

**AN INVESTIGATION ON THE IMPACT OF WOMEN PARTICIPATION IN IRRIGATION  
MANAGEMENT ON FOOD SECURITY IN ZIMBABWE: THE CASE OF ROZVA  
IRRIGATION SCHEME IN BIKITA**

**A dissertation submitted in partial fulfilment of the requirements for the Master of Science  
Degree in Food Security and Sustainable Agriculture  
(Production)**

**Bindura University of Science Education**



**Faculty of Agriculture and Environmental Science  
Department of Agricultural Economics, Education and Extension**

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## DECLARATION

I hereby declare that the research project entitled “**An investigation on the impact of women participation in irrigation management on food security in Zimbabwe: the case of Rozva irrigation scheme in Bikita**” submitted to Bindura University of Science Education, Department of Agricultural Economics, Education and Extension is a record of an original work done by me under the guidance and supervision of **Dr. Emmanuel Zivenge** and this work is submitted in partial fulfilment of the requirements for the award of a Master of Science Degree in Food Security and Sustainable Agriculture. The results embodied in this thesis have not been submitted to any University or Institute for the award of any degree of diploma.

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## **DEDICATION**

This project is dedicated to my family.

## **ACKNOWLEDGEMENTS**

First and foremost, praise is to my heavenly father who through his grace allowed me to persevere in the seemingly endless period of this project. I would like to express my deep appreciation to a number of people who made contribution towards this study. Special tribute and thanks to my supervisor, Dr. Emmanuel Zivenge, for his guidance and invaluable advice and suggestions. In fact, my project would not have been possible without the immense assistance I received from his tireless efforts of guiding and supervising right from the commencement up to the end of this work.

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## **ABSTRACT**

The study primarily sought to explore the impact of women participation in irrigation management on food security. Specifically, it was conducted at Rozva irrigation scheme in Bikita District of Masvingo province in Zimbabwe. The respondents were women farmers at Rozva irrigation scheme as well as key informants (Government officials, Community leaders and NGO officials). The study was mainly premised on participatory development theory. In addition, it was basically a descriptive survey research which used a hybrid approach through the application of both quantitative and qualitative research methodologies. The sample size had 150 female farmers and 15 key informants where both stratified and purposive sampling approaches were used to select the participants. Of the participants, 96% were non-managerial and only 4% were managerial. Primary data was collected through the use of questionnaires, interviews with key informants and field observations. Moreso, data was analysed using the descriptive statistics approach as well the Chi-square test with the use of SPSS Data Editor Software at 5 % significance level. The findings revealed that the participation of women in irrigation farming and agricultural management activities can generally empower the poor people, as well generate income and contribute to food security. The study confirmed that female farmers participated in irrigation management activities specifically on issues such as planning of tasks, organising tasks, coordination of project meetings and leadership. The study also demonstrated that women farmers held influential positions in the management of the projects, as well as crop and water management skills. In addition, the women were continuously developed through training programs offered by relevant departments. Women farmers showed high level of involvement in project decision making process and also participates in production of maize, beans and vegetables by undertaking activities such as land preparation sowing of seeds, watering the fields, fertilizer application, weeding, planting, harvesting, transporting the produce, selling produce in town and selling produce at home. The study findings also revealed that women were motivated to participate in irrigation management, by allowing them to own resources such as production land and through family support. The challenges established included; shortage of maize seeds, diseases, natural disasters (cyclone), lack of financial resources, water supply shortages, inadequate irrigation equipment and limited of government support. It was recommended that the government need to fully embrace the participatory development approach when establishing irrigation schemes. Moreso, participatory

monitoring and evaluation of the project would also help female farmers make well informed decisions about the project and improve performance. Women Youth farmers should also be encouraged to participate in the irrigation management. The government need to also offer more relevant training programmes under practical settings and provide financial saving schemes for women as well as improve road infrastructure and connect female farmers to sustainable market options.

**Keywords:** (Women Participation, food security, impact)

## **LIST OF ACRONYMS AND ABBREVIATIONS**

AIDS: Acquired immune deficiency syndrome

AREX: Agriculture Research and Extension

CADEC: Catholic Development Commission

CARE: Community American Relief Everywhere

CIDA: Canadian International Development Agency

CSO: Central Statistics Office

FAO: Food and Agriculture Organisation

HFS: Household Food Security

HIV: Human immunodeficiency virus

SPSS: Statistical Package for Social Sciences

UN: United Nations

UNAIDS: United Nations Programme on HIV and AIDS

UNDP: United Nations Development Programme

UN-HABITAT: United Nations Human Settlements Programme

UNWVLC: United Nations Virtual Learning Centre

UNESCO: United Nations Educational, Scientific and Cultural Organization

WWAP: World Water Assessment Programme

WFP: World Food Programme

ZimVAC: Zimbabwe Vulnerability Assessment Committee

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# CHAPTER 1

## INTRODUCTION

### 1.1 BACKGROUND OF THE STUDY.

Primarily, one of the problems being faced by Zimbabwe as a nation is the eradication of food insecurity and hunger. For example, in 2011, 72.3% of all Zimbabweans were food insecure whilst 62.6% of the households were being deemed poor, (ZimVAC, 2012). Thus, despite the widely publicised success stories about Zimbabwe land reform from 2000, 50% of the population continues to live in poverty (Zimstat, 2013). There is still food insecurity, extreme poverty, hunger and child malnutrition at the household levels in rural areas, among resettled farms and low income urban families especially those which are female-headed (Zimstat, 2013). Most people do not have enough food to meet their needs through to the next harvest season. Consequently, they rely on markets and other non-farm sources such as casual labour to bridge the food gap to the next season. As such, a number of people in rural areas struggle to meet their daily food needs (ZimVAC, 2012). Thus, rural households remain predominantly smallholder subsistence farmers that combine crop and livestock production for the majority of the income, complemented by various generally low paying non-agricultural activities.

Of great concern is that the Zimbabwean agriculture has been plagued by recurrent droughts and a large proportion of Zimbabwe's population is food insecure. Rural Livelihoods Assessment Report estimates that 1.6 million people in the rural areas were in need of food assistance between January and March 2013 (Zimbabwe Vulnerability Assessment Committee, 2012). The most severely affected are households that depend mainly on agriculture in communal lands and resettlement areas. However, as a way of eradicating food insecurity and in pursuit of accelerated economic growth and wealth creation, Government formulated a new plan known as the Zimbabwe Agenda for Sustainable Socio-Economic Transformation in 2013.

The purpose of Zim Asset is to achieve sustainable development and social equity anchored on indigenisation, empowerment and employment creation, which will be largely propelled by the judicious exploitation of the country's abundant human and natural resources in various sectors of the economy including agriculture. In line of this thrust, the revitalisation and establishment of irrigation schemes became a priority for the government.

Historically, smallholder irrigation farming in Zimbabwe was commissioned in 1913, well before the dawn of independence, as a means to mitigate drought (Chazovachii, 2013). Thus, in order to improve the agricultural productivity of the rural poor, particularly in arid and semi-arid areas including Bikita district in Masvingo Province, the Government undertook a project which ensures that each district has a dam for irrigation. The irrigation projects were established to assist the rural poor to increase their income through higher productivity. However, despite the efforts by government to leverage the life of people living in rural areas through crop production, animal farming and other income generating project, people in rural has remained largely poor, (ZIMVAC ,2014). Nevertheless, it is still commonly practiced in drought-prone areas, being seen as the best way of boosting agricultural production and as the panacea to food security at household level.

Likewise, Muir-Leresche (2006), notes that irrigation significantly reduces food insecurity exacerbated by drought and rural dwellers benefit greatly as they produce both for subsistence and the market. Thus, smallholder irrigation has the potential to alleviate food insecurity as it reduces hunger, malnutrition and unemployment (Chazovachii, 2013). They are regarded as the basis for development in communal areas (Manzungu, 1996). Although in Zimbabwe these schemes have been characterised by low productivity and have not contributed much to the growth of the country's economy due to a number of factors such as poor access to markets, limited access to water, financial constraints and poor management of the irrigation schemes (Chazovachii, 2013, Mutambara and Munodawafa, 2014).

However, women who make up the majority of the rural dwellers, play a pivotal role in irrigated farming (Chancellor, 1997; Chazovachii, 2012), even though their role has not been significantly documented in some context. Notwithstanding that, a plethora of scholars have documented that women are the backbone of food security especially in the rural areas (FAO, 2011). Moreso, not only are women responsible for purchasing, preparing and processing food but also play a focal role in national agricultural production. However, although women make considerable contribution to agricultural production and food security, various researchers' state that this contribution is often unrecognized, undocumented, under counted and undervalued especially in rural areas (ZimVAC 2012).

Furthermore, women have minimal control over key productive resources necessary for effective production, such as land, credit and extension training services (Rahman, 2008). It is crucial, therefore, to investigate the nature and extent to which women contribute to food insecurity eradication through involvement in irrigation projects as this could improve women's participation and bring about rural development projects to fruition.

It is argued that eliminating impediments to women's effective participation in agriculture could result in increased food production that would see the reduction of household food insecurity (Chancellor 1997). The research's interrogation of the participation of women in food security through participation in irrigation projects is of vital importance in policy formulation targeted at developing the rural communities who are otherwise marginalised in food insecure eradication activity due to gender stereotyping.

The study also fills the knowledge gap on how local women in rural areas can through participation irrigation projects take charge of their own development and food insecure alleviation. In any case, there is no systematic and comprehensive empirical research done in Zimbabwe to establish the impact of women participation on small holder irrigation management for enhancing food security. In light of this development, the predominant question of this study was; could the participation of women in the management of irrigation projects enhance food security? It is therefore the purpose of this study to provide the much needed answer. Accordingly, the main objective of this study was to examine the participation of women in irrigation management in Bikita district through irrigation projects with particular reference to Rozva scheme in Bikita.

## **1.2 STATEMENT OF THE PROBLEM**

Consecutive crop failure in Bikita gave birth to food insecure and has been one of the most persisting challenges faced by rural populations in Zimbabwe. In an effort to reduce food insecurity by increasing agricultural production, the Zimbabwean government started setting up of irrigation schemes in rural areas in the 1960s. According to ZIMVAC (2010), Bikita district has suffered at least seven droughts in the decade prior to 2009. This situation has had a negative impact on agricultural productivity resulting in food insecurity and stress (Chazovachii 2013). To survive this situation, the people have devised a variety of coping mechanisms that are on farm, off farm, and non - farm thus leading to an over diversification of rural economy. However, the participation of women in these poverty eradication mechanisms is critical. Women are the pillars of small scale farming and are the backbone of food security, especially in the rural areas. Manzungu noted that women's contribution to agricultural production outnumbered that of men as women contributed 67% of the total agricultural work and 65, 5% to the monthly household income in Zimbabwe.

Several studies, however, indicate that despite occupying a prominent position in agriculture, women still remain marginalised and have minimal access to productive resources such as land, credit and extension services (Chancellor 1997). Academic information on the participation of women in Bikita district in food security through participation in irrigation is limited.

Smith (2009) suggests that data are spotty on critical issues such as women's access to land, credit, participation in training and extension programmes and the degree to which women participate in agriculture. In that regard, a solid and comprehensive research showing the degree to which women participate in irrigation in Bikita rural district seems to be lacking. This study, therefore, sought to investigate the nature and the extent of women's participation in poverty eradication through participation in irrigation project management in Bikita rural district in Masvingo, with particular reference to Rozva scheme. This provided an opportunity to ascertain the prospects and problems facing women participating in irrigation farming in the research area.

### **1.3 OBJECTIVES**

#### **1.3.1 Main Objective**

The aim of this study was to assess the impact of women participation in irrigation management on food security.

#### **1.3.2 Specific Objectives**

- i. To characterize the nature of women participation in irrigation scheme in respect of labor provision, decision making and benefit.
- ii. To determine challenges experienced by women at irrigation schemes.
- iii. To assess factors contributing to participation of women in irrigation management
- iv. To assess impact of women participation in irrigation management scheme on food security.

### **1.4 RESEARCH QUESTIONS**

- i. What is the nature of women participation in irrigation schemes?
- ii. What are the challenges hindering the participation of women in irrigation projects in Bikita?
- iii. How social factors affect the contribution of women in irrigation schemes participation in irrigation projects in Bikita?
- iv. What are the impacts of women participation in irrigation management?

### **1.5 JUSTIFICATION OF THE STUDY**

The study will positively contribute to the academic body of literature considering that the promotion of women participation in community development programmes in Zimbabwe is still an ongoing process which calls the need of periodic reviews. More so the study will be an essential document for policy makers as well as Government of Zimbabwe through the provision of up to date relevant information.

The motivation of this study is derived from the researcher's own experience gained through staying in Bikita rural area for a long period of time. My parents and most of my family

members are subsistence farmers. As a result of staying in Bikita area for over ten years I realized that rural women in Bikita and other neighboring areas such as Zaka spend most of their time in agriculture, growing seasonal crops such as maize, beans, wheat, tomatoes and onions. However, rural women farmers face a number of challenges that affect their participation in irrigation management on food insecurity eradication through agricultural production. These challenges include lack of capital, inadequate inputs and inadequate labour supply. This results in low agricultural productivity. Therefore this study has been prompted by my personal experience of living in rural areas and by the need to address the plight of rural women farmers in their efforts to eradicate food insecurity through participation in small scale irrigation farming in Bikita rural in Masvingo province. This study is anticipated to benefit the government, local community, non-governmental organisations and researchers

#### **1.5.1 The government**

The government might gain insight in policy formulation, since currently policy framework empower women in irrigation projects. Through this study the government might be able to inform various departments as AREX and the community Developments and Ministry of Women Affairs the problems faced in irrigation farming.

#### **1.5.2 Local community**

The local community such as traditional chiefs, headmen, field officers and ordinary people might be equipped with knowledge on the major challenges faced by women for the successes of irrigation projects in Bikita. Moreover, the study might assist the local community relevant information on the importance of women participation in irrigation projects and might address the problems encountered in irrigation farming for the benefit of the people in the community.

#### **1.5.3 Non-Governmental Organization**

The study might benefit the Non-Governmental Organization such as CARITAS, CARE, and CADEC among others on how to emancipate women in irrigation projects for them to fully participate in the development process.

#### **1.5.4 Researchers**

Researchers might be equipped with knowledge on the challenges faced by women in irrigation projects as the research is going to be published. It might be used by other researchers who want to research on women participation in irrigation schemes. The findings of this study will not only add to the literature on food security through women participation but also provide relevant information on sustainable development projects that can be used not only for Bikita but throughout the country.

## **1.6 DELIMITATION OF THE STUDY**

This study will be conducted in Bikita district, Masvingo province and south western Zimbabwe, which is a hotspot for increased risk due to drought. Bikita District lies in Masvingo East in the north western part of the country. It stretches over an area of 8531 km<sup>2</sup> with a population of 167436 (CSO, 2005). The researcher chose the Rozva irrigation scheme because of its accessibility. The respondents were specifically the women farmers at Rozva irrigation scheme as well as key informants from Government departments, local Leaders and local Non-Governmental Organisations (NGOs). The area is mountainous and overpopulated which reduces the size of arable land thus creating the need for other alternative sources of livelihood.

## **1.7 LIMITATIONS OF THE STUDY**

The researcher encountered the following limitations:

- i. Inaccessibility of some areas where some of the members' households were located due to terrain and bad road networks. However, the researcher made use on convenient mode of transport.
- ii. High transport costs limited the number of trips, to which the researcher could have mounted to collect more data to enrich the study. However, proper route scheduling was done to minimise the transport costs.

## **1.8 OUTLINE OF THE STUDY**

This research study is divided into five chapters:

Chapter one: introduces the topic of the study, giving the background to the study, justification of the study, statement of the problem, the research objectives and questions. The chapter also looks at delimitation of the study and the limitations of the study.

Chapter Two: is the literature review which forms the basis for discussion for the other subsequent chapters. The researcher was guided with the research objectives in reviewing the literature.

Chapter Three: outlines the research methodology that the research used. The chapter outlines the research design, research type, the sources of data used, data collection methods, research instruments used. It also outlines the targeted population, sample frame and sample size and sampling technique used.

Chapter Four: gives an account of the findings obtained from the data collection exercise that was carried out by the researcher, data presentation and analysis are also part of this chapter

Chapter Five: is basically the last chapter which is the summary of the findings, conclusion and recommendations.

## 1.9 REFERENCES

- Chancellor, F. (1997). *Developing the Skills and Participation of women Irrigators: Experiences from Smallholder Irrigation in Sub-Saharan Africa*. Available at: <ftp://ftp.fao.org/agl/aglw/> (Accessed on 05/03/2019).
- Chazovachii, B. (2012). *The Impact of Small-scale Irrigation Schemes on the Rural Livelihoods: The Case of Rozva Irrigation Scheme Bikita District Zimbabwe*. *Journal of Sustainability Development in Africa*, 14(4): 217-231.
- Chazovachii, B. (2013). *Smallholder Irrigation Agriculture in Distressed Regions: A Quest for pro-poor policies in Zimbabwe*. *Research Journal of Sociology*, 1(1):1-7.
- Food and Agriculture Organisation (FAO). 1995. *Women, Agriculture and Rural Development*. A Synthesis Report of the Africa Region. Rome: FAO.
- Food and Agriculture Organisation (FAO). (2000). *Socio-economic Impact of Smallholder Irrigation Development in Zimbabwe*. Available at: <http://www.fao.org/docrep> (Accessed on 02/02/2019).
- Food and Agriculture Organisation (FAO). (2011). *Women Key to Food Security 2010-2011*. Available at: <http://www.fao.org/docrep/014/am> (Accessed on 10/03/2019).
- Manzungu, E. (1996). *Strategies of smallholder irrigation management in Zimbabwe*. PhD thesis, Wageningen University, The Netherlands.
- Bautitsa, R.M., M. Thomas, K. Muir-Leresche and H. Lofgren. (2002). *Macroeconomic Policy Reforms and Agriculture: Towards Equitable Growth in Zimbabwe*. USA Washington DC: International Food Policy Research Institute (IFPRI) [www.ifpri.org/pubs/abstract](http://www.ifpri.org/pubs/abstract) (accessed 8 February 2019).
- Zimbabwe Agenda for Sustainable Socio-Economic Transformation (ZIMASSET)* (2013). Government of Zimbabwe

## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1 INTRODUCTION**

Primarily, this chapter will provide a solid background for this research through a review of related literature. To begin with, it highlights the theoretical framework employed to inform the study. It also presents relevant literature, and concepts on food security, which form the basis for discussing and analyzing the participation of women. The literature review is sub divided as follows: theoretical framework, conceptual framework which involves a review of the concept of food security, followed by the concepts of irrigation schemes in Zimbabwe as well as women participation in irrigation management. Moreso, a review on the impact of women participation in irrigation production and management, challenges and a chapter summary will also be presented.

#### **2.2 THEORETICAL FRAMEWORK**

For the purpose of the study the following development theories will be discussed; modernisation, dependency theory, sustainable development, and the basic need theory. The examination of the contribution of women in food security through participation in irrigation projects follows. The discussion on the participation of women in irrigation management is useful for this study because it will evaluate on the impact of women participation in reducing food insecurity in Bikita rural district in Masvingo province.

##### **2.2.1 Participatory Development Theory**

Fundamentally, this study is premised on the participatory development theory which seeks to advocate for the involvement of beneficiaries in matters which affects their day to day activities. Thus, the participation of women in irrigation management is in line with the concept of participation development theory. As Cornwall and Jewkes (1995) puts it, community based programmes should be carried out with the beneficiaries rather than on them. Jackson (1992) further argues that such participatory approaches benefit the community rather than just the policy implementers. The value of participatory approach lies in the changes it brings to communities rather than simply in the engagement process (Cornwall and Jewkes, 1995). Thus, irrigation scheme establishment and management should be based on a participatory approach, involving users, planners and policy-makers at all levels. Mago (2014) also elucidated that many policy instruments in Africa and Zimbabwe in particular have failed to have meaningful impact because they tend to resort to the ‘top-down’ formulation and implementation

processes. Robb (2000) opines that programmes for enhancing food security should involve or consult the poor.

Therefore, this study also sought to understand the nature of women participation in key decisions which affects their participation in irrigation schemes. The women should contribute to the process because they have hands on experience with food insecurity. Pro-women strategies should be informed by this perspective if ever they are to make a dent on food security. Robb (2000) further explains that government programmes should follow a participatory methodology. That is if the women are involved then they will feel that they are part and parcel of any decisions that influence rural development. However, since independence, the Zimbabwean macroeconomic policies followed the ‘top-down’ approach, (Mago, 2014). Therefore the policies were not inclusive hence they failed to address the issues of food security issues on the ground. The participatory development theory is people centered; it is designed to be participatory and has an emphasis on sustainability (Cahn, 2002). Since the approach incorporates participation, it makes people to have ownership of the development ideas. This approach encourages local people to be innovative and to indulge in various projects which are sustainable. The sustainable livelihoods framework is also people centered, making it a framework that supports participatory development by allowing the poor to manage their livelihoods, Mago (2014).

However, according to Midgley (1986) barriers to women participation is finance. Local women usually do not have control over financial resources since they depend on external funds to meet their needs. Consequently, they are subject to external control. Mohan (2001) also notes that sometimes the term participation is used by organisations simply to gain legitimacy or funding. These organisations use it as a “rubber stamp” to impress funders that they are applying participatory approaches in their development programmes. The fact that organisations rely on external funding often means that they are more accountable to their funders than to the people they should help (Dipholo 2002). They appear participatory yet they exclude those who should benefit from development programmes. Cornwall (2008:279) states that it is not uncommon for external agents to carry out a participatory assessment of needs and priorities, but only respond to those that correspond with their agenda. Cornwall (1997) also points out that it is common for people to be involved in some decision making processes while real decisions are made elsewhere.

Furthermore, people may exclude themselves from participation due to “participation fatigue”. People may also exclude themselves if they see no change, especially after having been consulted many times. If they are asked to participate they will assume they are wasting their

time again. Brett (2003) argues that large external agencies, promoting participatory approaches to development, do not apply participatory principles to their activities.

Nawaz (2013) argues that although participatory development seeks to include gender, it has failed to some extent. Women are marginalised by the very programmes that are meant to empower and emancipate them. Cornwall (2003) draws attention to the Joint Forest Management that was known for being participatory. Analysis of the Joint Forest Management conducted by feminist researchers revealed that the programme was “gender exclusionary and highly inequitable”. Cornwall (2003) warns that participatory approaches may be “tokenistic rather than transformative”. It is against this background that this study sought to investigate the nature and the extent of women’s participation in irrigation management.

### **2.2.2 Modernization theory**

Modernizing agriculture by means of adopting new technological inputs, ability to read instructions on fertilizer packs and diversification of household income which would in turn enhance food security (Najafi, 2003). Applying this theory to our study, we can deduce that establishment of irrigation schemes is in line with the modernisation theory. The implication here is that the participation of women in irrigation management is a determinant factor on the output produced and subsequently food security. The theory was derived from the need for economic growth in the second half of the 1950s. According to Coetzee (1989), the idea of modernisation was a form of change that focused on the influence coming from outside to the less developed world.

The solution for the less developed world was simple: ignore tradition and follow the route to development as examined by the developed western countries (modernity) (Davids, 2005). Leys (1996) explains that the theories of modernisation emphasized that the values of the modern world would be spread out through education and technology development aid programmes to the less developed countries (LDC). Rostow (1990) explained development in five stages.

- i. The traditional society is in a stage when almost no history exists (Rostow, 1990).
- ii. Societies are guided to enable them to imitate the economic history of the European countries and to have growth resulting in development (Rostow, 1990)
- iii. The take-off happens when economic growth occurs independently. Accumulated interest becomes part of the mode of growth and structures of the society (Rostow, 1990).
- iv. The society progresses to maturity and enhances the criteria of modern efficient production. GNP indicates the progress (Rostow, 1990).
- v. The society is present in the stage of high mass consumption (Rostow, 1990).

Modernisation as explained by Rostow assumes that economic and social change of societies take place along a development continuum starting from traditional underdevelopment to modernity. According to Rist (1999) and Coetzee and Graaff (1996), modernisation did not always evolve in spite of favorable circumstances. From the 1960s to 1980s the former underdeveloped homelands of South Africa were provided with infrastructure for agriculture, education, and industry by the South African apartheid government. These underdeveloped areas were extremely poor and unemployment rampant (Cock, 1980).

The aim was to institutionalize and support the policy of separate development and to expose the people living in these areas to modernization. The envisaged development did not occur nearly to the extent envisaged and the trickle-down effect was not achieved (Coetzee, 1989; Leys, 1996). Sharp criticism exposed modernisation as an effort to justify northern countries use of domestic growth and foreign aid as methods of fighting communism. Moreso, Van Wijk-Sijbesma (2001) observes that technical breakthroughs made low-cost technologies that communities themselves are able to manage more widely applicable, but did not lead to community autonomy as external agencies continued to plan, build, maintain and manage the services in large blanket approach programmes. In India, hand pumps brought a rapid increase in access to a better water supply for the rural poor through a close cooperation between the government, multilateral development and the private sector. Later, the programme was threatened because the family type hand pumps were not suitable for community use and a survey found that 75% of them were out of order (Van Wijk-Sijbesma, 2001). Also, Southern countries expected an improved future, promised by modernisation, while the new ruling class of the South was benefiting only themselves and not the poor people (Regan and Ruth, 2002; Rist, 1999). The critique resulted in reaction and counter reaction and the Dependency theory as a critique of modernisation.

### **2.2.3 Dependency Theory**

The dependency theory was a reaction to the shortcomings of modernisation and it was mostly the Latin American countries that spearheaded the reaction. These countries had enjoyed independence for more than a century but had not benefited from modernisation and its promises. Coetzee and Graaff (1996) argue that the same processes that led to growth and prosperity of the capitalist west in the past broadly caused underdevelopment in the Third World. The elite of the Third World that dominated the developing countries specialist export orientated economies had a dependent relationship with capitalists in the more advanced countries (Coetzee and Graaff, 1996). Todaro (1989) describes dependency as a spiraling

phenomenon to which multinational corporations aid agencies and multilateral assistance organizations such as the World Bank and the International Monetary Fund contributed.

The actions of the elite prevented rather than enhanced genuine development efforts and resulted in the perpetuation of underdevelopment in the Third World. Todaro (1989) refers to this situation as the neo colonial dependency and regards it as indirect Marxist thinking. Frank (1995) believes that the unequal exploitive power relationships between the center (developed countries) and the periphery (less developed countries) prevented poor nations from becoming self-reliant and independent in their development efforts. The end result of external interference was the poor people concerned took up a passive role that was forced onto them by outside forces as they were robbed their own free will (Vorster, 1989).

As with modernisation, there were problems with the dependency theory and different criticisms of dependency. Regan and Ruth (2002) argue that the dependency theory attributed the wealth of developed countries unfairly to colonial exploitation. Dependency did not attend sufficiently to the cultural aspects of development. Internal factors that contributed to underdevelopment were ignored (Davids, 2005). The de-linking strategy could lead to self-destruction rather than self-reliance. The improvement of human conditions in particular material conditions was the underlying motivation of development in the western world. The need existed for development to be based on human well-being and basic human needs as defined by ordinary people. The basic needs approach was an effort in development thinking to move in such a direction. Therefore, following the above discussions critics of the social security policy say that government support has failed to address food security because it encourages dependency. Dependency is a silent food insecurity trap (Mago, 2014). Could women participation in irrigation management be used for the poor to attain self-sufficiency? The objective of the establishment of irrigation schemes is improving the welfare of people in communities, thus women participation was assumed to be a necessary vehicle to achieve this seemingly insurmountable reverie.

### **2.3 CONCEPTUAL FRAMEWORK**

The conceptual framework illuminates major issues in the study, together with the constructs or variables and reputed relationship among them (Kombo and Tromp, 2016). In this context, it therefore provided the clarification of underlying issues which guided this study. In addition to showing the alleyway of the study through the conceptual framework, the researcher was able to show the associations of the diverse paradigms that researcher was to explore. The conceptual issues which guided this study were women participation, irrigation schemes and food security. The independent variable being women participation in irrigation management

and food security being the dependent variable. First we begin with demystifying the concept of food security.

### **2.3.1 Understanding the concept of food security**

Before reviewing literature on the participation of women in irrigation, it is important to understand the concept of food security. There have been a lot of developments regarding Food Security in the world. The Food and Agricultural Organization has been a major player in the area of food security in the world. FAO (2008) says Food Security is a situation which exists when, “... *all people at all times have physical and economic access to safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life....*”

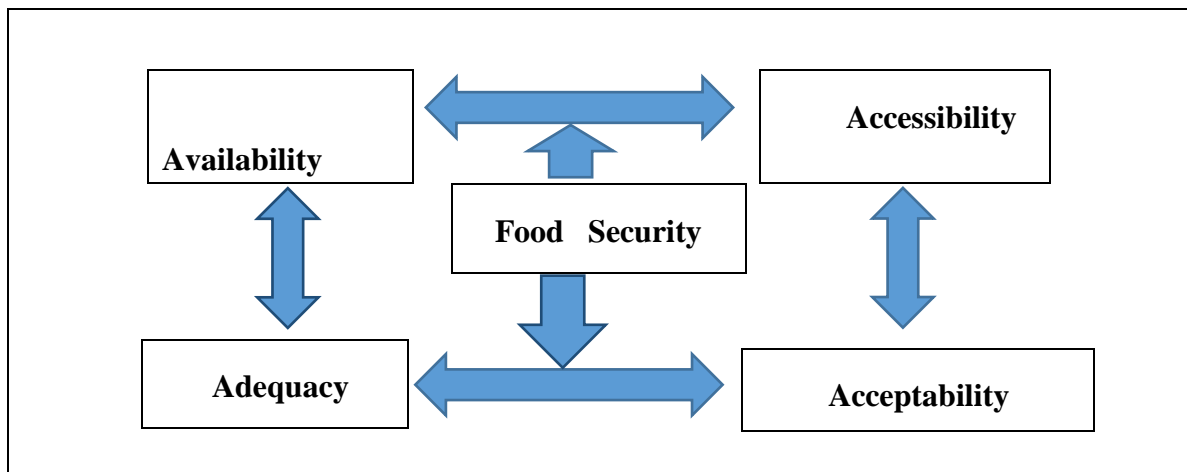
Further, the FAO speaks of food security on household basis when all members of a household can be supplied with sufficient and adequate food, whether through their own production or through buying of food.

There are many definitions of household food security that have been proposed by Maxwell and Frankenberg, (1992) who suggested that “all agree that the key defining characteristics of household food security is secure food access at all times to sufficient food. Likewise, Karl (2009) notes that The WFS declared that: “Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and preferences for an active and healthy life.” Moreso, the World Bank defines food security as secure access by all people to healthy food for an active life (Frankenberg, 1992). Thus, food security is essentially built on three pillars: food availability, food access, and food utilization. An individual must have access to sufficient food of the right dietary mix (quality) at all times to be food secure. Those who never have sufficient quality food are chronically food insecure. Accordingly, in the 1996 Rome Declaration on World Food Security, food security is defined as “Food that is available at all times, to which all persons have means of access, that is nutritionally adequate in terms of quantity, quality and variety, and is acceptable within the given culture.”

A definition adopted during an African regional workshop held in 1992 in Zambia noted that households will be food secure when the conditions relating to availability and access are met. Moreso, in their definition availability includes adequacy in staples, vegetables and animal protein relishes, vitamin supplements and concentrated energy sources which should be safe and meet cultural preferences (FAO, 2008). Accessibility implies that households can procure

foods through the transformation of endowments such as land, labour, capital and other resources (Republic of Zambia, 1992). Maxwell and Wiebe (1998) alludes to four variables that define food security.

These are availability, accessibility, adequacy and acceptability. These are interlinked as shown on fig 1 below:



**Figure 1: Interrelationship between food security variables**

Food availability constitutes the most basic elements of food security. Globally food production has increased substantially. The current production of grains, alone would be sufficient to feed the world population and eliminate hunger if only the need had access to it, (Mutangadura, 2000). Food availability would refer to the sum of domestic production imports (both commercial and food aid) and changes in national stock, Frankernberger (1992). The proximity of the above sources of food to household is critically important in the food security Matrix (Mutangadura, 2000).

Moreso, food must be available in sufficient quantities and of appropriate quality through either domestic production or purchase which may include food aid when necessary (FAO, 2006). Food access refers to people’s entitlement to food, namely the amount they can produce, purchase or otherwise receive through formal and informal food distribution systems (Food Forum Security in Southern Africa, 2004). Individuals must have adequate incomes or other resources to purchase or barter to obtain necessary food needed to maintain consumption of an adequate diet and nutritional level (Food and Nutrition Technical Assistance 2011). Food insecurity can occur in situations where food might be available but not accessible due to the erosion of people’s entitlement to food (Borton and Shoham, 1991). Also, food should be prepared and distributed between individuals within the household and the individual capacity to absorb and utilise nutrients in the food consumed. Utilisation also implies that food is properly used through the existence of proper food processing and storage facilities, adequate

knowledge and application of nutrition and child care, and adequate health and sanitation services (FAO, 2008).

The availability of food includes the supply of food. This is determined by the level of food production of a community, the level of reserves and the ability of the community to trade adequate food for its people. The broader availability of food in a community or country does not show an absolute indication on household food security. Sen (1981) says that there was a Green Revolution in Asia in the 1960's and 1970's where Asia experienced improved seeds, farm mechanization, fertilizers and irrigations, but other places in Asia and the world over had critical shortages of food. According to the World Food Programme WFP (2007) food availability entails bringing the right quantities of food in time to the families who need it. The Joint United Nations Programme on HIV/AIDS, UNAIDS (2006) explains that food availability hinges also on how the land is organized for meaningful farming in the country. If land resources are not properly harnessed through well planned land reforms, this may result in Household Food Insecurity and this is not one of the objectives of land reform programme. Usually good land reform Programmes results in increased food availability and thus improved Household Food Security.

Therefore, Seale (1988) mentions that Household Food Security (HFS) is a very important component of human existence. This is a situation where all people in a family have enough to eat as enshrined in the United Nations Declaration of Human Rights. The World Food Programme (2007) notes that the Declaration reads as follows: *“Everyone has the right to a standard of living adequate for the health and wellbeing of himself and of his family, including food, clothing, housing, medical care, the necessary social services and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond their control.”*

Scott (2003) explains that because most countries subscribe to this declaration, it is therefore imperative that all governments build holistic approaches to ensure that from the local to the national level strategies and participation of women in irrigation schemes is one the modern approaches. From all these definitions Mutangadura (2000 :) similarly consents that there are three important components that determine the levels to which Household Food Security can be attained. These are food availability, food consumption or utility and food access. Food availability is of particular importance to this research. Mutangadura (2000) argues that household food security should be maintained at all the times to reduce the incidents of “food crisis moments” where they have to sell some of their wealth to buy food. The author further states that most families may never recover from the response to household food shortage.

### **2.3.1.1 Measuring household food security**

Arikomoh (2001) emphasises the need for an accurate account of the nature and extent of food needs among households. This helps the relevant authorities to make an appropriate response to the need of the different households. Proper tabulated data on where the food is needed, who needs the food, how much food is needed, and when do these people need the food is very important. Frankernberger (1992) explains the importance of qualitative research methods and tools to use during food assessment. Examples of these methods include household risk mapping and household problem solving. These methods help to give a good description of the household food situation so that an appropriate response is given. Some of the indicators used in measuring household food security include employment of household member, level of education, assets, animals at homestead, labour, inputs, harvests, climate and geo physical environments among other factors.

These methods are holistic in nature and another additional strength in them is that they are gender sensitive and hence being applicable for this study. In Zimbabwe the government economic blue print captures food security as a critical component on cluster one that relates to food security and nutrition. The Ministry of lands and rural resettlement is mandated to offer secure of tenure to resettled farmers. This allows for increased investment of farmers and subsequent contribution to food security in Zimbabwe. The Zimbabwe Vulnerability Assessment Committee (ZIMVAC) produces yearly food security reports in Zimbabwe and the planned intervention strategies by the country.

However, Maharjan and Joshi (2011) notes that food security is measured in four steps:

Firstly, food supply at household level is determined based on their own farm production. Six major food crops namely; rice, wheat, maize, millet, barley, and potato produced in their own farm(s) are considered to assess food availability and this is the approach adopted for this study.

Secondly, food requirement is calculated in terms of calorie considering the age and gender of each household member i.e. adult equivalent. Total calorie requirement of 2,344kcal and 2,144kcal/person/day are taken into account when calculating the total calorie requirement of a household.

Thirdly, based on the yearly calorie availability and monthly calorie requirement of the household, a food self-sufficient month for the given household. The households that are food self-sufficient for 12 or more months are categorized as food-secure.

- Income is taken into consideration as the fourth step to assess food security of households having food self-sufficiency for less than 12 months. This minimum threshold income differs among households due to different food self-sufficient months and different family size. Those food self-insufficient households, who are unable to earn sufficient income to reach food security threshold level, are categorized under chronic food-insecure households. Accordingly, income was additionally considered in this study as an important factor in relation to food security.

### **2.3.2 The concept of irrigation schemes in Zimbabwe**

Irrigation is an essential component of achieving food and nutritional security and reducing vulnerability in crop production. Many countries, also in Sub Saharan Africa, have substantial potential for expanding irrigated agriculture in a sustainable manner. Moyo *et al* (2017) elucidated that globally, smallholder irrigation systems are viewed as critical common property resources that are needed to increase crop water supply and sustain livelihoods in semi-arid regions. Improving agriculture and enhancing productivity through smallholder irrigation is one of the key strategies for enhancing food security and improve the livelihoods of rural communities; the majority of the poor depend directly or indirectly on agriculture (Mutiro and Lautze, 2015).

Smallholder irrigation farming in Zimbabwe was commissioned in 1913, well before the dawn of independence, as a means to mitigate drought (Chazovachii, 2013). It is still commonly practiced in drought prone areas, being seen as the best way of boosting agricultural production and as the panacea to food security at household level. According to Muir-Leresche (2006), irrigation significantly reduces food insecurity exacerbated by drought and rural dwellers benefit greatly as they produce both for subsistence and the market. It is also believed that smallholder irrigation has the potential to enhance welfare of people as it reduces hunger, malnutrition and unemployment (Chazovachii, 2013; Jayne and Rukuni cited in Manzungu and Van der Zaag, 1996). Irrigation schemes are regarded as the basis for development in communal areas (Manzungu and Van der Zaag, 1996). Not only are irrigation schemes developed in rural areas to reduce food insecurity but also to empower the rural dwellers (Chazovachii, 2012).

Rural communities are afforded the opportunity to engage in activities that improve their livelihoods and well-being. Women, who make up the majority of the rural dwellers, play a pivotal role in irrigated farming (Chancellor, 1997; Chazovachii, 2012). Nonetheless, various scholars note that irrigation schemes in Zimbabwe have been characterised by low productivity and have not contributed much to the growth of the country's economy due to a

number of factors such as poor access to markets, limited access to water, financial constraints and poor management of the irrigation schemes (Chazovachii, 2013).

### **2.3.3 The concept of participation**

Generally, women play a critical role in agricultural production and management, especially in subsistence agriculture, irrigation as well as livestock keeping and food processing (FAO, 1995). In this study involvement and participation are used interchangeably. According to Sambureni (2001) involvement has its origins in the theories of Kurt Lewin, who strongly advocated the idea that the management of change requires full participation from those affected by change. According to Lewin, as cited by Sambureni (2001) ‘we are likely to modify our own behaviour when we participate in problem analysis and solution and likely to carry out decisions we have helped make’. Sambureni (2001), further notes that involvement is the process of influence, interaction and information sharing. It draws individuals into the decision making process within the organisation, decisions that have a direct impact on day to day activities of that individual. It is also a process that articulates a set of values that promote respect for individual contributions and teamwork.

Thus, as put forward by the UNWVLC (2008) participation is a process through which stakeholders influence and share control over the development initiatives, decisions and resources which affect them. According to UNESCO (2003) cited in Mago (2014), participation can also guarantee that voices of relatively powerless groups, such as women are heard. Participation offers people the opportunity to meet their responsibilities, as well as the opportunity to claim their rights. Key aspects of sustainability include empowerment of local people, self-reliance and social justice. These reflect concerns about principles of equity, accountability and transparency. One way to incorporate these philosophies into real life management is to move away from conventional forms of governance which have usually been dominated by a top-down approach, and professional experts in the government and private sector and move towards the bottom up approach, which combines the experience, knowledge and understanding of various local groups and people.

An important lesson during the 1990s was recognizing the benefits of combining expert knowledge with local knowledge (UNESCO, 2003). Thus, as put forward by Frayssinet (1995) ‘participation is fundamentally about power: the power to make decisions affecting one’s own life and the life and development of the community, the power to say no as well as to say yes’.

The result of effective participation is that people own their development and therefore development becomes more sustainable. Thus, women play a central part in irrigation

production and management. This pivotal role of women seldom has been reflected in institutional arrangements for the development and management of irrigation schemes. Acceptance and implementation of this principle requires positive policies to address women's specific needs and to equip and empower women to participate at all levels in irrigation activities, including decision-making and implementation, in ways defined by them.

#### **2.4 IMPACT OF WOMEN PARTICIPATION IN IRRIGATION ON FOOD SECURITY**

The participation of women in irrigation management has improved their behavior in the community and also enhanced their skills and knowledge in leadership and technical activities. It has been noted that women perform the so called men's work which was not ordinary to them in the past. According to Smith (1998) female members could be able to control both men and women in conducting projects activities as well as giving their on sentiments and setting strategies for successful project implementation.

Karl (2009) also elucidated that women play important roles in food security as food producers, keepers of traditional knowledge and preservers of biodiversity, food processors and preparers and food providers for their families. Because of their multiple roles, women are key players in overcoming food insecurity. Karl (2009) further notes that women produce a large part of the world's food. In the same vein, Bastidas (1999) also asserts that recognizing the importance of women in food production has increased in the past decades. Thus, it has been estimated that women are responsible for more than half of the food produced in developing countries, (Roda 1991; Davidson 1993; Cleaver and Jobes 1996). Bastidas (1999) further notes that exact data is very hard to come by but FAO estimates that women are the main producers of the world's staple foods: maize, wheat and rice. Overall, women are responsible for about 50 per cent of the world's food production and, in some countries of sub-Saharan Africa, women provide between 60 and 80 per cent of the food for household consumption, mainly as unpaid laborers on family plots. Men are found more often in agricultural wage labour and cash crop production, while women are mostly found producing food for their families and local markets.

However, in irrigation projects there is division of labor based on gender and fetching water was one of the main duties of women in irrigation projects. On the other hand cutting building logs was the responsibility of men. Land clearance, carrying building material to the project site can be done by both men and female. However, (Meertens, 2000) views that women in Africa are taking part in little tasks like selling vegetables. Although, on the contrary, Karl (2009) notes that they are also responsible for post-harvest food processing, storage, transport

and marketing. In addition to producing staple crops, women in many countries also grow legumes and vegetables to feed their families.

In respect to management, women's involvement in decision making include decisions regarding the benefits obtained from irrigated agriculture the amount of the crop to be sold, the amount to be allocated for home consumption, the ways in which the money should be spent, etc. (Bastidas 1999). Rahman (2008) conducted a study in Northern and Southern Kaduna State in Nigeria to examine the status of women involved in agriculture. The main findings of this study were that the participation level of women farmers in farm decision-making was lower than that of men. Such findings are also supported by Damisa and Yohanna (2007) who also carried out a similar study in the same area. The authors further explained that some women could not purchase needed agricultural inputs or adopt new technologies because they did not have the power to make decisions without their husbands consent. Thus absence of women's views in irrigation projects has lead to group neediness hardships which exacerbated underdevelopment and house food insecurity.

On the contrary, Raidimis (2014) study found that the majority of the women in six agricultural projects in Thulamela Municipality made farm decisions themselves. Thagwana's (2009) study on the participation of women in agriculture at Tshiombo Irrigation Scheme in South Africa showed that women were the key players of agricultural management the scheme. They engaged in farming in order to curb food insecurity.

Basically, women participation in irrigation projects helps them to earn income for their families. Accordingly, Mirtorabi *et al* (2012) conducted an applied research to analyse factors influencing rural women's participation in irrigation activities in Asara Karaj, Iran. The results of this study indicated that rural women's participation in irrigation activities depended on variables such as the level of education, family size, animal ownership, internal and using extension and education classes. The results also showed that there was a negative significant relationship between the level of education and rate of participation.

Rural women with low level of literacy were more involved in food security activities than women with higher levels of education. Moreso, Farid *et al* (2009) undertook a study in Bangladesh to determine and describe the nature and the extent of rural women's participation in agricultural and non-agricultural activities. Their study found that poor rural women were the ones mostly involved in agricultural and non-agricultural activities. The results also showed negative correlation between level of education and the rate of participation in agricultural activities. Those from affluent families spent more time in childcare and domestic activities.

The poor participated in various activities in order to meet family needs and supplement family income.

A study conducted by Kalyani *et al* (2011) in India to determine tribal women's participation in agriculture also showed that tribal women's contribution to household income was higher than that of men. These women were of poor backgrounds and had limited access to resources needed for effective agricultural production but their overall rate of participation in agriculture was higher than that of men as they worked harder and for longer hours. Unnati *et al* (2012), undertook a study to establish the extent of women's participation in farm decision-making the study revealed that age, education and annual income were positively and significantly correlated to the participation of women in farm decision making. Similar findings were also reported by Lad *et al* (2012) and Bhatet *al* (2012) who also conducted studies in India. The uneducated and the poor were the ones mostly involved in agriculture but barely involved in farm decision-making.

In respect to the issue of ownership rights, Madembwe and Madembwe (2005) also carried out a study to examine women's access to land at the Ngondoma irrigation scheme, Zimbabwe. This study found that the women who had land, irrespective of size and who participated in agriculture contributed significantly to household food security, income and welfare. In this study, women had land registered in their own names as land was allocated only to the unemployed, of which women were the majority. However, having land rights did not give them the power to make farm decisions. Some women farmers reported that farm decisions such as marketing of produce were still made by men. In that context, Meertens (2000) come to the conclusion that "women's investment in irrigation schemes can't be customary but a necessary developmental initiative.

#### **2.4 CHALLENGES TO WOMEN'S PARTICIPATION IN IRRIGATION**

The World Bank (2009), argue that women's contribution to food production could have been higher if they had access to needed resources such as land, finance and technology as well as access to extension and access to markets. Rojas (2008) also highlights that accessibility to land is one of the obstacles that women face. Similarly, FAO (2011) states that even in countries such as Latin America where there is greater access to land, men have larger land holdings than women. In that case, Olawepo and Fatulu (2012) notes that most married women gain access

to land through their husbands. Thus, access to ownership of property rights for women becomes an important issue for consideration.

However, ownership statistics do not convey the complex factors that determine women's abilities to manage and utilise land. First, decision-making (for example, regarding planting, seasons, and consumption vs market) is shaped by household and family interactions, informal bargaining, community expectations, and customary practices (Knapman and Sutz, 2015). Cleaver (2000) describes how married men and women differently perceive the use of household land holdings, and how tacit social understandings tied to gendered identities will shape production decisions. Moreso, Bastidas (1999) notes that research in the African (Carney 1988; Jones 1986; Zwarteveen and Neupane 1997) and Asian (Hart 1992; Zwarteveen 1996) systems has focused on varying the assumptions which guides irrigation policies, planning, and design. These studies also have shown that the failure to recognize gender issues affects the agricultural productivity of irrigated crops negatively, and that women's lack of independent access to, and control of, land and water threatens household food security.

Thus, women also have less access to markets than men which hamper their opportunities to earn an income even further, and thus their possibilities to be able to buy food. With fewer assets and heavier burdens, women are more vulnerable to shocks and less well positioned to respond to e.g. the effects of climate change or other rapid changes in the environment. Those who cannot obtain land through their husbands can obtain land through a male relative such as father, uncle, brother or son.

Mazhawidza and Mangengwa (2011) point out that, though the government of Zimbabwe has tried to address the plight of women regarding land access, there have been no clear measures to ensure that they are benefiting from the land reform process. This is further supported by the ZIMSTAT (2013b) report which states that even after the land reform program, men and women still do not have equal access to land.

Thus, subsequently women who do not own land have little access to credit which requires collateral such ownership of land for one to obtain it. This result in low agricultural productivity since without credit women find it difficult to purchase essential resources such as seeds, tools and fertilizer, (Mazhawidza and Mangengwa (2011). A study of credit schemes in Zambia and Zimbabwe established that women received less than 10% of the credit for smallholders and only 1% of total credit for agriculture (Mehra and Rojas, 2008). Women who receive a substantial amount of credit also produce higher agricultural output, although some have no formal training that is needed for effective food production.

Karl (2009) also notes that in spite of some very positive efforts, development agencies as a whole have failed to bring substantial representation of peasants, farmers, fisherfolk, and indigenous people into discussions on how to address the problems of the food crisis. Above all, the voices of women food producers and food providers are missing. Parker *et al* (2005) also elucidated that women's productive activities are frequently focused on less-marketable crops and home consumption. Women's and men's tasks in relation to land management are different, understood as gendered 'practical needs'. Men are often responsible for heavy physical, seasonal tasks related to large livestock and technology (for example ploughing new fields), while women are assigned more repetitive tasks (such as preparing the ground for planting and weeding) (Cheater, 1999; Cleaver, 2000). However, in sub-Saharan Africa, women market their produce mainly in local markets. Mehra and Rojas (2008) state that for female farmers to engage in marketing successfully, they should have the capacity to participate knowledgeably and effectively.

Mudukuti and Miller (2002), undertook a study to assess women's perceived obstacles to extension participation. Data collected from rural women in Shurugwi, Zimbabwe showed that the main barriers to extension participation were transportation, lack of information about extension programmes, heavy household workloads and time constraints. Ahmed *et al* (2012) also state that the higher illiteracy rates among women limit their ability to understand technical information and adopt new technologies aimed at increasing agricultural output and income growth.

One of the challenges that rural women farmers face is to negotiate terms and prices with powerful buyers (Mehra and Rojas). Rural women farmers in Chirumanzu, Zimbabwe, revealed that accessing markets was difficult due to lack of reliable transport in the area (Kapungu, 2013). A large portion of their income paid for transport. Kapungu's study also revealed unavailability of information about prices especially in the informal market as another constraint. Female farmers preferred to sell their produce at informal markets because they accommodated all the different grades of the vegetables that the women produced.

Women also faced immense competition from other farmers at the informal market and their prices were often lower than expected which further reduced their farm income. Female farmers also stated that another big hurdle was to get permission from their husbands to engage in marketing activities (Chancellor 1997). The aforementioned are the challenges that impede women from active participation in agricultural production. Women may also be subject to mobility constraints (as a result of social rules, limited access to modes of transport or security fears) and are therefore less able to access markets, and this, combined with social norms, means they cannot develop relationships with other actors along the value chain (Parker *et al*

2005).The following discussion shows that the governments of all nations, including Zimbabwe, have the obligation to address challenges faced by women in development and to ensure that all forms of discrimination against women are eliminated.

## **2.6 SUMMARY OF LITERATURE REVIEW**

The chapter reviewed the theories employed to inform the study and presented relevant literature, which form the basis for discussion and analysis of the participation of women in irrigation management in an attempt to enhance food security in Bikita district. The literature was sub divided as follows: theoretical framework, conceptual framework which involved a review of the concept of food security, followed by the concepts of irrigation schemes in Zimbabwe as well as women participation in irrigation management. Moreso, a review on the impact of women participation in irrigation production and management, challenges and a chapter summary was also be outlined. This review provides a solid background for this research. The researcher consulted government pamphlets, journals, articles, books and sources from the internet in an effort to situate this study within the existing literature. The next chapter focused on the research methodology, which outlines the research design, research instruments, data collection procedure, data presentation.

## **2.7 REFERENCES**

AGRITEX *Office in Bikita District of Masvingo, Zimbabwe*, 2019.

Ahmed, H. and Gabor, A. (2012). *An Examination of the Relationship Governance Structure and Performance: Evidence from Bangladesh*. Society and Economy.

Arikomoh, S. (2001). *Addressing Food Insecurity in Africa*, the National institute For Eco- Policy, Pretoria

- Bastidas, B.E. (1999). *Gender Issues and Women's Participation in Irrigated Agriculture: The Case of Two Private Irrigation Canals in Carchi, Ecuador*: International Water Management
- CARE. 2007. *Enhancing poor Households' Economy and Empowering the Marginalised: Implementation on Internal savings and Lending (Microfinance) Intervention*. CARE's Microfinance Programme Document. Zimbabwe: CARE.
- Cahn, M. (2002). "Sustainable Livelihoods Approach .Concept and Practice." Massey University. [www.devnet.org](http://www.devnet.org). Accessed 13 January 2019
- Carney, D. (1998). 'Implementing the sustainable rural approach'. In Carney, D., ed. 1998. *Sustainable Rural Livelihoods: What Contribution Can We Make?* (pp. 3-23). London: Department for International Development (DFID).
- Chancellor, F. (1997). *Developing the Skills and Participation of women Irrigators: Experiences from Smallholder Irrigation in Sub-Saharan Africa*. Available at: <ftp://ftp.fao.org/agl/aglw/> (Accessed on 05/03/2019).
- Chazovachii, B. (2012). *The Impact of Small-scale Irrigation Schemes on the Rural Livelihoods: The Case of Rozva Irrigation Scheme Bikita District Zimbabwe*. Journal of Sustainability Development in Africa, 14(4): 217-231.
- Chazovachii, B. (2013). *Smallholder Irrigation Agriculture in Distressed Regions: A Quest for pro-poor policies in Zimbabwe*. Research Journal of Sociology, 1(1):1-7.
- Cheater, A. (1999). *Power in the Postmodern Era*. In *The Anthropology of Power: Empowerment and Disempowerment in Changing Structures*. New York: Routledge.
- Cleaver, K.M. (1993). *A Strategy to Develop Agriculture in Sub-Saharan Africa and a Focus for the World Bank*. Washington: The World Bank.
- Coetzee, J.K. 2001. Modernisation Theory. In Coetzee, J.K., Graaff, J., Hendricks, F. & Wood, G. (Eds). *Development Theory Policy and Practice*. Cape Town: Oxford University Press, pp. 27-39.

- Coetzee, G and Graham D. (2002). *Restructuring Agricultural Development Banks in South Africa*, Working paper; 2002-06, Department of Agricultural Economics, South Africa: University of Pretoria.
- Cooke, B. and Kothari, U. (2001). *The case for Participation as Tyranny*: London: Zed Books, pp. 1-16.
- Cornwall, A. and Jewkes, R. (1995). 'What is participation research?' *Social Science and Medicine*. 41: pp. 1667-1676
- Cornwall, A. (2003). Whose Voices? Whose Choices? *Reflection on Gender and Participatory Development*. *World Development*, 31(8):1325-1342.
- Cornwall, A. (2008). Unpacking 'Participation': models, means, meanings and practices. *Community Development Journal*, 43(3):269-283.
- Cornwall, A. and Jewkes, R. (1995). 'What is participation research?' *Social Science and Medicine*. 41: pp. 1667-1676
- Damisa, M. A. and Yohanna, M. (2007). *Role of Women in Farm Management Decision - Making Process: Ordered Probit Analysis*. *World Journal of Agricultural Sciences*, 3(4):543- 546.
- Davids, I. (2005). *Development Theories: Past to Present*. In Davids, I., Theron, F., Maphunye, K.J. (Eds). *Participatory Development in South Africa*. A Development Management Perspective. Pretoria: Van Schaik, pp. 4-29.
- Davis, K.E. (2009). *Agriculture and Climate Change: An Agenda for Negotiation in Copenhagen*
- Dinbabo, M.F. (2003). *Development Theories, Participatory Approaches and Community Development*. University of Western Cape: Institute for Social development.
- Dinbabo, M.F. (2014). *Contractual Relationships between CBOs and the Community: Empirical Evidence from Ethiopia*. *Journal of Social Sciences*, 38(3):231-240.

- Food and Agriculture Organisation (FAO). 1985. *Irrigation Water Management: Training Manual No. 1- Introduction to Irrigation*. Rome: FAO.
- Food and Agriculture Organisation (FAO). 1995. *Women, Agriculture and Rural Development. A Synthesis Report of the Africa Region*. Rome: FAO.
- FAO (1996) *Rome declaration on world food security and world food summit plan of action*. World Food Summit 13-17 November 1996. Rome: FAO.
- Food and Agriculture Organisation (FAO). (2000). *Socio-economic Impact of Smallholder Irrigation Development in Zimbabwe*. Available at: <http://www.fao.org/docrep> (Accessed on 02/02/2019).
- FAO. (2005). *State of Food insecurity in the World*. Rome: Food and Agriculture (FAO).FAO (2009).*Special Report: FAO/WFP Crop and Food Security Assessment Mission to Zimbabwe, 22 June 2009*. Rome: Food and Agriculture Organization of the United Nations; Rome: World Food Programme.
- Food and Agriculture Organisation (FAO). (2011). *Women Key to Food Security 2010-2011* Available at: <http://www.fao.org/docrep/014/am> (Accessed on 10/03/2019).
- Manzungu, E. (1996). *Strategies of smallholder irrigation management in Zimbabwe*. PhD thesis, Wageningen University, The Netherlands.
- Frankenberger, T.R. (1992). *Integrated household food security into farming systems research and extension. Nutrition and Household and household Food Security in Farming Systems Research-Southern and Eastern Africa Regional Workshop Mansa, Zambia, 10-14 August 1992*. Ministry of Agriculture, Food and Fisheries, Zambia
- Farid, K.S., Mozumdar, L., Kabir, M.S. and Goswani, U. K. (2009). *Nature and Extent of Rural Women's Participation in Agricultural and Non-Agricultural Activities*. *Agricultural Science Digest*, 29(4):254-259.
- Ferraro, V. (2008).*Dependency Theory. An Introduction*. In Secondi, G. (Ed). *The Development Economics Reader*. London: Routledge, pp. 58-64.

- Frayssinet, F. (1995). *Let the dawn come: Social development: Looking behind the clichés*. London: Panos.
- Jackson, H. (1992). *AIDS: Action now*. Harare: AIDS Counselling Trust.
- Kalyani, K.S., Krishnamurthy, V., Rao, C. and Kumari, N.A. (2011). *Role Performance of Tribal Women in Agriculture - A study in Agency Area of East Godavari district, Andhra Pradesh*. Journal of Dairying, Foods and Home Sciences, 30(3):221-224.
- Kapungu, T.S. (2013). *A Study of Rural Women Farmers' Access to Markets in Chirumanzu*. Thesis submitted in partial fulfilment of the requirements for the degree Master of Philosophy in Sustainable Development Planning and Management. Stellenbosch University: Faculty of Economic and Management Sciences.
- Karl, M. (2009) *Inseparable: The Crucial Role of Women in Food Security Revisited: No.1, 2009 Women in action*
- Lad, A.S., Wattamwar, V.T. and Bothikar, G.R. (2012). *Correlates of Participation of Farm Women in Decision-Making*. Agricultural Science Digest, 32(1):52-54.
- Madebwe, C. and Madembwe, V. (2005). *Women and Access to Land in Smallholder Irrigation Schemes. The Case of Ngondoma Irrigation Scheme*. Journal of Social Sciences, 3(7):922:927.
- Mago, S. (2014). *Rural Microfinance and Poverty Alleviation in Zimbabwe: The Case of Masvingo District*. University of Fort Hare PHD
- Maharjan, L.M. and Joshi, N.P. (2011). *Determinants of Household Food Security in Nepal: A Binary Logistic Regression Analysis*: DOI: 10.1007/s11629-011-2001-2 403
- Manzungu, E. (2002). 'Global rhetoric and local realities: The case of Zimbabwe's water reform'. In Chikowore, Manzungu, Mushayavanhu and Shoko. (Eds). *Managing common property in an age of globalisation: Zimbabwean experiences*. Harare: Weaver Press

- Maxwell, S., and Frankenberger T., (1992). *Household Food Security Concepts, Indicators, and Measurements*. UNICEF, New York
- Maxwell, S., (1988). *National Food Security Planning: First Thoughts from Sudan*, paper presented to Workshop on Food Security in Sudan, IDS, Sussex, 3-5
- Mohan A.S. (2001). *Water demand management: Approach, experience and application to Egypt*. PhD thesis. Delft: IHE Delft and Delft University of Technology.
- Moyo, M., Van Rooyen, A., Moyo, M., Chivenge. P and Bjornlund.H. (2017). *Irrigation development in Zimbabwe: understanding productivity barriers and opportunities at Mkoba and Silalatshani irrigation schemes*: ISSN: 0790-0627 (Print) 1360-0648 (Online) Journal homepage: <https://www.tandfonline>.
- Mudimu, G.D. (2003). *Zimbabwe Food Security issues paper, Forum for Food Security in Southern Africa*, ODI: London.
- Muir-Leresche. H. and H. Lofgren. (2002). *Macroeconomic Policy Reforms and Agriculture : Towards Equitable Growth in Zimbabwe*. USA Washington DC: International Food Policy Research Institute (IFPRI)
- Mutangadura, G. B. (2000). *Households Welfare Impacts of Mortality Of Adult Females In Zimbabwe*, Longman, and Harare.
- Parker. H., Naom.O. Nathaniel M., Roger C., William C and Eva L. (2005). *Gender, agriculture and water insecurity*: Overseas Development Institute 2016. Creative commons CC BY-NC 4.0.
- Robb, M. C. (2000). *How the Poor can have a Voice in Government Policy. Finance and Development*: A Quarterly Magazine of the IMF. December 2000, volume 37, Number 4.
- Sambureni, N. T. 2001. *Industrial and labour relations*: MBA512 module. Harare: ZOU.

- Seale, C. (Ed). (1998). *Researching Society and Culture*, SAGE Publications, New Dehli.
- Sen, A. (1992). *Inequality Re-examined*. Oxford: Oxford University Press.
- Sen, A., (2000). *A Decade of Human Development*. Journal of Human Development, 1(1), 17-23
- UNESCO-IHE. (2003). *Basics in water resources reader: Course A*. Water Net.
- Van Wijk-Sijbesma, C. (2001). *The best of two worlds: Methodology for participatory assessment of community water services*. Technical paper series no 38. Deft: IRC International Water and Sanitation Centre.
- World Bank The. (2000). *Country Economic Memorandum: Achieving Shared Growth (Poverty assessment Figures)*. Washington DC, USA: World Bank.
- World Bank The. (2007). *World Development Indicators (1994-2004)*. Washington DC, USA:
- World Bank. (1997). *World development report*. Washington D. C.: World Bank.
- WWAP/UNESCO. (2009). *Water in a changing world: the UN world water development report 3*. Paris: UNESCO Publishing, and New York: Berghahn Books.

## **CHAPTER 3**

### **METHODOLOGY**

#### **3.1 INTRODUCTION**

In this study, the researcher seeks to examine the participation of women in irrigation projects to enhance food security with particular reference to Rozva irrigation scheme in Bikita district, Zimbabwe. The purpose of this chapter is to present the methodology used in the study. Precisely, it commences with the description of study area, followed by the research design. The succeeding sub-sections explains the research method, sampling process, data collection and analysis procedures, reliability and validity issues, ethical considerations and a chapter summary.

### 3.2 DESCRIPTION OF THE STUDY AREA

The study area, is the Rozva irrigation scheme in Bikita District which is one of the seven districts found in the Masvingo Province of Zimbabwe. The total population of the district is 181 863, (Girma *et al.*, 2012:8). Zimbabwe can be divided into five agro-ecological regions, and Bikita District lies in agro-ecological region 4. Most of the district is hilly and most of its streams flow throughout the year. The soils are sandy. Maize, sorghum, groundnuts and rapoko are the main crops that are commonly grown in the area.

Bikita District has a large number of farmer-managed irrigation schemes compared to other districts in Masvingo Province (AGRITEX, 2013). The Rozva irrigation scheme was wholly funded by the government and a wide range of crops is grown in this scheme and these include maize, wheat, sugar beans and a variety of vegetables. The scheme uses the drag hose surface system and they access water from the Rozva dam. Also, potential arable area is 138 hectares and 80 hectares are equipped, while only 50 hectares is in use, (Chazovachii, 2013). The figure below shows the Rozva dam.

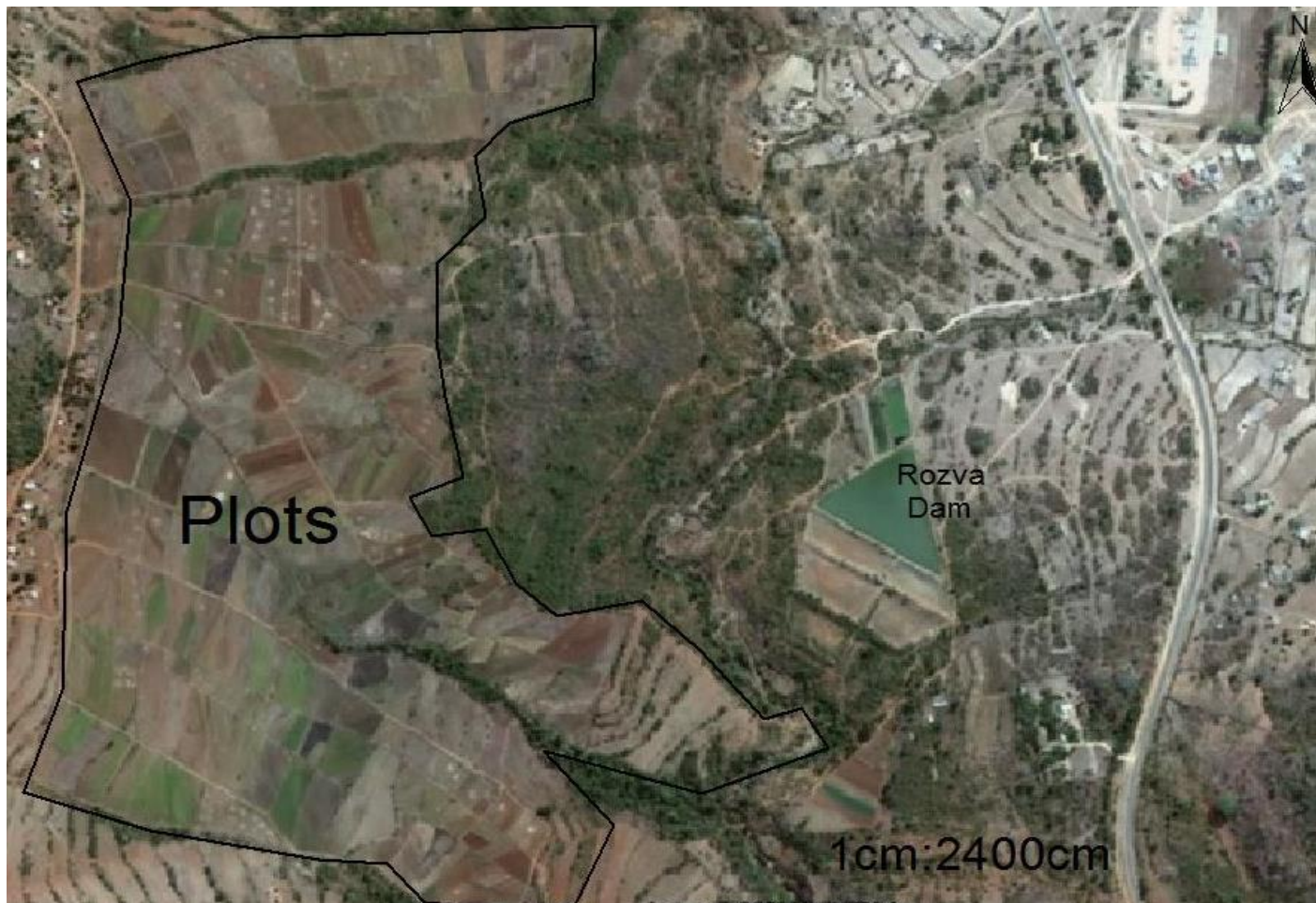


Figure 2: Rozva Dam Source: Google images

### **3.3 RESEARCH DESIGN**

The research design includes an outline of what the researcher has done from conceptualization of the research problem and its operational implications to the final analysis of data. To begin with, this study was within positivist philosophy which was considered as a systematic way of doing research that emphasises the importance of observable facts relationship, links probability and chance. Moreso, the deductive approach was used and the process involved the development of a research topic which informed the researcher on the appropriate strategy to take. The research strategy was basically designed to understand the characteristics and nature of women participation in irrigation schemes. This approach was chosen because it is quicker to complete, albeit that time must be devoted to setting up the study prior to data collection and analysis.

It also follows that, the researcher also adopted a descriptive survey method. The approach was mainly chosen since it provided an opportunity to use of varied methods and instruments i.e. questionnaires, interviews and observations which when used effectively results in data triangulation which in itself validates the finding of the study by confirming or rectifying data. Therefore, the researcher used both qualitative and quantitative data collection approaches.

### **3.4 SAMPLING PROCEDURE**

The researcher used probability and non-probability sampling techniques. Thus, the respondents were grouped in four strata and purposive sampling was done in each stratum. Stratification was done to ensure that there are smaller bounds of error of estimation than will be produced by a simple random of the same size especially if the measurements within strata are homogeneous.

This was also done to ensure that each relevant category was represented, and the strata are given below:

- i. Women farmers at Rozva irrigation scheme
- ii. Government officials in Bikita District
- iii. NGO officials operating in Bikita District
- iv. Bikita District community leaders

The respondents were purposively picked from each stratum by identifying those who were directly involved in the day to day activities at Rozva irrigation scheme. The choice for this technique enabled the researcher to derive relevant and detailed data at an affordable cost in terms, finances and human resource. Since the researcher could not take account of each and every item of the population, he came up with a sample size that was believed to be representative of the entire population taking into consideration the budget and time factors.

Accordingly, with a female population of 200 farmers and applying the Krejcie and Morgan (1970) sample size determination approach, the sample size was to be 150 female farmers.

In addition we also had 15 key informants from each stratum, i.e. Government officials, NGOs and Community leaders. Thus, the total sample size is shown in the table below:

<b>Category</b>	<b>Size</b>
Female Farmers	150
Key informants	15
<b>Total</b>	<b>165</b>

### **3.5 DATA COLLECTION PROCEDURE**

The study research method was basically hybrid; in view of that, it followed both quantitative and qualitative research methodologies. The approach involved collecting, analysing and interpreting quantitative and qualitative data in a single study that investigate the same underlying phenomenon, in this case, the participation of women in irrigation scheme to enhance food security. Qualitative data was mainly collected through an in-depth interview guide to know more about things that cannot be directly measured, for example feelings, intentions as well as thoughts and it was collected from expert informants. The quantitative data was collected mainly through a self- administered questionnaire applied to key informants (Community Leaders, Government officials and NGO Officials). It therefore gave the researcher room for both exploration and analysis of data as well as extend the breath and range of inquiry on the subject matter to enrich the study findings.

In addition, the study was a dominant status design with quantitative being dominant and the phases were conducted concurrently. Thus, the researcher used the **(QUAN + qual)** representing a dominant status concurrent design, meaning the research was primarily quantitative supported by qualitative phase but the methods being applied concurrently. The rationale of using the mixed methods study was for expansion. That is, it sought to extend the breath and range of inquiry on respondents ‘perceptions by using different methods for different inquiry components. Combining these two approaches allowed the investigator to address the research problem from the point of view of both numbers and narratives. It also added insights and understanding that might have been missed when only a single method was used enhancing the artfulness and versatility of the design.

Primary and secondary data was used in the research and the techniques provided the data needed to answer the problem statement of the research. Primary data was collected through the use of a questionnaire, interviews and direct observations. This relevant information was collected from the respondents (women farmers and key informants) and through direct observation of the irrigation activities. The use of these approaches gave the researcher greater control to ensure the success of the study. In addition, secondary data was abstracted from the Rozva irrigation scheme records as well as government reports on the performance of the scheme.

### **3.5.1 Questionnaires**

The researcher used questionnaires which had mainly closed ended questions and a few open-ended questions. Closed-ended questions provide the same frame of reference for all respondents to use in determining their answers and they were easy to work with.

The inclusion of open-ended questions gave the respondents greater freedom of expression as they offered them an opportunity to openly elaborate, specifically on challenges and suggested solutions. The questions were structured in both the Likert scale and the binary method. Notably, the binary options did not decrease validity or the component structure of the test instrument but significantly reduced the time required to complete the questions, thus making it more suitable for administration in the rural setting such as the Rozva area in Bikita. Therefore, a questionnaire was designed and self-administered to respondents.

However, before the main study was done, the researcher pre-tested the questionnaire and the pre-tested questionnaire took an average of 20 minutes. The final main questionnaire had an average time of 15 minutes. The validity and reliability of questions was also carefully checked during the pilot-testing and most importantly, redundancy of questions was equally checked to ensure questions that measure the same thing have one of them dropped.

Adjustments were done on the questionnaire and a debriefing was conducted in which the respondents were asked to state the meaning of each question and describe the problems they had in answering the questions.

A self-administered questionnaire was used mainly because of the following reasons:

- High response rate associated with these data collection techniques as the interviewer can ensure that all questions are answered.
- The high reliability of the data that could be obtained because the interviewer can probe in with further questions if the respondents appeared to have misunderstood the question or appeared to be giving false information.
- In addition, the interviewer can explain to the respondent if they have any problems.

### **3.5.2 In-depth interviews**

Primarily, as a way of enriching the data collected, in-depth interviews were also done with key informants, (Government officials, NGO officials and Community leaders). Accordingly, an in-depth interview guide was prepared. The interviews were used to reinforce the data collected from questionnaires and help fill in unanswered issues although the data collection process was done concurrently. Interviews were mainly conducted to get the professional views of the research. The study employed the semi structured interviews comprising of open ended type of questions. The interviewers were able to question the respondents in greater detail and examine issues in more detail during the interviews. The challenges and success factors on women participation in irrigation projects were extensively elaborated and explored through the use of this approach.

### **3.5.3 Observations**

In addition to the above strategies, observations were also used to develop an understanding of how they actually participate in the scheme. Observation as an instrument for collecting first-hand information is considered to be one of the core research methods for data collection. The choice of observation as a tool for collecting data was to get the opportunity to collect live data from naturally occurring settings. In this case, the researcher had to personally visit the irrigation scheme and observe various activities which were being undertaken. This enabled the researcher to see for herself what was being done in the Rozva irrigation scheme instead of relying on spoken or written accounts. In addition, through observations, the researcher had the opportunity to access information that may have been missed by the interviewee.

However, during this process, the researcher was completely detached from the group being observed and her role was to observe, listen and record what was happening. The complete observer role was adopted because the researcher did not want to interfere with farming activities.

Furthermore, the complete observer approach was adopted for the study to avoid the researcher's influence on the farmers' practices. The observations were unstructured and later followed by a short post-observation interview to help the women and the researcher to reflect on the activities that were observed.

Notably, the participants who were observed were aware that the researcher was going to observe them because the researcher asked their consent before going at the Rozva irrigation project.

### **3.5.4 Reliability**

It was also imperative to measure consistency of the data collected. It basically proves that something can be measured many times and still get similar outcomes. To achieve that, the researcher pre-tested the research instrument on a small number of cases in order to test the procedures and quality of responses. This judicious piloting reduced incidences of poor or non-response to the questionnaire and gave the researcher an opportunity to correct technical issues such as to fine-tune the questionnaire so that it is clear and unambiguous. This process is very critical in an attempt to provide information which is reliable. Accordingly, Cronbach alpha was later used to estimate the reliability of the data and the level of internal consistency. A Cronbach alpha of 0.60 or 60% as a minimum level is acceptable (Cooper and Schindler, 2008).

### **3.5.5 Validity**

Validity is the extent to which an instrument asks the right questions in terms of accuracy. To achieve that, collection of data was based on probability and non-probability approaches with four strata and the multi sequential approach allowed the researcher to cross check later findings as well as to conduct further enquiry to correct inconsistencies and confirm findings.

## **3.6 DATA ANALYSIS PROCEDURES**

Data was successfully collected and responses were reviewed for eligibility, completeness, consistency and clarity. Subsequently for quantitative data, the analysis started with descriptive statistics. In this regard, the study tested variables using the Chi-square test and the generalised least squares test using SPSS Data Editor Software at 5 % significance level to generate descriptive statistic. Descriptive statistics refers to quantitative summaries of a data set and it included measures of central tendency, dispersion and association. These are presented using pie charts, descriptive statistics tables and bar graphs.

In addition, for qualitative data which was mainly from interviews and observations, the analysis was done through careful evaluation to keep track the findings that were emerging. There was a written record (field notes) and basically, two strategies were applied concurrently for organizing in-depth interview notes for easy analysis and are given below:

Firstly, organizing the notes by question: the researcher recorded notes as “answers to questions in the research guide.” This also involved keeping in mind that interviews follow the flow of a conversation more than they follow a script, and so questions were answered or returned to at different points in the interview. Any additional remarks relating to a specific question were recorded in the same place, even if the question was brought up later on in the interview. The notes were also concurrently organized by theme.

Secondly, organizing by theme, in this strategy comments that speak to specific themes (pre-determined and/or that emerge in the course of an interview) were grouped together, regardless of the question they relate to. The above strategies were applied concurrently. First the analysis was organized by question and later switched to a thematic strategy as themes emerge over the course of the interviews. The use of these representation approaches allowed the researcher to interpret the meanings of the responses given by the respondents. The data presented was subsequently discussed in line with the literature reviewed focusing on the research objectives and questions.

### **3.7 ETHICAL CONSIDERATIONS**

In research, there is an ethical responsibility to work with honesty and with integrity. This study made of the following ethical considerations.

- There was an obligation to ensure privacy and confidentiality of the respondents in undertaking a research study. This equally relates to information collected, individuals involved, the setting and how research data and findings are stored and disseminated. Before conducting the interview, the researcher assured the participants that all data collected during the interviews would be kept securely and treated as confidential. To maintain confidentiality, the research instruments had no names of participants.
- Also, informed consent was sought from the respondents and they were made to understand the purpose of the study before they accept or reject to participate in the study. Thus, participants to the study were informed of their right to accept or reject participation and to answer questionnaires without coercion. In addition, informed consent of Rozva irrigation management committee was obtained before the data collection began.

Luckily, all the participants who were approached to participate in the study agreed. In addition, the district officials issued letters of permission to go into the area and conduct the research.

### **3.8 CHAPTER SUMMARY**

This Chapter describes the research methodology of the study. It basically covered research design, research approach, population, data collection instruments, types of questions, data collection procedures, reliability and validity of research instruments, data presentation, data analysis and ethical considerations. The next chapter focuses on data presentation and analysis of results.

### 3.9 REFERENCES

- Chazovachii, B. (2013). Smallholder Irrigation Agriculture in Distressed Regions: A Quest for pro-poor policies in Zimbabwe. *Research Journal of Sociology*, 1(1):1-7.
- Cooper, D.R., and Schindler, P.S. (2006) *Business Research Method*, 9<sup>th</sup> Edition Boston: McGraw-Hill Irwin.
- Coyne. I.T. (1997). *Sampling in qualitative research. Purposeful and theoretical sampling; merging or clear boundaries*: Leading Global Nursing research Volume 26, Issue3
- Creswell, J. W. and Clark, V. L. P. (2007). *Designing and conducting mixed methods research*. Sage Publications.
- Creswell J.W. (2013). *Qualitative, Quantitative, and mixed methods approaches* 2<sup>nd</sup> Ed Upper Saddle River Publishing
- Creswell, J.W. (2003). *Research design: Qualitative, Quantitative and Mixed Methods Approaches*. Second Edition. United Kingdom: Sage Publication.
- Fraenkel, J.R. and Wallen N.E. (1996). *How to Design and Evaluate Research in Education*: 2<sup>nd</sup> Edition: McGraw-Hill
- Kombo, K. D. and Tromp, L. A. D. (2006). *Proposal and thesis writing: an introduction*. Nairobi: Pauline Publications Africa.

- Kothari, C.R. (2004). *Research Methodology; Methods and Techniques*; 2<sup>nd</sup> Edition: New Age International Publishers.
- Kothari, C.R. (2004). *Research Methodology; Methods and Techniques*; 2<sup>nd</sup> Edition: New Age International Publishers.
- Mugenda and Mugenda, A. (2003): *Research Methods: Quantitative and qualitative Approaches*. Nairobi: Acts Press.
- Patton, M.Q. (1990). *Qualitative evaluation and research methods* 2<sup>nd</sup> Edition Newbury Park, CA: Sage
- Saunders, M. N., Saunders, M., Lewis, P. and Thornhill, A. (2011). *Research methods for business students*, 5<sup>th</sup> Edition Pearson Education India.
- Yin, R.K. (1994). *Case study research: design and methods*: Volume 5 of Applied social research methods series: Sage Publications, Social Science

## CHAPTER 4

### Participation of women in irrigation scheme

#### Abstract

The study data was analysed using the descriptive statistics approach as well the Chi-square test with the use of SPSS Data Editor Software at 5 % significance level. The sample size had 150 female farmers and 15 key informants. The research findings revealed that women at Rozva were actively involved in irrigation activities and management and the practice had a significant impact on food security. Indeed, the study established that women were occupying top leadership positions in the scheme and were very influential in the activities of the scheme. In that regard, the study notes a positive influence of women participation on household number of meals per day, income levels and savings, food store lasting period and reduction of food handouts which are all critical indicators of food security.

**Keywords:** *Women Participation, food security, impact*

#### 4.1 INTRODUCTION

This segment of the study illustrates the results from both primary and secondary data collected and analysed. Precisely, it will be categorized under the following headings: description of study area, research design, sampling procedure, and data collection procedure, data analysis

procedures, challenges encountered during data collect, results and discussion, recommendations and conclusion.

## **4.2 MATERIALS AND METHODS**

The researcher applied a descriptive survey approach which was triangulated to generate both quantitative and qualitative data. Both stratified and purposive sampling approaches were used to select the respondents who participated. Primary data was collected through the use of questionnaires, interviews with key informants and field observations and secondary data was abstracted from the Rozva irrigation scheme records as well as government reports.

**4.2.1 Description of study area:** The description of the site was done in in Chapter 3.2

**4.2.2 Research Design:** The research design was discussed in Chapter 3.3

**4.2.3 Sampling procedure:** Chapter 3.4 elaborated on the sampling procedure

**4.2.4 Data collection procedure:** Chapter 3.5 illustrates the data collection procedure

**4.2.5 Data analysis procedure:**The procedure for analysing data was outlined in chapter 3.6

### **4.2.6 Challenges encountered during data collection**

Studies face some challenges and this particular study was not an exception although the limitations could not derail it. Data collection was not easy because first, the study area had a very poor road network. The field survey was also a meticulous exercise because bureaucratic procedures that had to be followed to access the respondents. However, the aforementioned constraints did not derail the progress of the study.

## **4.3 RESULTS AND DISCUSSION**

### **4.3.1 DEMOGRAPHIC STRUCTURE AND NATURE OF WOMEN PARTICIPATION**

This first part of this analysis chapter will focus on the analysis of demographic structure of the respondents and nature of women participation.

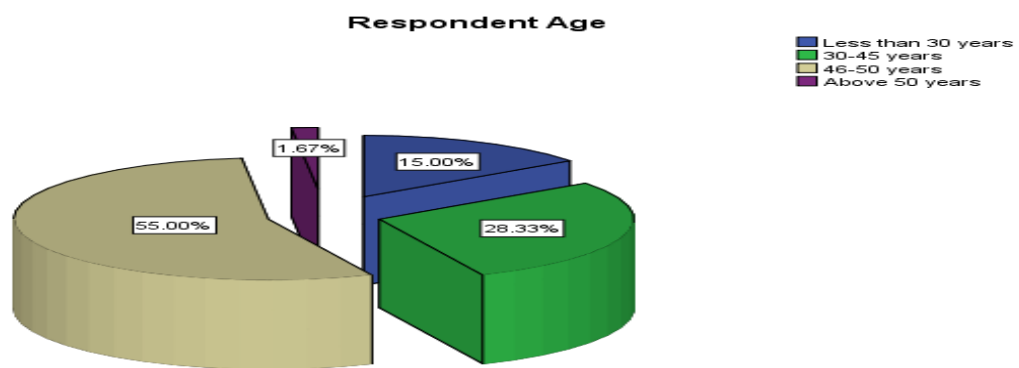
#### **4.3.2 Farmers' gender**

In terms of gender, all the respondents were female. Females are more actively engaged in community projects which focus on household food security in rural areas. The bias in gender was based on the fact that women constituted the majority members of Rozva irrigation scheme because men pursued different interests such as outside employment in mining towns and other

urban areas. The government also encourages women empowerment through provision of funds and other resources.

### 4.3.3 Farmer's age

For this area of the study, the researcher sought to know the age category of the respondents. This was expected to guide the researcher on understanding the most dominant age group in relation to study variables. The results in figure 3 below show that most of the respondents the majority on the women farmers at Rozva irrigation scheme 55% are aged between; 46-50, followed by 28.33% aged between 30-45, 15% aged less than 30 and lastly only 1.67% being aged above 50.

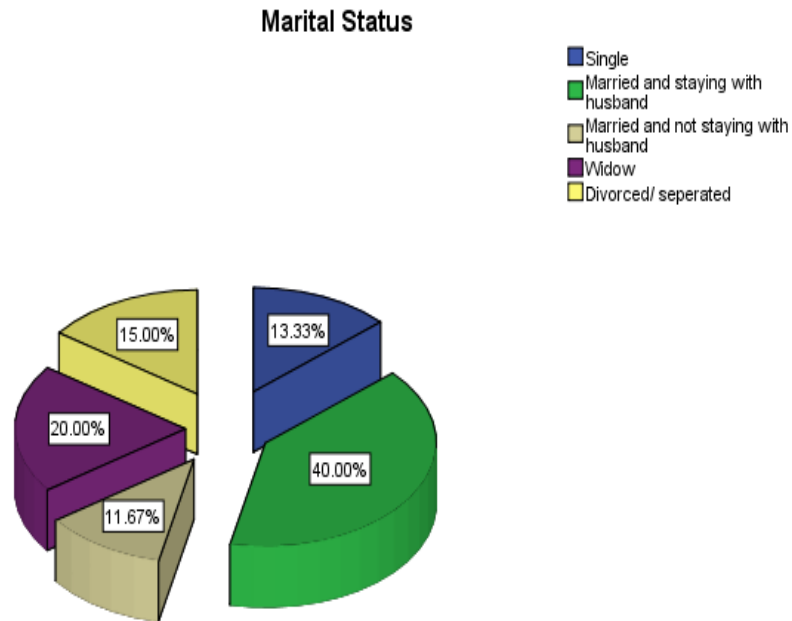


**Figure 3: Farmers' Age**

These results generally indicated that the women youths were scarcely participating in community projects. Adults of above middle age are the major participants in Rozva irrigation scheme. The adults of above 50 years of age also very few. Thus the major concern is that among the women, the youths are pursuing different interests and they did not see agriculture as a source of livelihood.

### 4.3.4 Farmers' marital status

Information from farmers gave an insight into their social characteristics and livelihood strategies and how the irrigation scheme helps them to develop coping strategies. The status of a household has a bearing on participation, innovation and other household activities. The 'married and staying with husband' category was included to differentiate it from the category of those respondents with migrant husbands because the different statuses have different implications on household welfare.



**Figure 4: Marital status**

Research findings in figure 4 above show that the majority of the sample respondents 40% are married with husbands that are permanently in the household. This category is followed by widows who represent 20% of participants. Widows participate in irrigation activities to enhance food security as well as fend for their children. During the survey, one widow expressed the following:

*“Rozva irrigation scheme’ is a good project because I am now in a position to produce enough food for my family as well as raise income to pay school fees for my children. I am a widow so no one looks after my children. I have to work to fend for my children and this has been made possible by this government-initiated project”.*

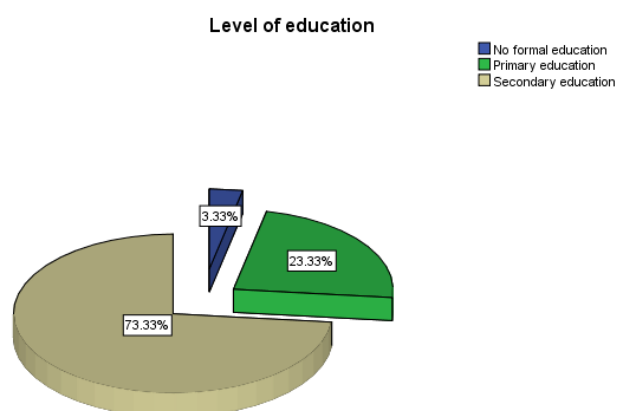
The divorced or separated category constitutes 15%. Respondents in this category indicated that their participation in irrigation projects has helped them to manage their livelihoods. Again, most of them are engaged in income generating activities so as to fend for their children.

There is a positive socio-economic impact of their participation since they are in a position to manage their welfare and can cope with social pressures. Widows are vulnerable so they take advantage of organised groups to develop formal networks and co-operations that will help them to have access to sustain their livelihoods. Single household heads represent a 13.33% and lastly, 11.67% of the women farmers have migrant spouses. Most of the migrant spouses were mostly in the urban centres.

#### **4.3.5 Farmer’s level of education**

Since education is an important factor for human capital development, a comparison between the education levels of the women farmers was done.

The figure 5 below illustrates the education levels of the respondents:

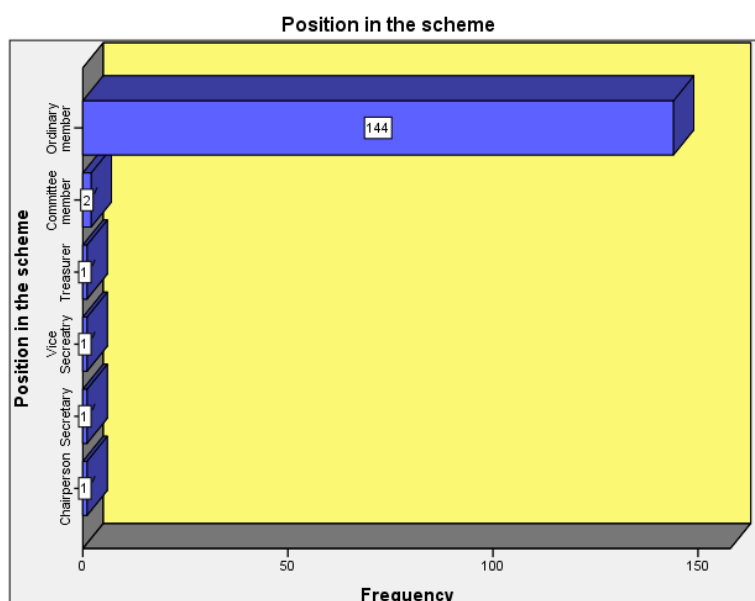


**Figure 5: Level of education**

None of the respondents managed to proceed above secondary school education, the majority 73.33% attained secondary level of education. Followed by those with primary level education 23.33% and lastly those without any formal education, 3.33%. However, despite this seemingly unfavourable situation, our field findings revealed that the farmers get capacity building training from government and local NGOs and this adds to their human capital enhancement.

#### 4.3.6 Farmer's position in the scheme

In addition, figure 6 below show that women are indeed occupying top leadership positions in the scheme. The posts of Chairperson, Secretary, Vice Secretary and Treasurer are occupied by women. Moreso, there are also 2 women committee members and others 144 are ordinary members. This basically shows that women undertaking very influential roles in these schemes.

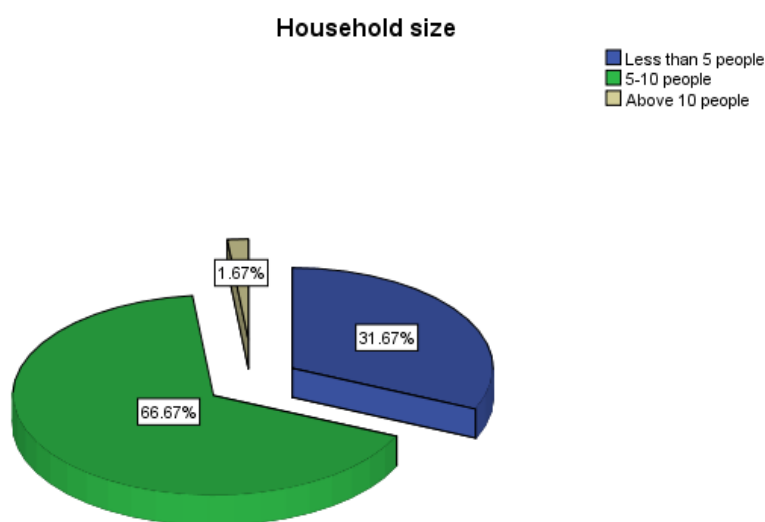


**Figure 6: Position in the scheme**

### 4.3.7 Household size

The size of a household may basically have a direct or indirect impact on the participation of women in irrigation activities. The assumptions are that an increase in household size can lead to an increase in the provision of human labour and productivity.

This could be because household members contribute labour towards production. According to Nghiem *et al*, (2007) production activities in rural areas are labour intensive therefore bigger households imply higher productivity, *ceteris paribus*. Therefore, the figure 7 below shows that 66.67% of the respondents had a family size which range between 5 to 10 people, while 31.67% had less than 5 people and 1.67% above 10 people. Thus, the results suggest that there is reasonably fair level of family labour available for supporting the irrigation project initiative at household level.



**Figure 7: Household size**

### 4.3.8 Nature of women participation in irrigation management

Exponents of the participatory development theory suggests that the beneficiaries of development have the potential to “shape their own life in cooperation and reciprocity with others, rather than being passively shaped or pushed around” (Swanepoel and De Beer, 2011:49). Participation seeks to give the marginalised, such as women, the opportunity to influence development initiatives in their communities (Dinbabo, 2014). It seeks to involve all the participants in the planning, implementation, monitoring and evaluation of development initiatives (Mompoti and Prinsen, 2011).

#### 4.3.8.1 Initial project planning and designing stages

The Rozva Irrigation Project was established in 1940 when communication between the government and the people was largely top-down. All the participants in this research stated that the irrigation project was not their idea. It was initiated and planned by the government who sourced labor from the local people at the implementation stage.

According to Rozva Irrigation Scheme management committee, the local people were incorporated mainly to dig the irrigation canal. The irrigation scheme was destroyed and abandoned during the Chimurenga wars, only to be reintroduced by the government with the help of United Nations Development Fund (UNDF) in 2001.

After securing financial support from the United Nations Development Fund, the government informed the people through the ward leaders that the proposal had been approved and the irrigation canal would be rehabilitated. However, none of Rozva Irrigation Scheme was involved in planning and designing the refurbishment of the irrigation scheme. Most of the participants including the members of the management committee cried that the new canal was narrower and shallower than the old canal and as a result they experienced water shortages.

According to the participants, even though the old canal was not lined, it was “wider and deeper” and carried vast amounts of water. The female farmers were not involved at every phase of the irrigation project. Although the beneficiaries were given the space to identify their needs, ask questions and air their views, they were marginalised in making the final decisions regarding their own development. According to Rozva irrigation management committee the consultations were done before the proposal was submitted to the United Nations Development Fund representatives. One participant stated that they got involved in the irrigation project just after the irrigation canal had been established.

The respondents felt that they had limited influence over irrigation development programmes because key decisions were made by the implementing agencies or governmental boards. The participants stated that they often took part in identifying their needs but did not make the “final decisions.”

It was evident from the interviews that during the initial phases of the project, the beneficiaries of the project were passive recipients of what the development agents had decided upon. Cornwall (2008) rightly pointed out that it is common for people to be involved in the decision making processes while real decisions are made elsewhere. The study confirmed that a top-down approach to development is still dominant. This is an opposite of the participatory development theory which negotiates for the involvement of all beneficiaries of development in all decision-making processes that affect and concerns their future.

#### **4.3.8.2 Project management activities**

Davids (2009) states that participation makes people feel that development projects or activities belong to them.

Therefore, as shown in the table 1 below, women actively participates in projects management activities namely, project planning tasks, organising tasks, project meetings, capacity building workshops, leadership roles, although they have limited control of activities as women to some extent. Nonetheless, all the female members of Rozva irrigation schemes reported that meetings were mostly conducted in a free and conducive environment. Women freely aired their views during meetings and actively participates in decision making.

One interview participant clearly said, *“Men’s views towards women’ involvement in decision making process in public platforms have now changed; men now listen to women’s voices and views”*. As we women we are now participating in decision making process and our voices as females are also being heard and respected. During the meetings we can now also give our views as females.”

**Table 1: Management activities**

To what extent do you actively participate in the following irrigation management activities?	Very great extent	Great extent	Some extent	Not at all
	Table N %	Table N %	Table N %	Table N %
Decision making and planning	<b>45.0%</b>	28.3%	26.7%	0.0%
organising tasks	<b>45.0%</b>	35.0%	20.0%	0.0%
project meetings	<b>47.5%</b>	45.8%	6.8%	0.0%
capacity building workshops	31.7%	<b>50.0%</b>	18.3%	0.0%
leadership roles	21.7%	<b>45.0%</b>	33.3%	0.0%
controlling project activities	16.7%	33.3%	<b>50.0%</b>	0.0%

#### **4.3.8.3 Project production activities**

When asked the extent to which women participate project production activities, table 2 show the responses given. The participants testified that women were the ones who largely participated in activities such as land preparation sowing of seeds, watering the fields, fertilizer application, weeding, planting, harvesting, transporting the produce, selling produce in town and selling produce at home. Notably, they are not much involved in fencing the fields.

However, one of the village participants revealed that, “a large number of people participated in development projects if incentives such as food and other items are promised to the participants.” Notably, this type of involvement is not perfect because once the incentives are withdrawn, the project will disintegrate. The study findings also shows that the major crops being grown are maize, beans and vegetables.

**Table 2: Production activities**

To what extent do you actively participate in each of the following production activities	Very great extent	Great extent	Some extent	Not at all
	Table N %	Table N %	Table N %	Table N %
land preparation	36.7%	<b>41.7%</b>	21.7%	0.0%
sowing of seeds	<b>40.0%</b>	<b>40.0%</b>	20.0%	0.0%
watering the fields	21.7%	<b>43.3%</b>	35.0%	0.0%
fertilizer application	<b>65.0%</b>	20.0%	15.0%	0.0%
weeding	<b>78.3%</b>	13.3%	8.3%	0.0%
planting	<b>65.0%</b>	15.0%	20.0%	0.0%
fencing the fields	13.3%	11.7%	<b>75.0%</b>	0.0%
harvesting	<b>59.3%</b>	22.0%	18.6%	0.0%
transporting the produce	11.7%	<b>76.7%</b>	11.7%	0.0%
selling produce in town	18.3%	<b>53.3%</b>	28.3%	0.0%
selling produce at home	<b>65.0%</b>	18.3%	15.0%	1.7%

#### **4.3.8.4 Factors contributing to participation of women in irrigation management**

The Rio Declaration on Environment and Development (1992), principle 20, articulates that the full participation of women is key to the achievement of sustainable development (UN, 1992). In respect to the factors contributing to participation of women in irrigation management, the study results indicates that, although the irrigation scheme is communally owned, there is some sense of ownership among the women which enables members to manage and to be in charge of their activities.

This therefore ensures project longevity because it is sustained by its owners (De Beer and Swanepoel, 2011). The women are also motivated to participate through the support they are given by the family members who offer family labour. The study results shows that 86.7% of the respondents rely on family labour for production activities, while only 13.3% rely on hired labour. One female members who participated said “they regarded the irrigation project as their ‘own’ and their family equally share the same view”.

The research findings revealed that women at Rozva were actively involved in irrigation activities and management and the practice had a significant impact on food security. Indeed the study established that women were occupying top leadership positions in the scheme and

were very influential in the activities of the scheme. In that regard, the study notes a positive influence of women participation on household number of meals per day, income levels and savings, food store lasting period and reduction of food handouts which are all critical indicators of food security. However, participatory monitoring and evaluation of the project was lacking and this task was mainly done by government extension officers.

#### **4.3.8.5 Discussion**

The study primarily focused on the participation of women, hence being gender biased but the approach had no negative effects on the study findings since women constituted the majority members of Rozva irrigation scheme. However, participation of women youths was established to be relatively limited and this can be a cause of concern for policy makers and relevant stakeholders since these are the most active members of the society. In addition, the marital status of women had no significant influence on the participation of women given that, the married, widows and divorced or separated are all participating in the project.

Most of the farmers had secondary level of education and this represents that they had a fair understanding of issues which relates to management functions. Moreso, educational development skills were provided to them through relevant government departments and the local NGOs. Most of the respondents had a family size of between 5 to 10 people and certainly this finding had a direct positive impact on the participation of women based on the understanding that an increase in household size can lead to an increased human labour and productivity.

The study also established that the initiation of the Rozva irrigation project concept was done by the government through the relevant departments and was largely a top to bottom approach. The local people were mainly involved in the implementation stage through offering labor mainly to dig the irrigation canal. The study further notes that failure to involve project beneficiaries during the concept design and development may lead to establishment of facilities which are not user friendly. For instance, most of the participants including the members of the management committee complained that the new canal was narrower and shallower than the old canal and as a result they experienced water shortages. Although the beneficiaries were given the opportunity to contribute their ideas, they were marginalised in making the final decisions regarding their own development. In that regard, the participatory development approach was evidently compromised.

The study confirmed that female farmers participate in irrigation management activities specifically on issues such as planning of tasks, organising tasks, project meetings, capacity building workshops and leadership, certainly they were very influential on the outcomes of the projects. This was mainly achieved by holding influential positions in the management of the project. Since the members regularly attend extension programmes, additional crop and water management skills are continuously developed for the realisation of better project outcomes. However, De Beer (2011) argues that empowerment does not only mean to acquire skills but also “to have decision making power”.

With regards to decision making, women farmers at Rozva irrigation scheme showed high level of involvement in project decision making process. Women actively participated in making decisions in respect to planning and organising project activities. Some of the participants expressed that participation in irrigation activities had improved their social and economic status and could make their own farm decisions. This finding supports Raidimi’s (2014) study that revealed that most of the women in six agricultural projects in Thulamela Municipality of South Africa had absolute freedom to make farm decisions.

Women also actively participate in project meetings, for which meetings are critical decision-making platforms and this practice reinforces their voices which are greatly respected by their men counterparts. In terms of production activities, it was further noted that women were the ones who largely participated in activities such as land preparation sowing of seeds, watering the fields, fertilizer application, weeding, planting, harvesting, transporting the produce, selling produce in town and selling produce at home. They are mainly involved in the production of maize, beans and vegetables, certainly these crops are critical facets of a sustainable household in terms of food security and income in particular.

Training programmes were also offered by extension officers at least three times per month mainly on crop management, crop rotation, effective and efficient use of water, pest control, crop planting and marketing produce and, in some cases, training certificates were issued to participants. Thus, government extension workers provided the much-needed support to ensure viability of the irrigation schemes such as the Rozva. However, most farmers prefer to attend training programmes conducted by donors with the expectation to get incentives. Thus, if given incentives such as food and other items, greater participation may be realised. Although, this approach may not be sustainable in the long term. Moreover, participants prefer practical training sessions as compared to theory lessons. This attitude may be due to their limited educational background.

The results also showed that female farmers spent more time in at Rozva irrigation scheme than other activities, further revealing that women farmers were actively involved in agricultural production. This is in line with McDonald (2011) who found that women in Korea participated in most farm activities and worked harder and longer than men. Participation can provide women, the marginalised and the underprivileged with an opportunity to influence community development projects (Davids, 2009; Cornwall, 2003). In light of this motivating thrust, the study sought to understand the factors contributing to the participation of women in irrigation projects.

## **4.5 RECOMMENDATIONS**

### **4.5.1 Fully promote a participatory development approach**

Participation of all beneficiaries of development in all project phases is critical to the sustainability of development programmes. Female farmers should be afforded the chance to participate in all project phases from concept development, implementation and evaluation. This would enable the farmers to claim true ownership of the project and take full control of their destiny. The involvement of project beneficiaries during the concept design and development can greatly enhance project sustainability.

Participatory monitoring and evaluation of the project would also help female farmers make well informed decisions about the project and improve performance.

### **4.5.2 Involve women in decision making positions and encourage youth to participate**

Women irrigation farmers need to be continuously encouraged to take up leadership positions and female youth should equally get involved in projects of this nature. Women should be directly included in the making decisions process in respect to all project activities. The setting up of a women quota system on every irrigation project can significantly enhance women participation and ultimately food security.

## **4.6 CONCLUSION**

This chapter focused on the demographic structure of the respondents as well as the nature of women participation in irrigation management. The study notes that the participation of women was paramount in an attempt to ensure that the concept of food security can be enhanced. The next chapter will elaborate more on the impact of women participation in food security.

#### 4.7 REFERENCES

Cornwall, A. (2008). Unpacking 'Participation': models, means, meanings and practices.

Community Development Journal, 43(3):269-283.

Davids, I. (2005). *Development Theories: Past to Present*. In Davids, I., Theron, F., Maphunye,

*K.J. (Eds). Participatory Development in South Africa*. A Development Management

Perspective. Pretoria: Van Schaik, pp. 4-29.

Dinbabo, M.F. (2014). *Contractual Relationships between CBOs and the Community:*

*Empirical Evidence from Ethiopia*. Journal of Social Sciences, 38(3):231-240.

Nghiem, H. S., T. Coelli and P. Rao. (2007). *The Welfare Effects of Microfinance in Vietnam:*

*Empirical Results from a Quasi-Experimental Survey*. The 51st Annual Conference of

the Australian Agriculture and Resources Economics Society 13-16 February 2007.

Queenstown, New Zealand: Centre for Efficiency and Productivity Analysis.

## CHAPTER 5

### Impact of women participation on food security

#### Abstract

Generally, the study notes a positive influence of women participation on household food security. With regards to decision making, women farmers at Rozva irrigation scheme showed high level of involvement in project decision making process and participation in irrigation activities had improved their social and economic status. The women are also offered agricultural extension services lessons which equipped them with a wide range of agricultural skills including crop management, crop rotation, using water effectively and efficiently, pest control, planting crops in an even and well-spaced manner and marketing produce.

**Keywords:** *Women Participation, food security, decision making*

#### 5.1 INTRODUCTION

This segment of the study is an extension of the results from both primary and secondary data collected and analysed. In particular, it will be categorized under the following headings: description of study area, research design, sampling procedure, and data collection procedure, data analysis procedures, challenges encountered during data collect, results and discussion, recommendations and conclusion.

#### 5.2 MATERIALS AND METHODS

The materials and methods of the study were discussed in Chapter 4.2

**5.2.1 Description of study area:** The description of the area was done in in Chapter 3.2

**5.2.2 Research Design:** The research design was highlighted in Chapter 3.3

**5.2.3 Sampling procedure:** Chapter 3.4 outlined the sampling procedure

**5.2.4 Data collection procedure:** Chapter 3.5 illustrates the data collection procedure

**5.2.5 Data analysis procedure:** The data analysis procedure was delineated in chapter 3.6

**5.2.6 Challenges encountered during data collection:** The challenges were highlighted in chapter 4.2.6

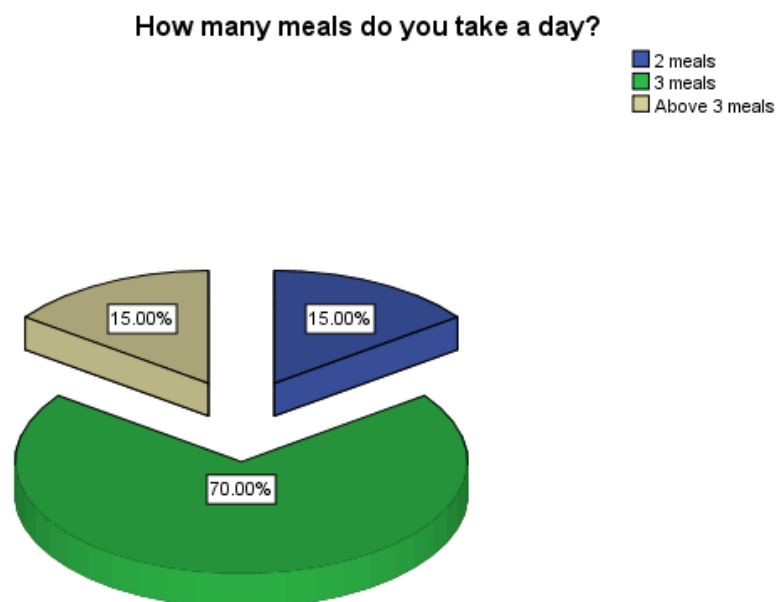
## 5.3 RESULTS AND DISCUSSION

### 5.3.1 THE IMPACT OF WOMEN PARTICIPATION ON FOOD SECURITY

The participation of women in irrigation farming and agricultural activities in general can economically empower the poor people in rural areas and contribute to food security. In line with this view, the study sought to establish the impact of women participation in irrigation projects on food security on the number of meals being taken per day, income levels and savings, food store lasting period, availability of next season seeds and reduction of food handouts. The results are shown hereunder:

#### 5.3.1.1 Impact of women participation on household number of meals per day

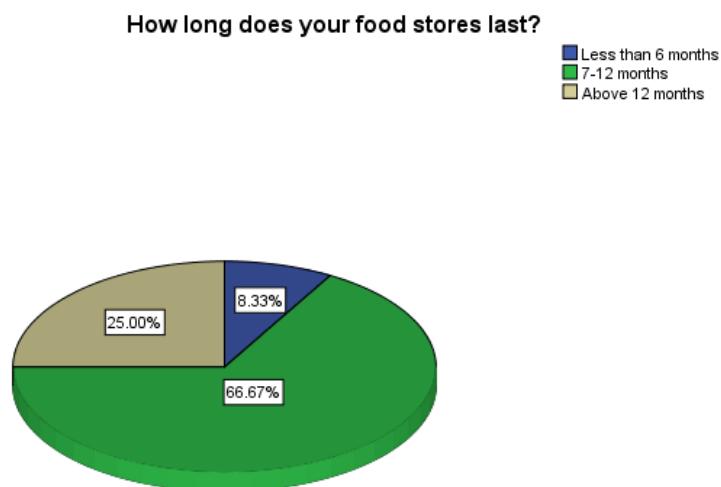
Generally, the number of meals per day is an important indicator of the standard of the people's living and food security. This variable is strongly influenced by the availability of income and food. The study therefore sought to establish the number of meals the women farmers had been taking considering that much of the food was from the irrigation project. As expected, 70% of the respondents confirmed that, through the proceeds from the project, they were able to sustain themselves with three (3) meals a day. More so, 15% said they were taking more than three (3) meals and day, although another 15% said 2 meals a day. One reason could be that the farmers also sell surplus produce are to accumulate savings hence being able to sustain themselves for some time. The results are shown in figure 8 below:



**Figure 8: Number of meals per day**

### 5.3.1.2 Impact of women participation on household food stores

Also, the majority of the respondents 66.67% echoed the sentiments that their participation in irrigation farming enhanced their food stores which can last for up to 7 to 12 months, more so 25% said it can last for more than 12 months, although 8.33% said it can last for less than 6 months. *In that respect, one of the participants had the following to say; “Rozva scheme improved the lives of many families in this area. Many of the houses that you see in this area were built from farm income and our granaries are always full. We sell surplus produce to GMB and we are also contributing to national food stocks.”* The results are shown in figure 9 below:



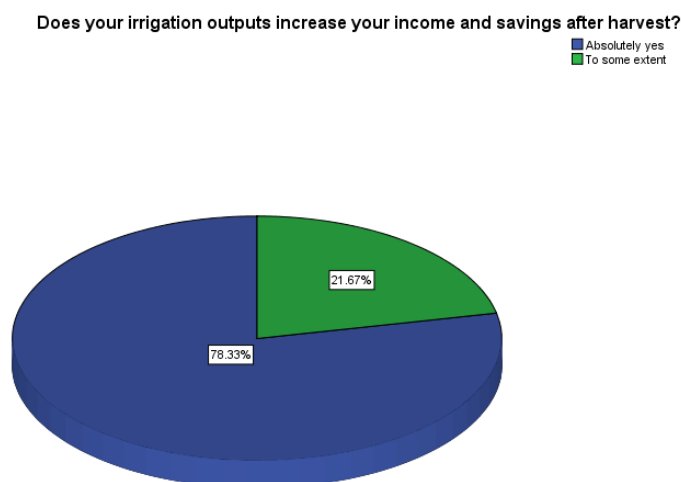
**Figure 9: Food storage**

### 5.3.1.3 Impact of women participation on household income and savings

Income is seen as an important household outcome variable that has direct impact on food security (Sherraden *et al*, 2003). Consequently, the participation of women in agriculture is considered the main source of income in most rural areas of developing countries. In the study site there is high reliance on woman participation in the irrigation scheme as a source of household income. The results in figure 10 below shows that 78.33% of the farmers confirmed that, indeed their participation in irrigation project enhances household income and savings. In addition, most female farmers also acknowledged that their social life and economic welfare had improved. Such findings were also reported by Smith (2000) whose study found that irrigation farming economically empowered and socially emancipated women in Markshow Communal Area of Nigeria.

The results basically suggests that, the female farmers are also able to send children to school and acquire assets such as wheelbarrows, scotch carts and livestock using the income from the project.

One participants proudly stated that they had enough food on their table and did not experience hunger. According to the participants, irrigation farming had the potential to improve not only household food security but also their quality of life if productive resources are easy to access.



**Figure 10: Household income and savings**

#### 5.3.1.4 Impact of women participation on reserve seeds for future production

It was also imperative to establish the impact of women participation on reserve seeds for future production in line with the thrust of enhancing food security. Unfortunately, the results in table 3 below shows that 88.7% of the farmers do not keep seeds for future production and only 11.3% do so. Hence the shortage of seed which is usually experienced by farmers during the farming seasons.

**Table 3: Seeds for future production**

Do you reserve seeds for future production from your current outputs?				
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	17	11.3	11.3	11.3
Valid No	133	88.7	88.7	100.0
Total	150	100.0	100.0	

#### 5.3.1.5 Impact of women participation on reducing household handouts from the government and NGOs

It was clear that very women farmers at Rozva irrigation scheme do not rely on food handouts from the government and other non-governmental organisations. Thus, the withdrawal of such donations did not greatly affect them. The results in table 4 below indicates that a few majority 34% relied on the handouts to some extent, followed 33.3% who confirmed that they do not rely on those supplements at all, although 19.3% agreed to a very great extent and lastly 13.3% agreeing to a great extent:

**Table 4: Handouts**

**To what extent do you supplement your food through handouts from the government and NGOs?**

	Frequency	Percent	Valid Percent	Cumulative Percent
Very great extent	29	19.3	19.3	19.3
Great extent	20	13.3	13.3	32.7
Valid Some extent	51	34.0	34.0	66.7
Not at all	50	33.3	33.3	100.0
Total	150	100.0	100.0	

### **5.3.1.6 Analysis of data from In-depth interviews and observations**

Participation in community development projects is used to describe an “empowering process which enables local people to do their own analysis, to take command, to gain in confidence, and to make their own decisions (Chambers 1995)”. Participation aims to create space for the marginalised people’s voices to be heard (Cornwall, 2003). This section will focus on presentation and analysis of responses from Government officials, local leaders and NGO officials in Bikita district.

A total of fifteen officials participated, five from each category. Data gathered through observations and interviews indicate that the plots allocated to each member in the irrigation project land were quite small. However, it was pleasing to note that the production levels were quite high and they suggested that this was because of intensive farming practiced with farming inputs from non-governmental organization such as Action Firm, United Nations, Development Fund to mention a few. Thus, in terms of land availability all the participants confirmed that they had enough land and water for irrigating their crops in dry season and spells was available.

The community leaders confirmed that, in terms of job creation the project created jobs for both female and males members of the project. The project created jobs for most of the members in this area and they are now in a position to buy food from the irrigation project. The statement tally with the objective of the project which is based on food security. The leaders were also quite happy by training provided by various organizations and members of the relevant government departments. Training is mainly on how to apply fertilizers, pest and disease control. They are also taught book keeping.

Similarly, the NGO officials were unanimous in saying that this project had improved the women status and food security in the community. They said, moving around the village in

which most of Rozva female irrigation members reside, one could observe, full granaries, cattle, chicken runs and rabbit huts as well as secured vegetable gardens emanating from the project profits.

In-depth interviews with the government officials indicated that agricultural extension services were conducted at least three times per month. However, they noted a concern that only a few attend agricultural extension services regularly and had attained certificates of participant. They confirmed that agricultural extension services lessons were very relevant, useful and equipped them with a wide range of agricultural skills including crop management, crop rotation, using water effectively and efficiently, pest control, planting crops in an even and well-spaced manner and marketing produce.

One of the female members of Rozva irrigation scheme suggests that “fieldwork, demonstrations and follow ups after training were very minimal and this was affecting their agricultural activities at Rozva scheme.” The participants indicated that they preferred practical training as compared to theory lessons. This might be as a result of the fact that the participants in this study had very low literacy levels. Therefore, it’s difficult for them to grasp concepts of new technologies in irrigation and any knowledge of irrigation farming given to them without practical illustrations.

Thus, the interviewed extension officers indicated that the turn out for agricultural extension services programmes was very low but hastened to mention that most of the attendees were women. One of the extension workers, said, “Women are the backbone of our work, without them our work is useless and meaningless.”

One the extension worker also confirmed that, “Most farmers attend training conducted by donors; and if it is not by donors very few people attend but if by donors they attend large numbers, because they were given some benefits. They also confirmed that productivity among the women was very high. Interviews with the agricultural extension officers in charge of Rozva irrigation revealed that participatory monitoring and evaluation was in its infancy. The extension officer suggested that participatory monitoring and evaluation of the project was lacking. The extension workers collected information for report writing in most cases, the Rozva irrigation management chairperson confirmed. This type of monitoring and evaluation is problematic since it serves to achieve certain goals which are beneficial to the extension worker and that has nothing to do with empowering of Rozva irrigation scheme.

Direct observation was used as a means of on-the-spot triangulation for the responses, discussions and explanations given by respondents. The method helped in validating the information that was obtained from interviews and questionnaires. The figure 11 shows the agricultural activities being undertaken at the irrigation scheme:



**Figure 11: Agricultural activities at the scheme**

#### **5.3.1.7 Challenges experienced by women at irrigation schemes**

The women farmers were asked to state the extent to which various problems were affecting their active participation in irrigation projects such as Rozva irrigation project. The main challenges identified include, diseases, natural disasters (cyclone), lack of financial resources and shortage of inputs.

One of the research informants suggests that very few female participants of the irrigation project had access to financial assistance and neither credit facilities. They also indicated that they derived little income from their produce due to unavailability of cash and market in the area. Other, notable challenges includes, water supply shortages, inadequate irrigation equipment and limited of government support and the results are shown in table 5:

**Table 5: Challenges**

To what extent does each of the following factors affect your participation in irrigation?	Very great extent	Great extent	Some extent	Not at all
	Table N %	Table N %	Table N %	Table N %
gender stereotyping	11.7%	2.0%	6.3%	<b>80.0%</b>
High transportation costs	4.0%	1.0%	<b>73.3%</b>	21.7%
lack of financial resources	1.7%	<b>80.0%</b>	18.3%	0.0%
limited labour force	6.7%	3.7%	3.0%	<b>86.7%</b>
shortage of inputs	8.3%	<b>78.3%</b>	13.3%	0.0%
water supply shortages	3.3%	10.0%	<b>86.7%</b>	0.0%
inadequate irrigation equipment	1.7%	16.7%	<b>81.7%</b>	0.0%
lack of government support	6.7%	11.7%	<b>81.7%</b>	0.0%
diseases	<b>66.7%</b>	21.7%	11.7%	0.0%
natural disasters	<b>50.0%</b>	30.0%	20.0%	0.0%

Financial challenge, among the problems facing female farmers at Rozva irrigation scheme were lack of money to buy farm inputs and farm implements. This is in support of Mandizha (2015) who reported that farmers in Zimbabwe are battling to acquire inputs due to price hikes and limited financial resources. They confirmed that the availability and affordability of inputs would not only improve their production but also their livelihoods. Water Shortages is also another problem affecting the participation of women in poverty eradication through participation in irrigation farming projects. Limited access to irrigation water and the depletion of the water as result of high evapotranspiration is one of the factors hindering the prosperity of some of the irrigation schemes in Zimbabwe (Munodawafa, 2014). Research participants strongly stressed that to some extent, water shortages affected their participation in irrigation farming.

The reasons for water shortage include; farmers do not follow the project water usage timetable; the canal are not wide and deep enough to carry large volumes of water and substantial amounts of water was lost through seepage because part of the canal was unlined. The research participants confirmed that to mitigate the challenge, Rozva female irrigation farmers stated that they irrigated at night while other block members are sleeping. The findings tally with those of Thagwana (2009) whose study revealed that water shortages constrained women farmers at Tshiombo Irrigation Scheme in Limpopo, South Africa. This is an indication of water crisis and that conflicts over irrigation water were rife. One of the participants suggests that, even if we irrigate at night, water shortage remains a challenge because the canal are not well maintained or as wide and deep as it was before the liberation struggle.

The female respondents of Rozva irrigation scheme also stated that unavailability of viable markets in Bikita district in general also affect their participation in agriculture. According to the participants accessing markets was difficult due to lack of reliable transport in the area and costly fares from their area to market area such as Masvingo urban area. The participants said that the road network in the area is poorly maintained and transport operators shunned the area. Most of the participants stated that they sold their produce either locally to non-irrigators or to neighboring villagers but revealed that cash was scarce in the rural areas. As result they resort to barter trade.

### **5.3.1.8 Discussion**

The study findings revealed that women are motivated to participate by allowing them to own resources such as production land. The Rozva irrigation scheme members regard the project as their 'own' and their family equally share the same view. Moreso, the support of family members in terms of provision of labour was also a very important factor since it was the main source of rural labour force.

It is believed that irrigation farming has the potential to reduce poverty, hunger and unemployment (Chazovachii, 2013). Much income can be derived from farming, the participants stated that irrigation farming had improved their livelihoods. The study further established that the participation of women in irrigation farming and agricultural activities can generally empower the poor people and contribute to food security. Accordingly, results confirmed that female farmers participates in irrigation projects specifically to produce food for household consumption and earn additional income through the sale of produce. Thus, irrigation farming was the main economic activity in the study area and the sole source of income for most respondents. Most of the respondents were able to sustain themselves with at least three (3) meals a day and sell the surplus to generate income to purchase other household needs such as pay school fees for children and buy other household assets such as wheelbarrows, scotch carts and livestock, indicating that participation in irrigation farming projects can economically and socially empower female farmers.

Moreso, the produced food can last them to the next harvest period as their granaries are always full. The surplus produce also contributes to national food store reserves and food security since the respondents sell to GMB. Above all, it was evident that many women farmers at Rozva irrigation scheme do not significantly rely on food handouts from the government and other non-governmental organisations. This reduces the burden on government in respect to food support schemes which are aimed to enhance food security for the nation at large.

However, of concern is that the farmers usually experience shortage of maize seeds during the farming seasons and is a direct threat to food security. Most farmers do not have the expertise as well as capacity to nurture and reserve maize seeds for future production. On this aspect, inputs from government and non-governmental organization such as Action Firm, United Nations, and Development Fund are greatly assist the farmers.

The main challenges identified include, plant diseases, natural disasters (cyclone), lack of financial resources and shortage of inputs. In that regard, female participants of the irrigation project had limited access to financial assistance and neither credit facilities. They also indicated that they derived little income from their produce due to unavailability of cash and market in the area.

Other, remarkable challenges includes, water supply shortages, inadequate irrigation equipment and limited of government support. Research participants strongly feel that water shortages affects their production initiatives. The reasons for water shortage include the fact that farmers do not follow the project water usage timetable and the canal design provides for water loss through seepage because part of the canal was unlined. It follows that, farmers were resorting to unsustainable water management strategies such as irrigating at night while others are sleeping. Thus, water crisis and conflicts over use of the water were predominant at Rozva irrigation project. In addition, the markets are hardly accessible due to poor road infrastructure and the farmers resort to sell their produce at the local market which mostly offer low relative prices and in some cases, they opt for better trade.

## **5.4 RECOMMENDATIONS**

### **5.4.3 Offer more relevant training programmes under practical settings**

To improve women's competence in farming, training should always be accompanied by practical training to enable farmers to quickly understand and apply information as well as new technologies better. The irrigation management committee also needs more training on how to effectively manage scarce resources such as water as well as disease control, disaster management and financial resource management.

Moreover, to improve women's participation in extension programmes, the government and other interested stakeholders need to develop and support programmes that specifically address women's agricultural needs through the use of a bottom up approach. Above all, the members need to be motivated to participate in extension services and if resources permit, the use of incentives can be a necessary option.

## **5.5 CONCLUSION**

This chapter looked at the impact of women participation in irrigation management on food security as well as the challenges thereto. It was noted that women showed an extraordinary level of contribution in project decision making process and participation in irrigation activities had improved their lives. However, there are challenges such as diseases, natural disasters, as well as inputs. The next chapter will focus on the summary, conclusions and recommendations of the study.

## 5.6 REFERENCES

- Chazovachii, B. (2013). *Smallholder Irrigation Agriculture in Distressed Regions: A Quest for pro-poor policies in Zimbabwe*. Research Journal of Sociology, 1(1):1-7.
- Davids, I. (2005). *Development Theories: Past to Present*. In Davids, I., Theron, F., Maphunye, K.J. (Eds). *Participatory Development in South Africa*. A Development Management Perspective. Pretoria: Van Schaik, pp. 4-29.
- Dinbabo, M.F. (2014). *Contractual Relationships between CBOs and the Community: Empirical Evidence from Ethiopia*. Journal of Social Sciences, 38(3):231-240.
- Nghiem, H. S., T. Coelli and P. Rao. (2007). *The Welfare Effects of Microfinance in Vietnam: Empirical Results from a Quasi-Experimental Survey*. The 51st Annual Conference of the Australian Agriculture and Resources Economics Society 13-16 February 2007. Queenstown, New Zealand: Centre for Efficiency and Productivity Analysis.

## **CHAPTER 6**

### **SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

#### **6.1 INTRODUCTION**

The major focus of this study was to explore on the impact of women participation in irrigation management to enhance food security in Zimbabwe. The recommendations are intended to have a positive influence on the participation on women in irrigation management in Zimbabwe. However, they may also be replicated in other settings with possible adjustments. This basically unlocks an opportunity for further research in this important area leading to continuous innovation and development. This chapter will begin by reviewing the research summary and conclusions, policy implication and recommendations on the research findings as well as areas of further research will later be presented.

#### **6.2 RESEARCH SUMMARY**

The study was conducted in Bikita district, Masvingo province and south western Zimbabwe and was precisely established to provide the necessary information which will assist the government, local community, non-governmental organisations and researchers in building vibrant and sustainable irrigation schemes through participation of women. It follows that it specifically sought to assess the impact of women participation in irrigation management as well as the extent to which this practice enhances food security in Zimbabwe. The inspiration to carry was drawn from the need to address the predicament of rural women farmers and eradicate food insecurity through active participation in small scale irrigation farming.

The respondents were women farmers at Rozva irrigation scheme as well as key informants (Government officials, Community leaders and NGO officials).The literature reviewed acknowledged the critical role of women participation in irrigation projects and food security.

The participatory development theory which argues for a people centred approach to development was adopted to inform the current study. Thus, the conceptual framework recognised women participation and food security as independent and dependent variables respectively. The study was primarily within positivist philosophy and it followed an epistemological position that advocates for working with an observable social reality. In addition, the deductive approach was used, where a concept developed and followed by the making of a research strategy to reaffirm that concept. In that regard, it was basically a descriptive survey research which used a hybrid approach through the application of both quantitative and qualitative research methodologies. Although, it was principally quantitative being supported by a qualitative phase of which, the methods were applied concurrently.

The sample size had 150 female farmers and 15 key informants and both stratified and purposive sampling approaches were used to select the respondents who participated. Primary data was collected through the use of questionnaires, interviews with key informants and field observations. To enhance the reliability and validity of the study, the researcher pilot tested the questionnaire and ensured that the respondents fully understand the questions. The reliability estimates and internal consistency of data was also tested using a Cronbach alpha of 0.60.

In addition, data was analysed using the descriptive statistics approach as well the Chi-square test with the use of SPSS Data Editor Software at 5 % significance level. This employed frequencies to describe the variables and it was later presented in various forms extending from tables, charts, graphs, and statistical analysis. The researcher also took note of the ethical considerations and obtained a consent before the interview began and also treated all the respondents equally without being bias based on, race, ethnic grouping, disability or age among others.

### **6.3 CONCLUSIONS**

Grounded on the research findings, the following conclusions were made:

- The participation of women in irrigation management through taking up leadership positions had a significant impact on food security. Women are very active and influential members who have the capacity to steer development in that respect. The household food security is greatly enhanced on issues such as, the household number of meals taken per day, income levels and savings, food store lasting period and reduction of food handouts from government and NGOs.
- It was also concluded that, more women youths should be encouraged to equally participate in these schemes since they are the future leaders. Moreover, the participation of women in irrigation schemes is not affected by their marital status and educational background. Although, the family members should be encouraged to provide the necessary support in terms of labour and financial resources.
- The top down approach in irrigation project planning and design is unsustainable and the implication is that, the designs will not be in line with the needs of the users. Limited involvement of project beneficiaries during the concept design and development has a negative consequence in terms of project viability. In that regard, participatory development approach need to be fully executed for projects of this nature.

- The women were directly involved in the management of project activities particularly on issues such as planning of tasks, organising tasks, project meetings, capacity building workshops and leadership through their guidance. Moreover, they were directly included in the making decisions process in respect to planning and organising project activities and this was mainly done through periodic meetings. Male counterparts were equally appreciative of the significant role of women as critical advocates of development of this nature.
- The production activities undertaken by women includes, land preparation, sowing of seeds, watering the fields, fertilizer application, weeding, planting, harvesting, transporting the produce, selling produce in town and selling produce at home. In addition, the major crops produced were of maize, beans and vegetables.
- The farmers were being offered regular training by government and other Local NGOs through the extension officers on crop management, crop rotation, pest control, planting crops and marketing produce with certificate being issued in some cases. Therefore, the government and the NGOs provided the much needed impetus to ensure success of the project. However, the farmers appreciate the concepts better if the training sessions are done under practical settings than theoretical platforms.
- It was further concluded that, if women were allowed access to resource ownership, more participation among them can be realised. However, the support of family members at household level is equally important.
- In addition, the participation of women in irrigation farming and agricultural activities can generally empower the society and contribute to food security, specifically at household and national level. In rural areas, irrigation farming is one of the main economic activity and the source of income for many people. In that regard, most household food and income levels can greatly improve given that most irrigation farmers no longer rely on food handouts from the government and other non-governmental organisations. If concepts of this nature are to be aggressively promoted, pressure on government in respect to food support schemes is greatly reduced.
- It was also concluded that, there is need to capacitate and empower the women farmers in respect to the storage of maize seed for future production and minimise shortages in future. More innovative mechanisms should be established to ensure success of such initiatives. There is also need to capacitate the women farmers on issues such as disease control, disaster management, financial resources and effective and efficient water management practices.

- It therefore be argued that improving women's access to financial resources could boost productivity and their role in agriculture (Mehra and Rojas, 2008). In view of this research's findings one can therefore conclude that improving women's access to credit facilities could improve women's level of participation at Rozva irrigation scheme and consequently enhance agricultural yields and farm proceeds. This could also help ensure the sustainability of the irrigation project.

## **6.4 POLICY IMPLICATION AND RECOMMENDATIONS**

Based on the research findings and conclusions, there was evidently a strong conviction that the participation of women in irrigation management activities provides a momentous influence on food security. Accordingly, the following recommendations are hereby presented for future consideration:

### **6.4.1 Provision of financial saving schemes for women**

There are various factors that affect the production these includes pests, diseases, inputs, disasters as well as financial resources. Therefore, the research established that lack of financial resources was one of the key factors affecting women's participation in agricultural production. The study recommends that development organizations and government agencies need to establish financial saving schemes for the farmers. This can be achieved through the establishment of community banking projects or financial saving groups among female farmers. The members of the community banking project could contribute a fixed amount of money regularly towards their own savings. The female farmers could use some of their contributions to purchase farm inputs as a group rather than individually as this can help reduce costs. Community banking could also enable female farmers to borrow from their own savings for the purchase of farm inputs and implements. Government agencies and development organisations could also help by training female farmers to run and take control of their community banking.

### **6.4.2 Improve road infrastructure and connect farmers to sustainable market options.**

Accessibility to markets for female farmers was also a challenge among the female farmers and this was mainly due to poor road infrastructure and transport problem. Rozva Irrigation Project was characterized by poor road infrastructure. Thus, good road infrastructure which connects the irrigation scheme with the market is of great importance. The government and non-governmental organizations needs to make focused effort to provide the necessary connectivity. In addition, connecting the farmers to agro-dealers or business companies is equally significant. The government and non-governmental organisations need to make a concerted effort to assist

female farmers to strike a contract with agro-dealers. Networking with agro-dealers not only helps mitigate market related challenges but also improves women's access to farm inputs. The female farmers could sell their produce to the agro-dealers whom they partnered with, who in turn would support farmers with affordable farm inputs and transport for produce.

#### **6.5 AREAS FOR FURTHER RESEARCH**

The research recommends that a study of this nature could also be done at other irrigation schemes in Zimbabwe or outside the country for comparison. This can assist in the assessment of other factors that could affect women's participation level in agricultural activities. More research is therefore needed on this area. Moreover, it is equally imperative to do a comparative analysis of the challenges and opportunities facing women farmers in the current study area.

## 6.6 REFERENCES

- Chazovachii, B. (2013). *Smallholder Irrigation Agriculture in Distressed Regions: A Quest for pro-poor policies in Zimbabwe*. *Research Journal of Sociology*, 1(1):1-7.
- Cornwall, A. and Jewkes, R. (1995). 'What is participation research?' *Social Science and Medicine*. 41: pp. 1667-1676
- Cornwall, A. (2003). Whose Voices? Whose Choices? *Reflection on Gender and Participatory Development*. *World Development*, 31(8):1325-1342.
- Cornwall, A. (2008). Unpacking 'Participation': models, means, meanings and practices. *Community Development Journal*, 43(3):269-283.
- Cornwall, A. and Jewkes, R. (1995). 'What is participation research?' *Social Science and Medicine*. 41: pp. 1667-1676
- Damisa, M. A. and Yohanna, M. (2007). *Role of Women in Farm Management Decision- Making Process: Ordered Probit Analysis*. *World Journal of Agricultural Sciences*, 3(4):543- 546.
- Davids, I. (2005). *Development Theories: Past to Present*. In Davids, I., Theron, F., Maphunye, K.J. (Eds). *Participatory Development in South Africa*. A Development Management Perspective. Pretoria: Van Schaik, pp. 4-29.
- De Beer, F. and Swanepoel, H. (2000). *Introduction to development studies*. 2<sup>nd</sup> Edition. Cape Town: Oxford University Press.

## APPENDIX I: SURVEY QUESTIONNAIRE

*Research Topic: Impact of women participation in irrigation management on food security in Zimbabwe.*

The researcher is currently a student at Bindura State University under Masters in food security and sustainable agriculture. Currently I am undertaking a Postgraduate research on the impact of women participation in irrigation management on food security in Zimbabwe. The questionnaire consists of questions to be completed by **Rozva irrigation scheme women members**. The information obtained from this interview will be handled **confidentially** and will be used **solely** for writing Master's Thesis. The recommendations of the study shall be shared with irrigation farmers.

### Demographic structure (Please tick in appropriate box)

1. (a) Member's sex: Male  Female
- (b) Age (yrs.): Less than 30  30-45  46-50  Above 50
2. Level of education:
- No formal education
- Primary Education
- Secondary education
- Tertiary education
3. Marital status
- Single
- Married and staying Husband
- Married and not staying with husband
4. Position in the Scheme
- Chairperson
- Vice Chairperson
- Secretary
- Vice Secretary
- Treasurer
- Committee member
- Ordinary member
5. Household size
- Less than 5 people
- 5 to 10 people
- Above 10 people
6. How long have you been a member of the scheme?
- Less than 5 yrs.
- 5-10 yrs.
- 11 yrs. and above

## NATURE OF WOMEN PARTICIPATION IN IRRIGATION MANAGEMENT

To what extent do you actively participate in the following irrigation management and production activities? **(Please tick in appropriate box)**

	Very Great extent	Great extent	Some extent	Not at all
<b><u>Management Activities</u></b>				
Planning project tasks				
Organizing tasks				
Project meetings				
Capacity building workshops				
Leadership roles				
Controlling				
<b><u>Production activities</u></b>				
Cleaning canals				
Land preparation				
Sowing				
Diverting water to fields				
Applying fertilizer or spraying				
Weeding				
Planting or transplanting				
Fencing				
Harvesting				
Transporting produce to market				
Selling products in town				
Selling products at home				

### FACTORS CONTRIBUTING TO PARTICIPATION OF WOMEN IN IRRIGATION MANAGEMENT

What is the type of land ownership structure of your scheme?

Individually owned

Whole scheme (communal)

If owned by individuals, give land size.....



Shortage of farming inputs				
Water supply shortages				
Inadequate irrigation equipment				
Lack of Government support				

What other, additional challenges are you facing in respect to your participation in this irrigation scheme?.....

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How have you benefited from the irrigation scheme?

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What are the possible suggestions necessary to promote women participation in irrigation management to enhance food security?

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**Thank You for your time**

## **APPENDIX 2: INDEPTH INTERVIEW GUIDE**

My name is Locadia Jongwe and currently student at Bindura State University under Masters in food security and sustainable agriculture. Currently I am undertaking a Postgraduate research on the impact of women participation in irrigation management on food security in Zimbabwe. I have a set of questions that I wish to ask you. The information obtained from this interview will be handled confidentially and will be used solely for the purpose of writing Msc Thesis. The recommendations of the study will be shared with Interveners, Policy makers and farmers in general.

### **1. QUESTIONS FOR LOCAL LEADERS**

- i. Do you provide an opportunity for women to participate in irrigation project management in your community?
- ii. What assistance do you offer to women irrigation projects in your community?
- iii. How comparatively successful is the Rozva irrigation project?
- iv. What do you think should be done to enhance women participation in irrigation projects for food security?

### **2. QUESTIONS FOR GOVERNMENT OFFICIALS AND NON-GOVERNMENTAL ORGANISATIONS**

- i. How do you promote women participation in irrigation projects?
- ii. To what extent are the women involved in irrigation projects?
- iii. What are your comments and suggestions to improve women participation in irrigation projects?

**THANK YOU FOR YOUR PARTICIPATION**