suggested that practices were adopted independently. Survey farmers expressed diverse views about motivations for pesticide interventions and use of IPPM. Among those exposed to IPPM training, 85 percent believed that IPPM knowledge is an effective pest management tool and 8 percent felt the opposite. The rest 7 percent were either not sure or had no opinion about IPPM. Including the non- FFS graduates, the beliefs about IPPM were that 40 percent felt it was effective and while 54 percent had no idea. The rest felt IPPM was not effective or that it could not be superior to the traditional chemical control of pests. Chemical interventions were made for different reasons with 30 percent of the respondents stating that they spray on fixed calendar basis, while 66 percent said they applied chemicals only after scouting. Other reasons cited for guiding chemical interventions were specific growth stages for the cotton plant. Only 14 percent of the farmers felt that the major problem in cotton production was pest management. A majority felt that poor prices [53%] were most important, and some felt drought [6%] was a serious problem needing urgent attention (Maumbe and Swinton, 2000: 20). Farmers exposed to cotton-IPPM techniques through the Farmer Field Schools, were more likely to use several IPPM related practices in cotton pest management (Maumbe and Swinton, 2000: 21). While Maumbe and Swinton (2000) study revealed that an extension approach, FFS influenced adoption of IPPM, Loevinsohn, *et al.* (1998 cited by Maumbe and Swinton, 2000: 21) found that adoption relies on farmer-to-farmer diffusion. Yet knowledge diffusion by FFS graduates revealed gender bias as men diffused to men and women diffused to women, and that an age bias among graduates of FFS was reported whereby older farmers tended to dominate younger farmers, a critical constraint to IPM dissemination.

The main conclusion reached by Maumbe and Swinton (2000: 23) is that technology awareness embodied in access to IPM training through FFS is important in motivating the use of multiple components of risk-reducing technologies such as IPM. Investment in IPM farmer education and literacy programmes targeted to non-adopters will have long-term beneficial impact on IPM use. IPM use requires an experimental cotton plot and farmers with more land are more likely to adopt IPM practices. In addition, cotton growers who planted the leading pest resistant variety “ALBARFQ902” were likely to adopt more IPM practices. Experience with pesticide-related health problems did not significantly affect IPM adoption, suggesting there is still a greater need to sensitise farmers about the health risks of using pesticides. It may be that using IPM does not significantly reduce these risks hence the link between pesticides and human health should be further explored in the context of Zimbabwean smallholder cotton production (Maumbe and Swinton, 2000: 22). The findings indicate that diffusion factors such as FFS-IPPM training and farmer-to-farmer extension delivery approaches play a critical role in the delivery and adoption of IPM. Success of IPM adoption depends on farmer’s knowledge and awareness of the technology. Further, rapid adoption could occur if farmers complement adoption of IPPM practices with a conscious choice on varieties that display pest and disease resistance qualities such as “ALBARFQ902” (Maumbe and Swinton, 2000: 23).



3.7.2 A case study of Shamva: Mashonaland Central Region

Chiputwa, *et al.* (2011) conducted a survey in the Shamva district of Mashonaland Central Province of Zimbabwe where most areas in the province fall under agro-ecological region II and III which are intensive and semi-intensive farming areas respectively. The study conducted by Chiputwa *et al.* (2011) models the adoption and use intensity of three dominant conservation agriculture (CA) technologies observed in the study area, namely zero tillage, contour ridging and crop rotation. A high proportion of farmers (90%, 84% and 78%) were aware of the principles of crop rotation, contour ridging and zero-tillage, respectively and this was possibly due to extension support services from both government and NGOs (Langyintuo, 2005 cited by Chiputwa *et al.*, 2011: 2-3).

The findings from the zero-tillage model suggest that labour capacity negatively and significantly affected the adoption and use intensity of the technology (Chiputwa *et al.*, 2011: 12). This is consistent with findings by Baudron *et al.* (2007) who did a study in Zambia. There was an

inverse relationship between level of disposable income and adoption of zero-tillage, implying that households with higher disposable income were less likely to adopt and intensify the use of zero-tillage than those with lower income (Chiputwa *et al.*, 2011: 13), probably based on financial capacity. Haggblade and Tembo (2003), on a study in Zambia, estimated that a farmer can save up to 75% on operations costs per hectare if they adopt zero-tillage as opposed to conventional tillage methods.

With regard to adoption of contour ridging, results from the contour ridging model, similar to those by Marenja and Barret (2007), suggested that male farmers were more likely to adopt and intensify the use of contour ridges compared to their female counterparts. Age of the farmer positively affects the use of contour ridging, a finding consistent with those of Langyintuo *et al.* (2000) but in contrast with the general belief that older farmers have shorter planning horizons and hence are more reluctant to invest in soil conservation technologies which take a long time before farmers realise the benefits (Marenja and Barreta, 2007; Tizale, 2007).

The number of extension visits had a positive impact on adoption and use of contour ridges (Chiputwa *et al.*, 2011: 14-15). However, adoption of contour ridging was found negatively correlated with the education level of the farmer, probably because contour ridging is not a complex technology and hence farmers with low education levels are more willing to uptake it compared to other knowledge-oriented technologies. Concerning adoption of crop rotation, Chiputwa *et al.* (2011: 15), findings, similar to those of Langyintuo and Mekuria (2005), indicated that education level showed a positive correlation with adoption and use intensity of crop rotation. Each technology was distinctly affected by a set of its own factors. The regression results showed how an increase in the area under one CA technology influences the adoption and extent use of another CA technology on farmers that adopt multiple technologies (Chiputwa *et al.*, 2011: 16). A potential strategy could be to promote CA technologies that show some degree of complementarity as a package rather than independently. This was anticipated to reduce time required between when the farmer adopts the first technology and the subsequent adoption of other technologies and hence realising the full and extensive benefits of CA as a package (Chiputwa *et al.*, 2011: 18).

3.8 Comment on reviewed literature

The literature reviewed echo the problem statement that there was a lack of information, education and training during the FTLRP hence the continuing food insecurity in Zimbabwe. To this end, farmers, particularly those under the A1 scheme who occupy the majority farmland are said to have failed to feed themselves and the nation and that since the year 2000, the country has faced severe grain deficits while some allocated farmland lies idle (Thebe, 2010: 93). Generally, observations such as poor agronomic practices, inefficient extension services and inadequate mass media and largely food insecurity justify the study problem that there was a lack of information, education and training during the FTLRP. These limitations have prompted this exploration of the dynamics of communicating with smallholder farmers as this could help equip them with adequate skills to increase production in their farms. There is reported decline in production across the board (Pazvakavambwa and Hungwe, 2009: 159) and that low production is due to poor agronomic practices and lack of inputs among other factors (Matondi and Dekker, 2011: 6). The Zim Vac (2014: 89) study indicates that the levels of food insecurity in the third quarter of the 2014/2015 consumption year were expected to rise to 3.4 percent.

Although agricultural communication is available both in print and electronic media, there are some challenges noted with its use, for example: print media is said to be published mostly in English, although materials are available in the two main mother languages "Ndebele and Shona". The rest of the minority languages are however left out (Mugwisi, 2013: 52). Meanwhile, television and radio are criticised for their politicised and momentary nature even though farmers' programmes are accorded time (Mugwisi, 2013: 53). Therefore, farmers' satisfaction with the durability and frequency of the programmes remain largely unexplored, a gap the current study sought to address. Some positive developments have been made to improve agricultural communication in Zimbabwe such as the "Freedom fone" project, affordable internet by ZARNet and tele-centres. However, the question is whether resettled smallholder farmers are aware of and can access these since literature has indicated poor infrastructural development and limited educational opportunities for such farmers (Mago, 2013: 6).

In agricultural extension, participatory approaches are said to be at preaching stages in Zimbabwe although bottom-up communication is being encouraged (Hanyani-Mlambo, 2002: 6). Yet the turnarounds brought about by the FTLRP have disrupted these emerging participatory approaches

which are still in their trial stages (Hagman *et al.*, 2003: 36). Furthermore, extension personnel expertise and poor extension worker-farmer ratio have been questioned (Mandizadza, 2009: 84). This justified the current in exploring the extent to which participatory approaches are used in the study context as this could assist in developing theory.

Regarding the particular case studies reviewed, the case study of Sanyati, Midlands region indicated that extension approaches and interpersonal channels are effective in communicating agricultural innovations. The findings revealed that those farmers who attended the FFS (PEA) adopted the IPPM because they were aware of the technology. Farmer-to farmer communication, which is interpersonal in nature was another method used in the diffusion and adoption process although the findings revealed that there was gender bias (compatibility) and age bias (relative advantage) in the diffusion process (Maumbe and Swinton, 2000).

The case study of Shamva, Mashonaland central region by Chiputwa *et al.* (2011), was based on three CA technologies namely zero tillage, contour ridging and crop rotation. The findings from the zero tillage model revealed that labour capacity negatively and significantly affected adoption of zero tillage, implying that farmers with financial resources (relative advantage) would rather opt for conventional tillage methods than zero tillage even though the latter method reportedly could save up to 75 percent operation costs. Findings from the contour ridging model indicated that male farmers are more likely to adopt and intensify the use of contour ridging (compatibility) than their female counterparts probably because they are more physically fit than women. Age of farmer was found positively influencing adoption of contour ridging, implying that older farmers adopted the technology than younger ones probably because of experience with the technology and resources for making the contours (compatibility and relative advantage). The number of extension visits (communication mode) positively influenced adoption probably because the mode was interpersonal in nature whereby farmers could find out all the information they want about the technology. Contour ridging was found negatively correlated to education level because of its simplicity (complexity). However, education level was found positively correlating with adoption of the crop rotation (relative advantage, complexity).

A closer analysis of the findings in the two case studies reveal a pattern that farmers adopt technologies based on capability, affordability and communication influence and that Rogers'

(1983) innovation characteristics noted in both case studies are at play in the adoption process. Generally, the literature has pointed out that largely, the political and economic constraints exacerbated by the FTLRP are impacting negatively on agricultural production in Zimbabwe. Therefore, the gaps noted in the literature justify the current study which explores the communication of agricultural knowledge and information to promote increased productivity in the Gweru district and the Midlands region in particular as well as the country in general whose livelihood is mainly based on agriculture.

3.9 Chapter Conclusion

In this chapter, the evolution of the FTLRP in Zimbabwe and its impact on agricultural productivity has been traced. Acknowledged is the resettled farmers' lack of information, education and training due to the haphazard nature of the implementation process, a situation which has contributed to declining agricultural productivity. The agriculture policy and its implications on food security in the country has been reviewed, revealing that a draft policy with a medium term plan had to be developed to cater for the disturbance caused by the FTLRP. Despite, such a development, literature documents continued food insecurity in the country. Further, the communication media and methods for agricultural communication in Zimbabwe have been reviewed. On the one hand, the print media indicates the major challenge of the language of publication which does not promote minority languages. On the other hand, the broadcast media is said to have restrictive regulations because of their politicised and momentary nature. The ICT policy of the country has been reviewed to determine its promotion of agricultural communication. Apparently, there are challenges of lack of information, education and training which hinder farmers from using ICTs whose main medium of instruction is English. The agricultural extension policy of the country and its implication on communication has been reviewed, revealing that most of the new participatory extension approaches are still in trial stages. The literature also indicates challenges of poor infrastructure and limited access to resources by smallholder farmers due to high costs. Empirical studies of agricultural communication as well as an overview of participatory extension services in Zimbabwe have been reviewed in order to determine the gaps between theory and practice. These studies complement the gaps in theory that participatory communication approaches are still in trial stages due to challenges faced with their use in some cases. However, other cases tell success stories of participation. In chapter four, which ensues, the theoretical framework used to guide the

current study, which is: the diffusion of innovations theory and the participatory theory is discussed.

CHAPTER 4: THEORETICAL FRAMEWORK

4.1: Introduction

In the previous chapter, the communication of agricultural knowledge and information in the context of the FTLRP of Zimbabwe is discussed. An overview of the land reform programme in the country and the evolution of the FTLRP is outlined. Communication modes and media for agricultural innovation dissemination are reviewed in the light of the apparent lack of information, education and training recourse to the haphazard nature of the FTLRP. There is a review of the extension and ICT policies in Zimbabwe and their promotion of agricultural innovations adoption. An overview of extension approaches in Zimbabwe is given in a bid to review their effectiveness and extent of participation. Some empirical studies of agricultural communication are reviewed in order to determine factors influencing adoption. The empirical studies reveal a complexity of factors at interplay. Generally, the literature points out continued food insecurity in the country and that the FTLRP exacerbated the political and economic constraints facing the country and consequently impacting negatively on agricultural production.

In this chapter, the theoretical framework underpinning the study: diffusion of innovations theory and participatory theory is discussed. These theories have been found suitable as compasses guiding the study because research has indicated that they are both used in agricultural communication (Albrecht 1980; Coldevin, 2003: 5; Padel 2001: 40). A theory is defined by Leedy and Ormrod (2013: 20) as “an organised body of concepts and principles intended to explain a particular phenomenon”. This is in line with Hofstee’s view (2006: 92) that theories are the best explanations currently available. In this study, both theories were used to measure the effectiveness of communication processes. The diffusion of innovations theory, embedded in the modernisation theory has been viewed as linear and top down communication. The participatory theory, based on Paulo Freire’s liberation pedagogy from the 1960s, is viewed as a dialogic and horizontal approach to communication (Tufté and Mefalopulos, 2009: 7). While the diffusion of innovations theory has been found suitable at the knowledge stage in the communication process, the participatory theory has been found apt at the persuasion stage.

The fact that Rogers asserts that the uptake of innovations is a process which goes through the following stages: knowledge, persuasion, decision, implementation and confirmation (Rogers,

2003: 172) prompts use of various communication media and methods thus underpinning the study by both theories. Though the diffusion theory has been criticised for its linear nature and the participatory theory for its complexity, their applicability in promoting effective communication is best inquired in context. In current study, both theories were used to seek ways of promoting increased agricultural productivity amidst the constraints brought about by the FTLRP in Zimbabwe. Intent to achieve this goal was realised by exploring the Gweru district resettled smallholder farmers' communication needs as well as the communication approaches used by agricultural extension workers to disseminate innovations to these farmers.

4.2 Diffusion of innovations theory

Diffusion theory, developed in the U.S by rural sociologists, is an important theory that describes the process of change, for example, diffusion of innovations in a community. This theory attempts to predict the behaviour of individuals and social groups in the process of adoption of innovations, considering their personal characteristics, social relations, time factor and the characteristics of the innovation (Padel, 2001). According to Rogers (2003), diffusion of innovations is a kind of social change. Diffusion can be regarded as the cumulative pattern of individual adoption decisions in time - that is, the timing of individuals' decisions about adopting, rejecting, or discontinuing an innovation within a social group. Adoption is commonly understood as the decision to make full use of an innovation, which encompasses the mental process that an individual undergoes from first hearing about to finally adopting an innovation (Monge *et al.*, 2008: 2). Set in the modernisation theoretical paradigm, diffusion approaches believe progress is achieved by inducing change in individuals' attitudes and behaviours (Paolo, 2008: 58). Although sprouting from the modernisation theory, diffusion of innovations theory differed critically from the former by recognising the limits of the mass media to directly provoke behavioural changes as well as the importance of interpersonal channels in the process of adopting new ideas (Inagaki, 2007: 6).

The diffusion theory was developed in the 1980s, during the paradigm of productivity of agriculture and green revolution. After the Second World War, in accordance with the increasing global need for food, conventional agriculture prevailed and took growing trend. Technology and agricultural chemical products were exported to developing countries with the justification of stopping the world hunger. In addition, the poor were offered genetically modified grain seed

which gives high yields while, at the same time, is resistant to pesticides (Pudak and Bokan, 2011: 521). However, in later years, there was a manifestation of the negative impact of conventional agriculture on the environment. Therefore, the shift from conventional to modern agricultural technologies which are less detrimental to the environment but high yielding calls for effective communication.

Communication scholars are interested in diffusion as a communication process, independent of the type of innovations that are diffused (Rogers *et al.*, 2003: 7). Therefore, this study mainly dwelt on finding out the media and methods of communication needed by farmers to increase their agricultural knowledge and outputs. Since the goal is to promote increased productivity, the study also focused on other factors influencing adoption. In that regard, it can be argued that it is the communication effectiveness that influences adoption of agricultural innovations rather than the nature of the innovations themselves. This prompts agricultural extension personnel and other relevant communication agents to be knowledgeable not only of latest and high yielding innovations but also how to disseminate them to farmers in the most effective ways. Yet literature has pointed out lack of expertise and new knowledge among agricultural extension workers who are responsible for disseminating agricultural innovations to farmers in Zimbabwe (Mandizadza, 2009: 84).

Diffusion is a special type of communication, in which the messages are concerned with a new idea. It is this newness of the idea in the message content of communication that gives diffusion its special character (Rogers, 1983). The newness means that some degree of uncertainty is involved (Rogers, 1962: 6). Based on this view of the diffusion concept, Rogers (1983: 5) explains that communication is a process of convergence (or divergence) as two or more individuals exchange information in order to move towards each other (or apart) in the meanings that they ascribe to events. The fact that Rogers notes some degree of uncertainty where new ideas are communicated calls for effective strategies in order to influence farmers to adopt high yielding technologies especially bearing in mind that some farmers resettled under the FTLRP did not have prior agricultural knowledge.

In the light of the importance of communication noted above, Rogers (2003) proposes elements to be considered in the diffusion of innovations which are: the innovation, communication channels,

time and social system. According to Monge *et al.* (2008: 2), broadly, an innovation is best understood as anything new successfully incorporated into social or economic processes, in line with Rogers' (2003) perception of new idea, practice or project. It is composed of two parts: hardware and software. While hardware is "the tool that embodies the technology in the form of a material or physical object," software is "the information base for the tool" (Rogers, 2003). Broadly, scholars from different fields of thought such as Mahajan and Peterson (1985), Rogers (2003), like other researchers refer to different concepts such as ideas, practices, products, services, processes, technologies, policies, structures, and administrative systems as innovations that the adopting unit perceives as new. Since software as a technological innovation has a low level of observability, its rate of adoption is quite slow (Sahin, 2006: 14), a factor which compels effective communication. The FTLRP in Zimbabwe was constrained in both hardware and software of innovations, making it difficult to address the needs of resettled smallholder farmers who are heterogeneous, with different communication needs which have remained largely unexplored.

Rogers (2003: 18) suggests that newness of an innovation may be expressed in terms of knowledge, persuasion and decision to adopt it. As such Rogers uses the terms innovation and technology as synonyms, clarifying that technology is a means of uncertainty reduction that is made possible by information about the cause-effect relationships on which the technology is based. Both concepts share the notion of gaining knowledge. Meanwhile, an innovation system includes all stakeholders at governmental and non-governmental levels, their interactions and contributions to the development and the diffusion and application of knowledge/technology (Leitgeb and Vogl, 2010: 751). Considering the lack of information, educating and training surrounding the FTLRP in Zimbabwe, it is needless to say how urgent the communication of agricultural production knowledge and skills is required among the resettled farmers. Evidence of this urgency is the continued food insecurity noted in the country. If the government through the ministry of agriculture mobilises all the relevant stakeholders in the communication of agricultural innovations, production skills could be improved and increased productivity could be realised.

At the time he propounded his diffusion of innovations theory, Rogers (2003) mentioned mass media and interpersonal communication as the two communication channels involved in diffusion

of innovations whereby interpersonal channels were viewed more powerful to create or change strong attitudes held by an individual. It can be argued that probably, Rogers did not have much more media to choose from since new media had not been invented then. Rogers (2003) categorised communication channels as “localite” channels that communicate among members of a social system and “cosmopolite” channels that communicate between an individual of the social system and outside sources. Rogers states that while interpersonal channels can be local or cosmopolite, almost all mass media channels are “cosmopolite”. Because of these communication channels’ characteristics, mass media channels are more significant at the knowledge stage while local and interpersonal channels are more important at the persuasion stage of the innovation-decision process (Rogers, 2003 cited by Sahin, 2006: 15).

While reviewed literature acknowledges the availability of farmer information and programmes on mass media in Zimbabwe, they are criticised for their politicized and transient nature (Mugwisi, 2013: 53). Interpersonal channels are criticised for ingenuity of participation (Dipholo, 2002: 66; Waisbord, 2008: 508) and that participatory approaches which require a lot of resources are still in their trial stages in the Zimbabwe (Hanyani-Mlambo, 2002: 6). This justified the enquiry of communication dynamics with smallholder farmers in order to determine the most suitable strategies in the FTLRP context.

The process of adoption of innovations appears to involve mass media communications in interaction with interpersonal or organisational networks, and both factors seem to complement and support each other in promoting diffusion (Wejnert, 2002: 318). Depending on the variable and circumstances, a number of variables appear to interact in a complex manner, including demographic (age, sex, mobility rate, race, ethnicity) and socio-economic (education, urbanisation, industrialisation, economic well-being, health conditions) variables (Wejnert, 2002: 319), echoing several other previous authors. The variables above are parts of the social system which is defined by Rogers (2003: 23) as “a set of interrelated units engaged in joint problem solving to accomplish a common goal”. Rogers further claimed that the nature of the social system affects individuals’ innovativeness, which is the main criterion for categorising adopters. All innovation is socially embedded and can properly be understood best by studying the social basis of innovation (Tuomi, 2002: 5–6). The current study considered the following variables:

communication modes, innovation characteristics and demographic variables as these are said to be at play in the communication and adoption of agricultural knowledge.

Accordingly, the time dimension is involved in diffusion in the innovativeness of an individual or other unit of adoption based on relative earliness or lateness with which an innovation is adopted, compared with other members of a social system (Rogers, 1983: 20). Time consists of the innovation-decision process by which an individual passes from first knowledge of an innovation through its adoption or rejection. An innovation's rate of adoption in a system, is usually measured as the number of members of the system who adopt the innovation in a given time period. Rogers (2003) argues that though the time aspect is crucial in diffusion research, it is ignored in most behavioral research. Several factors could slow down the adoption and rate of adoption of innovations, one of which is lack of communication. Effective communication strategies could speed up the adoption of agricultural innovations.

The social system-time dimension is measured by the categories under which members of a social system are classified on the basis of innovativeness (Rogers, 1983: 22). Rogers (1995) defines personal innovativeness as "the degree to which an individual or other unit of adoption is relatively earlier in adopting new ideas than other members of a system". The innovators include a small minority of people (about 2–3 percent of the population), who, by education, economic situation and personal psychological attitude, are comfortable taking risks. Innovators are normally more advanced than the average local advisors or change agents. They introduce innovations into their farms, households, and lifestyles even before institutions begin to consider such changes. Because of their status and behaviour, they can be somewhat isolated from the local community, tend to have few social relationships, and are often viewed by community members as extravagant.

The early adopters have more or less the same characteristics as the innovators: good education and higher economic status. However they are more risk-averse. They represent about 10–15 percent of the population and seek to emulate the innovators, but also desire the support of local advisors. They hesitate before experimenting with an innovation, but they are open to change. To some extent, they could be considered informal leaders because they enjoy the respect of their peers and their behaviour is taken as an example by the majority (Rogers, 2003: 22-23). The later

adopters would base their adoption decision on the evaluation of their near peers and rely strongly on internal sources (Rogers 1983: 22-23). Thus, earlier adopters receive information from different communication channels than later adopters (Hahnke, 2007: 13), a view which justifies the integration of mass media and interpersonal channels.

The majority, by definition, includes most of the people concerned with the proposed change. They comprise almost two-thirds of the population and, by comparison, are less willing to take risks than the early adopters. The majority have a lower level of education, read less than the previous categories, and participate less in meetings. They wait to see the results (Rogers, 1983). At the end of the social system-time dimension are the laggards who are the last to adopt because they are suspicious of innovations and change agents. They take long and resist innovations due to their precarious economic position (Rogers, 2003: 22). Though it is beyond the scope of this study to inquire the social time frame in adoption of innovations, the correlation of farmers' educational levels and their adoption of innovations could shed light on educational influence in adoption of new technologies. The fact that some farmers wait for observability of results from others reinforces the importance of local channels such as farmer-farmer communication in diffusing innovations. The study population is likely to consist of all the other categories except the innovators' category.

The diffusion of innovations has been viewed as a process. To that effect, Rogers proposed a five-stage innovation-decision process model in succession of the earlier model which consisted of the steps: awareness, interest, appraisal, trial, adoption and was criticised for its positivist and deterministic nature (Santucci, 2005: 30). For Rogers (2003), the innovation-decision process involves the following stages: (1) knowledge, (2) persuasion, (3) decision, (4) implementation, and (5) confirmation as stated earlier. These stages typically follow each other in a time-ordered manner (Sahin, 2006: 16). In the innovation-diffusion framework, a change agent, such as rural extension services, introduces a new technology or idea to the final users, thus creating awareness of the innovation (Rogers, 1995). The potential users seek knowledge about the innovation in order to decrease uncertainty and consequently form an attitude towards it. The information acquired in the persuasion stage of the process will finally lead to the decision to adopt or reject the innovation. After implementing the decision to adopt or reject, the individual continues gathering information concerning the innovation either in order to review the decision or to

confirm it (Hahnke, 2007: 5). Hahnke asserts that when plotted over time on a frequency basis, the distribution of adopters follows a normal, bell-shaped curve, implying that the degree of innovativeness as a human trait is expected to be normally distributed.

However, the innovation-decision process is different for innovations, depending on the distinct innovation's characteristics (Hahnke, 2007: 5). Inquiring the communication media and methods used by the extension workers at each of Rogers' stages above could help improve communication strategies. Rogers proposed innovation characteristics he considers universal in influencing diffusion and adoption of innovations. Importantly, Rogers (cited by Sahin, 2006: 17) notes that although there is a lot of diffusion research on the characteristics of the adopter categories, there is a lack of research on the effects of the perceived characteristics of innovations on the rate of adoption. Rogers (2003) defines the rate of adoption as "the relative speed with which an innovation is adopted by members of a social system" (Rogers, 2003: 221). The following characteristics were proposed by Rogers: relative advantage, compatibility, complexity, trialability and observability (Rogers, 1983).

Rogers (1983: 213) defines relative advantage as "the degree to which an innovation is perceived as being better than the idea it supersedes". Rogers elaborates that there are a number of sub-dimensions of relative advantage such as the degree of economic profitability, low initial cost, a decrease in comfort, a savings in time and effort, and the immediacy of the reward. However, the characteristics of the potential adopters affect which dimensions of relative advantage are most important. For instance, while innovators, early adopters, and early majority are more status-motivated for adopting innovations, the late majority and laggards perceive status as less significant.

In some diffusion research, relative advantage and compatibility were viewed as similar, although they are conceptually different. Rogers (2003: 15) states that "compatibility is the degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters". For example, a lack of compatibility in IT with individual needs may negatively affect the individual's IT use (McKenzie, 2001; Sherry, 1997). If an innovation is compatible with an individual's needs, then uncertainty will decrease and the rate of adoption of

the innovation will increase. Thus, even naming the innovation is an important part of compatibility and this should be meaningful to the potential adopter (Rogers, 2003: 18).

Rogers (2003: 15) defines complexity as “the degree to which an innovation is perceived as relatively difficult to understand and use”. As Rogers states, opposite to the other attributes, complexity is negatively correlated with the rate of adoption. Thus, excessive complexity of an innovation is an important obstacle in its adoption. A technological innovation might confront faculty members with the challenge of changing their teaching methodology to integrate the technological innovation into their instruction (Parisot, 1995), so it might have different levels of complexity. If hardware and software are user-friendly, then they might be adopted successfully (Martin, 2003).

Trialability is another innovation attribute defined by Rogers (2003: 16) as “the degree to which an innovation may be experimented with on a limited basis”. Also, trialability is positively correlated with the rate of adoption. The more an innovation is tried, the faster its adoption is. As noted in the implementation stage of the innovation-decision process, review may be done and reinvention may occur during the trial of the innovation. Then, the innovation may be changed or modified by the potential adopter. Increased reinvention may create faster adoption of the innovations. Importantly, Rogers stated that earlier adopters see the trialability attribute of innovations as more important than later adopters.

The last characteristic of innovations is observability which is defined by Rogers (2003: 16) as “the degree to which the results of an innovation are visible to others”. Role modelling (or peer observation) is the key motivational factor in the adoption and diffusion of technology (Parisot, 1997). Similar to relative advantage, compatibility, and trialability; observability also is positively correlated with the rate of adoption of an innovation (Sahin, 2006: 18). Generally, different variables converge in the diffusion of innovations as stated earlier, a situation which calls for adequate skills among agricultural extension workers to communicate innovations in the most effective ways. In that regard, mass media, new media as well as interpersonal channels should be integrated to achieve participation where relevant and hence underpinning of the current study by the participatory theory as well.

4.3 Participatory theory

Participatory theory is largely embedded in the notion of active engagement of relevant stakeholders in the communication process as emphasised by Tufte and Mefalopulos' (2009: 17) idea of empowerment whereby people define their own problems. Empowerment is the result of the process by which communities decide what to do, lead where to go, and are involved in actions (Waisbord, 2008: 509). It is in Latin America that the first dominant theoretical models of both communication and development were challenged. This challenge, particularly intense during the 1960s, 1970s and 1980s, was not based exclusively on criticism of the mistakes, prejudices or inadequacies of the old paradigm – as occurred in US or European critical theory: Frankfurt School, cultural studies, political economy of communication, French post-structuralism, – but moved towards the construction of renovated participatory outlines for development communication (Barranquero, 2011: 163).

In the field of international cultural and development policies, Latin America is said to be the protagonist of one of the most democratising international debates that has ever taken place in the world: that of the communication policies of the 1970s. In 1980 UNESCO published *Many Voices, One World*, the report of its International Commission for the Study of Communication Problems, also known as the MacBride Report, after the commission's chair, Sean MacBride, the Irish statesman and peace and human rights activist (Mansell and Nordenstreng, 2007: 15). The MacBride Report represented the culmination of years of debate on the need to foster a New World Information and Communication Order (NWICO), involving wide-ranging discussion about how developing countries might use the media and communication networks to become more economically, politically, and culturally self-reliant (Mansell and Nordenstreng, 2007: 16). The MacBride Report strongly emphasised the social aspect and the potential contribution of the media and communication to forces of democratisation. Its authors expressed their hope for the emergence of societies in which there would be "the diffusion of power through broader access to and participation in the communication process; the benefits of communication used as an educational and socialising force; the reduction of inequalities through democratisation and the abolition of the vestiges of domination" (Mansell and Nordenstreng, 2007: 19).

Latin America is one of the main supporters of the contemporary critical debate through platforms like the Communication Rights in the Information Society campaign, the First

Congress in Communication for Development in Rome (2006), the Civil Society Counter Summits to the official World Summit on the Information Society in Geneva (2003) and Tunisia (2005). It also supports some media-activist networks in alternative communication such as: "OURMedia"; the Communication Initiative; the World Association for Christian Communication; Communication for Social Change Consortium, to mention but some communication platforms (Barranquero, 2011: 168). The strength of alternative development is viewed as a regard for local development and agency from grassroots groups and social movements to NGOs. It is on that basis of the need for alternative development that participatory theory of communication emerged.

Soola (2002: 18), complementing Tufte and Mefalopulos' (2009: 17) notion of empowerment, defines participatory communication as "the bi-directional sharing of ideas, information, knowledge and experiences among co-equals, a necessary ingredient for development". Participatory communication ensures that development community people are the most qualified at the local level to decide if, and in what ways a given project's planning and objectives are situation realistic in the context of the people's needs at the local level (Imoh, 2013: 17). The primary goal of participatory communication is to support the expression of local people's knowledge, needs, priorities and decisions through effective communication processes (Mwanundu, 2010: 6). Individuals and communities benefit from a participatory approach to communication by developing a stronger connection with the problem and its solution.

In a marked departure from uni-linear to participatory communication, Technische (2006: 33) confirms that communication and education techniques can enhance the effectiveness of people or groups seeking to participate. Technische (2006: 33) further argues that people's participation not only improves the programme and adds credibility, but also upgrades their skills to do similar work in the future. Chambers (1997: 103) indicates that the most widely used participatory methodology is Participatory Rural Appraisal (PRA) whose essence is change and reversals of role, behaviour, relationship and learning. Participatory rural appraisal has been described as a family of approaches and methods to enable rural people to share, enhance and analyse their knowledge of life and conditions to plan and act. Participatory Rural Appraisal is the best known participatory approach which became popular in the 1980s as a research method trying to reach a balance between researchers' needs to be scientific in their approach and the communities' rights

to participate in activities concerning their wellbeing (Chambers, 1994). It utilises methods such as transects (systematic walks and observation), informal mapping (sketch maps drawn on site), diagramming (seasonal calendars, flow and causal diagrams, bar charts, venn diagrams) and innovation assessment (scoring and ranking different actions) (Chambers, 1994: 955). Secondary sources; do- it-yourself; key informants, semi-structured interviews; groups; participatory mapping and modelling; timelines; trend analysis; livelihood analysis; ethno biographies, brainstorming and simple questionnaires are other methods cited earlier (Chambers, 1992).

Three main types of organizations that have been involved with PRA are NGOs, government field organizations, universities and training institutions. NGOs have played a leading role in the use of PRAs (Chambers, 1992). However their use by the government is problematic, for example a combination of challenges ranging from financial and human resources hamper the use of PRA in Zimbabwe. A further constraint is that in Zimbabwe, participatory communication approaches are said to be in their trial stages (Hanyani-Mlambo, 2002: 84), therefore their effective implementation is hardly possibly considering the rushed FTLRP implemented without the necessary resources and in the midst of political and economic woes facing the country. This is despite the fact that there are practitioners of PRA at the University of Zimbabwe in Harare (Chambers, 1992). This situation which calls for more research into the farmers' communication needs in order to align these with the design of participatory approaches, starting from grassroots levels.

Technische (2006: 33) cites several other strategies available to enhance participation, such as participatory materials, development work and grassroots research methods like participatory rapid appraisal and interactive moderation and visualisation for group events. Participatory rapid rural appraisals are meant to stimulate community awareness with the outsider's role as catalyst (Chambers, 1992). These new approaches are also bringing forth localised communication tools like community resource centres, community radio, and community websites (Technische, 2006: 33). Thus, strategies that promote effective communication and adoption of innovations need to be explored in context to enhance their effectiveness. For example, the FTLRP in Zimbabwe is unique considering the lack of information, education and training of beneficiaries as well as several other resource challenges due to the rushed nature of the process. Therefore, detailed stakeholder analyses are required in order to channel communication to relevant farmers.

Another cited benefit associated with adopting a participatory communication strategy is that it helps to develop new skills that will stay within the community (Mwanundu, 2010: 6). Yet, one of the biggest obstacles to successful communication interventions is the lack of continuous management of related activities (Mwanundu, 2010: 9). In Zimbabwe, and particularly in the Gweru district, the challenge of continuous management is embedded in transport and infrastructural shortages in the light of the geographically dispersed distances in which the farmers were resettled which incapacitate extension delivery. Nonetheless, (Waisbord, 2008: 507) contending with (Tufte and Mefalopulos, 2009), argues that participatory communication conceives “development” as a transformative process at both individual and social levels through which communities become empowered. This differs from the view that links development to the achievement of economic progress and political institutions associated with Western democracies. Waisbord further views participatory communication as promoting local forms of knowledge and action which is the springboard for social change. This view is in sharp contrast with modernisation theory that basically views local cultures as obstacles to progress and development (Waisbord, 2008: 507).



Due to the discontent about Western influence, Eyoh (1986) supports participatory and local channels, arguing that radio, television and newspapers are largely for the exclusive benefit of the urban dwellers. Rather, participatory communication places emphasis on a multichannel system which is a blend of the interpersonal setting with the use of modern communication and informal traditional and group media which include theatre, public address system, mobile cinema outreach activities and other indigenous knowledge systems. These channels are considered culturally appropriate, cheap, time-saving and group anchored (Imoh, 2013: 29). Research has also shown that involvement of social groups, age groups, clubs, churches, mosques, women groups, professional groups, non-governmental organisations and community based organisations has brought greater participation in the innovations to be adopted (Ashcroft *et al.*, 1981 cited by Imoh, 2013: 29). The effect of combining modern channels with indigenous knowledge systems should be inquired in context in Zimbabwe considering the heterogeneity of the resettled farmers. This is in the light of the fact that findings of case studies of three projects by Hagman *et al.*, (1998) in Masvingo, for example, revealed that PEA is a highly complex and demanding venture.

One of the most important lessons about participatory communication, according to Coldevin (2003: 7), is that communication with target groups in the planning stage gives a better project design and better chances of making it successful. Thus interpersonal communication is regarded by Coldevin (2003: 7) as basic to learning and change in rural areas and that no media can succeed it when it comes to adding persuasiveness and credibility to messages. Yet, there is a gap in literature on consideration of interpersonal skills and cultural orientations in agricultural extension workers' collaboration of agricultural information and technologies. Considering that farmer participation in agricultural research and development is an upcoming approach, the top-down conventional mindset still prevails among scientists, extension agents and policy makers (Leitgeb *et al.*, 2011: 365). In Zimbabwe, including target beneficiaries at planning stages is difficult due to the economic hurdles in the country thus travelling to reach all the farmers is not possible. Using other media could not be effective at this stage since it is important for extension workers to assess the environment and situations at grassroots levels. This compels mobilisation from all spheres of influence.

In the light of the importance of using favourable media highlighted above, Tufte and Mefalopulos (2009: 12-13) assert that in developing participatory communication strategies, specific concerns evolve around types of media, from folk, community and mass media to new media of internet and satellite communication; levels of media including local and community-based media to national and trans-media; nature of media including electronic, one way or interactive, face to face communication; institutional characteristics of media including public to private, national- to community-owned, free and independent to closely government controlled; economic logic informing the media including commercial media, non-profit media and mixed models. These factors largely inform the effectiveness of communication processes and should therefore be carefully considered in designing communication strategies, particularly where complex situations as the FTLRP where there was a lack of information, education and training, are concerned.

Servaes and Malikhao (2002: 19) acknowledge that within the generalised framework of power, participatory communication is seen by some as being a potential source of social transformation. On the one hand, Servaes and Malikhao (2002: 19) comment that due to the asymmetrical

characteristics of power in society, this position is generally optimistic regarding the prospects of transformation via participatory communication. On the other hand, pessimistic scholars view participatory communication as helpful in attaining structural transformations in the land tenure, political or economic arrangements of society, which are viewed as the root sources of subordination. Therefore, for Servaes and Malikhao (2002: 20), the link between participation and popular liberation movements constitutes the basis for negotiating problematic issues of power. From a more socially inclined perspective, Dipholo (2002: 66) argues that participation helps to develop a better compromise between what people want and what development agencies can offer. Dipholo's view of participation above seems viable in resource constrained environments as the Gweru district where the stakeholders are confined to work with what is available hence this quest for the most appropriate agricultural communication strategies.

Notably, research points out that Participatory Action Research (PAR) and similar methodologies that foreground community knowledge are circumstantially used, but they are rarely the starting point in development programmes (Waisbord, 2008: 509). Instead, programmes typically follow pre-established goals decided at the national, regional, or global levels. Programmes are hardly subjected to the "tyranny of participation," as Cooke and Khotari (2001) have argued. Participation was viewed as a too time-consuming approach that required intensive use of human resources (Mosse 2005), reflecting on the obstacles for integrating participation in a rural development project in India (Waisbord, 2008: 511). By definition, participatory communication contains the possibility of unexpected occurrences. Participation may interfere with the normal functioning of procedures including contracts, programme design, scheduling, implementation, and funding (Waisbord, 2008: 512). Thus, participatory communication runs contrary to a mentality that prioritises achieving rapid results within time-bounded funding cycles, which is the scenario in many development organisations (Leeuwis, 2004: 245; Tufte and Mefalopulos, 2009: 17).

Nonetheless, participatory communication postulates that communities should be the main drivers of processes of social change rather than passive beneficiaries of decisions made by foreign experts. In this sense, it questions the modernisation's view of development as an externally-driven process planned and implemented by Western technical experts (Waisbord, 2008: 507). For participatory theorists, "developmentalism" supports outside experts' dominance over local

communities. Consequently, participatory communication proposes a “communitarian” view that makes deliberation and participation in public affairs, rather than information-transmission (including message design and media technologies), the essential elements of communication (Waisbord, 2008). Furthermore, participatory communication conceives development as a transformative process at both individual and social levels through which communities become empowered. This differs from the view that links development to the achievement of economic progress and political institutions associated with Western democracies. Most crucially, participatory communication promotes local forms of knowledge and action as the springboard for social change (Waisbord, 2008: 507). Importantly, Mwanundu (2010: 14) notes that in some cases, a mix of different communication tools and approaches might be most effective, reinforcing this integration of both diffusion and participatory theories in the study.

The adoption of a strategy to promote participation is a critical aspect. In this regard, experience shows that a couple of interrelated elements are essential (Cernea, 1992): keep extension projects simple and manageable; differentiate various groups in the project area; work with different types of organisations; take advantage of all possible methods and techniques; and improve people's capacities to participate (Cristovao *et al.*, 1998: 78). In the light of the above, the following major lessons for extension are noted by Roling and Pretty (1998: 228): making visible new ideas, the state of the environment and the extent to which present farming practices are unjustifiable and demonstrating the feasibility of sustainable practices. Even more important is to give farmers the tools for observation and to train them to monitor the situation on their own farms. The other lesson cited by Roling and Pretty is to use farmers' knowledge and work together with them to promote indigenous practices (Roling and Pretty, 1998: 228). Yet another lesson is an emphasis on facilitating learning where extension workers should seek to understand the learning process, provide expert advice where required, convene and create learning groups, and help farmers overcome major hurdles in adapting their farms (Roling and Pretty, 1998: 228). Viewed this way, participatory development seeks out the kind of diversity which allows the differences between people and between communities to be realised rather than treating everybody as uniform objects of development (Mohan, 2001: 6). This is particularly apt in the heterogeneous population of the FTLRP smallholder farmers in Zimbabwe.

Ponniah *et al.* (2008: 89) state that in Zimbabwe, although still new, extension has also embraced participation. Participatory extension approach as developed and understood in Zimbabwe is an approach involving transformation in the way extension agents interact with farmers. Its characteristics are that it integrates community mobilisation for planning and action with rural development, agricultural extension and research; it is based on an equal partnership between farmers, researchers and extension agents who learn from each other and contribute knowledge and skills; it aims to strengthen rural people's problem-solving skills, planning and management abilities; it promotes farmers' capacity to adopt and develop new appropriate technologies; it encourages farmers to learn through experimentation, building on their knowledge and practice and blending them with new ideas; it recognises that communities are not homogeneous but consist of various social groups with conflicts and different interests, power and capabilities (Agritex, 1998 cited by Ponniah *et al.*, 2008: 89). The PEA approach emphasises the participatory facilitation role of extension.

However, the fact that participatory extension approaches are said to be in their trial stages in Zimbabwe poses problems with their use due to resource constraints, exacerbated by the complexity of the FTLRP. Notwithstanding, successful participatory approaches have been realised in some districts such as Chivi, Chimanimani and Gwanda (Masendeke *et al.*, 2010: 32-34). Both the challenges faced with and success stories of participatory communication necessitate this exploration of smallholder farmers' communication as this could help agricultural communicators to design tailor-made participatory approaches. Largely, a high level of expertise and commitment is required in order to embrace PEA, which in Zimbabwe is hindered by poor policy making and constraining policy shifts.

Different theoretical perspectives view the concept of participation in certain ways. For example, Huesca (2002: 11) notes that on the one hand, scholars coming out of behaviourist, mass media effects tradition acknowledge the critique of the dominant paradigm as an extension of domination and have incorporated participatory dimensions – although to a limited extent into their research. On the other hand, scholars critical of traditional development communication research embraced participation virtually as an utopian panacea for development. However, considering the challenges documented in the literature, participatory theory should not be viewed as a panacea for development but rather should be contextualised accordingly.

4.4 Link between diffusion of innovations theory and participatory theory

Morris (2005: 135-141) carried out a review on studies, not only on how the diffusion of innovations and participatory theories differ, but also on how they are increasingly being applied jointly in development projects and she concludes that elements of each of the two can be combined in a hybrid mode. As such, Jacobson (2003a: 90) cautions that participation was not a concept foreign to modernisation theory. Modernisation theory did not remain in its non-participatory state either. In a period of over twenty years, Rogers, the father of "Diffusion of Innovations", which is originally a modernisation theory, revised his theory, moving it from a solely one-way process of message transmission towards a definition that incorporates participatory aspects (Rogers, 1995, 2003) hence linking the two theories. These two theories were explored in order to determine how best they can be integrated in complex farming systems characterised by lack of information, education and training as those practiced by smallholder farmers in Zimbabwe.

Barranquero (2006: 923) espouses that communicational understanding stems out of reason from within communicative action and not so much mere knowledge. Thus, the communicative action situation creates an opportunity for reason and debate, which increases participants' ability to understand one another. Therefore, both diffusion and participation enhance knowledge not only to be diffused to farmers but also that they interact with and put the knowledge into relevant action for their farming development. Communication media and methods, then, become the main thrust of agricultural development communication, adopting McLuhan's view (1964: 23) that "the medium is the message", emphasis being that the use of a particular medium may well carry a message in itself (Leeuwis, 2004: 118). Recourse to the foregoing views, it was worth researching the dynamics of communicating with smallholders in order to determine the most effective communication models that enhance not only understanding but also adoption of high yielding innovations.

Biggs and Smith (1998) argue that recent work suggests the importance of flexibility and methodological adoption and that a mixed bag of participatory and conventional techniques may be appropriate. They further postulate that modernisation theory is indispensable to development but its application, especially in the third world where the majority of people still rely on subsistence agriculture, is limited, hence its modification to participatory theories. In the same

light, Morris (2003: 125) postulates that the diffusion model has evolved in a participatory direction since its initial formulation and participatory projects necessarily involve some element of information transfer. What should matter the most, then, is that communication agents should determine the best mix from these two theories based on the circumstances of the relevant stakeholders. The major challenge reiterated in Zimbabwe is lack of expertise among agricultural communication agents to design the best communication mix coupled by lack of resources. Such challenges should be addressed as the starting point to the promotion of effective communication.

Elaborately, Rogers (1993 cited by Huesca, 2002: 11) states that in the words of its proponents, the concept of participation served to reform the dominant paradigm, making it more expansive, flexible and humane. Yet Morris (2003) notes that most development communication projects tend to identify themselves quite clearly as belonging in one category or the other, a view which seems rather underrated. Therefore, based on the interrelation of the diffusion of innovations theory and participatory theory presented above, it can be said that one theory complements the other and hence the need to integrate them for successful agricultural communication and particularly so among smallholder farmers who operate complex farming systems with limited resources.

4.5 Chapter conclusion

In this chapter, the theoretical framework guiding the study, the diffusion of innovations theory and the participatory theory have been discussed. Although sprouting from the modernisation theory, diffusion of innovations theory has acknowledged the critique of its linear nature and recognised the limits of the mass media to directly provoke behavioural changes as well as the importance of interpersonal channels in the process of adopting new ideas. The participatory theory, while criticised for its complexity, is being implemented in problematic forms as documented. The elements of both theories could complement each other in a hybrid mode, thus the two theories have been found relevant in guiding agricultural communication. Considering that the study has been put into a framework, the subsequent chapter explicates the research process. The chapter explains the research methodology, focusing on how data was collected, presented and analysed; and then discussed.

CHAPTER 5: RESEARCH METHODOLOGY

5.1 Introduction

In the previous chapter, the theoretical framework underpinning the study has been presented: the diffusion of innovations theory and the participatory theory. While the diffusion of innovations approach has been found most effective at the knowledge stage, the participatory approach has been found most suitable at the persuasion stage of the communication process. Importantly, research indicates that elements of both theories can be combined in a hybrid mode. Therefore, the applicability of both theories in communication processes is best inquired in context. In the current chapter, the procedure for the research process is explicated. It includes the following: philosophical assumptions guiding the research, research design, sampling techniques, instrument and instrumentation, procedures for data collection, validity and reliability as well as ethical issues and data analysis and interpretation procedures.

5.2 Philosophical assumptions guiding the research

According to Du Plooy (2009: 20), every research tradition is characterised by assumptions that guide researchers in the way in which they approach the phenomenon under investigation, their theoretical viewpoints and the selections of methods and techniques. Creswell (2006) defines a research philosophy as a belief about the way in which data about a phenomenon should be gathered, analysed and used. Philosophical assumptions are said to be embedded within the interpretive frameworks that qualitative and quantitative researchers use when they conduct a study (Creswell, 2013: 22).

The following four interrelated categories of philosophical assumptions were considered in the research design: ontological, epistemological, theoretical and methodological assumptions (Du Plooy, 2009: 19). Ontology refers to the nature of social phenomena and the beliefs that researchers hold about the nature of social reality (Denscombe, 2012: 118). Therefore, ontological assumptions and commitments feed into the way research questions are formulated and research is carried out (Bryman, 2012: 35). The current study adopted both an objectivist perspective whereby the nature of reality was enquired through a structured and closed mode to acquire an objective truth and a constructionist perspective which enquired phenomena in an open ended way to gain multiple truths. This approach was considered in order to consolidate the two

paradigms in such a way that the limitations of one paradigm may be addressed by the other. Epistemology refers to the logic behind our ability to acquire knowledge of what the nature of social reality is (Denscombe, 2012: 119). The current study drew from both positivism and interpretivism. Positivism enabled the generation of numerical data from quantitative survey of the smallholder farmers. Interpretivism was used to obtain an understanding of the world from the agricultural extension workers' perspectives through qualitative survey (Tichapondwa, 2013: 106). Knowledge was arrived at both through the gathering of facts that provide the basis for laws (inductivism) and through grounding these facts in theory (deductivism). This approach enabled the researcher to draw a holistic picture of the communication of agricultural knowledge and information between agricultural extension workers and the FTLRP smallholder farmers in the Gweru district of Zimbabwe.

5.3 Research Design

In general terms, research design could be viewed as a plan of action for conducting research. Khotari (2004: 31) views research design as "the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose". Research design therefore explicates the procedure for conducting the study: what kind of data is to be collected, where to find it and using what instruments, the time frame for data collection and how data will be presented and discussed. The study sought to determine the dynamics of communicating with smallholder farmers in the Gweru district of Zimbabwe. The observation was that the FTLRP was affected by lack of information, education and training which impacted negatively on smallholder farming productivity in particular and farming productivity in general. The study anticipated that effective communication of agricultural innovations could influence increased productivity.

The study adopted both the quantitative and qualitative research designs which were administered concurrently to triangulate the results from the separate quantitative and qualitative components, enabling confirmation, cross-validation and corroboration of the findings within the study (Creswell *et al.*, 2003: 229). This was found the best approach to consolidate the smallholder farmers' communication needs with the strategies as well as the challenges faced by agricultural extension personnel in disseminating agricultural knowledge and information to the farmers. A closed questionnaire was administered to smallholder farmers resettled under the FTLRP in the

Gweru district to collect quantitative data. Simple random sampling was used. A semi-structured interview was conducted with the district agricultural extension workers to collect qualitative data. A purposive sample was used. The following table shows the research methods used to explore each research question as well as the respondents:

Table 5.1: Research method Plan

Research Question	Research Design	Respondents
1. What are the communication needs of Gweru district smallholder farmers resettled under the FTLRP in order for them to increase their agricultural output?	Quantitative and qualitative	Smallholder farmers and the extension workers
2. How effective are the communication media available for disseminating agricultural information to the smallholder farmers?	Qualitative and quantitative	Agricultural extension workers and the farmers
3. Are the demographic variables of the farmers associated with their adoption of agricultural innovations?	Quantitative	Smallholder farmers
4. In what ways do the characteristics of the agricultural innovations influence their adoption by the farmers?	Quantitative and qualitative	Smallholder farmers and agricultural extension workers
5. What are the possible strategies of effective communication between agricultural extension workers and the Gweru district smallholder farmers?	Qualitative	Agricultural extension workers

It is discernible from the research method plan in table 5.2 above that the study was equally both quantitative and qualitative. A descriptive and exploratory survey of the communication dynamics between agricultural extension workers and smallholder farmers was conducted. This

determined the farmers' agricultural communication needs and challenges faced with agricultural communication in the light of the fact that they are a heterogeneous group affected by lack of information, education and training programmes prior to their resettlement: factors which obviously affect their farming productivity.

The study conducted a survey from a population of 7699 smallholder farmers and from 52 agricultural extension workers in the Gweru district. The survey was both descriptive and exploratory. According to Forza (2002: 155), descriptive survey research is aimed at understanding the relevance of certain phenomena and describing the distribution of the phenomena in a population and is therefore quantitative in nature. A descriptive design is a rigid design which makes use of probability sampling and in this case a simple random sample was used. The design for data analysis was pre-planned and the data collection instrument was structured (Khotari, 2004: 39). A questionnaire guide was used to inquire the common farmer communication needs by determining their preference rankings of given items. When researchers set out to study an area in which there is not a well-developed body of theory, they might choose an exploratory or descriptive research design due to the fact that there is little work done previously and lack of theory on which to build (Denscombe, 2012: 105). This situation was typical of the study context.

The study also used the exploratory survey design which emphasises on the discovery of ideas and insights (Khotari, 2004: 36) and is therefore qualitative in nature. The exploratory design was flexible and non-probability sampling was used. In the study, purposive sampling was used. A semi-structured interview was used to gather data and there was no pre-planned design for data analysis (Khotari, 2004: 39). Thus the major objective of the qualitative aspect of the study was expansion: to gain an in-depth insight of the current state of communication dynamics between agricultural extension personnel and smallholder farmers, and finding out the challenges faced in agricultural communication. On the one hand, the quantitative research design sought to establish farmer communication needs in breadth and in numerical terms. On the other hand, the qualitative design sought to extend the depth of the enquiry by probing the nature of communication available and challenges faced by agricultural extension workers in communicating agricultural knowledge and information to smallholder farmers. This in-depth inquiry cannot be captured by the low order quantitative survey.

5.4 Research strategy: case study

The study was based on the case of the Gweru district smallholder farming community resettled under the FTLRP in Zimbabwe. This case was considered since it is in one of the regions affected by food insecurity, the Midlands region. A case is defined by Gillman (2000: 1) as a unit of human activity embedded in the real world; which can only be studied or understood in context; which exists in the here and now; and that merges in with its context so that precise boundaries are difficult to draw. A case study, then, was used to investigate the communication of agricultural information in the light of the lack of information, education and training during the FTLRP. Evidence was there in the case setting, and it had to be abstracted and collated to get the best possible answers (Gillman, 2000). Case study is a main method within which different sub-methods are used such as interviews, observations, document and record analysis, and work samples (Gillman, 2000). The study used questionnaires and interviews as the methods of data collection within the Gweru district case. Case study research examines all evidence and can include both quantitative and qualitative evidence, (Gillman, 2000: 10; Yin, 2009: 14) hence the mixed research design. The researcher employed both inductive and deductive reasoning in order to gain an in-depth understanding of the state of agricultural communication in the district and the challenges faced. Theory development facilitated the data collection phase of the case study which enhanced generalization of the case within the population (Yin, 2009: 30). The advantage of the case study is that it can “close in” on real-life situations and test views directly in relation to phenomena as they unfold in practice (Flyvbjerg, 2006: 35).

Stake (1994 cited by Baxter and Babbie, 2004: 304) distinguishes single-case studies, in which a single case is examined in depth, from what he calls collective- case studies, also known as multiple-case study design (Yin, 2009) in which a number of cases are studied for the insights they provide into the broader category of similar cases. In a collective-case study, the researcher typically presents a detailed description of each case separately (known as a within-case analysis), followed by a thematic analysis across cases (known as across-case analysis) (Yin, 2009). The study adopted a single case study since it was ideal for testing the suitability of diffusion and participatory theories in agricultural communication among farmers in the same agro-ecological zone and could have almost the same communication needs. This unique case

provided an opportunity to uncover some prevalent phenomenon previously inaccessible to scientists since the researcher got to the grassroots levels.

Case studies can be holistic or embedded (Yin, 2009: 41). When a single case study consists of sub-units, it would be called an embedded case study design. However, if a case study examines only one unit, it is regarded as a holistic design (Yin, 2009: 42). The study used an embedded approach where sub-units (smallholder farmers and agricultural extension workers) were examined to add significant opportunities for extensive analysis, enhancing insights into the single case (Yin, 2009: 44). However, the study did not ignore the larger holistic aspect of the FTRLRP context in the whole country and the challenges it posed. Districts with the same characteristics as Gweru could also benefit from the study findings.

5.5 Justification for using both the quantitative and qualitative designs

The distinctive feature of the mixed research method paradigm is that the choice of research questions and methods should be based on how useful the methods are for addressing a particular problem being investigated (Denscombe, 2012: 134). The quantitative design aggregated smallholder farmers' needs so the Gweru district was the unit of analysis. On the contrary, the qualitative design presented an in-depth state of agricultural communication in the district from the extension personnel's viewpoints. The advantage of quantitative-qualitative research design is that it provides a more complete picture of the phenomenon under study (Baxter and Babbie, 2004: 66). The apparent differences noted between the quantitative and qualitative approaches above mean that when combined, the weaknesses in one approach could be offset by the strengths in the other. Thus, it is asserted that the important feature of triangulation is an attempt to relate different kinds of data so as to counteract the threats to validity encountered in each (Berg, 2009: 6).

5.6 Study population

According to Bryman (2004: 87), population basically refers to "the universe of units from which the sample is to be selected." The study population was drawn from the Gweru district community of smallholder farmers resettled under the FTRLRP in the Midlands province of Zimbabwe as well as from the district agricultural extension workers. This population was

considered since the Midlands region is among the regions affected by food insecurity (Food Security Brief, 2012: 2; Zim Vac, 2014: 89).

5.7 Sampling techniques

Sampling implies an attempt to statistically represent a population (Seal, 2004: 510). In the quantitative research design, probability sampling was used and in the qualitative research design, non-probability sampling was used. A sampling unit is that element or set of elements considered for selection in some stage of sampling. In the quantitative design, the Gweru district smallholder (A1) farmers resettled under the FTLRP were the sampling units and in the qualitative design, the Gweru district agricultural extension workers were the sampling units. A sampling frame is the actual list of sampling units from which the sample, or some stage of the sample, is selected. In the quantitative design, the sampling frame was the resettled smallholder farmers' register and in the qualitative approach, it was the district extension workers' register.

5.7.1 Probability sampling

In probability sampling, the components of the sample are chosen from the larger population by a process known as randomization: selecting elements from a population in such a way that descriptions of those elements portray the parameters of the total population (Baxter and Babbie, 2004: 141), thus permitting estimation of the accuracy or representativeness of the sample. Probability sampling encompasses simple random sampling, stratified random sampling, cluster sampling and systematic sampling (Tichapondwa, 2013: 122). Random selection eliminates bias (Schulz and Grimes, 2002: 516). Simple random sampling was used. According to Khotari (2004: 60), a simple random sample is a sample which is chosen in such a way that each of the possible samples has the same probability of being selected. It offers access to the body of probability theory, which provides the basis for estimates of population parameters and estimates of error. The statistics acquired from the Department of Lands, Land Administration and Technical Services records management of the Midlands province updated in 2014 indicated that there were 7699 smallholder (A1) beneficiaries of the FTLRP in the Gweru district. Using the Raosoft sample size online calculator at: (<http://www.raosoft.com/samplesize.html>), a sample size of 366 ($n=366$) smallholder farmers, which is 5% of the population, was electronically calculated from a total population of 7699 smallholder farmers in the Gweru district.

From the sample of 366, the following estimations were made for the quantitative research design: a 95% confidence level, a 5% error margin and a 50% response distribution to overcome deficiencies. According to Babbie (2004), convention has established that we should aim for at least 95% confidence level for any response and a five percent error tolerance. Due to non-responses, 305 (83%) responses out of the target sample of 366 were realised. However, due to missing data, only 301(82%) responses were considered for analysis. The non-responses were attributed to the fact that some farmers were not based on their farms so they could not be found in order to distribute and collect the questionnaires.

The researcher used a table of random numbers (Baxter and Babbie, 2004: 141) to randomly select the sample of 366 farmers. The table consisted of eleven pages with 7700 digits to cover the population size. A single five digit number from the table was assigned to each element in the register from the first name listed until the population size of 7699 was reached (Baxter and Babbie, 2004: 151-152). This was found to be the most suitable sampling technique since the Department of Land, Land Administration and Technical Services neither categorised the farmers' register into the wards nor according to gender and age-group. However, the gender variable was by chance almost balanced. The researcher tried to curb the age-group bias by ensuring a high response rate and considering that the whole district was viewed as a unit with the same ecological characteristics, which could influence the farmers' communication needs in more or less the same ways. The criterion used to draw the sample was that the first four digits of each number were considered for all the selections until the sample of 366 was reached. From the fourteen columns, the researcher chose the even numbered columns: 2, 4, 6, 8, 10, 12 and 14. From the 550 rows, the researcher blindly dropped a pencil on the rows and it fell on the tenth row. Therefore, digits were picked from every tenth row up to 366.

5.7.2 Non-probability sampling

Non-probability sampling is regarded as unscientific and mainly consists of convenience, quota, purposive and snowball sampling (Tichapondwa, 2013: 123). Non-probability sampling is that sampling procedure which does not afford basis for estimating the probability that each unit has a chance of being selected in the sample. In the qualitative approach, the researcher used purposive sampling so that the sample was relevant to the research questions posed. Purposive sampling is used to select unique cases that are especially informative to identify particular types of cases for

in-depth investigation Neuman (2010: 149). In this case, that was in order to gain a deeper understanding of the state of agricultural communication in the smallholder and FTLRP context of the Gweru district from the extension workers' perspectives since they are responsible for imparting knowledge and information to farmers. Therefore, purposive sampling was used to garner an in-depth understanding and a variety of perspectives on the communication of agricultural information as well as the challenges faced, aimed at determining ways of improving communication and consequently productivity. The researcher interviewed 10 (19%) agricultural extension workers selected from the 52 extension workers in the Gweru district and these were considered adequate to capture the voice of the extension workers in the district. One weakness identified with purposive sampling is that of researcher bias in picking the informants (Khotari, 2004: 59). However, this limitation was curbed by being impartial and making sound judgement to increase reliability of the findings. Yet sampling error cannot be estimated and the element of bias is always there, a limitation of non-probability sampling hence this mixed research design.

5.8 Instrument and instrumentation

The instruments were designed by borrowing from Geilfus' tool of participatory appraisal in communication and extension called the "communication exchange problem census" which is used to draw up a census and analyse problems encountered by farmers in their relations with actors (Geilfus, 2008: 145). Geilfus' instrument suggests the following criteria in communication flows: awareness, relevance, accessibility, frequency, control (Geilfus, 2008: 145). In the current study, the instrument was used to determine the dynamics of communication between agricultural extension workers and smallholder farmers and was used in both the quantitative and qualitative research designs. It included all of the above-mentioned criteria.

5.8.1 Questionnaire guide

In the quantitative research design, the researcher used a questionnaire guide to collect data from the smallholder farmers. According to Hofstee (2006: 132), questionnaires are a form of structured interview where all the respondents are asked the same questions and are often offered the same options for answering them. The closed nature of the questionnaire caused validity to suffer hence the triangulation of designs. The questionnaire guide was divided into three sections. Section A consisted of the respondents' demographic details including gender, age-group, educational level, and agricultural training. Section B consisted of questions on communication

of agricultural knowledge and information while section C consisted of questions on the farmers' assessment of communication. Both section B and section C consisted mainly of three question types on the communication of agricultural knowledge and information. The question types were adopted from Du Plooy (2009) and Geilfus (2008) and include: dichotomous questions whereby the respondents answered "Yes or No", ranking questions whereby the respondents listed their options according to the most preferable and desirable to them and multiple choice questions whereby the respondents choose one option among related concepts. A pilot survey was conducted to curb ambiguity of questions.

5.8.2 Interview schedule

In the qualitative research design, the researcher used interviews to collect data from the agricultural extension workers. Baxter and Babbie (2004: 325) define a qualitative interview as "an interaction between an interviewer and a participant in which the interviewer has a general plan of inquiry but not a specific set of questions that must be asked using particular words and in a particular order." One of the strengths of an interview is its flexibility and as such the answers evoked by the researcher's initial questions shaped subsequent questions (Baxter and Babbie, 2004: 325).

The structure of the interview schedule for the agricultural extension workers was divided into two sections. Section A consisted of the interview respondents' demographic details with the following components: gender, age-group, employer, formal training in agriculture and years of work experience. Section B consisted of various, clear and unambiguous questions to cater for reliability in gaining an in-depth understanding on the communication flow of agricultural knowledge and information with the smallholder farmers. These were adopted from Du Plooy (2009), Baxter and Babbie (2004) and Geilfus (2008) and they included: open-ended questions to elicit underlying information and suggestions. Dichotomous, follow up, and mirror questions were also asked in order to try and get all the responses that could address the research problem. The semi-standardised interview involved implementation of a number of predetermined questions. The questions were asked of each interviewee in a systematic and consistent order but the researcher digressed and probed far beyond the answers to their prepared standardised questions. The researcher communicated in language familiar to the interviewee by adjusting the

level of language of given scheduled questions and through unscheduled probes (Berg, 2009: 107).

5.9 Procedures for data collection

A self-administered questionnaire was used to collect quantitative data on smallholder farmers' communication needs. The researcher translated the questions into the mother language (Shona and Ndebele) and administered them in the form of structured interviews to those farmers who could not understand the English language. In that regard, a considerable number of 100 questionnaires were administered in the form of structured interviews. The researcher employed a research assistant who assisted with the distribution and collection of questionnaires as well as translating to the mother languages where necessary. The questionnaires were distributed and collected physically. On average, the questionnaire took about 1 hour to complete when self-administered and about 1 hour 30 minutes to complete where a structured interview was used. Interpretation of language and meaning helped control the order of questions to respondents who did not understand the English language. It also controlled for who responded to the questionnaire. Self-completion questionnaire – though it is said to be cheap in the sense that it can be posted (Bryman, 2012: 233), was expensive in this study due to limitations such as financial resources. As such, the absence of postal services saw the researchers travelling the geographically dispersed distances to distribute questionnaire guides and to translate to those who did not comprehend the English language.

Semi-structured interviews were used to collect qualitative data from the agricultural extension workers. The interviews were face-to-face at the interviewee's convenience. In conducting the semi-structured interviews, the researcher digressed from the order in the interview protocol as prompted by the responses to the previous questions (Tichapondwa, 2013: 127). One advantage of face-to-face interviews was that the researcher could establish the interviewee's degree of conviction which was aided by non-verbal communication. The researcher took notes during the interview process since the interviewees were uncomfortable being recorded, pointing out the fear of victimisation due to the political instability in the country.

5.10 Pilot study

Pilot studies are small scale trial runs that researchers can use as a way of checking how well their proposed research design works (Denscombe, 2012: 106). A pilot study helps to identify the weaknesses in the design (Leedy and Omrod, 2013). A pilot study of the quantitative survey was conducted in order to eliminate ambiguity of the questions in the questionnaire. The same study was used to rephrase some of the interview questions since both instruments had the same focus. In the pilot study, the focus was: to ensure that the language level in the questions was appropriate and understandable to the audience; to test whether questions were understood as intended and to determine whether the order of questions was logical and instructions were correct.

The questionnaire was pilot-tested on the study population, the Gweru district community of smallholder farmers. The researcher distributed 40 questionnaire copies to those farmers available. Out of the 40 copies, 20 were returned, probably because farmers were busy in their fields when the pilot study was conducted in December 2014. The pilot study assisted in addressing ambiguous questions by rewording them in the simplest form possible to cater for the heterogeneous smallholder farmer community. It also assisted in clearly defining the concept of communication as it was being confused with that of information. The pilot responses were also used to reword the interview questions so that they adequately addressed the research problem.

5.11 Validity and reliability in research

Validity concerns the accuracy of the questions asked, the data collected and the explanations offered (Denscombe, 2012: 143). Since claims to validity involve more connection between research activity and what is accurate, it is quantitative researchers and those adopting a positivist, epistemological position who have placed most emphasis on matters of validity (Denscombe, 2012: 145). The relevance of the research questions in both the questionnaire guide and the interview schedule was checked with the research supervisor. The accuracy of research in light of whether it is asking the right questions and using the right indicators relates to its content validity. The right questions need to be contextualised, what (Denscombe, 2012: 145) calls construct validity. The content validity was checked through a pilot survey in which 40 questionnaire copies were distributed to smallholder farmers outside the sample. The researcher

catered for construct validity by putting questions into the smallholder and FTLRP context for both the questionnaire guide and the interview schedule.

In order to avoid limitations such as ambiguous replies and omissions which are difficult to interpret in the questionnaire (Khotari, 2004: 101), the researcher assisted respondents by reading through the questionnaire to clarify concepts. Where respondents who could not comprehend the English language were concerned, the researcher translated the questionnaire into the mother languages and administered it in the form of a structured interview to avoid misinterpretation of the questions (Neuman, 2012: 194). Some few self-administered questionnaires which were incomplete had to be thrown out to avoid problems of missing data in the analysis. The respondents to the self-administered questionnaire were given clear instructions on how to answer questions, to avoid distorting the order of questions (Bryman, 2012: 234). The researcher hoped that those weaknesses of the survey which could not be addressed would be offset by the qualitative data.

Qualitative researchers should demonstrate that interpretations are dependable, by making it possible for an external check to be conducted on the process by which the study was done (Baxter and Babbie, 2004: 298). As such, the researcher filed documentation of the research process and the instrument copy is attached as an appendix. The logic used in data collection was systematic, coherent and explicit. The researcher provided a thick description of the group under study, so that readers can judge for themselves whether or not and how the researcher's analysis is relevant to them. Reliability relates to the methods of data collection and the concern that they should be consistent and not distort the findings. In that regard, the researcher made sure that she clarified all interview questions in the same way and without distorting the intended sense.

Credibility of findings ensures that research is carried according to the canons of good practice (Baxter and Babbie, 2004: 298). To this end, the researcher promised to submit the research findings through the leadership of the community studied for confirmation that the researcher correctly understood the social context. The researcher also catered for confirmability by ensuring that personal values or theoretical inclinations did not sway the conduct of the research. Largely, authenticity was catered for by clarifying the political context in which the research was

conducted (Bryman, 2012: 390). The researcher took notes for the interview data. The interviewer explained questions in detail, restructuring questions for clarity (Khotari, 2004: 98).

5.12 Problems encountered during data collection

One major challenge faced during data collection was that in the quantitative survey, some respondents did not understand the English language so questions had to be translated into their mother languages. This slowed down the data collection process since the responses had to be transcribed without distorting the intended meaning. The researcher incurred high costs travelling the geographically dispersed distances to conduct interviews, to distribute and collect the questionnaires. Some of the areas were impassable due to poor road conditions. Furthermore, other farmers do not stay at their farms, therefore, it was difficult to locate them. As a result, the researcher ended up seeking participation from those that could be accessed in order to increase the responses and cut travelling costs, a situation that caused a bias in the sampling procedure. In the qualitative survey, it took long to find the agricultural extension workers who were busy facilitating the area agricultural shows thereby increasing travelling costs. Some other questionnaires copies were returned uncompleted probably due to political scepticism where the majority of the farmers highlighted political instability in the country. With regard to the political instability issue, all respondents, though having consented to participate, refused to sign the consent form for fear of victimisation even though the researcher tried to explain that the study was academic and had nothing to do with politics. Due to the stated constraints, the target sample of 366 could not be reached for the quantitative survey.

5.13 Data analysis and interpretation procedures

Basically, data analysis involves discovering patterns among the collected data, so as to identify different trends that point to theoretical understanding (Babbie, 2004: 284). Quantitative data were coded numerically and presented using Microsoft Excel products such as tables, charts and graphs, and Microsoft Word. Coding involved categorizing the pieces of data by relating concepts after which data were analysed and interpreted using descriptive statistics in software called the Statistical Package for the Social Sciences (SPSS) (Seal, 2004). The study associated the respondents' demographic variables with adoption of agricultural communication which were analysed using inferential statistics by means of Chi-Square tests.

Qualitative data were coded, categorised and represented in tables and a discussion, and then condensed into themes (Creswell, 2013: 180). The data was coded manually. Grounded theory was used where data was based on the words and actions of those under study (Goulding, 2004: 296). Codes were descriptive and in the form of short phrases to capture the main idea in each question asked (Lapan, *et al.* 2012: 46). Data was transcribed from the interviews by means of emic analysis whereby the interviewees' categorisation of behaviour was regarded as the reality in the study context. The researcher then moved from emic to etic analysis whereby the interviewees' views were evaluated through conceptual categories from the literature and theory to provide a grounded and detailed view of the state of agricultural communication in the Gweru district (Lindlof and Taylor, 2011: 94-95). In Vivo codes where data was taken directly from what participants said were used where necessary and placed in quotation marks (MacQueen, *et al.*, 1998). Codes were then grouped into categories according to the interaction patterns they addressed in agricultural communication between the extension workers and the smallholder farmers. The categories were then compared with each other and their interrelationship formed the basis for theoretical understanding in smallholder agricultural communication. The findings from both the quantitative and qualitative data were consolidated after the data had been analysed separately, then a meta-inference was drawn to integrate the inferences made from the separate quantitative and qualitative data findings (Onwuegbuzie and Burke (2008: 281).

5.14 Ethics in conducting the research

Ethical procedures should be religiously observed when conducting research mainly in order to avoid conflict with and harm to elements involved in the research process. Thus Leedy and Omrod (2013: 104) advise that whenever human beings or other creatures with the potential to think, feel and experience physical or psychological distress are the focus of investigation, researchers must look closely at the ethical implications of what they are proposing to do. Therefore, ethical procedures in conducting this research were adopted from the North West University research ethics policy and the Human Science Research Council's guidelines. As such, authorisation to conduct the research in the Gweru district of Zimbabwe was sought from the North West University through the Faculty of Human and Social Sciences and the Department of Communication.

The researcher applied for a research ethics approval after which an ethics clearance certificate was acquired from the Human and Social Science faculty higher degrees committee. This is attached to the research document as appendix A. The researcher sought permission to collect data in the study community through the Department of Lands, Land Administration and Technical Services from where the farmers' register was acquired and from the department of AGRITEX. Voluntary participation was sought and participating members were assured of confidentiality of the information they gave to the researcher. An informed consent letter was attached to the questionnaire and interview guides that participants were supposed to sign to show consent. Participants were informed about the purpose of the research, expected duration of the questionnaire completion and the interview as well as the procedures to be followed. Confidentiality was achieved by responding to the questionnaire anonymously and by assuring the questionnaire respondents as well as the interviewees that the data collected would be used for academic purposes only.

Participants were informed of their right to withdraw from the research after it had started but were however cautiously warned of the consequences of doing so – slowing down the research progress and limiting the research findings. The researcher also informed the participants of the incentives they would get for participating as motivation after which they received. The incentive was in the form of a small gift hamper consisting of stationery (exercise book, pencil, rubber and ruler) to encourage them to record their farming progress. The participants were informed to contact the researcher or the research supervisor if they had any questions. Participants were promised objective data analysis and interpretation and that findings would be presented to them through their leadership. Prospective benefits of the research were also highlighted to the participants. Most importantly, the researcher observed respect for intellectual property by acknowledging all sources used in the research.



5.15 Chapter conclusion

In this chapter, the research process has been explicated. The philosophical assumptions guiding the quantitative and qualitative research approaches have been explained in order to distinguish the two. The research design has been presented. A descriptive and exploratory survey was conducted to explore the dynamics of communicating with smallholder farmers in the Gweru district of Zimbabwe. Both the quantitative and qualitative designs were administered

concurrently in order to provide a more complete picture of the state of agricultural communication in smallholder farming in the context of the FTLRP. Probability sampling and non-probability sampling was used in the quantitative and qualitative approaches respectively. A self-administered questionnaire was used to collect quantitative data and a semi-structured interview was used to collect qualitative data. Validity and reliability was improved by combining the quantitative and qualitative designs. The measures taken to curb the limitations in both designs have been presented. The problems faced during data collection and how this affected the data gathering process has been highlighted. Quantitative and qualitative data were analysed separately and then consolidated to draw conclusions. Research ethics were observed in conducting this research. In the consequent chapter, data are presented and analysed and then discussed in order to draw findings of the research.

CHAPTER SIX: DATA PRESENTATION, ANALYSIS AND DISCUSSION

6.1 Introduction

In the previous chapter, the research procedure has been expounded, including issues of philosophical approaches to the research, research design and justification, validity and reliability of the research process, ethics observed and problems encountered during data collection as well as the data analysis and interpretation procedures followed. In this chapter, data are presented and analysed, then discussed in order to determine the findings on the effectiveness of communicating with smallholder farmers in the Gweru district of Zimbabwe. This brings out the challenges faced and determines suggestions for improvement. Qualitative data are analysed separately from quantitative data after which consolidation of the two separate data sets is done in the discussion section to get a holistic picture of the communication of agricultural knowledge and information with the FTLRP smallholder farmers in the Gweru district. The study findings are presented in relation to the research objectives. Related literature is used to reflect on the study findings. The theoretical underpinnings of the study - the diffusion of innovations and participatory theoretical approaches are applied in order to investigate the effectiveness of communication of agricultural innovations in the district. The study sought to understand the possibilities and limitations in agricultural communication processes in the context of the FTLRP with a view to improve on current practices and possibly generate some models that could better enhance communication and consequently productivity and food security.

The study sought to investigate how the following variables influence the dependent variable of effective agricultural communication with smallholder farmers:

1. Demographic variables (gender, age-group, educational level, and language);
2. Communication media (extension media, mass media, folk media, new media, associated media);
3. Innovation characteristics (relative advantage, compatibility, complexity, trialability and observability).

The variable of innovation characteristics has been adopted from Rogers (1971, 1983) who argues that these influence adoption of an innovations and the rest of the variables have been adopted from a variety of perspectives in the literature such as Odalele (2005: 250) who encapsulates that social scientists investigating farmers' adoption behaviour have accumulated

considerable evidence showing that demographic variables, technology characteristics, information sources, knowledge, awareness, attitude and group influence affect adoption behaviour.

The research objectives are restated as follows. To:

1. Determine the communication needs of smallholder farmers resettled under FTLRP in the Gweru district in order for them to increase their agricultural output; [quantitative and qualitative]
2. Find out the effectiveness of the communication strategies available for disseminating agricultural innovations to the smallholder farmers; [quantitative and qualitative]
3. Determine whether or not the biographical variables of the farmers are associated with their adoption of agricultural innovations; [quantitative]
4. Determine how characteristics of the agricultural innovations influence their adoption by the farmers; [quantitative and qualitative]
5. Determine possible strategies of effective communication between agricultural extension workers and the Gweru district smallholder farmers. [qualitative]

6.2 Presentation and analysis of the interview findings

In this section, findings of the interview schedule are examined. The semi-structured interview was in two sections. Section A provided the demographic profile of the extension workers interviewed and section B provided findings on the communication of agricultural information from the agricultural extension workers' perspectives so as to consolidate it with questionnaire responses from the smallholder farmers. The interview schedule addressed research objectives number one, two, four and five except objective three. Ten agricultural extension workers (19%) were interviewed out of the 52 in the district to get a variety of perspectives on the communication of agricultural knowledge and information with the farmers.

6.2.1 Section A: Demographic profile of the extension workers

This section presents the demographic details of the extension workers interviewed. This comprised gender, age-group, and level of formal agricultural training as well as work experience all of which could influence the quality of agricultural communication.

6.2.1.1 Distribution by gender

There were 9 (90%) female and 1 (10%) male interview respondents in the sample. The researcher found the interviewees according to availability, therefore it is not known whether there are more female than male extension workers in the district. Literature has indicated that some cultures are reserved about the interaction of male and female gender (Jiggins *et al.*, 1998: 95), a factor which calls for the balancing of male and female gender among extension personnel. However, in the current study, it was unlikely that gender could influence the communication process since the questionnaire findings indicated that cultural values and beliefs were the least considered in adoption of agricultural communication.

6.2.1.2 Distribution by age-group

The findings indicated that the majority of the interviewees 4 (40%) fell under the 42+ age-group and this age-group usually plays an advisory and guidance role to the younger workers which was a positive sign considering the much needed knowledge and information by the resettled farmers. This was followed by the 24-29, 30-35, and 36-41 age-groups with 2 (20%) respondents each. This range from 24 to 41 years falls under the category of the productive age and therefore should be seen to be actively engaged in imparting agricultural knowledge to farmers. None fell under the 18-23 year age-group. This could be viewed in a positive light since there is a high level of maturity required to communicate with and convince the heterogeneous groups of farmers to adopt innovations.

6.2.1.3 Distribution by level of formal agricultural training and work experience

Educational qualifications and work experience are interrelated since the one strengthens the other. The majority of the responses 5 (50%) had agricultural college certificates, followed by 4 (40%) with agricultural college diplomas and 1 (10%) with a university undergraduate degree. None had a postgraduate degree. Considering work experience, 7 (70%) had between 5-10 years' work experience, which is adequate to attain expertise in agricultural technology and hence effective communication of the knowledge. However, there was notable discrepancy between work experience and qualification, for instance, out of the 7 informants with 5-10 years of work experience, 3 had college certificates, 3 had diplomas and only 1 had a university undergraduate degree. There was 1 (10%) respondent with 10+ years' work experience and had a diploma. One (10%) of the informants had 2-5 years' experience and holding a certificate. One (10%) had 6

months to 2years' experience, holding a certificate. None of the respondents had less than 6 months' work experience. The majority of the informants, 5 (50%) held agricultural college certificates and this implies inadequate training considering the dynamic state of society where employees need to keep abreast with trends in their fields. This could impact negatively on the effectiveness of agricultural communication.

6.2.2 Section B: Findings on the state of smallholder agricultural communication in the Gweru district

In this section, the findings on the state of communication of agricultural knowledge and information from the extension worker interviewees' perspectives are presented and analysed. The findings are grouped according to the objectives they address. The data are coded by deducing sub-headings from the research questions for easier categorisation and analysis. The literature has indicated that when choosing traditional, new or convergence tools, communicators are urged to consider their capacity, access and needs in terms of costs, language and accessibility by the poor and marginalised (Coldevin, 2003: 11) and these are captured in the analysis and discussion presented below. The following presentation is based on the first objective which sought to determine the communication needs of smallholder farmers resettled under FTLRP in the Gweru district in order for them to increase their agricultural output.

6.2.2.1 Role confirmation

The first question posed (B1) determined role confirmation from the extension worker interviewees. The interviewees indicated the following as the roles they play in smallholder agricultural communication: disseminating agricultural knowledge and information 6 (60%) responses, training farmers to improve agricultural production 3 (30%) responses, and providing knowledge about farming and mobilising farmers to uptake innovations that enhance increased productivity 1 (10%) response. All the responses above imply the upgrading of farmers' knowledge and skills as well as influencing their social change and this enabled the researcher to proceed with the interviews in the light that the sample chosen was relevant to the study objectives. These findings echo Rogers's (2003) assertion that diffusion of innovations is a kind of social change, therefore, it is the responsibility of extension workers to ensure that positive social change is occurring in smallholder agricultural practices.

6.2.2.2 Pressing smallholder farmer communication needs

Question (B13) inquired what communication needs were pressing among the smallholder farmers. The question was a mirror to B1 above since it would be discernible whether or not the extension workers' roles were relevant to the farmers' communication needs. The majority, 7 (70%) of the interviewees indicated the need for financial resources to access knowledge and information, five (50%) indicated the need for communication infrastructure and proper communication networks. Two (20%) indicated the need for communication literacy and credible communication sources. On the contrary, 2 (20%) said there were no pressing communication needs among the smallholder farmers. Though the two other indicated needs can be covered by the extension workers' roles stated, the need for communication infrastructure and proper communication networks is not covered in the stated roles. The findings of the need for communication infrastructure and networks as well as credible communication sources reflect on the argument by Rogers *et al.* (2003: 7) that communication scholars are interested in diffusion as a communication process, independent of the type of innovations that are diffused. However, the current study has extended this view by further inquiring the information that smallholder farmers need to be communicated to them since this also determines the communication processes to be engaged.

The following presentation and analysis is based on the second objective which sought to find out the effectiveness of the communication strategies available for disseminating agricultural innovations to the smallholder farmers.

6.2.2.3 Stakeholder analysis

The second question (B2) focused on stakeholder analysis. Thus the interviewees were asked factors they consider in designing the smallholder agricultural communication so as to gauge the relevance of their communication strategies. The majority 7 (70%) indicated socio-linguistic factors: education, age, gender, religious beliefs, farming sector and language. However, this majority confirmed that they consider the stated socio-linguistic factors, time permitting, implying that time to plan communication strategies is a constraint to the extension workers. Five (50%) said they use influential people in the communities to find out common communication needs. One (10%) indicated starting from the very basic information in order to accommodate everyone. One (10 %) considered the geographic location where farmers are

settled. The majority who indicated socio-linguistic factors confirmed an attempt to design tailor-made channels, contending with Cole's (2003) view that development support communication activities and the materials selected and produced have to be relevant to the intended audiences. These findings reiterate the participatory communication view that a project's planning and objectives should be situation realistic in the context of the people's needs at the local level (Imoh, 2013: 17). However, the indicated time constraint might suggest some inadequacies in stakeholder analyses which could impact negatively on the quality of agricultural communication.

6.2.2.4 Prevalent communication media and methods

Question (B3) focused on the communication media and methods used at each of the diffusion-adoption stages. When consolidated with the quantitative findings, this could determine whether the extension workers were aware of what farmers consider the most effective media and methods in the dissemination of agricultural communication. At the knowledge stage where farmers are first informed of an innovation, the major media indicated were field demonstrations and group training with 5 (50%) responses in each case. Meetings were also mentioned with 3 (30%) responses. Other methods indicated were workshops, trials and supplementary material such as pamphlets with 1 (10%) response in each case.

At the persuasion stage, where farmers seek more knowledge to decrease uncertainty about innovations, the majority 7 (70%) indicated incentives such as sample packages. Four (40%) of the respondents indicated issuing of achievement certificates, 2 (20%) indicated farm demonstrations, 2 (20%) indicated consulting with local leaders, 2 (20%) stated farmer field schools and 1 (10%) cited use of training manuals. At the decision stage where farmers form attitudes to adopt or reject the innovations, the majority cited participatory rural appraisals and look and learn tours with 5 (50%) responses respectively. Demonstration packages and field days were also cited with 2 (10%) responses in each case, then training manuals with 1 (10%) response.

At the implementation stage where the farmers put the innovations into practice, most interviewees, 9 (90%) cited individual visits, 1 (10%) stated land auditing and 1 (10%) stated loan recommendations. At the confirmation stage where farmers review or confirm their decisions to adopt the innovations, result demonstration whereby output comparison is done was the most

cited response, with 6 (60%) respondents citing that, farm visits 3 (30%), then incentivised competitions and stakeholder mobilisation were also cited with 1 (10%) response each. The most cited methods of communication at each of the stages are presented in the following table.

Table 6.1: Most cited methods used at each stage of the diffusion-adoption process

Communication stage	Most cited communication media/method
Knowledge	Field demonstration (50%)
	Group training (50%)
Persuasion	Incentives (70%)
Decision	Participatory rural appraisals (50%)
	Look and learn tours (50%)
Implementation	Individual farm visits (90%)
Confirmation	Result demonstrations (60%)

It is discernible that the main media and methods used in the diffusion-adoption process are extension approaches, an observation which raises the question of whether or not other media approaches could be useful in this process. For example, according to Rogers (1983), the mass media was found more effective in creating knowledge of innovations since they can reach large audiences in a swoop. Although most extension approaches have been found mainly ideal for attitude change as supported by theorists like Mowlana and Wilson (1988: 14) who argue that development communication should be based on dialogue, this does not mean that they are effective on their own. The findings indicate that the extension workers mainly use traditional extension approaches in the diffusion and adoption process, a factor which might suggest inadequacy of communication. The finding falls short of integration as asserted by Tufte and Mefalopulos (2009: 12-13) that in developing participatory communication strategies, specific concerns evolve around types of media from folk, community and mass media to new media of internet and satellite communication.

6.2.2.5 Prevalent participatory extension approaches

Question (B4) sought the listing of participatory extension approaches used to disseminate agricultural knowledge and information. This could reveal the extent to which participatory communication is used. The most cited response was look and learn tours with all 10 (100%) interviewees stating it, followed by farmer field schools and innovative farmers' workshops with 9 (90%) stating them in each case. One observation by the researcher is that "look and learn tours" is not a participatory method. Therefore, since the researcher had explained the concept of participation to the interviewees, this finding might suggest that the extension workers use look and learn tours for convenience. Eight (80%) of the interviewees cited participatory rural appraisals. Rapid rural appraisals were stated by 4 (40%) of the interviewees and lastly participatory technology development was cited by 2 (20%) of the interviewees. One of the interviewees indicated that smallholder farmers do not have much machinery to use so training them how to develop and use agricultural technology is not a priority, which could explain why participatory technology development was the least cited. These findings indicate that the interviewees were aware of the most widespread participatory approaches like the PRA. Research indicates that PRA is regarded as the best known participatory approach which became popular in the 1980s (Chambers, 1994). However, the cited newness of these approaches exacerbated by resource constraints of the FTLRP in Zimbabwe might hinder their use (Hanyani-Mlambo, 2002: 84).

6.2.2.6 Challenges of participatory extension

Question (B5) was a follow up to question (B4). It inquired the challenges faced with the use of the extension approaches in (B4) if any. The most cited challenges with 6 (60%) of the interviewees citing them each were lack of resources among both extension workers and farmers, as well as high illiteracy rate among farmers. One interviewee indicated that high illiteracy results in low farmer participation. This majority (60%) argued that lack of financial resources for collaboration materials on the part of extension workers limit participatory programmes. On the part of the farmers, it was said to result in low motivation to participate in the communication programmes. The other cited challenges were poor infrastructure such as roads limiting access to farmers and farmers' lack of motivation to participate with 5 (50%) interviewees mentioning these in each case. Other cited challenges were lack of extension personnel expertise with 3 (30%) stating it, lack of human resources with 2 (20%) indicating that, poor knowledge of

training needs with 1 (10%) interviewee citing it and farmer rigidity (resisting new knowledge) with 1 (10%) interviewee stating that. All the challenges indicated hamper the effectiveness of the extension approaches used which might suggest the need for a review of extension policy in the country. Despite these challenges, successful PEAs have been realised in Zimbabwe such as the cases of Chivi district in Masvingo, Chimanimani in Manicaland and Gwanda district, Matebeleland South (Masendeke *et al.*, 2010:32- 34). Yet the experiences on the ground have proved that a large pool of resources is required to make PEAs a success (Hagmann *et al.*, 1998: 10-12). As the case of the Zimbabwe FTLRP has proved, sudden political turnarounds can easily disrupt such processes in a devastating way (Hagman *et al.*, 2003: 36). Critical factors have been cited as the lack of skilled personnel and availability of equipment in good working order (Chipika and Friis Hansen, 2004: 76), agreeing with the current findings.

6.2.2.7 Communication integration

Question (B6) inquired whether there is integration of mass and interpersonal media of communication in disseminating agricultural knowledge and information in order to explore the effectiveness of a multi-media approach to agricultural communication. The majority 7 (70%) confirmed combination of mass and interpersonal media in their communication of agricultural information. On the contrary, 3 (30%) of the interviewees said they wished they could integrate interpersonal and mass media channels but in practice, they said that they could not do so because the political order of the country hampers agricultural communication and that all programmes on mass media are censored. This minority concurred that the government is sceptical of being exposed for its lack of support for smallholder agricultural communication and hence the censoring of agricultural communication programmes. This finding agrees with the view by (Mugwisi, 2013: 53) that farmer information programmes on mass media in Zimbabwe are criticised for their politicized and transient nature. One of these three interviewees cited that it is expensive and time consuming to produce mass media programmes such as drama and that the Ministry of Agriculture has lack of influence over mass media institutions to schedule agricultural communication programmes.

6.2.2.8 Effect of communication integration

Question (B7) was a follow up to (B6) and sought to determine the effect of integrating mass and interpersonal media in communicating agricultural knowledge and information. This was a quest

to determine the feasibility, in the FTLRP context, of Morris' suggestion of combination of diffusion and participatory approaches into a hybrid mode (2005 cited by Paolo, 2008: 57). Five (50%) of the interviewees cited that integrating media improves motivation and caters for non-participants of extension programmes. For example, one of the interviewees said "Those who might have say, missed folk drama can watch the drama on television after it has been programmed or can watch missed programmes on farmers' programmes like Talking Farming". One (10%) cited the effect of wide reach and more effectiveness when interpersonal extension programmes are broadcast over the mass media. This finding concurs with Biggs and Smith (1998) who posit that recent work suggests the importance of flexibility and methodological adoption and that a mixed bag of participatory and conventional techniques may be appropriate. In the same light, Morris (2003: 125) postulates that the diffusion model has evolved in a participatory direction since its initial formulation and participatory projects necessarily involve some element of information transfer.

6.2.2.9 Agricultural training and support

Question (B8) sought to find out if there are any other training and support programmes meant to upgrade farmers' knowledge and skills in agricultural technologies. This question was asked in order to determine the diversity of institutions that contribute to agricultural communication thus enriching farmers' agricultural knowledge and skills in the country. The majority 8 (80%) confirmed availability of agricultural training programmes, citing examples such as farmers' training workshops offered by agricultural colleges and universities, agricultural boards and input manufacturers; short courses offered by universities and cooperatives such as dairy farming offered by the Zimbabwe Association of Dairy Farmers; and master farmer training offered by agricultural colleges and universities, which can be a two year programme to acquire a general agriculture certificate and a three year programme for an advanced certificate. On the contrary, 2 (20%) of the interviewees indicated that there were no training and support programmes and that institutions invite farmers for look and learn tours only. This minority voice might suggest that there is some cause for concern regarding agricultural training and support to smallholder farmers, the majority of whom are poor and marginalised. This minority echoes the literature. For example, Scoones *et al.* (2011: 11) notes that extension workers are few and veterinary care almost non-existent and that people have relied on their own knowledge and skills to develop their agriculture. If the minority view is to be adopted, then it suggests that agricultural training

and support is lacking in the district. Yet research asserts that if the new resettlements are to contribute to national food security, they require investment and support (Cliffe *et al.* (2011: 926).

6.2.2.10 Feedback

Question (B10) inquired how the agricultural extension workers get feedback from farmers as this could also determine their communication effectiveness. The most cited method of getting feedback was consultation with local leaders with 6 (60%) of the interview respondents stating that, followed by meetings with farmers 5 (50%), then farm visits 3 (30%). The least cited methods were: individual farmer reports, yield assessment, agricultural gatherings, farmers phoning in and farmers' groups with 1 (10%) respondents each. The use of consultation with local leaders which was cited the most might be questioned on the basis that the local leaders may not know each individual farmer's needs therefore may misrepresent the farmers. This might suggest that extension workers do not have enough time to meet with all the farmers thus reaching them through their representatives which may negatively affect the communication.

6.2.2.11 Credibility of information sources

Question (B11) sought the listing of sources that extension workers liaise with for agricultural knowledge and information in order of their importance and credibility. This could determine the extension workers' resourcefulness. The most cited source regarded as credible and important was mass media with all the 10 (100%) of the interviewees citing it. These were followed by seed and fertilizer manufacturers cited by 9 (90%) of the interviewees, then marketing boards indicated by 7 (70%) of the informants. Agricultural technology manufacturers were cited by 5 (50%) of the interviewees and lastly was agricultural insurance agents cited by 4 (40%) of the interviewees. One interviewee said that mass media is consistent with and credible in its communication of agricultural information unlike other sources which are more concerned with promoting their products, citing the example of seed and fertilizer manufacturers.

6.2.2.12 Communication evaluation

Question (B12) sought to determine how the extension workers evaluate the success of communication programmes with the smallholder farmers. The majority 5 (50%) indicated measuring the adoption rate, followed by observing and analysing yields with 4(40%) responses

and lastly question and answer, with 2 (20%) interviewees citing that. This finding suggests availability of evaluation tools.

The following presentation is based on the fourth objective which sought to determine how the characteristics of the agricultural innovations influence their adoption by the farmers.

6.2.2.13 Factors influencing adoption

Question (B9) sought to determine factors influencing farmers' adoption rate of agricultural innovations from the interviewees' perspectives. This could help extension workers incorporate those factors into their design of communication strategies. The most cited factor was relative advantage, being cited by 5 (50%) of the interviewees, followed by observability and trialability cited by 4 (40%) of the interviewees each. The fourth cited innovation characteristic was compatibility indicated by 3 (30%) of the interviewees. The fifth cited was complexity with 1 (10%) interviewee citing it. The findings largely imply that the extension workers are aware that farmers need to be convinced of the benefits of adopting a new agricultural activity over the present one, a factor which reiterates the need for communication effectiveness.

The following discussion is based on the fifth objective which sought to determine possible strategies of effective communication between agricultural extension workers and the Gweru district smallholder farmers.

6.2.2.14 Measures being taken by AGRITEX to support smallholder agricultural communication

Question (B14) sought to find out measures being taken by the department of AGRITEX to support communication with the resettled smallholder farmers. The most cited measure, with 5 (50%) interview respondents, was using local leaders to motivate and mobilise local communities, followed by sending letters through local schools 4 (40%). The other indicated methods were, using SMSs via mobile phones, one on one interviews with farmers, improving folk drama and song, more frequent farm visits, upgrading extension workers' skills to improve expertise, training more personnel to improve extension worker-farmer ratio, providing extension workers with transport for mobility, providing extension workers with accommodation near or in their working areas and giving them their own farms, and effective use of competitions with 1 (10%) response each. These findings contradict the examination by Clarke (2002: 357) which

reveals that extension is generally reaching a small percentage of smallholder farmers in developing countries because it is under-funded. Particularly, the (GoZ and FAO, 2012-2015: 11) reiterate lack of resources for agricultural support in Zimbabwe.

6.2.2.15 The interviewees' opinions of how smallholder agricultural communication could be improved

The last question (B15) probed the interviewees' opinions of what measures could be taken to improve agricultural communication with the resettled smallholder farmers. This question was a mirror to B14 above in order to find out if the measures stated in B14 are indeed being implemented. These suggestions could add to the improvement of policy on agricultural communication. The majority indicated increasing network connectivity and conducting frequent meetings with farmers, with 5 (50%) responses each, improving transport linkages 3 (30%) interviewees, giving farmers subsidies for motivation, with 2 (20%) of the interviewees citing that, conducting communication needs analyses with 2 (20%) stating that, mobilising various stakeholders to assist with agricultural knowledge and information dissemination, increasing participatory activities such as small group projects, and increasing associated media such as pamphlets and flyers, with 1 (10%) respondent each. This finding suggests that there are some challenges in the measures purported to be taken by the AGRITEX department to improve smallholder farmers' communication.

6.2.3 Agricultural extension workers' perspectives of communication with FTLRP smallholder farmers in the Gweru district and implications for agricultural development

The coded, presented and analysed data above is categorised and examined in order to deduce themes pointing to theoretical understanding.

6.2.3.1 Quality of communication and advisory

The demographic details of the agricultural extension workers and their role confirmation determine the quality of communication and advisory provided to smallholder farmers. The data indicated that although the majority of the interviewed extension workers had considerable work experience of between 5-10 years, they held agricultural college certificates. A few had diplomas and only 1 out of the 10 interviewees held an undergraduate degree. This could imply a lack in the quality of knowledge, information and skills imparted to the resettled farmers who are a heterogeneous group, with some not having prior agricultural knowledge. Therefore, upgrading

of extension worker skills should be hailed as the starting point to improving communication with the farmers. In as far as their roles in agricultural communication were concerned, the interviewees stated the following in order of the most cited: disseminating agricultural knowledge and information, training farmers to improve agricultural production, and providing knowledge about farming and mobilising farmers. These roles imply that considerable knowledge and skills are required in order for extension workers to communicate agricultural knowledge and skills effectively.

6.2.3.2 Adequacy and effectiveness of agricultural communication efforts

The interviewees were asked to state the prevalent communication media and methods at each stage of the diffusion and adoption of agricultural communication; prevalent participatory extension approaches; agricultural training and support opportunities available, integration of communication strategies and available methods of giving feedback. All these factors impact on the adequacy and effectiveness of communication provided to smallholder farmers.

The findings indicated that the prevalent methods used to communicate agricultural knowledge and information at the various stages of the diffusion-adoption process were agricultural extension methods. The most stated method was demonstration, including farm demonstrations, demonstration packages and result demonstrations. Interviewees were then asked to state the participatory approaches they use and the following were cited in the order of the most common: look and learn tours, farmer field schools, innovative farmers' workshops, participatory rural appraisals, rapid rural appraisals and participatory technology development. This shows an apparent shortage of a variety of media which limits farmers' choice of knowledge and information. In the study context, this might be due to the fact that rapid production of agricultural information to cater for all the resettled farmers in their heterogeneity is quite a challenge since there was no planned budget for the FTLRP (Pazvakavambwa and Hungwe, 2009; Scoones *et al.*, 2011)..

Agricultural training and support programmes were confirmed available by the majority (80%) of the interview respondents. Those cited in order of their popularity were farmers' training workshops, short courses and master farmer trainings provided by agricultural colleges, universities, input suppliers and agricultural boards. However, two interviewees indicated

absence of training and support programmes and that institutions invite farmers for look and learn tours only. This finding is supported by literature which indicates that there are weak linkages between research centres, universities and agricultural extension systems in developing countries, therefore, the incentives of these institutions are not aligned with agricultural priorities in the country (Fisher, 2004). This finding calls for more research into the communication and undertaking of agricultural training and support programmes in institutions.

With regard to communication integration, the majority of the interviewees (70%) confirmed integration of mass and interpersonal communication media. However, there was a contradiction with previous responses which did not indicate mass media as one of the methods used in the diffusion and adoption of agricultural communication. This observation contends with 30% of the interviewees who indicated that in practice, they do not integrate interpersonal approaches with mass media channels. These three interviewees indicated that the political order of the country censors mass media programmes and do not give them room to decide on what programmes to air. Rather mass media institutions, which are mainly owned by the state, programme agricultural communication in the way they deem relevant and necessary as well as the allocation of time slots. One interviewee pointed out the expense of mass media programming and the long-time taken to produce, for example, a drama.

Concerning feedback, the cited methods of getting feedback from farmers in order of dominance were: consultation with local leaders, meetings with farmers, individual farmer reports, yield assessment, agricultural gatherings, farmers phoning in, and farmers' groups. According to the interviewees, there are various options available for farmers to give feedback on their progress and challenges. However, based on the resource constraints pointed out by the interviewees, it is likely that the farmers' feedback is not adequately addressed by the extension workers.

There was a general consensus among the interview respondents that extension approaches are dominant in disseminating agricultural innovations. Although availability of training and support programmes to upgrade farmers' skills was confirmed by the majority, the fact that other interviewees indicated absence of such programmes implies a concern that farmers and extension workers should be made aware of such programmes and be mobilised to take them up. An important observation from the responses was that there are some constraints with

communication via mass media which makes it difficult for extension to integrate interpersonal with mass media channels in their communication. There was general consent that there are adequate feedback platforms for farmers to report their progress and challenges to extension workers. However, this finding contradicted the interviewees' cited feedback methods such as meetings with farmers, individual farmer reports, yield assessment and agricultural gatherings, based on the finding that extension delivery is hindered by lack of resources to access the farmers.

6.2.3.3 Communication Impact

The interviewees were asked to state the impact of integrating interpersonal with mass media channels, factors influencing adoption of agricultural innovations and their perceptions of credibility of information sources available for agricultural communication. These could determine the impact of communication on the farmers. The majority of the interviewees who confirmed that they integrate interpersonal with mass media channels indicated that it improves farmers' motivation, caters for non-participants of interpersonal programmes and that mass media have a wide reach. The implication is that if farmers' programmes could be increased over the mass media, communication might be more effective. However, the findings have revealed limitation of agricultural programmes on mass media due to media monopoly, political constraints and the expensive nature of mass media programming.

The findings on sources interview respondents liaise with for agricultural knowledge and information indicated that the mass media is regarded the most important and credible source probably because of its wide reach referred to earlier. Seed and fertilizer manufacturers have also been considered credible probably due to their important role of providing fertilizers and seed and that the quality of their products can be measured by trying them. Marketing boards have also been listed since these provide important marketing information. Technology manufacturers and insurance agents are the least cited possibly because many smallholder farmers do not have the resources to buy advanced agricultural equipment. Some farmers may not afford to pay for insurance and others may be sceptical of insurance companies since the literature has revealed that many smallholder farmers are risk-averse (Swanson, 2008: 14).

Among the stated innovation characteristics, relative advantage was found the dominant factor influencing adoption among farmers from the interviewees' observations. This was followed by

observability and then trialability. Fourth was compatibility and the fifth and least was complexity. However, the literature has revealed that these characteristics are integrated in a complex way in their influence of adoption. This finding will be tested again with the questionnaire findings on farmers' preferences of innovation characteristics to determine whether or not the farmers' responses are in harmony with the extension workers' observations. This could help extension workers align their communication programmes with the farmers' preferences.

6.2.3.4 Barriers to effective communication

The interview respondents were asked to state challenges they face with the use of participatory extension approaches earlier indicated to be available as well as pressing farmer communication needs. These factors have a large bearing on the effectiveness of communication and if not addressed, could thwart effective communication. Several challenges were cited, including material resources among the extension workers to collaborate participatory activities. High illiteracy rate among the farmers was also cited as a stumbling block to communication. Poor infrastructure such as roads, limiting both extension personnel and farmers' mobility was another cited challenge. Lack of human resources as well as extension worker expertise was another pointed challenge. It was also stated that some farmers are too rigid to acquire new knowledge and ideas. Poor knowledge of farmers' training needs by extension workers was another challenge faced with the use of participatory extension approaches.

With regard to farmers' communication needs that are pressing, the majority indicated the need for financial resources to access knowledge and information. Proper communication infrastructure and access to communication networks were the other dominant pressing communication needs cited. Communication literacy and credibility of communication sources were other cited communication needs. These cited communication needs are worrying communication barriers. The findings suggest a need to improve communication infrastructure and networks for the benefit of the poor and marginalised as well as to train and motivate farmers to use communication media to exploit knowledge and information on their own. Importantly, the minority which indicated absence of pressing communication needs among the farmers should not be ignored. This could be attributed to the opinion that maybe the respective extension workers did not want to expose the challenges faced for fear of victimisation as the constraints

have a large bearing on the political situation of the country. The researcher observed that generally, fear of political victimisation was present among both the extension workers and the farmers during data collection and this could have influenced the responses given.

6.2.3.5 Strategies for communication improvement

The interviewees stated how they evaluate the success of their communication programmes, the measures taken by the AGRITEX department to support smallholder farmers' communication, and their opinions of how communication with the smallholder farmers could be improved. These reveal some of the strategies that the agricultural extension workers could use to improve smallholder agricultural communication in the light of the FTLRP context and the communication challenges discovered in the findings. With regard to evaluation of communication programmes, the majority indicated measuring adoption - finding the frequency of farmers who would have adopted a particular innovation. Some cited observing and analysing yields and comparing them with previous yields. A minority indicated use of question and answer. The responses indicated the availability of measures to evaluate success of communication programmes implemented in the district. However, these are limited and could be increased.

Concerning institutional support, the following were stated as measures taken by AGRITEX to support improved communication with the smallholder farmers:

- Using local leaders to motivate and mobilise local communities;
- Sending letters to farmers through schools;
- SMSs via mobile phones;
- One-on-one interviews with farmers;
- Promoting folk drama, poetry and song;
- Increasing frequency of farm visits;
- Training more extension personnel to improve extension worker-farmer ratio;
- Providing extension workers transport in the form of motorbikes for mobility.
- Accommodating extension workers near or in their working areas; and
- Effective use of competitions by giving incentives at occasions such as agricultural shows.

When asked to give their own opinions of measures that could be taken to improve agricultural communication, the following were stated:

- Increasing network connectivity;
- Providing farmers with cheaper and easier access to new media such as the internet;
- Conducting frequent meetings with farmers;
- Improving transport linkages;
- Subsidies to motivate smallholders to take farming seriously;
- Conducting adequate communication needs analysis;
- Mobilising relevant stakeholders to support smallholder agricultural activities;
- Increasing participatory activities; and
- Increasing associated media.

Notably, the measures purported to be taken by AGRITEX to improve communication with smallholder farmers are contradictory since these have been reiterated in the interviewees' suggestions for improvement. Though the extension workers indicated that the AGRITEX department is making efforts to provide them with transport to reach farmers, they maintain that transport linkages should be improved. Although folk drama, poetry and song is said to be promoted, the extension workers point out the need to increase participatory activities. The fact that extension workers indicated the need to improve transport linkages might imply that their farm visits currently are inadequate, which is a contradiction to the finding that the frequency of farm visits is being increased. These findings suggest that a lot more effort has to be put in order to improve smallholder agricultural communication.

6.2.4 Summary of the qualitative interview findings

To summarise the analysis above, the following theme and sub-themes which could improve on the current theories and practices on agricultural communication have been deduced. The interview findings clearly indicate that current communication practices are inadequate. Therefore, these should be improved on by embracing models that cater for the plurality of the resettled smallholder farmers to promote increased productivity:

Theme

- Good quality of communication and advisory improves smallholder farmers' agricultural knowledge and skills and consequently productivity.

Sub-themes

- A multi-media approach enhances agricultural communication effectiveness.
- Farmers' preferences should be prioritised to improve communication impact.
- Stakeholder analysis curbs barriers to effective communication.
- A multi-strategy approach should be adopted to improve communication with the smallholder farmers.
- Various stakeholders should converge to promote smallholder farming communication.

6.3 Presentation and analysis of the quantitative survey findings

In this section, data from the quantitative survey are presented and analysed. The questionnaire was administered to the FTLRP smallholder farmers in the Gweru district. The questionnaire was self-administered for respondents literate in the English language and presented in the form of interviews and in mother languages for respondents who could not understand the English language. The questionnaire was mainly based on preference rankings. Section A presents findings on the demographic details of the farmers. Section B presents findings on the farmers' preferences of the communication of agricultural knowledge and information, which could determine their communication needs. Section C presents findings on the farmers' assessment of agricultural communication. The questionnaire addressed objectives one, two, three and four. The farmers' responses are subsequently consolidated with the agricultural extension workers' responses in order to gain a better understanding of the state of smallholder agricultural communication in the Gweru district.

Out of a total sample of 366 smallholder farmers chosen from the population of 7699, 305 questionnaire responses were received. However due to missing data (more than 10%) in some of the questionnaire copies, three hundred and one (301) questionnaire copies were considered for data analysis. The error tolerance of the sample at the confidence level of 95% was 5.5%. The response distribution was 82%, which is significant. The quantitative findings were limited by the closed nature of the questionnaire which could not probe the respondents further about the challenges faced in agricultural communication. However, some of the limitations were offset by the qualitative findings. The targeted sample of 366 could not be reached since it was difficult to find the respondents at their farms. Some of the smallholder farmers still reside in their previous

communal areas or at their work places. The following is the presentation and analysis of the responses.

6.3.1 Section A: Demographic Profile of the farmers

The demographic details entailed the gender, age-group, language preference, education level and agricultural training variables. These could be important determinants of the respondents' adoption of agricultural communication. Gender, age-group and education levels of the respondents were associated with their adoption of agricultural communication by means of Chi-Square tests to address the third objective. Usually, a statistically significant chi-square implies that the pattern of distribution in a sample can be generalised to a population; thus the hypothesis is accepted or rejected on that basis. The following rule was applied to all the chi-square tests done in the analysis: If $p < 0.05$, then the test is statistically significant. The hypothesis was that age-group, gender and education levels are associated with adoption of agricultural communication. The association of demographic variables with communication adoption could provide information that could make it easier for the agricultural extension personnel to group the farmers accordingly in their design of communication strategies in the district.

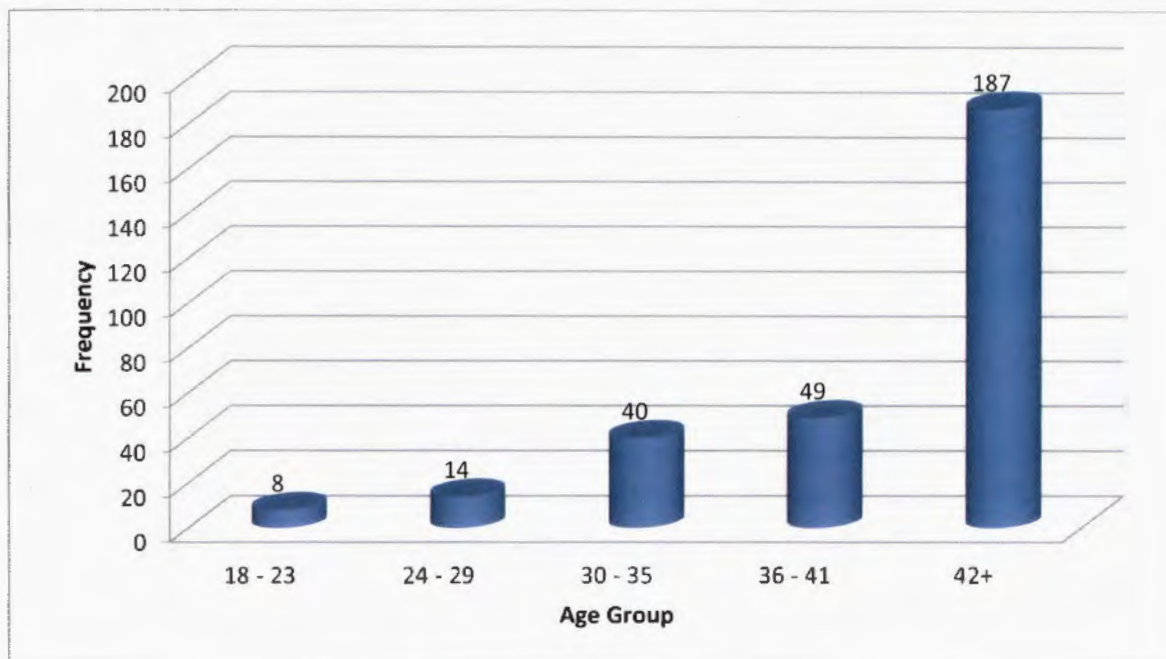
6.3.1.1 Gender Distribution

There were one hundred and fifty (49.8%) male respondents and one hundred and forty-eight female respondents (49.2%). Three (1%) of the respondents did not indicate their gender. The gender balance was almost equal thereby attaining an equal voice according to gender.

6.3.1.2 Age-group Distribution

As shown in figure 6.1 below, the majority of the respondents (62.8%) were aged 42 years and older. Respondents in the 36 – 41 years age-group constituted 16.4% while about 13% were those in the 30 – 35 years age group. Approximately 7% of the respondents were below 30 years of age. Since the majority of the respondents are 42 years and above, it is surmised that these are mature people who are settling in farming and therefore, it is not anticipated that they would think of abandoning the sector for other means of livelihood. It is likely that these farmers take their farming activities seriously and so require adequate knowledge and information for productivity.

Figure 6.1: Age-group distribution



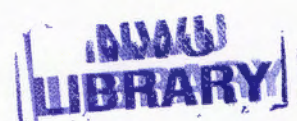
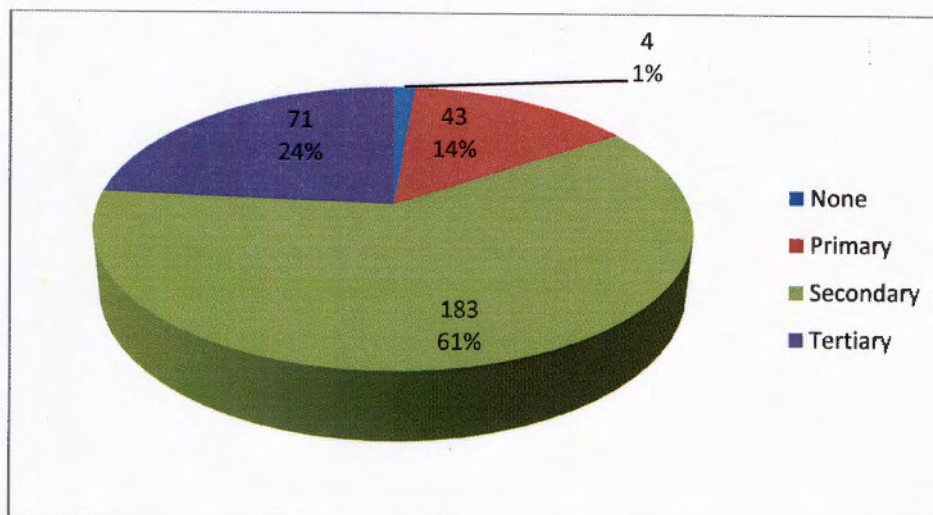
6.3.1.3 Language Preference

One hundred and nineteen (39.5%) respondents indicated that they preferred to receive agricultural communication in Shona, one of the local languages. English and Ndebele were the language preferences for 88 (29.2%) and 21(7%) of the respondents respectively while 73 (24.3%) respondents did not respond to the question. Drawing from those who responded to the question, the majority prefers the Shona language in receiving agricultural communication. The 39.5% frequency is significant probably due to the fact that the majority of the people in the Gweru district and the Midlands region are Shona speaking. However, the 29.2% and the 7% who prefer the English and Ndebele languages respectively should not be ignored. Therefore, the three languages should be considered in designing agricultural communication.

6.3.1.4 Level of education

The figure below shows the respondents' levels of education.

Figure 6.2: Level of education

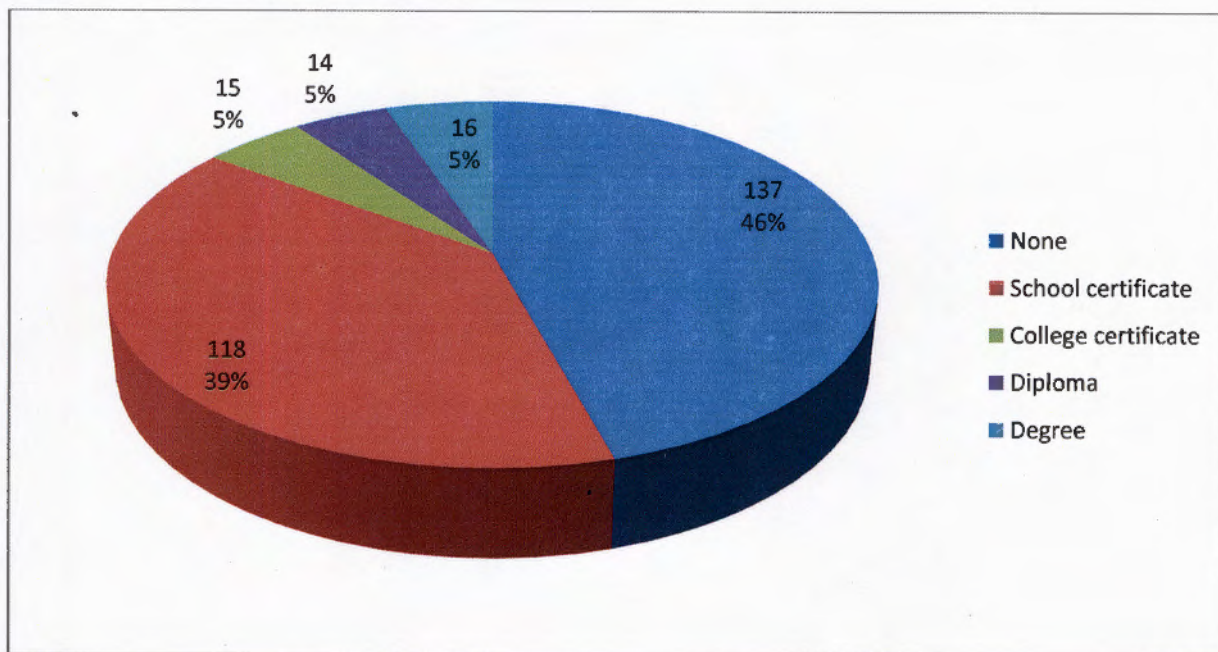


As shown in the pie chart above, the majority (61%) of the respondents indicated that they had attained secondary level education. Seventy-one (24%) respondents had undergone tertiary education and forty-three (14%) had attained primary level education. The remaining four (1%) respondents indicated no level of education. The 24% who attained tertiary education are likely to be more knowledgeable about agricultural production and communication since it is anticipated that they are well read. Therefore, with such people among smallholder farming communities, productivity could be improved since they are likely to look for knowledge and information. Extension workers could also use such farmers to help them impart agricultural knowledge in their respective communities. The majority of the farmers attained secondary education. This means that they are literate people who are capable of seeking knowledge and information on their own as well. Those who attained primary level education, 14%, and those who indicated no education, 1%, may not be competent in interpreting agricultural knowledge and messages. Therefore, such farmers need to be put into consideration when designing agricultural communication.

6.3.1.5 Training in agriculture

The figure below shows the respondents' training in agriculture.

Figure 6.3: Training in Agriculture



The majority (46%) of the respondents indicated that they had no training in agriculture. Thirty nine percent indicated that they held an agriculture qualification on their school certificate. Equal proportions (5%) among the respondents indicated that they had an agricultural college certificate, diploma and degree respectively. There was a significant proportion of the respondents (46%) who did not have training in agriculture, which is high enough to justify the need to improve agricultural communication for increased productivity among the smallholders. The 39% respondents who indicated that they had agriculture on their school certificates may not be very conversant with agricultural knowledge and trends considering the dynamic nature of knowledge. Therefore, these need to have their knowledge and skills upgraded. It is discernible that those with what could be considered adequate (certificates and diplomas) and advanced agricultural knowledge (degrees) are only a minority (5%) respectively. These statistics are convincing that an effective agricultural communication strategy has to be implemented considering that smallholders now occupy most arable land in Zimbabwe (Manyeruke *et al.*, 2013: 278-279).

6.3.2 Section B: Communication of agricultural knowledge and information

The presentation and analysis below is based on the findings on communication of agricultural knowledge and information in the Gweru district from the farmers' perspectives. The findings are

presented based on the sub-headings deduced from the questions to allow for easier analysis. All the rankings are in ascending order, with the first being highest and the last being lowest depending on the number of items.

Question B1 inquired whether farmers receive knowledge and information meant to improve their agricultural activities or not. All the 301 farmers (100%) confirmed that they receive agricultural knowledge and information. This question was used as confirmation to enable the researcher to proceed with the survey so it was not considered for analysis.

6.3.2.1 Importance of roles of agricultural extension agents ranking

Question B2 addresses objective number one which sought to determine farmers' communication needs and inquired the respondents' preference rankings of the important roles of agricultural extension agents as presented in table 6.2 below. The roles listed below have been extracted from the literature on the roles of agricultural extension (Contado, 1998: 31).

Table 6.2: Importance of roles of agricultural extension agents ranking

Role	First	Second	Third	Fourth	Fifth
Linking farmers with input and credit suppliers		X			
Transferring technology				X	
Advising farmers	X				
Programme planning and evaluation			X		
Mobilising local communities for group action					X

When asked to rank the roles of agricultural extension officers in order of their importance, the respondents selected advising farmers as the most important role ranked first while mobilising local communities for group action was placed as the least important, ranked fifth among the five roles given as presented in table 6.2 above. The ranking order of all roles was independent of the gender variable. The age-group variable was however associated with the ranking of the linking farmers with input and credit suppliers role ($\chi^2(16)=27.835$, $p < 0.05$). This association could imply that since the majority of the farmers are elderly people (42 years +), they consider their

farming seriously and want to acquire the right inputs and also adequate capital for their farming. It could be said that they are not afraid of potential risk involved in credit since they are likely to be settling in farming. There was also association between the level of education and the ranking of the linking farmers with input and credit suppliers role ($\chi^2(12)=23.482$, $p < 0.05$), transferring technology role ($\chi^2(12)=30.762$, $p < 0.01$) and advising farmers role ($\chi^2(12)=28.195$, $p < 0.01$). It could be surmised that since the majority respondents' general education and agriculture training was lacking, they need to be informed of where to find the right inputs and authentic credit suppliers, as well as the right technologies for their activities and farming advice in general. The most preferred role of advising farmers imply that the farmers themselves do not have adequate exposure to agricultural knowledge and technologies. This reiterates the finding that the majority of the respondents do not have training in agriculture. The findings suggest that agricultural extension workers should consider prioritizing giving farmers advice that could enhance their productivity. The role of mobilising farmers for group action was ranked the least probably because smallholder farmers have diverse agricultural activities which could make harmonization of their communication needs difficult.

6.3.2.2 Communication of farmer information needs ranking

Question B3 which addresses objective number one sought to determine the communication of the smallholder farmers' information needs. The list in table 6.3 below consists of the questionnaire respondents' ranking of general farmer information needs.

Table 6.3: Communication of farmer information needs ranking

Farmer needs	Rank
Weather forecasting	1
Input prices and availability	2
Early warning and management of diseases and pests	4
Latest packages of practices	6
Information about rural development programmes and subsidies	8
Farm business management information	5
Marketing information	7
Information on crop insurance	10
Soil testing and soil sampling information	3
General agriculture news	9

Table 6.3 above shows the respondents' ranking of the communication of farmer information needs in order of relevance to them. Information on weather forecasting was ranked the first and most relevant while information on crop insurance was ranked as the tenth and least relevant. The finding suggests that weather report should be readily available to farmers since it has proved to be the basic determinant of farmers' activities. The rest of the information requirements should be prioritised as per the farmers' preferences. Crop insurance might have been ranked the least due to different reasons such as lack of affordability and risk aversion due to uncertainty about insurance companies in the politically unstable environment. The rankings were independent of gender. The rankings were however dependent on age-group as well as level of education. The need for weather forecasting ($\chi^2(36)=56.752$, $p < 0.05$), information about rural development programmes and subsidies ($\chi^2(36)=61.664$, $p < 0.01$), farm business management information ($\chi^2(36)=51.918$, $p < 0.05$), information on crop insurance ($\chi^2(36)=59.320$, $p < 0.01$) and soil testing and soil sampling information ($\chi^2(36)=59.210$, $p < 0.01$) were associated with age-group. The need for weather forecasting ($\chi^2(27)=44.150$, $p < 0.05$), input prices and availability ($\chi^2(27)=64.980$, $p < 0.001$), latest packages of practices ($\chi^2(27)=48.229$, $p < 0.01$), information about rural development programmes and subsidies ($\chi^2(27)=49.579$, $p < 0.01$) and general agriculture news ($\chi^2(27)=55.724$, $p < 0.01$) were associated level of education.

6.3.2.3 Media of communication effectiveness ranking

Question B4 addresses the second objective which sought to find out the effectiveness of the communication media available for disseminating agricultural innovations to the smallholder farmers.

Table 6.4: Communication media effectiveness ranking

Medium of communication	First	Second	Third	Fourth
Media Category: Mass Media				
Television	X			
Radio				X
Newspapers		X		
Magazines			X	
Media Category: Folk Media				
Folk drama and songs				X
Master farmer communication			X	
Farmer to farmer communication	X			
Farmers' groups		X		
Media Category: New Media				
Internet		X		
Satellite				X
Mobile phone	X			
Telephone			X	
Media Category: Associated Media				
Pamphlets		X		
Charts			X	
Books	X			
Video and audio tapes				X

Table 6.4 above shows how the respondents ranked the given media of communication in order of effectiveness. These media have been listed on the basis that the literature has revealed that they are some of the main media forms available for agricultural communication in Zimbabwe (Mugwisi, 2013; Chisita, 2010). Television was ranked the first and most effective and radio, the

fourth and least effective mass media of communication among the given four media forms. The respondents' preference for television is in harmony with the literature which states that the interactive nature of television programmes helps to attract a wider audience (Mugwisi, 2013: 53). The ranking of radio as the least preferred echoes Chisita's (2010: 5) articulation that radio falls short as a channel for sharing knowledge on demand because of the politicised and momentary nature of broadcasts in the country. Though print media (newspapers and magazines) have been ranked second and third, there are linguistic challenges noted Mugwisi (2013: 52) where the language of publication is mostly English. Farmer to farmer communication was preferred as the most effective and folk drama and songs as the least among the four folk media forms given. This finding reiterates the literature where participation was viewed as a time-consuming approach that requires intensive use of human resources, reflecting on the obstacles for integrating participation in a rural development project in India (Waisbord, 2008: 511). Under the category new media, mobile phone was ranked the most effective while satellite was least among the four given forms. In line with this finding, Ilahiane (2007 cited by Chisita, 2010: 6) notes that mobile phones have transformed the way in which farmers access agricultural information. Concerning associated media, books were preferred as the most effective and video and audio tapes as the least among the four media forms given. This implies that extension workers should recommend increasing communication through television, farmer to farmer communication, mobile phones and books which the farmers regard as the most effective communication media.

There was no association between gender and the effectiveness rank order of the communication media. There was however association between the effectiveness rank order and age-group for the following modes of communication: television ($\chi^2(12)=43.259$, $p < 0.001$), magazines ($\chi^2(12)=34.376$, $p < 0.01$), farmer to farmer communication ($\chi^2(12)=23.887$, $p < 0.05$), internet ($\chi^2(12)=30.105$, $p < 0.01$), satellite ($\chi^2(12)=27.578$, $p < 0.01$), mobile phone ($\chi^2(12)=24.346$, $p < 0.05$), telephone ($\chi^2(12)=30.708$, $p < 0.01$), books ($\chi^2(12)=21.458$, $p < 0.05$) and video and audio tapes ($\chi^2(12)=21.321$, $p < 0.05$). There was also association between the media of communication rank order and level of education for all media except newspapers and pamphlets.

6.3.2.4 Ranking of factors that could influence adoption of agricultural ideas, methods and technologies

Question B5 addresses the first and fourth objectives which sought to find out the communication needs of the smallholder farmers and how the characteristics of innovations influence their adoption by the farmers respectively. The factors listed in the table below, which could influence adoption, have been adopted from the universal innovation characteristics propounded by Rogers (1983).

Table 6.5: Ranking of factors that could influence adoption of agricultural ideas, methods and technologies

Factors that could influence adoption	Rank
Need for new ideas	1
Cultural values and beliefs	10
Ease of use	6
Room for experimentation	4
Observability of results	7
Cost price	3
Profitability	2
A saving in time and effort	5
Exposure to information	8
Communication channels used	9

Table 6.5 above shows the ranking of factors that could influence adoption of agricultural ideas, methods and technologies. Need for new ideas option was ranked as the first and most important while cultural values and beliefs was ranked the tenth and least important. The fact that the farmers need new ideas most should prompt agricultural extension workers to broaden their communication strategies as well as their knowledge and skills so that new ideas are made available to the farmers. Furthermore, they should consider maximising their communication via the media that is available to the farmers to disseminate agricultural knowledge and information. However, cultural values and beliefs were not considered an important factor in adoption among the respondents. This should make the work of the extension workers much easier since literature

has indicated that some cultural values and beliefs are a barrier to the communication of agricultural information (Jiggins *et al.*, 1998: 95).

There was association between gender and the ranking of room for experimentation ($\chi^2(9)=17.798$, $p < 0.05$). There was also association between age-group and the ranking of the following factors: cultural values and beliefs ($\chi^2(36)=56.520$, $p < 0.05$), ease of use ($\chi^2(36)=60.732$, $p < 0.01$), a savings in time and effort ($\chi^2(36)=63.060$, $p < 0.01$), exposure to information ($\chi^2(36)=69.922$, $p < 0.01$) and communication channels used ($\chi^2(36)=58.370$, $p < 0.05$). Concerning education, there was association between the level of education and the ranking of the following factors: ease of use ($\chi^2(27)=46.374$, $p < 0.05$), room for experimentation ($\chi^2(27)=43.903$, $p < 0.05$), cost price ($\chi^2(27)=51.480$, $p < 0.01$), profitability ($\chi^2(27)=64.224$, $p < 0.001$), a savings in time and effort ($\chi^2(27)=43.321$, $p < 0.05$), exposure to information ($\chi^2(27)=47.865$, $p < 0.01$) and communication channels used ($\chi^2(27)=43.027$, $p < 0.05$).

6.3.2.5 Ranking of the effectiveness of extension methods through which agricultural development needs can be communicated

Question B6 addresses objective two which sought to determine the effectiveness of the communication media available for disseminating agricultural knowledge and information to the farmers. The findings are shown in the table below. These extension methods have been drawn from literature citing the relatively new extension approaches in Zimbabwe (Hanyani-Mlambo, 2002: 6).

Table 6.6: Ranking of the effectiveness of extension methods through which agricultural development needs can be communicated

Extension communication mode	Rank
Farmer field schools	2
Farm demonstrations	1
Agricultural shows	4
Look and learn tours	5
Innovative farmers' workshops	3

Table 6.6 above shows the ranking of extension methods through which agricultural development needs may be communicated. Farm demonstrations were ranked as the first and most effective while look and learn tours were ranked the fifth and least effective among the given methods. Therefore, extension workers should consider maximising the use of farm demonstrations in their extension approaches. Look and learn tours were ranked the least probably because they are less educational than demonstrations and could be effective to those farmers with prior knowledge of an innovation. Considering the low agricultural education revealed in the demographic findings, the farmers need more involving and educating communication means. There was association between gender and the ranking of agricultural shows ($\chi^2(4)=43.027$, $p < 0.05$). There was also association between age-group and the ranking of farmer field schools ($\chi^2(16)=26.810$, $p < 0.05$) and agricultural shows ($\chi^2(16)=39.657$, $p < 0.01$). Level of education was associated with the ranking of farmer field schools ($\chi^2(12)=31.437$, $p < 0.01$), agricultural shows ($\chi^2(12)=34.169$, $p < 0.01$) and look and learn tours ($\chi^2(12)=22.495$, $p < 0.05$).

6.3.3 Section C: Farmers' assessment of available agricultural communication

This section presents the farmers' assessment of the adequacy of communication via the given media and their preferences of the frequency of communication via the same media.

6.3.3.1 Frequency of agricultural knowledge and information dissemination via the communication media indicated

Question C1 addresses objective two which sought to determine the adequacy and effectiveness of the communication media available for disseminating agricultural innovations. Respondents

indicated how often they receive agricultural messages via the media listed. The given frequencies as indicated in the figure below were: always, often, sometimes and rarely with the frequencies (always and often) taken to represent adequate communication. In figure 6.4 below, the most common mass media communication used to disseminate agricultural messages was the television with (73.8%) indicating always and (19.3%) indicating often, followed by radio with (14.3%) indicating always and (31.3%) indicating often. The least common was magazine probably due to its high cost and that it is not produced often. The most common folk media was farmer to farmer communication with (48.6%) indicating always and (34.75) indicating often, followed by farmers' groups with (35.3%) indicating always and (35.6%) indicating often. Folk drama and song was indicated as the least common probably due to limited time to practice for the production of drama or song. The most cited new media was mobile phone with (61.9%) indicating always and (22.7%) indicating often, followed by telephone with (14.7%) indicating always and (19.8%) indicating often. Satellite was presented as the least common probably because it mainly presents entertainment programmes. The most common associated media cited for agricultural communication was books with (26.4%) indicating always and (17.5%) indicating often, followed by pamphlets with (15.3%) indicating always and (19.3%) indicating often. It could be surmised that video and audio tapes were the least cited associated media probably because they are not readily available to farmers or are scarce in the market. The respondents were given the option "other" in case there were some media forms of disseminating agricultural communication not indicated under each category. Notably, none of the respondents completed the part "other" for all the media categories.

Figure 6.4: Frequency of agricultural knowledge and information dissemination via the communication media indicated

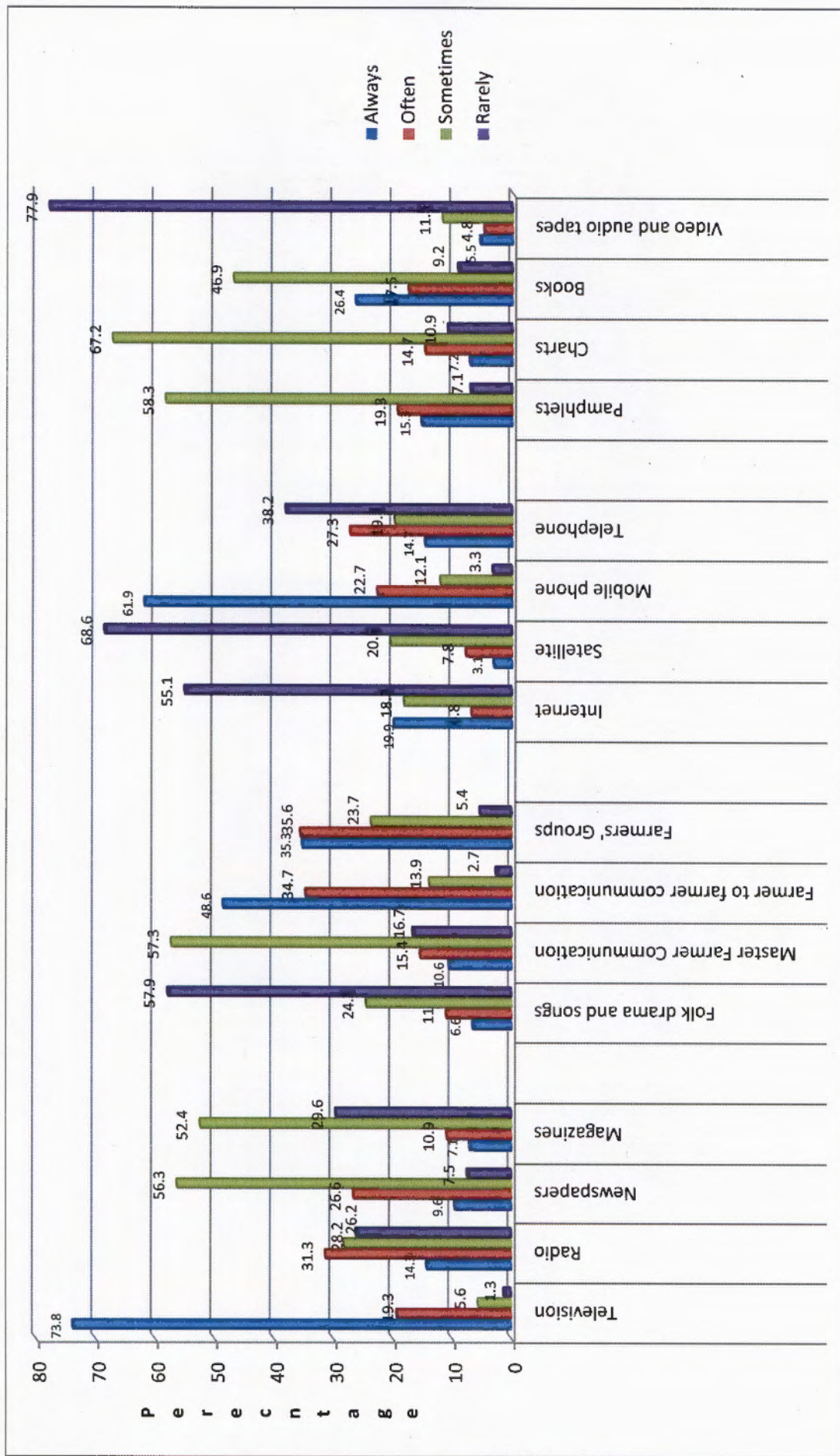
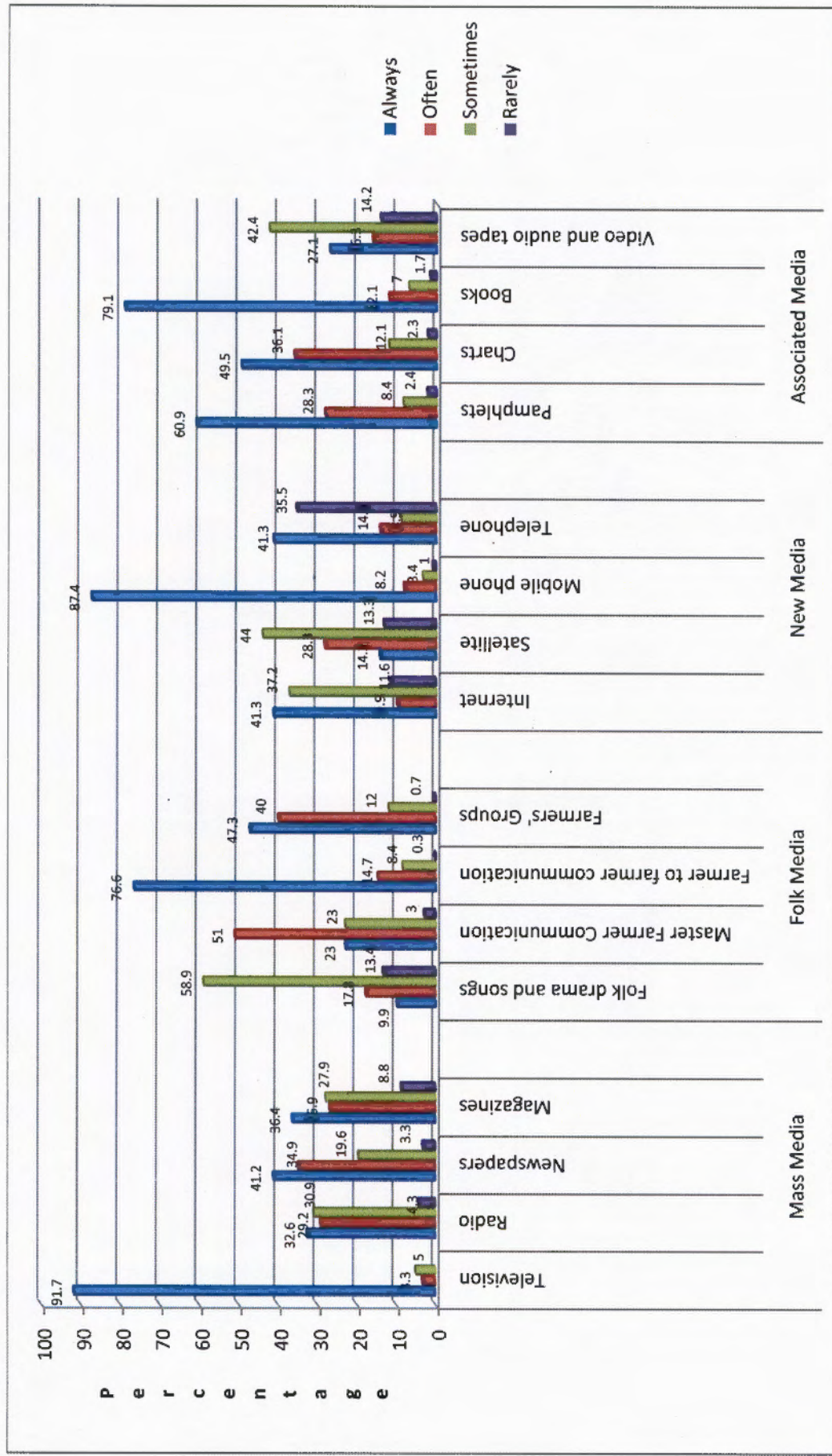


Figure 6.5: Farmers' preferences of the frequency of agricultural knowledge and information dissemination via the communication media indicated



6.3.3.2 Farmers' preferences of the frequency of agricultural knowledge and information dissemination via the communication media indicated

Question C2 addresses objective number one which sought to determine the communication needs of the smallholder farmers. The preferences are based on the options: always, often, sometimes and rarely. Figure 6.5 above shows that the respondents would prefer to receive agricultural messages via the television most and in the following frequencies: always (91.7%) and often (3.3%), via newspapers: always (41.2%) and often (34.9%) under mass media while radio was the least preferred: always (32.6%) and often (29.2%). It could be surmised that radio was least preferred because it does not provide pictures which enhance understanding where the listeners may not understand the language and especially due to the momentary nature of broadcasts as indicated earlier. However, where television is used, pictures may create a lasting impression in the farmer's mind even though it is momentary rather than words alone. Similarly, newspapers and magazines are preferred to radio probably because of visuals and permanence where farmers may refer to them where necessary.

The most preferred folk media was farmer to farmer communication with the following choice options: always (76.6%) and often (14.7%) and the least preferred was folk drama and songs: always (9.9%) and often (17.8%). Farmer to farmer communication was preferred probably due to its locality whereby farmers can always share ideas among themselves. However, folk drama and song need a lot of time resource to practice and rehearse, which could be why it was the least preferred. The most preferred new media was mobile phone: always (87.4%) and often (8.2%) and the least preferred was satellite always (14.3%) and often (28.3%). The preference of mobile phones is in harmony with the literature, Phiri (2010) and Chisita and Malaphela (2013/2014: 63) that mobile phones have proliferated even in rural Zimbabwe and they are convenient hence could be very effective in delivering timely information. However, satellite is expensive since it has to be subscribed for and also there may be no particular farmers' programmes. Books were the most preferred associated media: always (79.1%) and often (2.1%) and video and audio tapes the least preferred: always (27.1%) and often (16.3%). Books have permanence which could be why they are preferred and yet video and audio tapes on agriculture could be scarce since most video and audio tapes found on the market are entertainment tapes. Fairly significant proportions of respondents also indicated that they would like to always and often receive agricultural information via newspapers, farmers' groups, telephone and pamphlets under each of the four categories. Newspapers and pamphlets could have been preferred for their durability while farmers' groups allow for interpersonal contact where farmers can share ideas. The telephone is

relatively cheap and allows for interpersonal communication since the farmers can ask questions and seek explanations.

6.3.4 Summary of the presentation and analysis of quantitative findings

Questions B1, B3, and C1 address objective one, which sought to determine the farmers' communication needs. The following is a summary of the findings of the farmers' communication needs which could guide agricultural extension workers in designing their communication strategies. In Question B1, the cited roles of agricultural extension workers in order of their importance to the farmers were as follows: advising farmers; linking farmers with input and credit suppliers; programme planning and evaluation; transferring technology and mobilising farmers for group action. The outstanding role is that of advising farmers. Considering the resettled farmers' heterogeneity, extension workers should prioritise giving advice that promotes productivity.

In question B3, the communication of farmer information needs in order of the most relevant to them was as follows: information on weather forecasting, input prices and availability; soil testing and soil sampling information; farm business management information; latest packages and practices; marketing information; rural development programmes and subsidies information; general agricultural news and lastly crop insurance information. Therefore, extension workers should prioritise the communication of information required most by the farmers. Weather forecasting should be provided timely as it determines the farmers' programme planning.

In question C2, the most preferred media was determined by the options "always and often". The mass media preferences were as follows: television, newspapers, magazines, then, radio. The folk media preferences were as follows: farmer to farmer communication, farmers' groups, master farmer communication and lastly folk drama and songs. The most preferred new media was mobile phone, then telephone, followed by internet and lastly satellite. The most preferred associated media was books, then pamphlets, charts and lastly video and audio tapes. The other media preferred significantly under the four categories were as follows: newspapers, farmers' groups, telephone and pamphlets respectively. The outstanding media preferred by the farmers under the four media groups were the television, farmer to farmer communication, mobile phone and books respectively.

The questions which addressed the second objective which sought to determine the effectiveness of available communication media are B2, B5 and C1. Question B2 sought to determine the most adequate and effective media from the farmers' perspectives. The most adequate and effective mass media cited was television, followed by newspapers, magazines and lastly radio. The preferred folk media in order of effectiveness was as follows: farmers to farmer communication, farmers' groups, master farmer communication and lastly folk drama and songs. The preferred new media in order of effectiveness was mobile phone, telephone, internet and satellite. The most effective associated media was books, pamphlets, charts and lastly video and audio tapes. The outstanding mass media preferred as most effective was television. The folk, new and associated media regarded as effective were: farmer to farmer communication, mobile phone and books respectively.

In question B5, the highest ranked extension media in order of effectiveness was farm demonstrations, farmer field school, innovative farmers' workshops, agricultural shows and lastly look and learn tours. In question C1, the most common cited mass media over which agricultural communication is received always and often was as follows: television, radio, newspapers and magazines. The most cited folk media was farmer to farmer communication, followed by farmers' groups, master farmer communication and lastly folk drama and songs. The most cited new media was mobile phone, followed by telephone, internet and lastly satellite. The most cited associated media was books, followed by pamphlets, charts and lastly video and audio tapes. The outstanding media through which agricultural communication was said to be disseminated was television, farmer to farmer communication, mobile phone and books respectively.

The demographic variables of the farmers were associated with their adoption of agricultural innovations using chi-square tests to address the third objective which sought to determine associations between demographic variables and adoption. In so far as the rankings of the roles of agricultural extension agents were concerned, the ranking order of all roles was independent of the gender. However, there was association between the age-group and education variables with some of the roles as presented earlier. Concerning the communication of farmer information needs ranking, the rankings were independent of gender. Rankings were however dependent on age-group as well as level of education on some of the information needs. When it came to innovation characteristics ranking, there was association between gender and the ranking of room for experimentation. There was also association between age-group and education with the

ranking of some factors as indicated in the presentation and analysis. As far as preferences for extension approaches were concerned, there was association between gender, age-group and education levels with the extension approaches in some instances.

The first objective which sought to determine the smallholder farmers' communication needs and the fourth objective which sought to determine how characteristics of innovations influence their adoption by the farmer were addressed by question B4. The respondents were asked to rank factors that could influence adoption of agricultural ideas, methods and technologies in order of importance. The ranking preferences from the first were: need for new ideas, profitability, cost price, room for experimentation, a savings in time and cost, ease of use, observability of results, exposure to information, communication channels used and lastly cultural values and beliefs.

The presentation and analysis of both the interviews and the questionnaire survey are consolidated in the following discussion in order to deduce new models of smallholder agricultural communication to improve on current communication practices as well as to determine some recommendations for the Gweru district smallholder farming community and other communities with similar characteristics.

6.4 Data discussion: Manifestations of smallholder agricultural communication in the Gweru district of Zimbabwe

The data is discussed based on the consolidation of the interview and the questionnaire findings. This mixed design approach was anticipated to yield a better understanding of the state of smallholder agricultural communication in the Gweru district so as to come up with models to improve on current practices with the goal of promoting increased productivity.

6.4.1 Demographic profiles

Section A of both designs focused on the demographic details of the samples. In the interview findings, these consisted of gender, age-group, formal agricultural training and work experience of the extension workers interviewed. These factors are important determinants of the quality of knowledge and information provided to the farmers. The majority of the extension worker interviewees (90%) were female. In the quantitative findings, the number of females was slightly lower than that of males. Though gender balance is important in extension in order to deal with compatibility issues, in the current study, it was not significant because cultural values and beliefs were the least cited among factors influencing farmers' adoption of agricultural communication. The majority of the interview respondents fell in the 42+ year's category and

were therefore expected to be mature people who can guide the farmers effectively. The level of agricultural training and work experience determine the quality of advisory provided to the farmers. The findings revealed lower education than adequate among extension personnel which is likely to compromise the quality of advisory.

In the quantitative findings, the demographic details consisted of gender, age-group, level of education, agricultural training and language preference. These could be important determinants of the farmers' adoption of agricultural innovations. There is a slight difference between the number of male and female responses – one hundred and fifty and one hundred and forty eight respectively which eradicates gender imbalance in the responses. Both male and female voices were equally represented. The majority of the farmer respondents were in the 42+ age category which matches with the age-group of the majority extension workers. This implies that both groups are mature therefore communication between them should be much easier. It is also anticipated that these elderly people should play a guidance role to the younger farmers. However, as revealed by the interview findings, one challenge that could be faced with the majority elderly is rigidity. Some of the farmers may not readily accept new ideas.

As far as the language of instruction was concerned, all three major languages in the Midlands region: English, Shona and Ndebele were preferred in receiving agricultural communication. However, the majority respondents (39.5%) preferred Shona which is the dominant mother language in the region. The literature has pointed out some gaps in balancing the languages of instruction, particularly by the mass, new and associated media institutions with the English language being the dominant linguistic medium (Mugwisi, 2013: 52). This might discourage farmers from listening to or reading information that could otherwise improve their agricultural activities. Since the survey findings have revealed that all three languages in the district are preferred, they should be used equally in agricultural communication. Therefore, addressing the language issue might motivate farmers to engage with a variety of literature on farming which could contribute to their farming knowledge and skills.

Education is an important determinant of efficiency in any sector because it is through education that new knowledge and skills to solve problems are acquired. Education is required in the agriculture sector to deal with various factors threatening the sector particularly that of climate variability as indicated in the literature (Intergovernmental Panel on Climate Change cited by Zerbe, 2004: 598). The majority of the respondents have attained secondary education and a

significant proportion, (46%) do not have training in agriculture. This is likely to impact negatively on productivity, which is why this study advocated adequate and effective agricultural communication. It is discernible that the demographic findings of the extension workers who basically impart knowledge and skills to farmers is also low, which is worrisome.

6.4.2 Communication of agricultural knowledge and information

Section B of both designs focused on the dynamics of communicating with the smallholder farmers from the agricultural extension workers' as well as from the farmers' perspectives. The questionnaire responses were mainly based on preference rankings where farmers would arrange items according to what they considered more desirable and important than the others in the communication of agricultural knowledge and information. The findings are consolidated based on the objectives they addressed. This was intended to gain a better understanding of current communication practices, identify challenges and suggest models to improve communicating with the smallholder farmers. The following is a discussion based on both the quantitative and qualitative findings addressing the first objective which sought to determine the communication needs of smallholder farmers resettled under FTLRP in the Gweru district in order for them to increase their agricultural output.

6.4.3 Roles of agricultural extension agents

The agricultural extension agents were asked to state their roles in agricultural communication while the smallholder farmers ranked the given roles in order of importance to them. Role confirmation was crucial to enlighten farmers of the help they could get from agricultural extension workers. The interviewees stated the following as their roles: disseminating agricultural information, training farmers to improve agricultural production, providing knowledge about farming and mobilising farmers. These roles could be seen to embrace all the roles acquired from literature which the farmer respondents ranked. The first and highest ranked role was that of advising farmers. This aspect reflects on the demographic details which indicated a lack of agricultural training among the farmers who apparently have heterogeneous backgrounds. Therefore, these smallholder farmers need a lot of advice on how to run agricultural activities in a way that maximises production. Thus extension workers should prioritise this role in their communication with the farmers. The findings indicated that age-group and education levels were associated with the respondents' rankings of the roles. This suggests that extension workers should consider grouping farmers according to age-group and education levels when designing communication programmes. An important discovery from the

interview findings was the low agricultural education qualifications among extension workers which are similar to the findings by (Hanyani-Mlambo, 2002: 6; Mandizadza, 2009: 84), a factor which may affect the effective discharge of their roles. Poor extension worker-farmer ratio could also be another limiting factor to the delivery of service which is apparent in the study population where only 52 extension workers were responsible for 7699 farmers and is also stated in the literature (Maposa *et al.* 2013: 144). Upgrading knowledge and skills and balancing the extension worker-farmer ratio could improve the quality of advisory and in turn agricultural productivity.

6.4.4 Pressing farmer communication needs and communication of farmer information needs ranking

In the interviews, the interviewees stated the smallholder farmers' communication needs that were pressing, corresponding to the ranking of the communication of farmer information needs in the questionnaire. The majority response, seven (70%) was need for financial resources to access knowledge and information, followed by five (50%), the need for communication infrastructure and proper communication networks. Two (20%) indicated the need for communication literacy and credible communication sources. In the quantitative survey, the farmers ranked agricultural information according to what they prefer to be communicated most. Weather forecasting had the highest ranking. Therefore, extension workers have to find the most convenient way to send timely information such as weather forecasting. For example, mobile phones, one of the preferred media indicated in the findings and also found to be convenient in the literature, could be used to provide timely information. However, the pressing farmers' communication needs mentioned by the extension workers above such as inadequate communication networks could limit the farmers' access to various agricultural knowledge and information when they need it. Apparently, the interviewees' responses indicated challenges of communication infrastructure to access agricultural knowledge and information among the farmers. The farmers' rankings were associated with their age-group and education levels but not with gender. In order to address the agricultural communication needs of the various farmer segments, extension workers might have to consider detailed stakeholder analyses so that they package the various knowledge and information needed through media not only easily accessible to the farmers but also influencing their adoption of agricultural innovations.

6.4.5 Farmers' preferences of the frequency of agricultural knowledge and information dissemination via the communication media indicated

The outstanding media preferred by the farmers in receiving agricultural communication were the television, farmer to farmer communication, mobile phone and books respectively under the categories: mass, folk, new and associated media. Since the interview findings have indicated that mainly, extension approaches are used in the diffusion-adoption of agricultural innovations, extension workers could consider combining them with these other preferred media to improve the communication effectiveness. Therefore, based on stakeholder analyses which the interviewees confirmed to be doing, an appropriate media mix could help improve adoption of agricultural innovations which is the desired end. The notion of an appropriate media mix has also been supported by Spurke and Schanne (2013: 21).

The following is a discussion of the findings addressing the second objective which sought to find out the effectiveness of the communication strategies available for disseminating agricultural communication to the smallholder farmers and was addressed by both the quantitative and qualitative findings.

6.4.6 Communication media effectiveness ranking and prevalent communication media in the diffusion-adoption process

In the survey, farmer respondents ranked the given media in order of effectiveness preference. This could assist agricultural extension workers and other communication agents to channel their communication via the preferred media. Television was the most cited mass media and radio was the least, farmer to farmer communication was the most preferred folk media while folk drama and song was the least, mobile phone was the most effective new media while satellite was the least and books were the most effective associated media while video and audio tapes were the least. Although both radio and television have been criticised in the literature for their momentary nature (Chisita, 2010), the respondents could have preferred television to radio probably because television provides visuals which are interactive and engaging thus aiding meaning. Therefore, even though momentary, the visuals can enhance easier understanding of concepts than mere narration of the same as on radio. Although, internet was ranked second last under new media, the use of the internet is said to have become widespread in Zimbabwe, with organisations increasing their visibility through the web (Mugwisi, 2013: 53). However, the low connectivity density, lack of financial resources and the continued energy crisis cited by Chisita (2010: 10) could be viewed as a hindrance to internet use, particularly by the resource

constrained smallholder farmers (Chisita, 2010). The findings indicated that video and audio tapes were the least preferred associated media probably because of the farmers' unfamiliarity with them. This finding is different from that of Gudza (2010), where the podcast project in Mbire district of Zimbabwe had a positive impact in agricultural production in quantitative terms. Low cost media such as podcasts should be made available to the smallholder farmers to widen the communication reach. However, the extension workers should facilitate improvement and accessibility of the rest of the media under each category to increase farmers' choices.

In the interviews, the interviewees cited extension approaches as the most prevalent communication media they use at each of the five stages of the diffusion-adoption process adopted from Rogers (1983). This finding reiterates the finding by Rao (2008: 154) who argues that in most developing countries, agricultural communication is primarily delivered by publicly funded agricultural extension services which are however questioned. In Zimbabwe, agricultural extension services might have been questioned on the observation that extension agency does not have much new knowledge to transfer to the farmers (Mandizadza, 2009: 84). Although some extension approaches are interpersonal and participatory, they could still be combined with other media categories to extend the communication reach in the light of the cited challenges of extension reach. Elsewhere, in India and in Bangladesh, face-face communication has also been reported successful over other media (Dubey and Srivastava, 2008: 111; Lokanathan and Kapugama, 2012: 21). The interview respondents confirmed that they conduct stakeholder analyses in designing their communication approaches such as education, gender, age, religious beliefs farming sector, language; that they consult with influential people, and that they move from simple to complex and also consider the geographic location of the farmers. If these are considered seriously and incorporated into the design of communication strategies, that could improve extension delivery. However, the fact that the interviewees indicated a lack of human resources and transport networks implies that there is a constraint in reaching geographically dispersed and impassable locations which could however be reached through other media such as the mass, folk, new and associated media preferred by the farmers.

Elsewhere, in Kenya, radio is regarded as the most successful communication tool (Spurke and Schanne, 2013: 18). The farmer respondents in the current study findings might have preferred television over radio under the mass media category since it is likely to be much more convincing because of visual aids. The finding which indicates that the major media of agricultural communication was extension approaches suggests inadequacy of communication

considering the constraints cited with extension delivery and hence the need for integration with other media categories to widen communication reach.

6.4.7 Prevalent participatory extension approaches

The interview findings indicated that look and learn tours were the most cited participatory extension approach with 10(100%) interviewees stating that. However, this is not a participatory extension approach since farmers learn through observation only, which could imply that the interviewees indicated the approach which they use the most. The other participatory approaches cited in the order of their dominance were: farmer field schools, innovative farmers' workshops, participatory rural appraisal, rapid rural appraisal and participatory technology development. In the quantitative findings, respondents ranked the listed extension methods in order of preference and in the following order: farm demonstrations, farmer field schools, innovative farmers' workshops, agricultural shows and lastly look and learn tours. Interestingly, the extension approach used most by the extension workers – look and learn tours, was the one least preferred by the farmers. This approach is least preferred by farmers probably due to its non-participatory nature and it is therefore likely to be effective only to those who have prior knowledge of a particular innovation.

The findings indicated that farmer field schools are popular among both the extension workers and the farmers. Similarly, farmer field schools have been used successfully, for example, in a study on pest control by Maumbe and Swinton (2000) in Sanyati, the Midlands region of Zimbabwe. The findings on the use of look and learn tours reveals inadequacy of participatory communication approaches in the Gweru district. Studies on the use of participatory extension approaches in Zimbabwe have revealed mixed findings. For example, the study of three projects by Hagman *et al.* (1998) in Masvingo region revealed that PEA is a complex process requiring a large pooling of resources. Yet studies on the use of PEAs were reported successful in other parts of the country such as in Gwanda district, Matebeleland South and in Chimanimani district in Manicaland (Masendeke *et al.*, 2010).

However, farmer field schools, innovative farmers' workshops and agricultural shows which are a part of participatory rural appraisals, should be promoted by extension workers since the farmers have confirmed their preference of these. Importantly, the farmers have a limited choice considering that the literature has indicated the newness of participatory extension approaches in Zimbabwe and that these are still in their trial stages (Hanyani-Mlambo, 2002: 6). Therefore,

keeping participatory projects simple and using indigenous knowledge and resources could be a starting point to successful participatory communication. Elsewhere, in West Sumatra, Indonesia, participatory extension approaches such as farmer field schools have been reported successful, for example, in a study conducted by the FAO (cited by Coldevin, 2010: 20). The farmers who had adopted the integrated pest management-farmer field school on rice farming achieved more rice harvest compared to those who had not adopted, suggesting that FFS had a positive effect in influencing adoption.

6.4.8 Challenges of participatory extension approaches

The interview respondents were further probed on the challenges faced with the use of participatory extension approaches in smallholder farming. The following challenges were stated in order of prevalence: lack of resources to harness participatory activities among both extension workers and farmers; high illiteracy rate among farmers leading to low farmer participation, poor infrastructure to enhance participation, lack of extension personnel expertise to plan such activities effectively, lack of human resources, poor knowledge of training needs and farmer rigidity. This complex web of challenges could discourage the extension workers from using participatory approaches and that might explain why the majority interviewees indicated that they use look and learn tours mostly to disseminate agricultural knowledge and information to smallholder farmers. This finding was in line with the assertion by Mandidadza (2009: 84) who states that extension agencies does not have much new knowledge to transfer to the farmers, one major challenge emanating from the current findings. The finding might suggest a pooling of resources from various stakeholders to address the mentioned challenges and promote effective agricultural communication, most importantly the integration of extension approaches with the other media categories investigated – mass, folk, new and associated media. To this end, forms such as television, farmer to farmer communication, mobile phones and books as preferred by the farmers could increase adoption rates since the farmers can interact with these at their own convenience.

Apart from the lack of expertise cited above, one major challenge generally noted with successful participatory communication is that Participatory Action Research (PAR) and similar methodologies that foreground community knowledge are circumstantially used, but they are rarely the starting point in development programmes (Waisbord, 2008: 509). Thus, participatory extension approaches should be contextualised as much as possible owing to the challenges cited.

6.4.9 Communication integration and effect

The interview findings largely revealed that there is integration of mass and interpersonal media in the communication of agricultural innovations, with 7 (70%) indicating that. The positive effect indicated was that mass media caters for non-participants of interpersonal extension programmes and that mass media have a wide reach and hence more effectiveness when interpersonal extension programmes are broadcast over the mass media. The success of media integration has also been reported in rice farming in Philippines where rice yields improved remarkably after promotion of increased productivity through radio, a variety of print media and intensively trained farm technologists (Sison, 1985 cited by Coldevin, 2001: 53). However, the minority 3 (30%) presented very important findings that the political order of the country hampers agricultural communication since all programmes on mass media are censored. The restrictive regulation of mass media in Zimbabwe has also been indicated by Chisita (2010: 5). One of the interviewees cited that it is expensive and time consuming to produce mass media programmes such as drama and that the AGRITEX and largely the Ministry of Agriculture have lack of influence over mass media institutions to schedule agricultural communication programmes. Yet research maintains that successful participatory communication is achieved through media integration (Mwanundu, 2010: 14; Tufte and Mefalopulos, 2009: 12-13).

However, since the quantitative findings in C1 have indicated that agricultural communication is mostly disseminated via television followed by radio under mass media, extension workers should then find strategies of improving the impact of that knowledge and information on farmers' behaviour. Yet if adopting the minority view of media censorship and the inability to control media production by AGRITEX, then, it might be difficult for extension workers to improve the effectiveness of the mass media messages. This challenge could possibly be resolved by reviewing of the agricultural communication policy to make it more integrative. Folk media such as farmer to farmer communication, new media such as mobile phones and associated media such as books which the farmers have indicated as effective should be maximised and included in the media mix to improve the effect of agricultural messages on the farmers' production behaviours.

6.4.10 Agricultural training and support

The interview respondents were further probed on the agricultural training and support services available to promote smallholder farmers' productivity in the Gweru district. The following were cited by the majority 8 (80%): farmers' training workshops, short courses and master farmer

training. However, (20%) of the interviewees who indicated absence of such programmes should not be ignored. This finding echoes the observation by Scoones *et al.* (2011: 11) that people have relied on their own knowledge and skills to develop agriculture in Zimbabwe. It could be that if these training and support programmes are paid for, some farmers may lack the financial resources to attend, or that the farmers are not well informed about such programmes. If the foregoing challenges are to be adopted, then this finding by the minority might suggest a review of policy on agricultural training and support with a view to promote the upgrading of both the extension workers and the smallholder farmers' skills.

6.4.11 Feedback

The interview respondents were further questioned on their strategies of getting feedback from the farmers on the latter's progress and challenges. The following were cited: consultation with local leaders, meetings with farmers, farms visits, individual farmers' reports, yield assessment, agricultural gatherings, farmers phoning in and farmers' groups. This suggests that there are various platforms through which farmers can communicate their progress and challenges to extension workers. However, this finding, which indicates that the dominant feedback strategies are interpersonal, contradicts the challenges mentioned such as transport problems to reach the farmers indicated by the interviewees earlier. Therefore, it is likely that platforms of addressing the farmers' problems are limited.

6.4.12 Credibility of information sources

The interview respondents listed the sources of information they liaise with for agricultural information in order of credibility. This could determine the extension workers' resourcefulness and effectiveness. The following were cited: mass media, seed and fertilizer manufacturers, marketing boards, agricultural technology manufacturers and agricultural insurance agents. The fact that the mass media were outstanding might suggest a need to review the mass media policy of the country in order to maximise agricultural communication via the preferred mass media such as television and newspapers in the light of the limiting political environment and the media monopoly indicated in the findings. Alongside mass media, the other stated information sources should be utilised as much as possible to enrich the smallholder farmers' information base despite the fact that they have been discredited by the interview respondents for being product driven and not service driven.

6.4.13 Communication evaluation

The interviewees stated how they evaluate the success of their communication programmes in order to determine whether agricultural communication is yielding adoption of innovations and increased productivity. The following strategies were mentioned: measuring adoption rate, observing and analysing yields and question and answer. The literature reviewed has largely revealed that the majority of studies evaluated the success of communication programmes by analysing yields. For example, studies by Airlines and Lee (2003: 695) in Central Honduras in North America; by Howley *et al.* (2012: 172) in Uganda and by Maumbe and Swinton (2000) in Sanyati, Zimbabwe. However, limited geographic scale and poor sustainability of face to face interaction in geographically dispersed areas (Anderson and Feder, 2007 cited by Aker, 2010: 87) has been viewed as a hindrance to yield analysis as a communication evaluation strategy. Such a hindrance could also apply in the Gweru district as indicated by the study findings.

6.4.14 The frequency of agricultural communication

The questionnaire respondents were asked how often they receive agricultural communication via the media listed. The responses were as follows under mass media: television, radio, newspapers and magazines. When it came to preferences, the respondents preferred to receive agricultural communication in the following order: television, newspapers, magazines and lastly radio. Under folk media, the responses were in the following order which corresponded with the respondents' preferences: farmer to farmer communication, farmer's groups, master farmer communication and folk drama and song. Under the new media category, the responses were in the following order which corresponded with the recipients' preferences: mobile phone, telephone; internet and satellite. The associated media were listed in the following order which also corresponded with the preferences: books, pamphlets, charts and video and audio tapes.

Elsewhere, with regard to mass media, radio has been found the most successful media for agricultural communication, for example, in Nigeria Ubgoajah (1986: 13) and in Kenya (Spurke and Schanne, 2013: 18). Radio has been least preferred in the current findings probably because of its transitory nature particularly where the language is incompatible with the listeners. Television has been cited as the most prevalent and most preferred media probably due to its attractive nature as it is aided by visuals. Farmers can learn from visuals even if they may not understand the language. However, the literature has indicated the challenge of electricity cuts in the country (Chisita, 2010: 9, Mago, 2013: 6), which might limit viewing frequency. The respondents also preferred newspapers over radio probably because of their durability for future

reference. In other rural areas, such as in Kenya, print media has been found to be rare (Spurke and Schanne, 2013: 18). Qualitative interviews with farmers could determine the affordability and accessibility of newspapers as well as magazines among the farmers.

Where folk media were concerned, the survey findings revealed that while farmers were content with farmer to farmer communication and farmers' groups, master farmer communication and folk drama and songs were less preferred. However, efforts should be made as indicated in the suggestions for improvement, to diversify communication with the smallholder farmers since the goal is not just to communicate but to influence adoption of better agricultural practices which promote productivity. In so far as new media were concerned, the respondents confirmed the availability of mobile phone and telephone. These then have to be maximised in agricultural communication to influence adoption. The finding echoes the literature that has indicated an increase in the number of people with a telephone in Zimbabwe by 16% (Mushawevato, 2013). The internet was the third highest ranked new media. This could imply that it is not readily available to the farmers. However, the internet is said to be efficient in delivering timely information and increasing choice (Rao, 2006: 495) and has proved successful in South Africa (Dragon, 2002: 20) and in India though positively associated with education level (Rao, 2008: 154). This finding might suggest more pooling of resources in the country to make internet services available to farmers.

With regard to associated media, the use of charts and video and audio-tapes has proved to be lacking. Yet, group media including flip charts, video and audio cassettes, slides, film strips and village theatre have been promoted for their immediate feedback (Coldevin, 2003: 6). Flip charts have been used successfully by the FAO in Namibia (Lucky and Achebe, 2013: 14). Video has been successfully used for supporting participatory farmer training in a variety of FAO rural development projects, for example in Peru, Mexico and Mali (Coldevin, 2003: 6). Exploiting such group media which are participatory in the Gweru district could promote increased productivity among the smallholder farmers.

6.4.15 Measures being taken by AGRITEX to improve smallholder agricultural communication

Concerning institutional support, the interview respondents said that AGRITEX is improving communication with the smallholder farmers in the following ways: using local leaders to motivate and mobilise local communities. The use of local channels for agricultural

communication has also been proved successful in other studies, for example, by Pandey in Dubey and Srivastava (2008: 111) in India and by Lokanathan and Kapugama (2012: 21) in Bangladesh. Sending letters to farmers through schools was also cited as a measure to improve communication. However, this could be disputed since many areas where the farmers were resettled do not have schools yet. The use of SMSs via mobile phones was another measure cited. The mobile phone has also been used successfully for agricultural communication in other countries such as Uganda, Gantt and Cantor (2010) and in Niger (Macnamara, 2009: 2). Therefore, maximising their use in the Gweru district might contribute to increased productivity.

The conducting of one-on-one interviews with farmers was also cited though that can be questioned on the basis that the interviewees cited shortage of transport to reach the geographically dispersed distances. The promotion of folk drama, poetry and song was another cited measure though this contradicts the finding from the questionnaire responses that these are rarely used for agricultural communication and that they are least preferred by the farmers. Increasing the frequency of farm visits was yet another measure which contradicts the finding that there are poor transport linkages to reach the farmers. Training more extension personnel to improve extension worker-farmer ratio was cited as another measure being taken to improve communication. This contradicts the literature which indicates shortage of extension personnel in Zimbabwe (Maposa *et al.* 2013: 144; Mandizadza, 2009: 85) and also the statistics of the current study population which indicates that there are 52 extension workers responsible for 7699 farmers in the Gweru district, which implies that one extension worker is responsible for 148 farmers. The provision of extension workers with transport in the form of motorbikes for mobility was questioned on the basis that the interviewees echoed shortage of transport which could imply that these may not be adequate. This was revealed by one of the interviewees who indicated that only extension supervisors who supervise extension workers are given motorbikes. The findings also indicated accommodating extension workers near or in their working areas and effective use of competitions by giving incentives at occasions such as agricultural shows as other measures being taken by AGRITEX to improve smallholder agricultural communication.

Largely, the discussion of the study findings above reveals that there are some challenges in the form of resources which hamper the effective delivery of service to the farmers. These challenges suggest the need for some improvements to the agricultural communication and extension policy to promote increased productivity. The following is a discussion based on the third objective which sought to determine whether or not the demographic variables of the

farmers were associated with their adoption of agricultural communication and was addressed by the quantitative questionnaire findings.

The following rule, which applies to all the chi-square tests done, was used to deduce whether or not gender, age-groups and educational levels and the farmers' adoption of agricultural communication were associated: If $p < 0.05$, then the test is statistically significant.

6.4.16 Importance of roles of agricultural extension agents ranking

The ranking order of all the given roles was independent of the gender. The age-group was however associated with the ranking of the linking farmers with input and credit suppliers role. There was also association between the level of education and the ranking of the linking farmers with input and credit suppliers' role, transferring technology role and advising farmers' role. The demographic details have indicated low education and agricultural training levels among the majority of the respondents. Therefore, it might be inferred that these farmers need adequate information on getting the right inputs, credit, knowledge about and access to technology and general advice due to their lack of prior knowledge about agriculture. This finding partly agrees with one finding by Hahnke (2007: 56) in two black Thai villages in Northern Vietnam which showed that farmers tend to be more innovative when they are older and have higher education. In this case, the findings could be largely attributed to the FTLRP where overcrowded communal areas were targeted in resettling farmers. It is likely that the majority of these farmers were poor peasant farmers with less education, regardless of age and that is why they need much knowledge and information.

6.4.17 Communication of farmer information needs

The rankings were independent of gender. Rankings were however dependent on age-group as well as level of education. The need for weather forecasting, information about rural development programmes and subsidies, farm business management information, information on crop insurance and soil testing and soil sampling information were associated with age-group. The need for weather forecasting, input prices and availability, latest packages of practices, information about rural development programmes and subsidies and general agriculture news were associated with level of education. As is the case with the roles of agricultural communication agents, it was surmised that the farmers' low education and agricultural training prompts them to require various information that could help them improve their farming.

6.4.18 Communication media effectiveness ranking

There was association between the effectiveness rank order and age-group for the following modes of communication: television, magazines, farmer to farmer communication, internet, satellite, mobile phone, telephone, books, and video and audio tapes. There was also association between the modes of communication rank order and level of education for all modes except newspapers and pamphlets. Farmer to farmer communication was the prevalent folk media associated with age-group and education probably because the elderly people, with their lack of education, prefer to seek information from their folks who they can easily relate to and understand.

All the new media indicated were associated with age-group and education level. It could be inferred that the younger farmers with more education than the older ones might have indicated the new media: internet, satellite, mobile phone and telephone in their rankings. This is due to the general observation by the researcher that the younger generation is more interactive with the new media than the older generation. Books and video and audio tapes were also associated with age-group unlike charts and pamphlets possibly because these can provide detailed information so the majority farmers, considering their education and age, are likely to understand better where detailed information is provided

6.4.19 Factors that could influence adoption of agricultural ideas, methods and technologies

There was association between gender and the ranking of room for experimentation. It could be inferred that women are likely to experiment before adopting an innovation due to several factors that have been found restricting women's productivity such as their legal and cultural status which affect the degree of control they have over productive resources and property and inheritance rights which govern their access to and use of land (Jiggins, 1989a: 3). This finding could imply that women have limited land which they need to utilise efficiently. There was also association between age-group and the ranking of the following factors: cultural values and beliefs, a savings in time and effort, exposure to information, and communication channels used. Concerning education, there was association between the level of education and the ranking of the following factors: ease of use, room for experimentation, cost price, profitability, a savings in time and effort, exposure to information and communication channels used.

6.4.20 The effectiveness of extension media through which development needs can be communicated

There was association between gender and the preference of agricultural shows. This might be linked to the previous finding where women were likely to experiment before adopting an innovation. Therefore, it is surmised that women are likely to be interested in seeing the results of an innovation as in the result presentations at agricultural shows. There was also association between age-group and the preference of farmer field schools, and agricultural shows. The variable of education level was associated with the choice of farmer field schools as well as look and learn tours for communicating.

Generally, it could be inferred that the association between the respondents' demographic variables of gender, age-group and education levels and their adoption of agricultural communication is largely defined by the FTLRP context which was characterised by resource constraints. This in turn thwarted the dissemination of information, education and training in agriculture which could be why there is a complexity of agricultural communication needs by the farmers coupled by the fact that many smallholder farmers operate complex farming systems. The following is a discussion of the fourth objective which sought to determine what characteristics of the agricultural innovations influence their adoption by the farmers and was addressed by both the quantitative and qualitative findings.

6.4.21 Innovation characteristics influencing adoption

The interview respondents stated the innovation characteristics that influence the farmer's adoption of the innovations from their perspectives. The following were cited in order of the most observed: relative advantage, observability, trialability, compatibility and complexity. The questionnaire respondents ranked the given innovation characteristics which influence their adoption. The most preferred was the need for new ideas, followed by profitability and cost price which corresponded with the interviewees' most cited "relative advantage" which encompass the above stated preferences. However, the literature has pointed out extension personnel's lack of expertise (Mandizadza, 2009: 84), similar to the current study findings which revealed low education levels among extension workers thus a dearth of new ideas with relative advantage over current practices. This suggests the need for upgrading of extension workers' skills.

The questionnaire respondents further cited room for experimentation (trialability), then a savings in time and effort and ease of use (compatibility and complexity), observability of results, exposure to information and communication channels used (compatibility) and lastly cultural

values and beliefs (compatibility). Apparently, these findings reveal that there is harmony on the most cited characteristics influencing adoption from both the extension workers' the farmers' perspectives. There seems to be a complex interrelationship of these characteristics in the farmers' interaction with them. Such a complex interrelationship has also been found in other studies for example, by Hycenth Tim (2014: 52-63) in Cameroon; by Howley *et al.* (2012: 72) in Uganda and by Leitgeb (2011: 359) in Sancti Spiritus Province. This complex interrelationship calls for adequate skills in designing strategies and communicating with the smallholder farmers who in the current study lacked education and agricultural knowledge.

The following discussion is based on the fifth objective which sought to determine possible strategies of effective communication between agricultural extension workers and the Gweru district smallholder farmers and was addressed by the qualitative interview findings.

6.4.22 Improving communication with smallholder farmers

This objective was addressed by the qualitative data. The following were the suggestions given by the extension workers on how communication with the resettled smallholder farmers in the Gweru district could be improved: increasing network connectivity; providing farmers with cheaper and easier access to new media such as the internet; conducting frequent meetings with farmers; improving transport linkages; subsidies to motivate smallholders to take farming seriously; conducting adequate communication needs analysis; mobilising relevant stakeholders to support smallholder agricultural activities; increasing participatory activities and increasing associated media.

However, the measures purported to be taken by the AGRITEX to improve communication with smallholder farmers contradict the extension workers' suggestions for improvement. This finding suggests that the measures stated as improvements being made are in fact measures that should be taken to improve smallholder agricultural communication. The interviewees' way of responding could have been influenced by the politically unstable environment they indicated which made them very sceptical of the questions asked despite a clear indication that the study was an academic one. Largely, the study findings reflect that on the one hand the mass media, which are uni-directional and modelled by the diffusion of innovations theory, are inadequate in agricultural communication if used independently. On the other hand, interpersonal media which are modelled by the participatory theory are equally inadequate if used independently mainly due to their complexity. Therefore, an appropriate media mix could be ideal in promoting effective smallholder agricultural communication. This position is reinforced by scholars such as Morris

(2003: 125) who asserts that diffusion has evolved in a participatory direction and that participatory projects necessarily involve some element of information transfer.

6.5 Chapter conclusion

In this chapter, the study findings for both the qualitative and the quantitative designs have been presented and analysed, and then discussed. The state of agricultural communication with the smallholder farmers in the Gweru district has been revealed. The challenges faced in communicating with the farmers as well as the suggestions for improvement has been spelt out. The findings from the demographic profiles in both designs indicated that both the agricultural extension worker interviewees and the farmer respondents had low education and agricultural training. On the part of the extension workers, this could impact negatively on the effectiveness of their communication with the heterogeneous smallholder farmers and thus compromising the quality of knowledge and skills imparted to the farmers. This situation could have been exacerbated by the FTLRP context which saw the resettled farmers being resource constrained and also lacking information, education and training prior to their settlement. On the part of the farmers, this could imply lack of awareness to demand and exploit knowledge and information, not only from the extension workers but from other agricultural communication agents and from the communication media available. The findings revealed that the three major languages dominant in the Midlands region: Shona, English and Ndebele are preferred in receiving agricultural knowledge and information and should be equally considered.

The findings indicated that extension approaches are the major forms of media used by the extension workers in the diffusion and adoption of agricultural communication process. There are some challenges faced with the use of participatory extension approaches since they require a lot of resources. Some interviewees indicated that they use "look and learn tours" the most, probably for their convenience even though they are non-participatory. This finding supports the interviewees' subsequent response to the mirror question which indicated that there are major challenges in adopting participatory approaches such as that of lack of financial, human, time and infrastructural resources to collaborate such programmes. Poor stakeholder analysis and farmer rigidity also emerged as stumbling blocks to participatory activities, the former of which could lead to an underrating of the farmers' needs and preferences. Yet considering farmers' communication needs and preferences could motivate them to participate in communication programmes, to seek more knowledge on their own and to adopt agricultural innovations that promote productivity. These challenges in their entirety could render agricultural and especially

participatory communication ineffective and this might suggest a rethinking of strategies for smallholder agricultural communication. The findings have revealed a complex web of interrelationships in the way the innovation characteristics influence their adoption by the farmers and so these should be considered in their complex patterns as indicated in the literature and the findings.

The findings revealed that although media integration was said to be effective in agricultural communication, the integration of mass and interpersonal media was found problematic due to political constraints and mass media monopolisation in Zimbabwe. This finding suggests a need to influence policy on agricultural communication so that it is maximised on mass media in the light of the extension workers' mobility challenges and considering the geographical dispersed spaces the farmers were resettled in. The suggestions given by the interview respondents for improving agricultural communication with the smallholder farmers in the Gweru district indicate that there is need for stakeholder mobilisation to promote effective communication in its plurality with the farmers as this could promote increased productivity. This is due to the fact that the continued food security in the country is a cause for concern.

In the following chapter, the summary of the study findings, the contributions presenting the suggested models for improvement of smallholder agricultural communication in the Gweru district of Zimbabwe, the conclusion and the recommendations for further studies are presented.

CHAPTER 7: SUMMARY, CONTRIBUTIONS, CONCLUSION AND RECOMMENDATIONS

7.1 Introduction

In chapter six, the study data were presented and analysed; and the findings discussed. The mixed research design provided a clearer picture of the state of smallholder agricultural communication in the FTLRP context of the Gweru district in Zimbabwe and the challenges faced. The farmers' needs in the form of their preferences were deduced. The available media and extension approaches for agricultural communication as well as the challenges faced with their use were spelt out. The demographic variables of both the agricultural extension workers and the farmers have largely revealed low education and agricultural training. This has shed much light on the need for effective dissemination of agricultural knowledge and information. The innovation characteristics influenced adoption of agricultural knowledge and information in an integrated and complex manner. Several challenges hampering effective agricultural communication were indicated and suggestions for improvement provided. In this chapter, the summary of findings, contributions to agricultural communication, the conclusion to the study as well as the recommendations for improvement of smallholder agricultural communication and further studies in the field of agricultural communication are presented. The research problem was a concern for continued food shortage in Zimbabwe which could increasingly threaten the food security of the country caused by the apparent lack of information, education and training during the FTLRP. The researcher anticipated that effective agricultural communication could help increase productivity amidst the various challenges faced with agricultural production.

7.2 Summary of findings

The findings were based on the communication needs of the Gweru district smallholder farmers; the effectiveness of the communication methods and media available for agricultural communication in the district; the influence of the agricultural extension workers' and the farmers' demographic statuses on dissemination of the knowledge and skills and adoption thereof; the influence of innovation characteristics on adoption and the suggestions for improvement of smallholder agricultural communication.

7.2.1 Smallholder farmers' communication needs

The smallholder farmers' communication needs were presented in the form of their preferences as well as from the extension workers' perceptions of what the farmers need. Insofar as the roles of agricultural extension workers were concerned, the questionnaire respondents cited advising farmers as the dominant role, suggesting that the farmers need as much advice as possible to make choices that increase productivity. The findings could be an indication that currently, the farmers are not getting enough advice. The extension workers confirmed their roles in smallholder farming, the dominant one being that of disseminating agricultural knowledge and information to farmers. These findings corroborate the farmers' preferences of what they expect from extension workers. The findings confirm the literature that farmers who acquire more information are more likely to be innovators than those who acquire less information (Abdulai and Huffman, 2005: 652). However, the low education levels and agricultural training revealed in the demographic details of both the extension workers and the farmers is likely to impact negatively on dissemination and adoption of agricultural knowledge and information especially considering the heterogeneity of the farmers resettled under the FTLRP.

In order to determine the farmers' preferences of the various media that could be available for agricultural communication apart from extension approaches, four major media categories were presented to them to choose from: mass, folk, new and associated media. The outstanding media preferred by the farmers under the four media groups were the television, farmer to farmer communication, mobile phone and books respectively. Extension workers could then integrate their extension approaches with these other media forms preferred by the farmers according to their effectiveness and accessibility so that farmers have a wide variety to choose from. The successful use of multi-media has been attested to by researchers like Coldevin (2003) in his studies of rat control in Bangladesh and Malaysia, for integrated weed management in Malaysia and for pest surveillance in Thailand and also supported by other researchers like (Servaes, 2008; Davies, 2006).

Concerning the communication of farmer information needs according to the farmers' preferences, weather forecasting emerged as the prevalent information need. This implies that weather forecasting should be provided timely as it determines the farmers' programme planning. Information on crop insurance was ranked the least probably due to the farmers' lack of affordability of crop insurance and scepticism about insurance companies. As a mirror to the farmers' information needs communication, the following was presented by the interviewees as

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farmers' pressing needs in order of the most widespread: the need for financial resources to access knowledge and information; proper communication infrastructure and access to communication networks, communication literacy and credibility of communication sources. These findings on major farmers' pressing needs have been largely reiterated in literature. For example, Clark (2002: 357) cites macroeconomic challenges which encompass all the challenges in the study findings above; and Swanson *et al.*, (1990: 55-64) indicate shortage of human resources and advancement possibilities to give credible communication.

The findings revealed that farmers lacked basic agricultural production information due to lack of financial, infrastructural and human resources. On the contrary, one interesting finding by the minority interviewees which could not be ignored was absence of pressing communication needs among the farmers. This could be attributed to the opinion that maybe the respective interviewees did not want to expose the pressing needs for fear of victimisation as these have a large bearing on the political situation of the country. This fear of victimisation was observable from the scepticism of the majority study elements about the study goals although it was clarified that the study was for academic purposes.

7.2.2 Effectiveness of available communication media and methods

With regard to the effectiveness and adequacy of available media for agricultural communication, the extension workers indicated that they use extension approaches from the knowledge stage right through to the confirmation stage of communicating new innovations. The following emerged as the major approaches at each stage: knowledge stage – field demonstrations and group training; persuasion stage – incentives; decision stage – participatory rural appraisals and look and learn tours; implementation stage – individual farm visits and at the confirmation stage – result demonstrations. However, extension approaches alone have proved inadequate as indicated in literature (Scoones *et al.*, 2011: 11). The study findings have also indicated challenges faced with extension delivery, such as poor transport networks. The findings revealed an attempt to use participatory extension approaches such as farmer field schools, innovative farmers' workshops, participatory rural appraisals, rapid rural appraisals and participatory technology development in the Gweru district. Participatory communication approaches have been reported successful in some previous studies. For example, farmer field school was a success in rice farming in Indonesia (Coldevin, 2010) and in cotton pest management in Zimbabwe (Swinton, 2000). PEAs have also been reported successful in Chivi, Gwanda and Chimanimani districts of Zimbabwe (Masendeke *et al.*, 2010). However, these

proved problematic due to the indicated lack of financial, human, infrastructural and time resources. An observation by the researcher was that extension workers use “look and tour tours” the most for their ease of use although they are not a participatory extension approach. This was a clear indication that participatory extension approaches are rarely used.

In order to confirm that the extension methods presented by the extension workers were the ones preferred by the smallholder farmers, the questionnaire respondents ranked the given extension approaches in order of their effectiveness. The extension media in order of effectiveness were ranked as follows: farm demonstrations, farmer field schools, innovative farmers’ workshops, agricultural shows and lastly look and learn tours. Except for farm demonstrations and look and learn tours, the rest extension approaches given by the extension workers interviewed did not match the farmers’ preferences. This lack of consideration of farmers’ communication preferences might be contributing to low adoption of agricultural innovations. Previous studies have also encouraged the establishment of farmers’ preferences as a pre-requisite for successful knowledge and information dissemination (Tire, 2006).

The most common mass media over which agricultural communication is disseminated from the questionnaire respondents’ perspectives were the television and the least were magazines. The most cited folk media were farmer to farmer communication and the least cited were folk drama and songs. The most cited new media were mobile phones and the least cited were satellite. The most cited associated media were books and the least cited were video and audio tapes. The outstanding media indicated to be available for agricultural communication were television, farmer to farmer communication, mobile phone and books respectively. These findings are different from those presented in a study on media preference by Spurke and Schanne (2013) in Kenya. Preference for television, mobile phone and print media was positively associated with high education levels, with print media in the form of newspapers and magazines found to be rarely available in rural areas.

The effectiveness of agricultural communication was also determined by enquiring the availability of agricultural training and support programmes in the Gweru district. Availability was confirmed by the majority (80%) of the interviewees. However, two (20%) of the interviewees indicated absence of training and support programmes and that institutions invite farmers for look and learn tours only. This latter finding might suggest that both the extension

workers and the farmers were not well informed about such programmes and the conditions for their delivery.

With regard to communication integration, the majority of the interviewees (70%) confirmed integration of mass and interpersonal communication media in agricultural communication. However, the finding contradicted previous responses which did not indicate mass media as one of the methods used in the diffusion and adoption of agricultural communication. This confirmed the finding from 30% of the interviewees who indicated that in practice, they do not integrate interpersonal approaches with mass media channels due to the constraining political environment and media monopoly by media institutions. The finding suggested that the AGRITEX department and media institutions do not work closely together, a situation which might lead to glossing over of the various farming segments. Nonetheless, the majority interviewees indicated that media integration improves farmers' motivation, caters for non-participants of interpersonal programmes and that mass media have a wide reach. However, the lack of such media integration could result in less impact on the farmers' production behaviour change. The finding that media integration has a positive effect on communication impact is similar to the findings in a study on rice farming in Phillipines in 1974 by Sison (1985). In that study, the mix of radio, a variety of print media and intensively trained farm technologists was successful and by 1977, the country exported its excess harvest. Promotion of media integration has also been supported by scholars like Hornik (1988).

Concerning feedback, the dominant method of getting feedback from farmers cited by the interviewees was consultation with local leaders. There was a general consensus by the interview respondents that there are adequate feedback platforms for farmers to report their progress and challenges to extension workers. However, the cited feedback methods such as meetings with farmers, yield assessment and agricultural gatherings contradicted the finding that extension delivery is hampered by lack of resources to reach the farmers. This lack of resources to reach farmers has also been postulated by Swanson (2008) saying that small-scale farmers are the largest and yet the most difficult farm group for agricultural extension and advisory systems to access. Lack of infrastructural resources to reach farmers has also been confirmed by Salami *et al.*, (2010) in a study conducted in Uganda which revealed that 30 percent of communities did not have access to passable roads even in the dry season. Such challenges can be addressed by a holistic approach to policy making.

The sources extension workers liaise with for agricultural information could determine their resourcefulness and efficiency and this could also influence adoption of agricultural knowledge and information. The mass media were stated as the most important and credible source probably because of indication by the interviewees that they are consistent in their communication. Technology manufacturers and insurance agents were the least cited possibly because many smallholder farmers do not have the resources to buy advanced agricultural equipment and are risk-averse.

7.2.3 Demographic variables' associations with adoption of agricultural communication

The demographic variables of the farmers were associated with their adoption of agricultural communication using chi-square tests in order to determine the importance of such variables in agricultural communication. Where the ranking of the roles of agricultural extension agents was concerned, the ranking order of all roles was independent of the gender. The age-group was however associated with the ranking of the linking farmers with input and credit suppliers' role. There was also association between the level of education and the ranking of the linking farmers with input and credit suppliers' role, transferring technology role and advising farmers' role.

Concerning the communication of farmer information needs ranking, the rankings were independent of gender. Rankings were however dependent on age-group and educational levels for some information needs. When it came to factors that could influence adoption, there was association between gender and the influence of some factors such as room for experimentation in adopting knowledge and innovations. There was also association between age-group as well as educational level with the ranking of some factors influencing adoption. As far as preferences for extension approaches were concerned, there was association between gender, age-group and education levels in some instances. While the association of gender and adoption of agricultural knowledge and innovations was not significant, the findings revealed association of age-group and education level with adoption. The findings indicated that agricultural extension workers should consider mainly the age-group and education level of the farmers in their design of agricultural communication as this could influence the effectiveness of communication and hence adoption of knowledge and information. Although the association was not significant, in some instances, gender has to be considered in designing agricultural communication.

The finding that gender was not associated with adoption in this study differs from one study by Schipman and Quain (2010) which indicated that adopters of sweet pepper cultivation in

Thailand were female. Yet literature indicates that there are several factors inhibiting women from adopting agricultural technologies particularly in Islamic areas where women are secluded (Jiggins *et al.*, 1998). In this study age-group was associated with adoption of agricultural technologies, similar to findings by Chiputwa *et al.* (2011) in Zimbabwe but different from findings by Schipman and Quain (2010) in Thailand, by Airlines and Lee (2003) in North America and by Howley *et al.* (2012) in Uganda. In this study, educational levels were also associated with adoption, similar to findings by Schipman and Quain (2010), in Thailand and by Rao (2008) in India but different to findings by Chiputwa *et al.* (2011) on adoption of contour ridging in Zimbabwe.

7.2.4 Innovation characteristics' influence on adoption of agricultural communication

The questionnaire respondents were asked to rank factors that could influence adoption of agricultural ideas, methods and technologies in order of importance. The highest ranked factor was need for new ideas and the least ranked was cultural values and beliefs. To confirm these findings, the interviewees stated these factors influencing adoption from their experience with the farmers as follows: relative advantage, observability, trialability, compatibility and least was complexity. This finding indicated that extension workers were aware of how the innovation characteristics influence farmers' adoption of agricultural knowledge and information. Therefore, they should prioritise these accordingly. However, the literature has revealed that innovation characteristics are integrated in a complex way in their influence of adoption (Schipman and Quain (2010); Airlines and Lee (2003); Hycenth Tim (2014); Howley *et al.* (2012) which suggests that they should be integrated and contextualised as much as possible in the communication processes.

7.2.5 Suggestions for improvement of agricultural communication

Suggestions for improvement of agricultural communication were based on the interview respondents' presentation of the communication evaluation strategies used, the measures being taken by the AGRITEX to support agricultural communication and the interviewees' suggestions of how smallholder agricultural communication could be improved. With regard to evaluation of communication programmes, the findings indicated observing and analysing yields by comparing them with previous yields and measuring adoption - finding the frequency of farmers who would have adopted a particular innovation. A minority indicated use of question and answer. This finding indicated that evaluation strategies are limited.

The following are the suggestions given by the extension workers on how communication with the resettled smallholder farmers in the Gweru district could be improved: increasing network connectivity; providing farmers with cheaper and easier access to new media such as the internet; conducting frequent meetings with farmers; improving transport linkages; subsidies to motivate smallholders to take farming seriously; conducting adequate communication needs analyses; mobilising relevant stakeholders to support smallholder agricultural activities; increasing participatory activities and increasing associated media.

A contradiction was noted in the findings that the measures purported to be taken by the AGRITEX to improve communication with smallholder farmers were in fact the extension workers' suggestions for improvement. This finding suggests that the measures stated as improvements being made are in fact measures that should be taken to improve smallholder agricultural communication. The interviewees' way of responding could have been influenced by the politically unstable environment as indicated earlier. These suggested measures to improve agricultural communication are thwarted by the several challenges robust in the literature (Mudhara, 2010; Munyua and Jensen, 2008; Macnamara, 2009; Salami *et al.*, 2010; Swanson, 2008). A commitment to the drafting of and effective implementation of favourable policies could curb these challenges which hamper improvement of agricultural communication and the anticipated increased productivity.

7.3 Contributions

The current study has made an attempt to address the gaps in smallholder agricultural communication in the Gweru district of Zimbabwe. This has been achieved by determining the smallholder farmers' communication needs as well as exploring the challenges faced in communicating with these farmers and suggesting improvements. The FTLRP exacerbated the challenges faced by smallholder farmers. Yet research in the area of smallholder agricultural communication improvement has been lacking in the country.

The study raises awareness among the various smallholder farming stakeholders in particular and farming stakeholders in general, of the agricultural communication challenges being faced which are affecting production and productivity and are reiterated in literature (Mudhara, 2010; Munyua and Jensen, 2008; Macnamara, 2009; Salami *et al.*, 2010; Swanson, 2008). Awareness is also raised among the various stakeholders, of the important role of communication in

agricultural development in the light of the continuing food insecurity in Zimbabwe (Zim VAC, 2014).

The study also raises smallholder farmers' awareness of the communication media and methods they can exploit for agricultural communication; of their right to demand agricultural knowledge and information through the AGRITEX department which is responsible for imparting farming skills to them; and of their right to voice out their communication preferences through the extension workers who work directly with them.

Awareness is also raised, of the need to contextualise smallholder agricultural communication since this farming segment is characterised by complex farming systems and hence the need for a plurality of knowledge and skills (Servaes, 2008; Coldevin, 2003). The heterogeneous nature of the FTLRP farmers, some of whom did not have prior agricultural knowledge and experience should be seriously considered in communicating if increased productivity is to be realised.

Various stakeholders, particularly the Zimbabwean government, are made aware of the need to increase support of smallholder agricultural activities and to enact policies that are favourable to smallholder farming with the goal of promoting increased productivity. This is in the light of the literature which indicates that policy failures contribute to poor agricultural production (Pazvakavambwa and Hungwe, 2009; Masiwa, 2004; Cliffe *et al.*, 2011).

The study provides a knowledge base for further studies particularly in the area of smallholder agricultural communication and agricultural communication in general.

The following models which have been deduced from the gaps in the literature and theoretical underpinnings as well as from the study findings are suggested for the improvement of smallholder agricultural communication in the Gweru district and other districts with the same characteristics as the Gweru district. These models are based on the deduced theme and sub-themes.

Theme

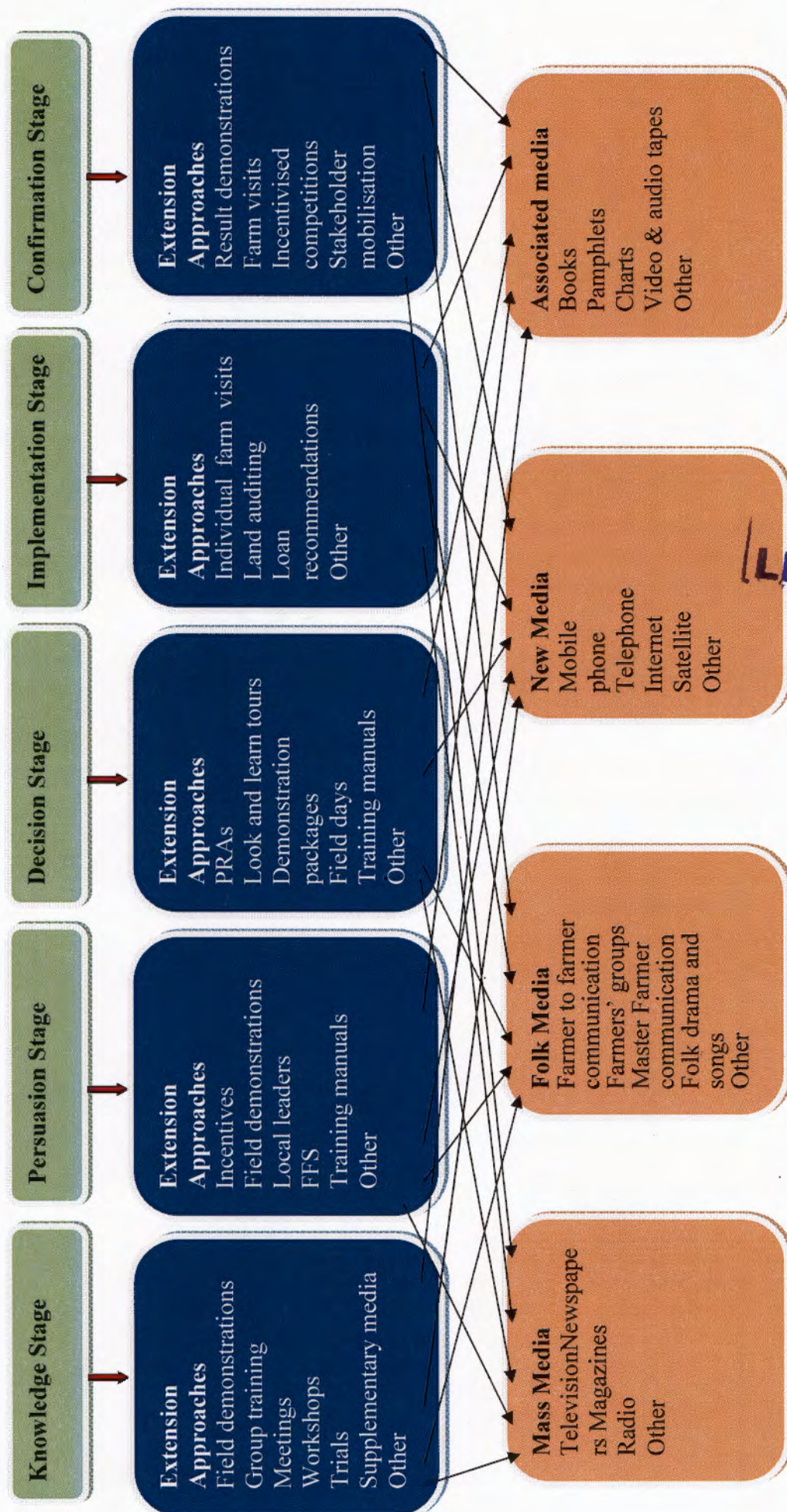
- Quality communication and advisory improves smallholder farmers' agricultural knowledge and skills and consequently productivity.

Sub-themes

- A multi-media approach enhances agricultural communication effectiveness.
- Farmers' preferences should be prioritised to improve communication impact.

- Stakeholder analysis curbs barriers to effective communication.
- A multi-strategy approach should be adopted to improve communication with the smallholder farmers.
- Various stakeholders should converge to promote smallholder farming.

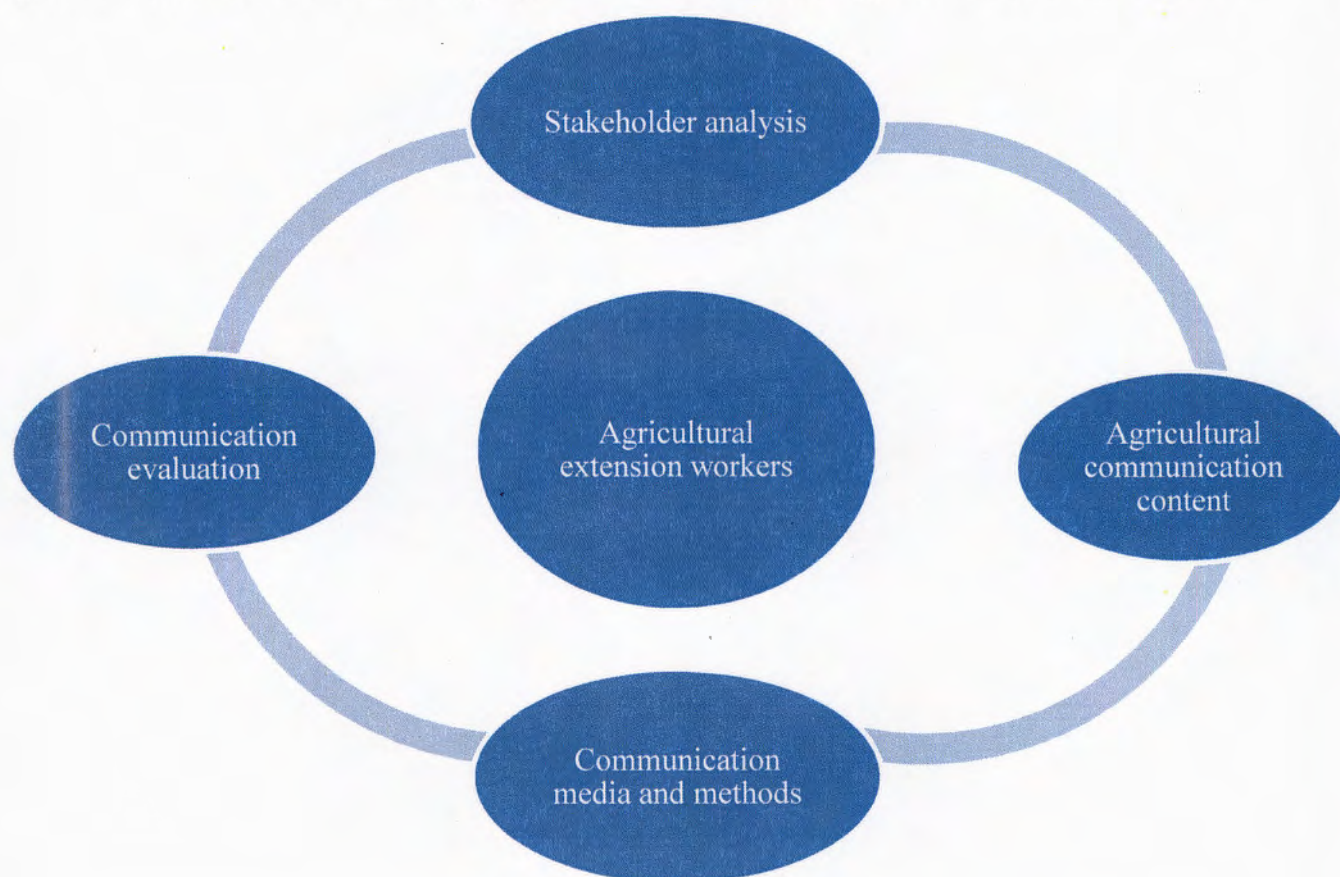
Figure 7.1: Model of a multi-media approach to smallholder agricultural communication



The model above illustrates a multi-media approach to agricultural communication. As illustrated in the model, the communication of agricultural innovations should go through the five stages adopted from Rogers' (1983) diffusion-adoption process: knowledge, persuasion, decision, implementation and confirmation stages. At the knowledge stage, farmers are made aware of an agricultural innovation. At the persuasion stage, farmers are persuaded to adopt an innovation by seeking knowledge to decrease their uncertainty about the innovation. At the decision stage, farmers put measures in place to either adopt or reject the idea. If they intend to adopt it, they start planning and in order to do so, they need adequate knowledge and information regarding the innovation. At the implementation stage, farmers then put the idea into practice, for example, using a new seed or a new farming method. At the confirmation stage, the farmers continue to gather information in order to review their decision to adopt or to confirm it, for example, by displaying the success or failure of the new idea. In order that farmers succeed through these stages, adequate and effective communication is required to give them enough knowledge and skills about the idea. The arrows indicate that at each stage of the diffusion-adoption process, the extension approaches used should be integrated and supplemented with various other media from the different media categories indicated for effectiveness.

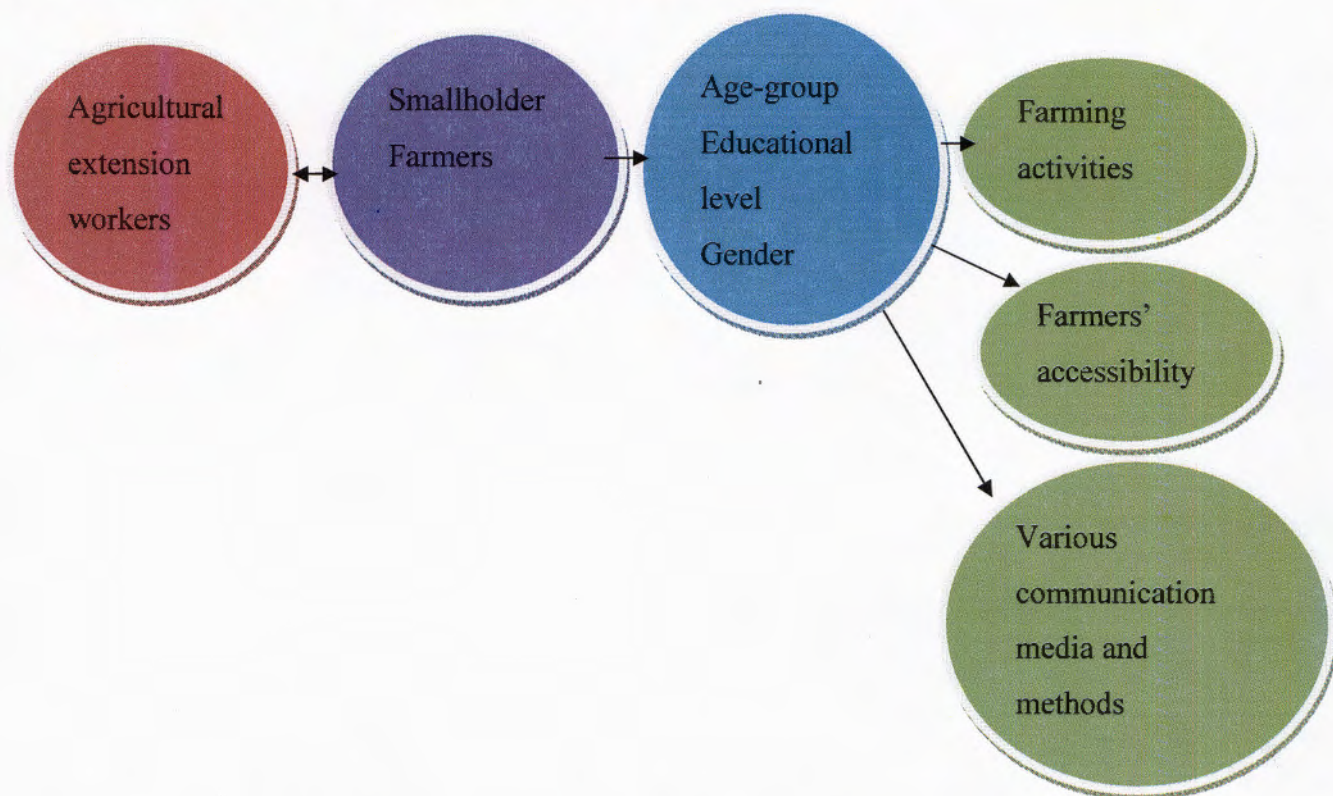
The model gives the four major media categories through which agricultural communication can be channelled: mass media, folk media, new media and associated media. The channelling of agricultural innovations through multi-media widens the communication reach in communities that are geographically dispersed. Furthermore, the multi-media approach increases choices of communication media and that is beneficial to heterogeneous communities since farmers in their diversities can access the new knowledge and information. It is likely that a multi-media approach has a high communication impact since it caters for various types of audiences. The repetition of the same messages in various media is also an effective way of reinforcing an idea thus making its adoption highly likely.

Figure 7.2: Model of a multi-strategy approach to smallholder agricultural communication



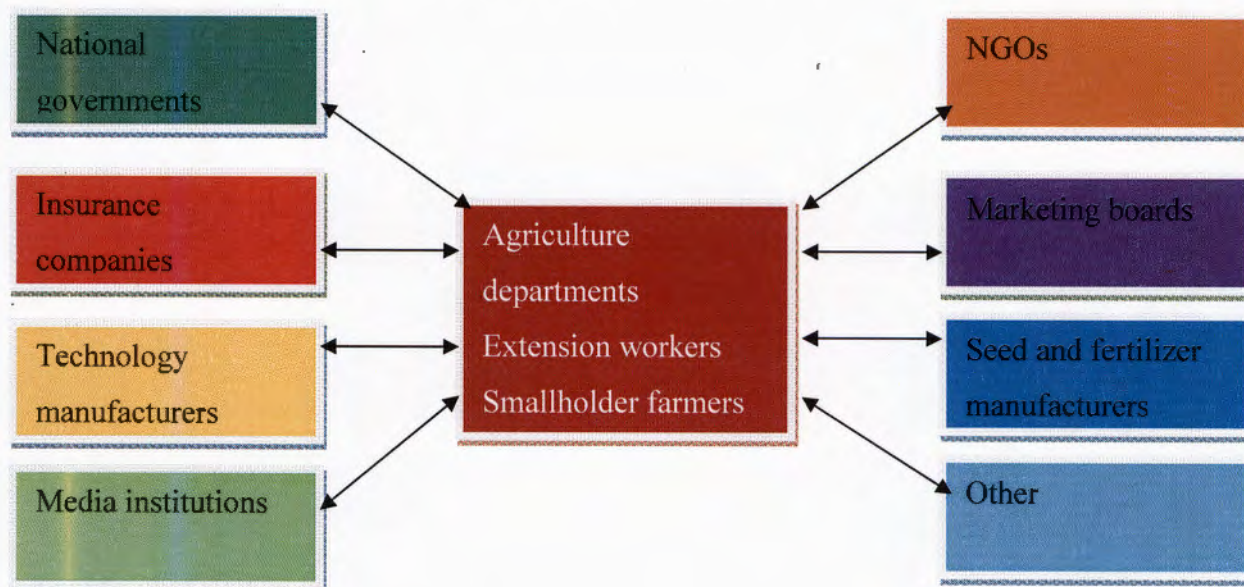
A multi-strategy approach should be adopted in agricultural communication in order to increase the communication impact as illustrated in the model above. Agricultural extension workers should design a continuous communication cycle by continually analysing the stakeholder profiles. This enables them to align their communication with the relevant farmer segments' needs each time they communicate. Each stage in the cycle is a part of the whole communication process where one stage is influenced by the other. Extension workers should thus conduct thorough stakeholder analyses in close consultation with the farmers concerned before delivering communication in order to determine the farmers' needs and preferences. After that, agricultural communication content can then be determined in consultation with the farmers. The agricultural content is channelled through various media and methods to widen accessibility. The various media and methods should allow for feedback from the farmers. The effectiveness of communication should be evaluated continuously in consultation with the farmers. This multi-strategy approach which forms a continuous cycle is considered effective in the sense that new ideas and problems are discovered each time and possible plans of action and solutions suggested.

Figure 7.3: Model of smallholder farmers' stakeholder analysis



When conducting stakeholder analyses among smallholder farmers, agricultural extension workers should consider the age-group, educational levels as well as gender as these demographic details have proved to have an influence on farmers' communication preferences and adoption of agricultural knowledge and information. There should be a two way communication process as indicated by the arrow between the extension workers and the farmers in order to group the farmers accordingly as much as possible when designing communication programmes. As such, the demographic details should be assessed in line with the particular farmers' agricultural activities as diverse as they could be and according to their accessibility in order to group the farmers as effectively as possible. Various communication media and methods should then be utilised to disseminate knowledge and information in order to cater for the various farmer groups.

Figure 7.4: Model of smallholder agricultural communication stakeholder mobilisation



The model of smallholder agricultural communication stakeholder mobilisation seeks to appeal to various stakeholders interested in agriculture such as national governments, NGOs, media institutions, technology manufacturers, insurance agents, seed and fertilizer manufacturers, marketing boards and other such institutions to converge and give maximum support to agriculture departments and smallholder farmers. These stakeholders should work together to promote smallholder farming production and productivity considering that this farming sector has been found dominant in developing countries (Manyeruke *et al.*, 2013: 278-279). Therefore, the arrows in the model indicate a two way communication process between the various stakeholders and agriculture departments and extension workers as well as the smallholder farmers. The smallholder farming sector should therefore contribute significantly to the food security of developing countries. The formation of public-private partnerships is one way the stakeholder mobilisation could be effective.

7.4 Conclusion

The study was an exploration of the dynamics of communicating with smallholder farmers in the Gweru district of Zimbabwe. In the first chapter, the framework for the study was outlined. In the second and third chapters, literature was reviewed in order to determine the successes of and the challenges faced in smallholder agricultural communication globally and locally. Gaps have been noted in previous studies which did not suggest ways of improving smallholder agricultural communication to promote adoption of agriculture innovations in the context of the FTLRP in Zimbabwe. Literature has revealed that agricultural policies in developing countries are not

favourable to smallholder farming despite the fact that smallholder farmers occupy most arable land in developing countries and particularly in Zimbabwe. Though research has pointed out the effectiveness of a multi-media approach to smallholder agricultural communication, this has not been achieved in the FTLRP context of Zimbabwe since literature on that is scanty.

The diffusion of innovations and participatory theories which were explicated in chapter four underpinned the study since these have been used widely in agricultural communication. However, these theories have been seen to be inadequate in achieving effective communication if used independently. This is due to the fact that on the one hand, mass media hardly mobilise farmers to adopt the innovations even though they have a wide reach. On the other hand, participatory extension approaches have proved problematic in the Gweru district FTLRP context due to financial, human, infrastructural and time resource challenges and considering that participatory approaches are still new and in trial stages in the country. Similarly, other extension methods used might not be successful due to infrastructural and network challenges indicated in the study findings. These challenges limit extension workers' mobility thus failing to reach all the smallholder farmers who are geographically dispersed. The current study has made considerable effort to address these challenges by suggesting detailed stakeholder analyses; stakeholder mobilisation; multi-strategy and multi-media approaches to smallholder agricultural communication. This could improve communication effectiveness; increase the farmers' communication choices and also promote adoption of agricultural knowledge and information that increase productivity.

A multi-strategy and multi-media approach has been found to be likely effective if maximised considering the heterogeneous nature of the resettled farmers in the Gweru district who have been found to have low education and agriculture training. Such a strategy could also yield positive results in communities with the same characteristics as the Gweru district.

The research methodology was presented in chapter five where a mixed research design was used to address the research objectives. A semi-structured interview was used to gain an in-depth understanding of the state of smallholder agricultural communication in the Gweru district. A questionnaire which was either self-administered or administered in the form of interviews for respondents who could not understand the English language was used to find out from the farmers, their communication preferences. The study findings were presented and analysed; and then discussed in chapter six.

With regard to smallholder farmers' communication needs, it was concluded agricultural communication was lacking among the FTLRP farmers and yet these farmers need as much agricultural communication as possible since their demographic details indicated that they had low education and agricultural training. Similarly, the study concluded that the lack of communication effectiveness was also contributed by the extension workers' lack of expertise as surmised from their demographic details. Where the language of communication was concerned, it was concluded that all the three languages, Shona, English and Ndebele were not equally used for agricultural communication as preferred by the farmers. The literature has revealed the dominance of the English language in some media forms particularly print and the internet. The study concludes that the farmers lacked financial resources and hence proper infrastructure and networks to access communication and that in some cases they lacked the media literacy to access agricultural knowledge and information. A lack of credible communication sources was also noted. The study concludes that there was a lack of an appropriate media mix since the extension workers revealed use of extension methods only in diffusing the innovations.

In so far as the effectiveness of available agricultural communication media was concerned, the study concludes that communication media was not being used adequately to maximise communication with the smallholder farmers and also to influence adoption of the knowledge and information. If extension approaches could be combined with the other media categories the farmers preferred, such as television, farmer-to-farmer communication, mobile phones and books, that could improve the communication impact.

The study further concludes that participatory extension approaches were problematic in the study context due to lack of resources to embrace them. Importantly, the study concludes that media integration was not effective in the study context due to the indicated political constraints and media monopoly and that agricultural training and support was lacking. If the various stakeholders were to be mobilised to support smallholder farmers, smallholder agricultural communication could improve significantly. Concerning the demographic profiles' association with adoption of innovations, the study concludes that unlike gender, age-group and education levels of the farmer respondents were associated with adoption of agricultural innovations significantly and should therefore be carefully considered in stakeholder analysis.

Where the innovation characteristics were concerned, the study concludes that relative advantage of an innovation is the most important aspect which should be prioritised in agricultural

communication although the various other innovation characteristics are at play. With regard to suggestions for improvement of smallholder agricultural communication, it is concluded that the suggestions given by the interview respondents indicated that such communication was lacking due to the various factors cited as needing attention. Largely, the study concludes that smallholder agricultural communication in the context of the FTLRP is not effective in the Gweru district of Zimbabwe and to this end, the following recommendations are made.

7.5 Recommendations

Recommendations are suggested on how smallholder agricultural communication can be improved based on the study objectives, the gaps in the literature, the theoretical underpinning as well as the study findings. The following recommendations are made:

7.5.1 Recommendations to agricultural extension workers

Agricultural extension workers should upgrade their knowledge and skills in the light of the noted low agricultural training. This could enhance effective discharge of their duties particularly to smallholder farmers who have proved to be in dire need of knowledge, skills and information. Furthermore, the extension workers should conduct thorough stakeholder analyses in order to contextualise agricultural communication as much as possible. In that regard, farmers' communication preferences should be prioritised. Extension workers should adopt a multi-strategy approach to smallholder agricultural communication in order to improve communication impact. Extension workers should also engage a multi-media approach to agricultural communication as heterogeneous as it could be Servaes (2008: 212), Fischer (2004: 29), in order to widen the reach considering the communication infrastructural challenges noted. Also, extension workers should increase stakeholder mobilisation through their AGRITEX department in order to maximise promotion of smallholder farming communication and productivity thereof. Agricultural extension workers should maximise liaison with various local groups to spread agricultural communication, for example tasking these groups to distribute associated media like pamphlets to the farmers or to spread word about agricultural gatherings and meetings.

7.5.2 Recommendations to the department of AGRITEX

The AGRITEX department should lobby for upgrading of extension workers' knowledge and skills through agricultural training colleges, universities and other institutions such as marketing boards. These services should be offered at minimal costs or should be freely available to the extension workers so that they are motivated to participate considering the economic constraints facing the country. The AGRITEX department should also lobby for the training of more

extension personnel in institutions in order to curb the apparent extension worker-farmer ratio discrepancy noted in the study population as well as in the literature. Furthermore, the AGRITEX department should mobilise various stakeholders to support the pooling of financial resources to provide extension workers with adequate transport facilities to reach the geographically dispersed distances in which the smallholder farmers are resettled. The AGRITEX department, with government support, should also liaise with various stakeholders in order to promote agricultural training and support of smallholder farmers.

7.5.3 Recommendations to the Zimbabwean government

National governments play an important role in agriculture through the policies they enact. The Zimbabwean government should revisit the agricultural communication policy in light of the FTLRP and consider a comprehensive policy that will promote smallholder agricultural communication to since smallholder farmers occupy the majority farmland in the country. The government should reinforce policy implementation. The government should liaise with media institutions and other agriculture related organisations locally and internationally so that they increase their promotion of agricultural communication since agriculture is the backbone of the country. The government should also enact policies that promote private-public partnerships in agriculture which work together in order to build smallholder farmers' capacities in particular and the country's farming capacity in general. Most importantly, the government should improve its extension policy to upgrade extension workers' knowledge and skills and also to achieve a balanced extension worker-farmer ratio. The government should work towards promotion of participatory extension approaches which are said to be in trial stages in Zimbabwe and requiring many resources in the light of the fact that these have proved to be effective in influencing adoption of agricultural innovations (Masendeke et al., 2010). The government should also improve its land tenure in order to motivate the resettled farmers to invest in farming.

7.5.4 Recommendations to media institutions

Media institutions should consider working closely with the AGRITEX department so that they broadcast a wide variety of programmes to cater for the heterogeneous smallholder farmers with a view to promote the food security of the country. Media institutions are also encouraged to promote use of all the local languages in their programming to cater for the linguistic variability.

7.5.5 Recommendations to smallholder farmers

Smallholder farmers should upgrade their agricultural knowledge and skills owing to the indicated low agriculture training. This could improve their farming productivity to attain not

only household food security but also national food security by commercialising their farming activities. Upgrading of their knowledge and skills enables the farmers to fully exploit agricultural communication which promotes their production and productivity. Farmers should also fully participate in agricultural communication activities as this improves their production skills. Furthermore, the farmers should demand agricultural communication from agricultural extension workers who are responsible for imparting knowledge to them. Farmers should also form as many farmers' groups as possible to assist each other in their various farming segments as heterogeneous as they could be. Thus, they could share knowledge and skills during the absence of other communication forms and encourage each other to adopt new farming technologies which enhance productivity.

7.5.6 Other recommendations

Marketing boards should increase their support of agricultural activities particularly to smallholder farmers. These boards should also pay farmers in time after buying their products to enable them to prepare for the next season since the researcher has observed that late payment of farmers is another factor hindering productivity. International agricultural organisations should get to the grassroots levels of developing countries and find out the challenges being faced by both small and large-scale farmers so that they get first-hand information for their agricultural planning purposes. Different community organisations such as religious groups, interests groups, co-operatives, should work together in the spreading of agricultural communication.

7.5.7 Recommendations for further research in agricultural communication

Research should be conducted in the smallholder agricultural communication context in Zimbabwe by conducting detailed stakeholder analyses. These could determine the various smallholder farming segments' communication needs. Qualitative interviews with the smallholder farmers could provide more detail on their communication needs and challenges. Research should also be conducted on agricultural communication in the country in order to find ways of improving the sector and to promote the food security of the country. The agricultural communication and extension policy of Zimbabwe should be reviewed in order to find ways of maximising production and productivity with the goal of restoring the country's status as the breadbasket of Southern Africa. Research should be conducted on how the various stakeholders such as NGOs, marketing boards, research institutions, international agricultural organisations such as FAO, are promoting smallholder agricultural communication so as to find ways of addressing the gaps in agricultural support.

APPENDICES

APPENDIX A: ETHICAL CLEARANCE CERTIFICATE



NORTH-WEST UNIVERSITY
YUNIBESITHI YA BOKONE-BOPHIRIWA
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**Institutional Research Ethics Regulatory
Committee**

Tel: +27 18 299 4849
Email: Ethics@nwu.ac.za

ETHICS APPROVAL CERTIFICATE OF PROJECT

Based on approval by the Human Resource Research Ethics Committee, Mafikeng Campus, the North-West University Institutional Research Ethics Regulatory Committee (NWU-IRERC) hereby approves your project as indicated below. This implies that the NWU-IRERC grants its permission that, provided the special conditions specified below are met and pending any other authorisation that may be necessary, the project may be initiated, using the ethics number below.

Project title: Dynamics of communicating with smallholder farmers in the Gweru District of Zimbabwe.																
Project Leader:	Prof A Salawu															
Student:	R Moyo															
Ethics number:	<table border="1"><tr><td>N</td><td>W</td><td>U</td><td>-</td><td>0</td><td>0</td><td>2</td><td>2</td><td>5</td><td>-</td><td>1</td><td>5</td><td>-</td><td>A</td><td>9</td></tr></table>	N	W	U	-	0	0	2	2	5	-	1	5	-	A	9
N	W	U	-	0	0	2	2	5	-	1	5	-	A	9		
WWW - S = Submitted by IR - For Submission F = Provisional Authorisation A = Authorisation																
Approval date: 2015-08-03	Expiry date: 2020-08-02															
Category:	N/A															

Special conditions of the approval (if any): None

General conditions:

While this ethics approval is subject to all declarations, undertakings and agreements incorporated and signed in the application form, please note the following:

- The project leader (principal investigator) must report in the prescribed format to the NWU-IRERC:
 - annually (or as otherwise requested) on the progress of the project,
 - without any delay in case of any adverse event (or any matter that interrupts sound ethical principles) during the course of the project.
- The approval applies strictly to the protocol as stipulated in the application form. Would any changes to the protocol be deemed necessary during the course of the project, the project leader must apply for approval of these changes at the NWU-IRERC. Would there be deviation from the project protocol without the necessary approval of such changes, the ethics approval is immediately and automatically forfeited.
- The date of approval indicates the first date that the project may be started. Would the project have to continue after the expiry date, a new application must be made to the NWU-IRERC and new approval received before or on the expiry date.
- In the interest of ethical responsibility the NWU-IRERC retains the right to:
 - request access to any information or data at any time during the course or after completion of the project;
 - withdraw or postpone approval if:
 - any unethical principles or practices of the project are revealed or suspected,
 - it becomes apparent that any relevant information was withheld from the NWU-IRERC or that information has been false or misrepresented,
 - the required annual report and reporting of adverse events was not done timely and accurately,
 - new institutional rules, national legislation or international conventions deem it necessary.

The IRERC would like to remain at your service as scientist and researcher, and wishes you well with your project. Please do not hesitate to contact the IRERC for any further enquiries or requests for assistance.

Yours sincerely

Linda du
Plessis

Digitally signed by Linda du Plessis
DN: cn=Linda du Plessis, o=NWU,
ou=First Triangle Campus,
email=Linda.duPlessis@nwu.ac.za,
c=ZA
Date: 2015.08.11 13:08:48 +02'00'

Prof Linda du Plessis

Chair NWU Institutional Research Ethics Regulatory Committee (IRERC)

APPENDIX B: LETTER OF INTRODUCTION TO AGRITEX



NORTH-WEST UNIVERSITY
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Email: abiiodun.salawu@nwu.ac.za

15 February 2016

To whom it may concern

Dear Sir/Madam:

INTRODUCING MRS RACHEL MOYO (REGISTRATION NUMBER
25835319)

This serves to introduce the above-named as a full-time Doctor of Philosophy (PhD) student in the Department of Communication, North West University, Mafikeng campus, South Africa. Mrs Moyo has proposed to conduct research on the "Dynamics of communicating with smallholder farmers in the Gweru district of Zimbabwe." Mrs Moyo's research proposal was approved by the Higher Degrees and Research Committee of the Faculty of Human and Social Sciences and duly registered by the North West University as a research project. As the student's supervisor, I am very convinced that the topic is researchable. It is being increasingly realised that communication is a fundamental aspect of development.

Mrs Moyo would like to collect data for the research project by interviewing those deemed to be credible sources of agricultural communication. As a Department, we request that you permit Mrs Moyo to distribute questionnaire copies and/or conduct face to face interviews. Any other assistance given to Mrs Moyo would be highly appreciated.

Should you need any further information regarding this research project, do not hesitate to contact the undersigned.

Your assistance will be greatly appreciated.

Thank you.

Yours faithfully,

A handwritten signature in black ink, consisting of a stylized 'A' followed by a flourish.

Professor Abiodun Salawu

APPENDIX C: QUESTIONNAIRE GUIDE

RESEARCH QUESTIONNAIRE FOR FARMERS

DYNAMICS OF COMMUNICATING WITH SMALLHOLDER FARMERS IN THE GWERU DISTRICT OF ZIMBABWE.

Dear participant

My name is Rachel Moyo, a postgraduate student in the Department of Communication at the North West University in South Africa. I am conducting a study on the title above in fulfilment of a doctoral thesis. The study findings could assist in policy formulation on designing suitable communication strategies for sustainable smallholder farming development, let alone farming in general. Therefore, your consent is requested to spare about an hour of your time to respond to all the questions in this questionnaire to the best of your knowledge. Below are some definitions of the key research concepts.

Communication

From an agricultural development perspective, communication is considered as a social process designed to bring together senders and receivers of information as co-creators of knowledge (Mgbenka et al. 2013). To this end, farmers are supposed to be actively engaged in the communication of their development activities. The communication modes used should be suitable for the farmers.

The information provided in this study will remain confidential. Should you have any questions concerning the questionnaire, please contact me on 00263-783844858, or at my e-mail: moyorachel@gmail.com. I will personally collect the completed questionnaire.

Your cooperation will be greatly appreciated.

Yours faithfully

Rachel Moyo (Researcher)

RESEARCH QUESTIONNAIRE

SECTION A: BIOGRAPHICAL INFORMATION

- A1. Please indicate your gender by ticking (✓) the appropriate box below.

Male	Female

- A2. Please indicate your age-group by ticking (✓) the appropriate box below.

18 – 23	24 – 29	30 – 35	36 – 41	42+

- A3. Please indicate your level of education by ticking (✓) the appropriate box below.

None	Primary	Secondary	Tertiary

- A4. Do you have some training in agriculture? Please tick (✓) the appropriate box.

None	School certificate	College certificate	Diploma	Degree

SECTION B: COMMUNICATION OF AGRICULTURAL INFORMATION

- B1. Do you receive agricultural information aimed at improving your farming activities? Please tick (✓).

Yes	No

- B2. Rank the following roles of agricultural extension agents 1-5 in order of their importance to you. Number 1 is the most important.

Role of agricultural extension agents	Number
Linking farmers with input and credit suppliers.	
Transferring technology	
Advising farmers	
Programme planning and evaluation	
Mobilising local communities for group action	

- B3. Rank the communication of the following farmer information needs 1-10 in order of their relevance to you. Number 1 is the most relevant.

Farmer needs	Number
Weather forecasting	
Input prices and availability	
Early warning and management of diseases and pests	
Latest packages of practices	
Information about rural development programmes and subsidies	
Farm business management information	
Marketing information	
Information on crop insurance	
Soil testing and soil sampling information	
General agriculture news	

- B4. Rank the following media of communication in order of effectiveness to you in receiving agricultural information. Each media category is ranked 1-4. Number 1 is the most effective.

Media category: Mass Media	Number in order of effectiveness
Television	
Radio	
Newspapers	
Magazines	
Media category: Folk Media	Number in order of effectiveness
Folk drama and songs	
Market gatherings	
Farmer to farmer communication	
Farm visits	
Media category: New media	Number in order of effectiveness

Internet	
Satellite	
Mobile phone	
Telephone	
Media category: Associated media	Number in order of effectiveness
Pamphlets	
Charts	
Books	
Video and audio tapes	

- B5. Rank the following factors that could influence adoption of agricultural ideas, methods and technologies in order of importance to you from 1-10. Number 1 is the most important.

Factors	Number
Need for new ideas	
Cultural values and beliefs	
Ease of use	
Room for experimentation	
Observability of results	
Cost price	
Profitability	
A savings in time and effort	
Exposure to information	
Communication channels used	

- B6. Rank the following extension modes 1-5 through which you can receive or communicate your development needs by numbering them in order of the most effective to you. Number 1 is the most effective.

Communication mode	Number
Farmer field schools	
Farm demonstrations	
Agricultural shows	
Look and learn tours	
Innovative farmers' workshops	

- B7. In which language do you prefer to receive agricultural information?

--

SECTION C: ASSESSMENT

- C1. How often are agricultural messages disseminated via the communication media you have indicated above? Please tick (✓) appropriate box.

Media category: Mass media	Always	Often	Sometimes	Rarely
Example: Radio	✓			
Television				
Newspapers				
Magazines				
Other (please specify)				
Media category: Folk media	Always	Often	Sometimes	Rarely
Folk drama and songs				
Market gatherings				
Farm visits				
Agricultural shows				
Other (Please specify)				
Media category: New media	Always	Often	Sometimes	Rarely
Internet				
Satellite				
Mobile Phone				
Telephone				
Other (please specify)				
Media category: Associated media	Always	Often	Sometimes	Rarely
Pamphlets				
Charts				
Books				
Video and audio tapes				
Other (please specify)				

- C2. How often would you prefer to receive agricultural messages via the communication media you have indicated above? Please tick (✓) appropriate box.

Media category: Mass media	Always	Often	Sometimes	Rarely
Example: Radio	✓			
Television				
Newspapers				
Magazines				
Other (please specify)				
Media category: Folk media	Always	Often	Sometimes	Rarely
Folk drama and songs				
Market gatherings				
Farm visits				
Agricultural shows				

Other (Please specify)				
Media category: New media	Always	Often	Sometimes	Rarely
Internet				
Satellite				
Mobile phone				
Telephone				
Other (please specify)				
Media category: Associated media	Always	Often	Sometimes	Rarely
Pamphlets				
Charts				
Books				
Video and audio tapes				
Other (please specify)				

The End. Thank you for your co-operation and time.



APPENDIX D: INTERVIEW SCHEDULE

INTERVIEW SCHEDULE FOR AGRICULTURAL EXTENSION WORKERS.

DYNAMICS OF COMMUNICATING WITH SMALLHOLDER FARMERS IN THE GWERU DISTRICT OF ZIMBABWE.

Dear participant

My name is Rachel Moyo, a postgraduate student in the Department of Communication at the North West University in South Africa. I am conducting a study on the title above in fulfilment of a doctoral thesis. The study findings could assist in developing theory and policy formulation on designing suitable communication strategies for sustainable smallholder farming development, let alone farming in general. Therefore, your consent is requested to spare about 1 hour of your time to respond to all the questions in this interview to the best of your knowledge. Below are some definitions of the key research concepts.

Communication

From an agricultural development perspective, communication is considered as a social process designed to bring together senders and receivers of information as co-creators of knowledge (Mgbenka et al. 2013). To this end, farmers are supposed to be actively engaged in the communication of their development activities. The communication channels used should be suitable for the farmers.

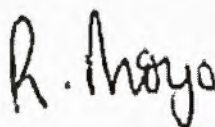
Innovation

An innovation is an idea, practice or project that is perceived as new by an individual or other unit of adoption (Rogers, 2003: 13). New information, methods and technologies that are high yielding continue to be developed in the agriculture sector and these need to be communicated effectively to the relevant farmers so that they are able to adopt them.

The information provided in this study will remain confidential. Should you have any questions concerning the interview, please contact my supervisor, Professor A. Salawu on +27183892238 or at abiiodun.salawu@nwu.ac.za.

Your cooperation will be greatly appreciated.

Yours faithfully



Rachel Moyo: Researcher

INTERVIEW SCHEDULE

SECTION A: BIOGRAPHICAL INFORMATION

- A1. Please indicate your gender by ticking (✓) the appropriate box below.

Male	Female

- A2. Please indicate your age-group by ticking (✓) the appropriate box below.

18 – 23	24 – 29	30 – 35	36 – 41	42+

- A3. What level of formal training do you have in agriculture? Please tick (✓) the appropriate box.

Certificate	Diploma	Undergraduate Degree	Postgraduate Degree

- A4. How many years of work experience do you have in your current position? Please tick (✓) appropriate box.

Less than 6 months	
6 months to 2 years	
2 years to 5 years	
5 years to 10 years	
10 years and above	

SECTION B: COMMUNICATION OF AGRICULTURAL INFORMATION

- B1. What is your role with regard to the communication of agricultural information to smallholder farmers?

.....

- B2. What factors do you consider in designing communication strategies for agricultural information dissemination to smallholder farmers?

.....

- B3. Which communication modes do you use at each of the following stages of disseminating agricultural innovations? List all that apply in order of the most effective when communicating with smallholder farmers.

Knowledge	Persuasion	Decision	Implementation	Confirmation

- B4. List the participatory extension approaches do you use to communicate agricultural knowledge and information to smallholder farmers?

.....

- B5. What challenges are faced with the use of the approaches you stated in item B4 above if any?

.....

- B6. Do you integrate interpersonal channels and mass media channels in communicating agricultural knowledge and information? "Yes" or "No".

- B7. What is the effect of integrating interpersonal and mass media channels in communicating agricultural knowledge and information?

.....

B8. Are there any agricultural training and support programmes meant to upgrade farmers' knowledge and skills? If so, give examples of such programmes.

.....
.....
.....

B9. From your experience with smallholder farmers, what factors could influence their adoption of agricultural innovations?

.....
.....
.....

B10. How do you get feedback from the farmers on the challenges they face in their development activities?

.....
.....
.....

B11. Whom do you liaise with to provide adequate agricultural knowledge and information to smallholder farmers?

.....
.....
.....

B12. How do you evaluate the success of your agricultural communication programmes?

.....
.....
.....

B13. What communication needs are pressing among the smallholder farmers?

.....
.....
.....

B14. What measures are being taken by your AGRITEX department to improve communication with the resettled smallholder farmers?

.....
.....
.....

B15. In your opinion, what measures could be taken to improve communication with the resettled smallholder farmers?

.....

Thank you for your cooperation

APPENDIX E: CONSENT FORM

CONSENT

I hereby agree to participate in research regarding the communication of agricultural information to smallholder farmers in the Gweru district. I understand that I am participating freely and without being forced in any way to do so. I also understand that I can stop this participation at any time, at any point should I not want to continue and that this decision will not in any way affect me negatively.

I understand that this is a research project whose purpose is not to benefit me personally. I have received a telephone number and e-mail address of a person to contact should I need to talk about any issues which may arise in this survey/interview.

I understand that this consent form will not be in any way linked to the questionnaire/interview and that my answers will remain confidential.

I understand that if possible, feedback will be given to my community on the results of the completed research.

Signature of participant

Date.....

APPENDIX F: PROOF OF EDITING LETTER



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22nd April 2018

TO WHOM IT MAY CONCERN

CERTIFICATE OF EDITING

I, Muchativugwa Liberty Hove, confirm and certify that I have read and edited the entire thesis

**DYNAMICS OF COMMUNICATING WITH SMALLHOLDER FARMERS IN THE
GWERU DISTRICT OF ZIMBABWE.**

by Rachel Moyo, student number 25835319.

This thesis is submitted in fulfillment of the requirements for the award of the degree of

Doctor of Philosophy in Communication

Department of Communication Faculty of Human and Social Sciences, North-West
University, Mafikeng Campus. Rachel was supervised by Professor Aoidun Salawu,
NWU, Mafikeng.

I hold a PhD in English Language and Literature in English and am qualified to edit
academic work of such nature for cohesion and coherence.

The views and research procedures detailed and expressed in the thesis remain those of
the authors.

Yours sincerely

Dr M.L.Hove

Original stored in: D:\ALL-Work\2018\2018-04-22\22-04-2018\22-04-2018\CERTIFICATE OF EDITING.docx

22nd April 2018

Printed on 2018-04-22

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