GENDERED EXPERIENCES ALONG THE TOMATO VALUE CHAIN IN THE LUSAKA CITY REGION.

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A dissertation submitted to the University of Zambia in partial fulfilment of the requirements for the award of Degree of Master of Science (MSc) in Environmental and Natural Resources Management.

The University of Zambia

Lusaka

2020

DECLARATION

I, Victoria Hepplethwaite, hereby declare that this dissertation; Gendered Experiences Along the Tomato Value Chain in the Lusaka City Region Zambia, has not been previously submitted for the award of an academic degree at this or any other University.

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Victoria Hepplethwaite Date

CERTIFICATE OF APPROVAL

This dissertation of Gendered Experiences along the Tomato Value Chain in the Lusaka City Region is approved as fulfilling part of the requirements for the award of the degree of Master of Science in Environment and Natural Resources Management by the University of Zambia.

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ABSTRACT

This study examined the gendered experienced along the tomato value chain in the Lusaka city region. The objectives of the study were to: identify the key actors along the tomato value chain; establish the practices carried out along the tomato value chain by men and women; analyse the challenges faced by men and women along the tomato value chain in the study area; and analyse the benefits accrued by men and women along the tomato value chain in the study area. The study adopted a mixed method approach. Data was collected from Mumbwa, Chibombo, Kafue and Chongwe using; an interview schedule administered to 232 respondents; 12 focus group discussions in the 4 districts; semi structured interviews with farmers, middlemen, transporters and vendors at Soweto Market; and semi structured interviews with 7 key informants. Qualitative data were analysed using content analysis, while the quantitative data was analysed using Two Sample Z-proportions Test and Chi Square Test with the aid of the statistical software SPSS, Minitab, Excel and QDA Minor. The study tested the following hypotheses; Hypothesis 1: Men use pesticides more than women during the production of tomatoes. Hypothesis 2: There is an association between gender and the decision making over the use of income generated from tomato production. It was found that the proportion of men who sprayed herbicides was greater than that of women who sprayed herbicides ($Z = 3.49$, $p = 0.0001$). There was an association between gender and decision-making power [$\chi 2$ ($n = 232$) $= 17.9$, $p = 0.0001$]. Results further showed that women's roles were mainly as farmers at production node and vendors at marketing node. Men's roles were farming, transporting and brokering at the market. The main challenge identified was lack of capital, 77 percent for men and 66 percent for women. Other challenges included too many household responsibilities for women (47 percent) and lack of access to productive inputs for men (43 percent). Men's benefits were centred on profit maximization as opposed to women's benefits that were centred on being able to provide for the home and children. The study recommends that the Government through the Ministry of Gender should incorporate the ADVANCE project into the tomato value chain to empower the women tomato farmers, through mechanising the agricultural process for women which will increase productivity levels and have ripple effects for the

men as well, as they will reduce on the amount of labour they put into tomato production.

Keywords: Gender, Gender gaps, Gender roles, Value chain analysis.

ACKNOWLEDGMENTS

I would like to extend my gratitude to my brother Clifford Hepplethwaite, without whom I would not be where I am today, I am grateful for all the support and encouragement that he gave me throughout this study. I would like to thank my other family members and friends for their continuous support. I would like to extend my thanks to my supervisor Dr. Bridget Bwalya Umar, for constantly believing in me and pushing me to do my best, for the guidance and wisdom that she continuously showed me. I would also like to say thank you to all the lecturers and staff at the University of Zambia, School of Natural Sciences, Geography Department, who have taught me a lot and made me a better person overall.

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ADVANCE	Agriculture Development through Value Chain Enhancement
DACO	District Agriculture Coordinator
FISP	Farmer Input Support Program
GIDD	Gender in Development Division
MACO	Ministry of Agriculture and Cooperatives
MGCD	Ministry of Gender and Child Development
NGP	National Gender Policy
WID	Women in Development

CHAPTER ONE: INTRODUCTION

1.0 Chapter Overview

This chapter gives the background of the research and sets the context of the study. It includes the statement of the problem, aim of the study, study objectives, research questions and the significance of the study. It ends with an outline of how the rest of the dissertation is organized.

1.1 Background

Tomato value chains in Africa perform poorly due to a host of challenges such as pests and diseases, bad roads and lack of processing plants (Geoffrey et al., 2014; Ochilo et al., 2019; Ugonna et al., 2015; Clottey et al., 2009). In Zambia, the tomato market has been unstable over the years, with extreme tomato price fluctuations (Mwiinga & Tschirley, 2009; Kabisa et al., 2019), water shortages due to reduced rainfall and an increase in pests that have increased the financial requirements to produce the crop (Hichaambwa & Tschirley, 2006). However, high consumer demand for the crop has made it popular among smallholder farmers Chapoto et al., (2019) and other value chain actors who continue to invest in tomatoes amidst the challenges surrounding its production and marketing. Women smallholder farmers are likely to face more of the agricultural challenges due to pervasive gender gaps in the agricultural sector.

Gender refers to the socially constructed differences in roles, attributes and opportunities associated with being female or male as well as the social interactions and relations between women and men, (FAO, 2016; Phillips, 2005). Gender gaps therefore, are the differences between men and women with regards to their economic, social, intellectual, cultural and political attainments and attitudes, (Harris, 2017). In agriculture, gender gaps result in women and men not having equal opportunities to access and benefit from the agricultural industry, with women for the most part being the worse off (Huyer, 2016; Croppenstedt et al., 2013). These gender gaps are especially prominent in the developing world (Quisumbing et al., 2014; Goldstein, 2015). The vast majority of women participate in agricultural activities that see minimal profit margins which do not

tally with the amount of labour they put in (Lastarria-Cornhiel, 2006). The women participate in primary activities such as planting of seeds, weeding and watering Ogunlela & Mukhtar (2009) whereas the men assume a more dominant role and are in charge of the profit earning value adding activities such as transporting and marketing as well as the farming of cash crops (Leavens & Anderson, 2011). Gender gaps in agriculture are also said to be as a result of women not having the same access as the men to productive inputs and even using the inputs wrongly (Moyo & Diop, 2014: Backiny-Yetna & McGee, 2015). Women farmers also make less than their male counterparts which can be attributed to men using more inputs such as herbicides on their crops in comparison to women (Oseni et al., 2013; Ahmadu & Idisi, 2014). Due to the challenge of increased labour requirements during weeding, herbicide use is increasingly becoming an option for overcoming the challenge in Zambia (Nyanga et al., 2011). However, with women having less access to inputs than the men it means that they are less productive than the men once their crops are attacked by weeds and pests.

In Zambia while the proportion of women engaged in agriculture stands at 78 percent in comparison to men at 69 percent JICA (2016) women do not reap as much benefits as the men. This is attributed to women's roles in the household, lack of ownership of agricultural land, lack of access to markets and reduced access to productive resources (FAO, 2018; White et al., 2015). Moser (1989) expounded these gender roles through her elucidation of the triple roles of women and their effects on the productive potential of women, especially in low-income households and communities. These roles are: (1) Productive Roles - Activities that produce goods and services for consumption or trade, (2) Reproductive Roles - Childbearing and caring as well as domestic tasks that support the household's wellbeing, such as cooking and cleaning, (3) Community Roles - community work, such as holding social events, activities to improve or care for community resources. The triple roles of women put women at a disadvantage as they participate in crop value chains (WFP, 2016). Women and Men's roles in food and agricultural systems need to be given serious attention as they relate to agricultural productivity, food security, nutrition, poverty reduction and empowerment (Mulunga & Kandiwa, 2015; Mofya-Mukuka & Sambo, 2018).

Agriculture value chain analysis has increasingly gained research interest due to the number of people that rely on agriculture for their livelihood and due to the potential of agricultural value chains to improve livelihoods (Hawkes & Ruel, 2012; Mitchell & Coles, 2009; Kissoly et al., 2017). However, with a few exceptions, the analyses do not routinely include the mediating potential of gender roles and gender relations and how these could potentially affect the men and women value chain actors along the value chains. The manifestation of gender gaps along crop value chains has the potential for suboptimal outcomes as women value chain actors would not get as many benefits as their men counterparts, with trickle down effects on the performance of the agricultural sector. In a study of the value chains of three internationally important dry forest non timber forest products from Burkina Faso, Ethiopia and Zambia, Shackleton et al. (2011) found that women performed a variety of functions at different stages in the value chains, but their roles tended to be poorly visible and inadequately acknowledged, largely because they were either operating in the informal sector, were part-time employees, or carried out their activities at home between family responsibilities.

The Gender and Groundnut Value Chains impact evaluation, conducted in Eastern Province, Zambia by Curtis et al. (2018) concluded that women's participation in groundnut production, marketing, and use of proceeds was maintained as efforts to commercialize groundnuts expanded. A study on women's participation in the cowpea value chain in eastern Zambia by Gondwe et al. (2017) showed that women's participation in the cowpea value chain significantly increases cowpea production, marketing and adoption of improved cowpea varieties. It also reduces both food insecurity and poverty (FAO, 2018a). However, women's participation in the value chain was limited by low levels of education, access to extension, credit, village markets, and improved agricultural technologies.

Increased gendered agriculture value chain analysis would aid to identify the areas of inequality and inform policy and strategies to improve the sector and the overall economic standing of the region. Other ripple effects include education, reduced early marriages and improvements in health through linkages to global value chains and global markets. This study therefore aimed to examine the gendered experiences along

the tomato value chain in the Lusaka city region, by; (1) Identifying the key actors along the tomato value chain (2) Establishing the practices carried out along the tomato value chain by men and women, (3) Analysing the challenges faced by men and women along the tomato value chain, and (4) Analysing the benefits accrued by men and women along the tomato value chain.

1.2 Problem Statement

The gender roles that exist in the agricultural sector in Zambia see women have to perform productive, reproductive and community roles, making them less productive than men (Umar et al., 2020). Further, the gender relations see the women take on a submissive role as the men take on a more dominant role. This has worsened the gender gaps that exist as women have less access to hired labour, capital and productive inputs, making them less productive than the men (Fanworth et al., 2011). These gaps exist along the agriculture value chain and hence the tomato value chain, seen from production to the market. Efforts have been made to increase women's participation and overall productivity in the agricultural sector, but women still do not perform as well as men due to their triple roles as producers, reproducers and community managers (FAO, 2018). The tomato value chain in the Lusaka city region is particularly sensitive to gender gaps because the requirements surrounding tomato production are quite high and add to the challenges that women face daily.

Tomato is a perishable product, has high requirements for purchased inputs, and more frequent tomato price fluctuations (Hichaambwa & Tschirley, 2006; Kabisa et. al, 2019). These factors threaten incomes, household food security and could possibly increase poverty among tomato value chain players, especially the women. Majority of the studies conducted on tomatoes in Zambia focus on price fluctuations, market analysis and the potential of the crop to reduce poverty. With a dearth of literature on gender dynamics along the tomato value chain in Zambia, this study sought to fill this gap by adding knowledge to the sector that may be of relevance to policy formulators.

1.3 Aim

The aim of the study was to examine the gendered experiences along the tomato value chain in the Lusaka city region.

1.4 Objectives

The objectives of the study were:

i. To identify the key actors in the tomato value chain in the study area.
ii. To establish the practices carried out along the tomato value chain by men and women.
iii. To analyse the challenges faced by men and women along the tomato value chain in the study area.
iv. To analyse the benefits accrued by men and women along the tomato value chain in the study area.

1. 5 Research Questions and Hypotheses

The research questions and hypotheses were:

i. Who are the key actors in the tomato value chain?

ii. What are the gender roles along the tomato value chain?

iii. What challenges do women and men face along the tomato value chain?

iv. What benefits do women and men have along the tomato value chain?

v. To what extent do women and men have control over the use of income generated from tomato production?

vi. To what extent do women and men use productive inputs such as herbicides in tomato production?

Hypothesis 1: Men use herbicides more than women during the production of tomatoes.

Hypothesis 2: There is an association between gender and the decision making over the use of income generated from tomato production.

1.6 Significance of the Study

The demand for tomato and its products has increased drastically and this can be attributed to an increase in population in cities such as Lusaka (Mumba et al., 2015). For the most part smallholder farmers experience challenges such as lack of capital, knowledge and entrepreneurial skills necessary for production and marketing for them to benefit positively from the value chains they participate in. Gender inclusion in agriculture and value chains plays a big role in reducing incidences of hunger, poverty, food insecurity and lack of education (Umar & Pelekamoyo, 2019; Mofya-Mukuka & Sambo, 2018). There is therefore a need to increase gendered studies in agriculture value chains. The tomato sector in Zambia can transform smallholder farmers' lives; create jobs, sustainable incomes and wealth through increased access to markets, improved storage facilities, enhanced processing of tomatoes and an increase in exports. Currently however, the tomato value chain isn't performing at its optimum with producers struggling to acquire capital and inputs, a lack of an adequate number of processing plants, annual reports of wastage and price fluctuations (Kabisa et al., 2019; AFTAR, 2009). This study was undertaken to provide information on gendered experiences along the tomato value chain in terms of the different actors; practices carried out; challenges faced by actors and; benefits accrued by different actors. It further adds to knowledge on gender and agriculture value chains in Zambia and the region.

This study will further provide development actors and policy formulators with information on where and how to address gender gaps along the tomato value chain in the Lusaka city region. With the high demand for the crop and the high levels of wastage surrounding it the study will provide recommendations on how to ensure efficiency in the sector. The information obtained will enable organisations specialising in agriculture such as Zambia National Farmers Union, MUSIKA, World Food Programme, Indaba Agricultural and Policy Research Institute, the Ministry of Agriculture and the Ministry of Gender to identify the main constraints being faced in the tomato value chain by gender and ways that they can possibly be overcome.

1.7. Organisation of the dissertation

Chapter One introduced the study and presented the aim of the study, the research objectives, research questions and the significance of the study. Chapter Two reviews the literature and theory. It highlights gender and agriculture, the value chain concept and gender and value chain analysis; Analysis of the tomato value chain from a gender perspective in Africa and Zambia. Chapter Three describes the methodology and research design that was used to achieve the aim and objectives of the study. Chapter Four, the results of the study are presented and discussed. Chapter Five concludes the study and presents recommendations arising from the research.

CHAPTER TWO: LITERATURE REVIEW AND THEORY

2.0 Chapter overview

This chapter presents reviewed literature on tomato value chain analysis with a gender perspective in Africa and Zambia. It gives insight on gender and agriculture, the value chain concept, and gender and agriculture value chains. It ends with a summary of the chapter.

2.1 Gender and Agriculture

Women have emerged as key contributors to the agricultural sector and are considered to perform the bulk of the work (Croppenstedt et al., 2013). Women's activities in agriculture are weighed down by a global gender gap (Quisumbing, 2014). In Africa women make up approximately 43 percent of the agriculture labour force (FAO, 2011), although much of their effort is overlooked (Mamaril & Lu, 2019). It has been noted that women often achieve lower yields than men in agriculture as a result of women often facing constraints in their access to and demand for the factors of production that would allow them to have yields equal to men (Patra et al., 2018; Huyer, 2016; Doss, 2018). There is unequal distribution of productive resources between men and women, (Croppenstedt et el., 2016). The low productivity among women farmers is widely as a result of their limited access to agricultural inputs such as land, chemical inputs, credit and extension services (Mukasa& Salami, 2016; Uduji et al, 2018).

Women tend to have very low land tenure rights and this takes away from their productivity (Giovarelli et al., 2013; Meinzen-Dick et al., 2019). In most African communities men are considered to be the custodians of the land (Akinola, 2018). In some instances when a women is widowed land that she was meant to inherit from her husband is grabbed from her by the village head and given to a man and thus women tend to rely on men for access to land (Doss et al., 2018). It has been noted that women's lack of access to land can perpetuate poverty, reduce on productivity, and enhance food insecurity and child undernourishment (Odeny, 2013; Moyo, 2013; Gillespie & Kadiyala, 2012). There is a belief that women have access to land through joint ownership (Mishra & Sam, 2016; Rehman et. al., 2019). However, it should not be

assumed that joint ownership necessarily provides equal rights over the land; men often have more rights over the land than their wives (Doss et al., 2013, Jacobs & Kes, 2014). It is imperative then to increase women's access to land as Allendorf, (2007) notes that if women had more access to land there is potential to promote food security, development and child welfare because women will be empowered and productivity increased. It has been estimated that if women had more land they would be able to increase their agriculture input by 20 to 30 percent (FAO, 2011).

Gender disparities in agriculture are further characterized by unequal access to agricultural inputs (Killic et al., 2015; Kristjanson et al., 2017). Women have less access to productive inputs such as fertiliser, herbicides and pesticides (ADB, 2013; Ahmadu & Idisi, 2014). In farming activities, women frequently lack access to information about pesticide inputs and their use, are avoided by male extension agents who predominate in most settings, and are therefore disadvantaged by inadequate access to pesticide-related decision making (Tanzo, 2005). According to (Uduji et al., 2019; Peterman et al., 2011; Ragasa et al., 2013) women's agricultural productivity when compared to men is notably lower as a result of limited access to agricultural land and inputs.

Increasing women's decision making power increases their levels of empowerment. This then results in improved child nutrition, food security, increased agricultural productivity and diversity and improved educational attainment and economic enhancement (Sell & Minot, 2018; Peterman et al., 2015; Malapit et al., 2015; Anderson et al., 2020; Tripathi et al., 2012). However, men tend to be the decision makers in households with women at times making joint decisions with the men (Alwang et. al, 2017). Despite the fact that women put in a lot of labour into the farming of crops, men are still the main decision makers (Deeksha, 2014). (Pooja et al., 2016; Shibata et al., 2020) report that lack of decision making power is one of the major constraints for women in agriculture. Some of the reasons why women are not imvolved in farm decision making are illiteracy, poor access to farm information, culture, the belief that women are less informed than men, low self-confidence of women in making farm decisions and lack of knowledge about farming (Chayal et al., 2013, Patra et al., 2018).

2.2 Gender and Agriculture in Zambia

Over the decades, effort has been put in to reduce the gender gaps in agriculture in Zambia. 1996 saw the introduction of the Gender in Development Division (GIDD) whose mandate was to ensure that national development was gender-sensitive, through use of awareness-raising and integration of gender policies into all programs, plans and projects (JICA, 1998). The Ministry of Agriculture at the time was targeting small-scale farmers especially women, but their objectives did not translate into practice, as credit and training did not reach majority of the women being targeted (ZARD (1998). This was followed by the National Gender Policy (NGP) that was adopted in 2000 (Pitamba, 2006). One of its areas of concern was how women lacked access to credit, improved technology, land and extension services, which constrain agricultural productivity. It placed emphasis on issues of poverty, noting that women and children are differentially affected compared to men. In 2012, GIDD was upgraded to the Ministry of Gender and Child Development (MGCD) (Ministry of Gender and Child Development, 2014) known as the Ministry of Gender since 2016. The Ministry of Gender has a coordinating role in gender issues in agriculture. Through the mainstreaming of gender in the Ministry of Agriculture and Cooperatives (MACO) the ministry applies Women in Development (WID) approach in implementing a strategy for the economic empowerment of women in the agricultural sector (Fanworth & Munachonga, 2010: FAO, 2018b). Currently the Ministry of Gender is working on Agriculture Development through Value Chain Enhancement (ADVANCE), which is an empowerment programme designed to aggregate and coordinate Government efforts towards women, men and youths empowerment.

Despite decades of gendered agriculture reforms and policies to enhance women's participation and productivity, gaps still exist in Zambia's agriculture sector. These gaps are seen through women's lack of decision making power with regards to production and use of income, lack of access to inputs, credit and participation in extension services. Men are more likely to access agriculture inputs and use technology on their land (Namonje-Kapembwa & Chapota, 2016). Men further take charge of cash crops and value addition nodes in agriculture. Ngoma-Kasanda & Sichilima (2016) found that the

commercialisation of groundnuts reduces women's decision making over production. This reflects how men tend dominate the production of cash crops and the value addition nodes.

2.3 The Value Chain Concept

The concept of value chain created by (Porter, 1985), is a collection of activities that are performed by a company to create value for its customers. The primary focus of the value chain is the benefits that accrue to the actors along the chain. An effective value chain then is one that generates profit. Kaplinsky & Morris (2000) define a value chain as the full range of activities that are required to bring a product or service from conception through the different phases of production, delivery, final consumers and disposal after use. Value chain analysis therefore, entails the identification of different activities and their respective nodes and mapping of the interactions amongst these nodes that generate costs or value (Webber & Labaste, 2009).

Analysing agriculture value chains is therefore essential for any weakness to be realised and worked on. They serve the purpose of transforming agricultural products through the addition of value to meet the needs of consumers, expose smallholder farmers to markets, enhance benefits of value chain actors and enhance global trade and economic development (Trienekens, 2011; Ho et al., 2018; Haggblade et al., 2012). The actors along a typical agricultural value chain are found at the following nodes; input supply, production, processing, marketing and consumption (Figure 2.1). The value chain sees interactions through suppliers providing inputs to producers who then grow and harvest the crop which is then either taken to processing plants or markets directly and then consumers purchase the crops and products (Mumba et al., 2015).

Gender has become a key feature in agriculture value chain analysis as women's involvement along the value chain could result in their empowerment (Laven et al., 2009; Coles & Mitchell, 2011). Gender inequalities are often critical to understanding and addressing any weaknesses within value chains, and the most critical areas for upgrading quality and growth as well as poverty reduction. The points where women are mostly involved along a value chain are usually ignored reducing on efficiency of

analysis (Mayoux& Mackie, 2008). If women are to be found along the chain and participating at each node they will have direct access to benefits. Studies however, continue to show that gender roles and relations impact women's participation of the value chains with men dominating the value addition nodes such as the transportation and marketing nodes while women's labour tends to be focused on production (Fanworth, 2011; Lyon et al., 2019).

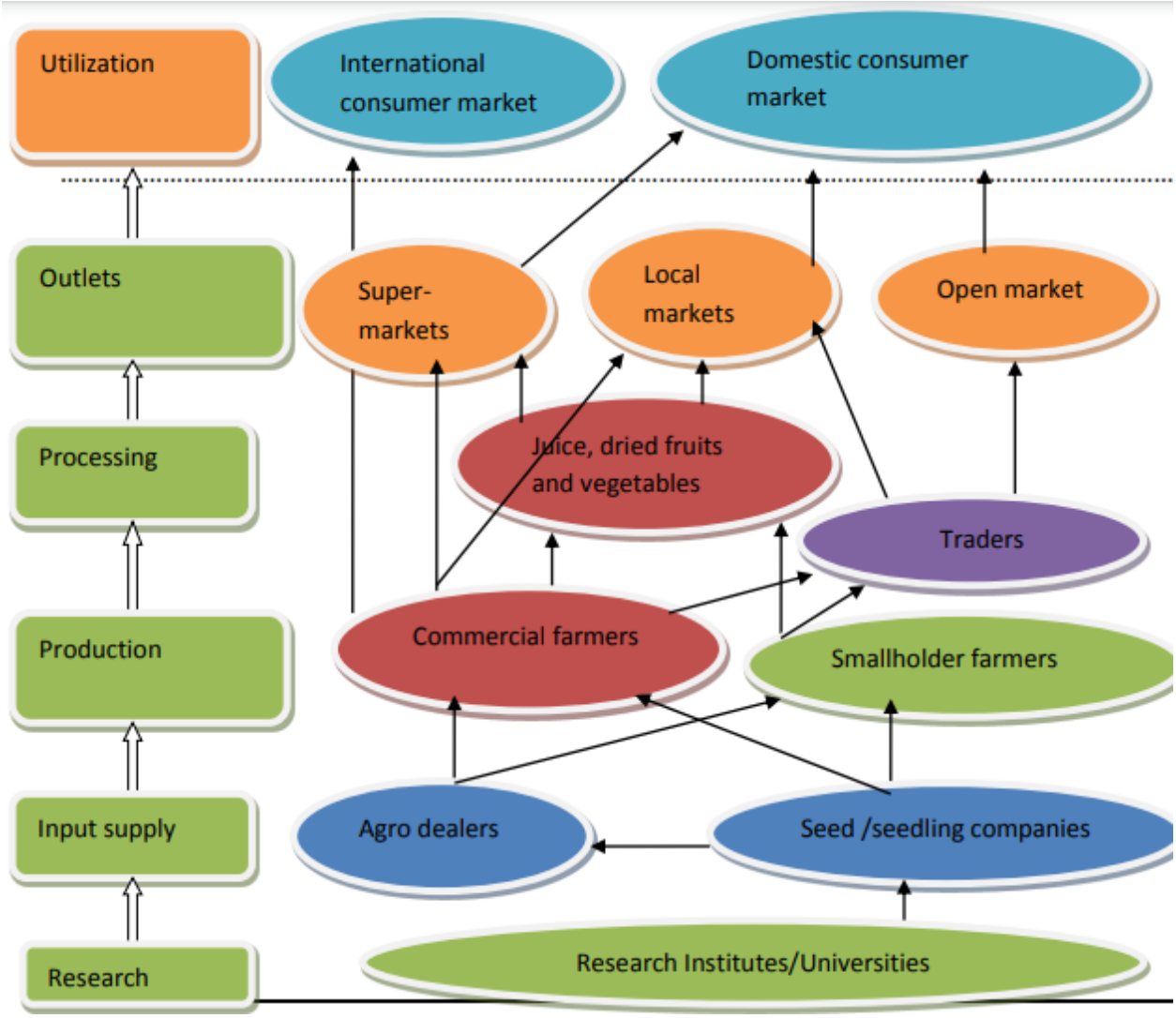

Figure 2.1: Agriculture value chain mapping (Source: Mumba et al., 2015).

2.4 Agriculture Value Chains in Zambia

Agriculture value chain analysis in Zambia has growing research interest. Agricultural value chains can be a game changer for smallholder farmers (Norton, 2014) and all value

chain actors. Through the development of value chains and their analysis weaknesses are identified, smallholder farmers are introduced to commercial and global markets and there is improved food security through the identification of better seed and crop varieties (Schaffnit-Chatterjee et al., 2014; Guritno, 2017). Value chain analysis in Zambia is increasingly integrating gender.

Mofya & Shipekesha (2013) in their analysis of the groundnut value chain in Eastern province looked at the gender control of groundnuts. Groundnuts are believed to be a woman's crop, meaning that it is mostly farmed and controlled by women. However, the study found the opposite with 62.4 percent of men and 37.6 percent of women controlling the groundnut field. The study further found that women and men's roles differed with women's roles for the most part being weeding, harvesting and shelling of groundnuts while the men were more involved in planting and selling. These results therefore, reflect that women put in more labour into the production of the crop and men dominated the value addition node.

In a study by Shipekesha& Jayne (2012) on the gender control and labour input of the 3 staple crops; maize, cassava and rice among Zambian farmers they found that the labour activities were roughly equally split between men and women, especially in maize and rice production. The study revealed that most of the proceeds from maize, rice, and cassava fields in Zambia were controlled by men at 74 percent for maize, 62 percent for cassava and 69 percent for rice. From their findings they assert that the sweeping generalizations that women account for most of the labour in Zambian agriculture appear to be misleading.

These studies therefore, highlight the importance of incorporating gender in agriculture value chain analysis so as to identify roles, weakness, suggest policy improvements and dispel or verify myths surrounding certain crops.

2.5 Tomato Value Chain in Tanzania

The main nodes of the tomato value chain include in Tanzania include; production (farmers & suppliers), box/crate making and packaging, transportation and marketing

node (Mwagike, 2015). Women participate at the supply node, although in very small numbers. Women are more active at the production node with men having higher levels of participation. Khasa & Msuya (2016) found that the making of boxes and the packaging of tomatoes women do not participate in this role; it is completely dominated by men who are viewed to be stronger than women and possess the skill and knowledge to make the boxes. They further reported that the transportation node is also fully dominated by men mainly because transportation is associated with the marketing of tomatoes and men tend to take control of the roles with the most immediate benefits.

At the marketing node men dominate both the brokering and vending of tomatoes attributed to their drive to maximize profits. Women do participate in both activities, including brokering which is considered a "man's" job. Men and women in Tanzania have varying opportunities to participate across the tomato value chain, influenced by cultural traditions that dictate the roles and responsibilities, ownership of production and processing assets (Mroto et. al, 2018). The tomato chain in Tanzania is very complicated, with a lot of actors contributing to challenges (Nyamba et. al, 2016). Due to the gender relations at play, women are facing even more challenges than men and denied access to benefits that are already being fought for in the existing power dynamics.

2.5.1 Tomato Value Chain in Ethiopia

The main actors in the tomato value chain in Ethiopia are input suppliers, farmers, traders and consumers (Deressa et al., 2018). The tomato passes through different actors to get to the consumer; collectors, wholesalers and retailers, with little value being added before reaching the end-users. The intermediate buyers obtain tomato from the farmers at a lower price and they sell to the consumers at a higher price (Rikitu, 2018).

In Ethiopia the demand for tomatoes is very high, drawing a lot of farmers to the sector because it promises high profits. However, there are some constraints that are overlooked such as, tomato price fluctuations and increasing prices for input supplies Emana & Gebremedhin (2007). This weighs heavily on the farmers, especially the women who tend to produce fewer yields. Further, the distribution of profit along the

chain sees the farmers having the least profit while brokers, wholesalers and retailers gain much more profit. Women farmers have lower gross margins as compared to men farmers also because women's selling prices are lower than men (Adugna, 2018).

At the production node Emana et al, (2015) expound that women produce less yield than men attributed to men having better vegetable farming experience and better participation in social organizations, better access to market information and better access to credit. At the marketing node women have less access to market information, low participation in social organization, low educational level and low marketing experience in comparison to men (Giziew et al., 2014). There are a lot of gender relations at play in the tomato value chain in Ethiopia. Women have less experience in the fields, a clear indication that men take the lead as the women play a supportive role. They reduce their price of tomatoes, earning less while the men sell at higher rates and earn more.

2.5.2 Tomato Value Chain in Ghana

The tomato value chain in Ghana has vast potential to create/enhance economic development for the actors, the sector and the county Issahahu (2012). The actors in the tomato value chain in Ghana include producers who are mostly men; assembling, wholesaling and retailing, predominantly women led by a market queen who they appoint. Tomato distribution comprising local assemblers, local traders and wholesalers (market queens). The benefits among the value chain actors are as follows; the retailer has the highest profit, followed by the assemblers/wholesalers, then the distributors and finally the farmers earn the least profit (Kumi, 2017). Some of the challenges include; Low prices of tomato, unstable prices, lack of access to credit, inadequate storage facilities, inadequate access to information and poor quality of tomatoes. There is a blame game with regards the unstable and low prices of tomatoes. Market queens who oversee setting prices and controlling trade at the markets are frequently accused of manipulating tomato prices and prioritising produce from neighbouring Burkina Faso resulting in losses for Ghanaian tomato farmers and some cases of suicides from farmers who fail to cope (Britwum, 2013). The farmers have also been requesting the

government to open processing plants to avoid wastage and add more value to the product, but their requests have fallen on deaf ears.

The tomato value chain in Ghana shows some differences with the women taking the lead at the market and even earning more than the producers who are mostly men. This proves the cultural aspect assigned to gender roles and relations and how they differ depending on the society. For example, in Tanzania men take the lead at the market with a very small presence participating in brokering, whereas the culture in Ghana allows for women to take charge in the market and succeed as market queens. In Ethiopia women have less participation rates than men from production to the market. These studies highlight the importance of value chain approaches as each have identified weaknesses that would need to be addressed for the value chains to be enhanced. They highlight significant gender gaps with regards to division of labour, challenges experienced and benefits received. They give insight into how the regions tomato value chain is performing and lay a foundation for this study.

2.5.3 Tomato Value Chain in Zambia

Zambia has a high demand for tomato due to its use in meal preparations and the increasing population. According to Hichaambwa & Tschirley, (2006) tomato is considered to have the highest value among the horticultural products, making it popular among farmers who bring their produce directly to Soweto market in Lusaka even though they mostly must pay for transportation. The tomato sector is comprised of tomato farmers, tomato traders, tomato processors, tomato wholesalers, and a wide range of retailers. Mwiinga (2009) in their study on price fluctuations found that Soweto market had very high price fluctuations which were attributed to it being a fresh produce market which is not well developed. It lacks a cold chain, market information system, formal grades and standards, and has small geographic market shed for tomatoes. The study further found that the Zambia wholesale market is problematic in terms of predicting price drops.

A study by Hichaambwa et al., (2015) looked at the possibility of the horticultural production as a poverty reduction option. The study revealed that enhancing conditions

for smallholder participation in horticultural markets offered significant income earning opportunities; much more than participation in maize markets would particularly for poor and land-constrained farmers. On average horticultural marketing leads to a 157 percent increase in total household income compared to 22 percent for participation in maize markets. Furthermore, participation in horticultural markets appears to reduce the gender gap in rural household income: female-headed households that market horticultural output are relatively less disadvantaged than their male-headed counterparts, as compared with female-headed households that do not market horticulture. They found that the main challenges that prevented smallholder farmers from participating in horticultural markets were remoteness (i.e., distance from infrastructure and markets) and price volatility.

The findings conducted on tomatoes didn't incorporate gender to a high degree. Djurfeldt et al., (2019) concluded that gender gaps in Zambia's agricultural sector still persist, more so in cash crop value chains such as tomatoes, which have garnered popularity among smallholder farmers. Gender gaps are likely to vary along crop value chains with more barriers and less benefits and participation by women at particular nodes. For the tomato value chain, women are likely to be daunted by the need for external inputs that characterises tomato production and marketing. This study, therefore, sought to bridge this gap by analysing the gendered experiences along the tomato value chain in the Lusaka city region.

2.6 Summary

The agricultural sector is characterised by gender gaps that result in women having less access to productive inputs, agricultural land, knowledge, labour and time. Increasing women's access to land and other productive resources has potential to increase productivity by 20 to 30 percent. As it stands currently however, these gender gaps increase poverty levels, food insecurity, and child under nutrition affect levels of education. In Zambia reforms and policies have been put in place to empower women and improve the agriculture sector but gender gaps still persist.

Value chain analysis is vital in identifying any weaknesses along the chain and gives insight into how best they can be addressed. Value chain analysis of tomatoes conducted across Africa have all reflected similar challenges; inadequate transportation, poor quality of tomatoes, fluctuating tomato prices, inadequate storage facilities, shortage of processing plants, brokers and market queens interfering with prices. Women are less productive than men due to gender roles and relations that prevent them from carrying out certain activities such as box making and transporting produce or see them adopting a supportive role even in instances where they can do the work.

Zambia also has a high demand for tomato, used to prepare most meals and as a result of the rapidly increasing population. Studies conducted on tomatoes in Zambia have not delved into the practices carried out along the tomato value chain in terms of division of labour and the challenges being faced by different genders. Most studies focus on one node of the value chain, such as the market or production which leaves gaps on how the different nodes are interacting. This study therefore sought to fill this gap and contribute to existing literature by including a focus on challenges that men face as well with literature pointing mostly to women and their constraints in agriculture with men being side-lined.

CHAPTER THREE: DESCRIPTION OF THE STUDY AREA

3.0 Chapter overview

This chapter gives a description of the study area. It further highlights the climate and economic activities in the different study sites.

3.1 Location of the study area

The study area was the Lusaka city region. This comprises Lusaka city, Chongwe in the east, Mumbwa in the west, Chisamba in the north and Chilanga and Kafue districts in the south. (Figure 3.1)

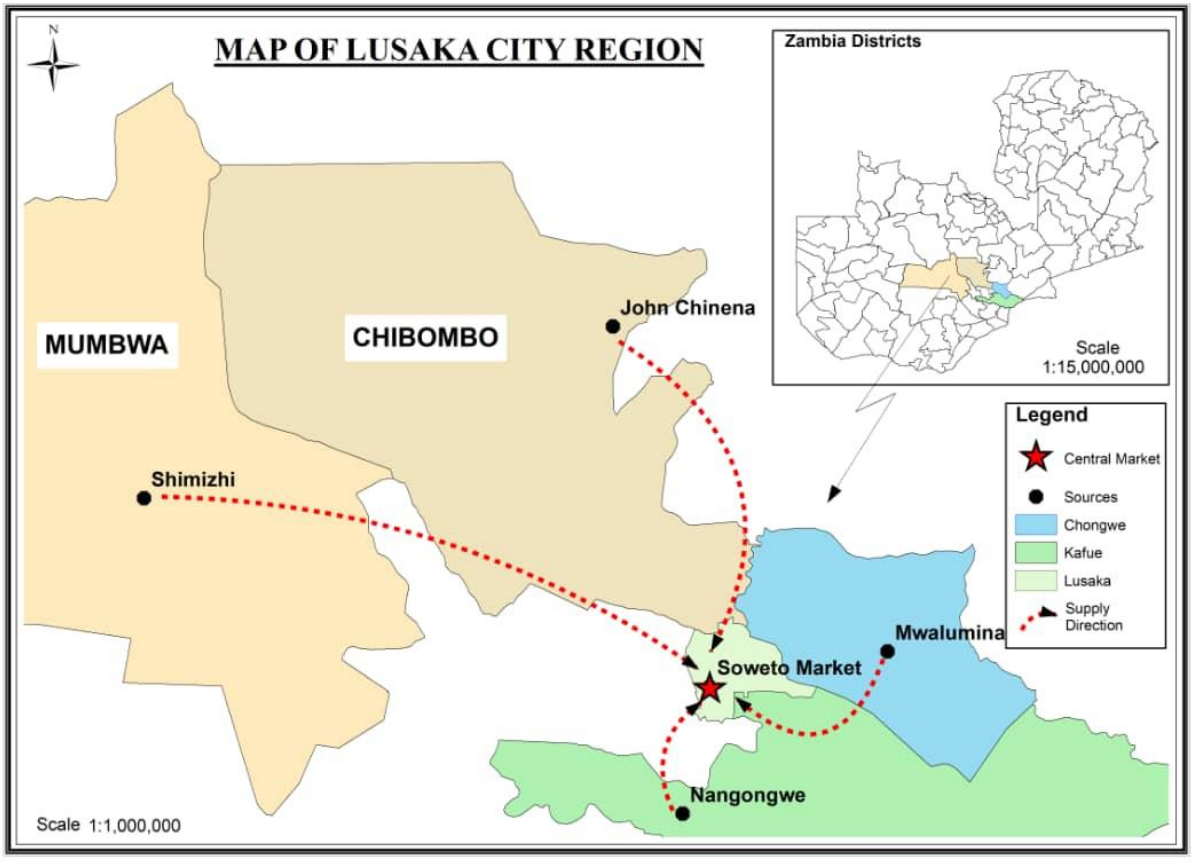

Figure 3.1: Map of Lusaka City Region

Lusaka City region is situated in the central part of Zambia and lies at an altitude of 1280m above sea level, with a surface area of 360 km^2 (Lusaka City Council, 2019). The central position of the city has made it one of the most important economic hubs of

Zambia as it provides the market for the absorption of agriculture produce from all provinces (FAO, 2018c). It is surrounded by Mumbwa, Chibombo, Chongwe and Kafue districts that are all agriculture hotspots.

The study sites were Mumbwa, Chibombo, Chongwe and Kafue Districts as well as Soweto market in Lusaka city. Soweto market was selected because it is the main market in Lusaka that draws farmers from numerous locations. These districts were purposively selected as study sites because they are important tomato production areas due to their proximity to Lusaka City, the capital city of Zambia. Mumbwa and Chibombo are in Central Province and are 159.3 km and 97.3 km from Lusaka city respectively, Chongwe and Kafue districts are in Lusaka Province and are 46.6 km and 43.6 km from Lusaka city respectively (Disatancesto.com, 2019).

Like other areas in Zambia, the region experiences uni-modal seasonal rainfall of 6 months per year. Variations exist in the mean seasonal rainfall in the four districts (Table 3.1).

Table 3.1: Climatic characteristics of the study areas

District	Mean annual rainfall (mm)	Mean annual temperature (°C)	Mean maximum and mean Minimum temperatures (°C)
Mumbwa	939	20.9	Min 15.8 Max 24.4
Chibombo	693	27	Min 22.7 Max 31.6
Kafue	769	21.5	Min 16.7 Max 25.7
Chongwe	813	20.9	Min 16 Max 24.7
Lusaka	831	20.3	Min 16 Max 24.4

Sources: Climate-data.org, 2019. World Weather, 2019.

3.2 Economic activities

Mumbwa is largely a farming district, although copper and gold mining also form part of the economic activities in the district. The crops grown in the area include tomato (Solanum lycopersicum), cotton (Gossypium), soya beans (Glycine max) and maize

(Zea mays subsp. Mays) (GRZ, 2018). Chibombo is predominantly a farming district with a mixture of commercial and smallholder farming. The commonly grown crops are cotton, maize and wheat (Triticum). Fishing in the Lukanga Swamps and livestock rearing are also part of the local people's livelihood strategies. In Chibombo Cattle rearing is one of the major economic activities that is motivated by the presence of the country's biggest beef processor, ZAMBEEF, that provides a large market for both crops and livestock to local producers and consumers. Other big farms in the district are Lendor Burton and Okley, producers of wheat and vegetables (RDA, 2019).

The main economic activity in Chongwe is agriculture. The agricultural activities include crop production, horticulture production and livestock production. Maize and tomatoes are the main crops cultivated covering 82 percent of agricultural land and livestock consists of cattle, goats and poultry (Jenkins et. al, 2015). Kafue district houses a good number of industries such as, an ammonium nitrate fertilizer plant, a textile mill, an iron and steel complex, a firm producing fibreglass fishing boats, a leather tannery, a pulp and paper mill, a copper-processing unit, a bag and sacking plant, and an assembly and equipment-repair plant (Encyclopedia Britanica, 2013). Agriculture, in the form of crop production and fishing are also big economic activities in the area (Hampwaye, et. al, 2019).

CHAPTER FOUR: RESEARCH METHODOLOGY

4.0 Chapter Overview

This chapter outlines the research methodology employed by this study, as well as details the rationale for choosing the strategy and methodologies. It offers a description of how the requisite data was obtained, processed and analysed to address the research questions identified in chapter one. The latter parts of this chapter include a brief explanation on reliability and validity of research instruments, along with the ethical considerations and limitations of the study.

4.1 Research strategy

The study adopted post positivism, emphasising the meaning and the creation of new knowledge, and support movements that aspire to change the world and contribute towards social justice (Ryan, 2006). The study recognised that people's background knowledge and theories influenced what was observed. In terms of epistemological and ontological positioning, knowledge was created as the study progressed realising that reality is not fixed but is subject to the influence of opinions. The study further realised that bias does exist and as humans we are prone to it, hence, caution was taken to eliminate any inclinations to favour any group or opinion but instead report all observations, views and understandings.

The study used a cross sectional design which allowed for the collection of data from different variables at the same time (Setia, 2016). The selected variables were on; gender, marital status, roles along the tomato value chain, challenges and benefits faced. Data on the different variables was collected simultaneously, meaning that answers to questions were supplied at the same time. This differs from other designs such as the experimental design in which data or the pre-test, experimental treatment and post-test can be collected weeks, months or even years apart. The main underpinning for this study was to observe and not alter any of the findings.

The study used a mixed method approach. A mixture of qualitative and quantitative methods was used because the two complement each other and allow for a more robust

collection of sex disaggregated data. (Guodaar et. al, 2017) used a quantitative method in which questionnaires were administered followed by focus group discussions to explore the spatiality of adaptation practices of tomato farmers to climate variability because the use of both methods eliminates limitations in any individual method. The enhancement of understanding on how to address gender inequalities is best realised using mixed methods to collect and analyse data (Behrman et al., 2014). This study adopted mixed methods to collect and analyse sex disaggregated data as well as contextualise the qualitative findings.

4.2 Sampling

The study consisted of 7 key informants from Zambia National Farmers Union, Ministry of Gender, Ministry of Agriculture, ZARI, MUSIKA and World Food Programme who were sampled purposively (Table 4.1). Drivers, traders and brokers were conveniently sampled until a point at which the chances of collecting more data would result in similar theoretical findings was reached as per saturation theory (Faulkner & Trotter, 2017). Convenient sampling was used to sample 232 households of tomato farmers as determined by G power at a power of 0.9, level of significance of 0.05 and a moderate effect size (Erdfelder et al., 1996). The sample size was determined by first deciding on the hypotheses and what tests would be used, this information was entered into G power software at the power and effect sizes mentioned (Faul et al., 2007). The study sampled from four districts in the Lusaka city region; Chongwe, Mumbwa, Chibombo and Kafue districts. 58 respondents were selected from each district comprising 115 women and 117 men, of the 115 women 51 were from female only headed households. The respondents were sampled using convenient sampling and snowball sampling. The study initially intended to use stratified sampling, but a comprehensive list of the residents could not be found. Because of the distances between the homes, the study adopted convenient sampling where respondents' homes were visited and if they were available and willing to be interviewed then the interview schedule was administered.

Table 4.1: Sampling methods used for the study

Node	Target	Sampling Method	Sampling Size
Production	Men and Women tomato Farmers	Convenient	232
	Men and Women tomato Farmers	Purposive	3 focus groups with 7 discussants per focus group
Transportation	Tomato drivers	Convenient	Until saturation was reached
Marketing	Brokers/Vendors/Transporters/Farmers	Convenient	Until saturation was reached
	Key Informants	Purposive	7

4.3 Data Collection Methods

Data was collected using several methods and their corresponding instruments. A camp officer was assigned from each of the District Agriculture Coordinator's (DACOs) offices in the 4 districts to aid with data collection during the survey and focus group discussions. The camp officers had experience in focus group discussions as such they were introduced to the study aim and interview guide to be used. They were further given a refresher on best practices when conducting focus groups as guided by Mishra (2016). In addition the camp officers received training on the interview schedule that included; the type of data that was to be collected, going through each individual question, addressing any questions/challenges and having a practice session.

4.3.1 Structured Interviews

Structured interviews were administered to create uniformity during all the interview sessions by ensuring that questions were asked the same way and as such aid with the collection of similar type of information and the generalisation of results (Bryman, 2012) and have a general understanding of the roles played by men and women along the tomato value chain as well as the challenges and the benefits that they have. Interview schedules were administered in the four study sites; Mumbwa, Chongwe,

Chibombo and Kafue districts. The study used an interview schedule that was administered to men who came from male and female headed households, women that came from male and female headed households and lastly to women who came from female headed households.

The interviews were administered in Nyanja, Tonga and English depending on the language that the respondent was comfortable with. The demographics of the respondents were collected first followed by questions under the following themes;

i. Role in tomato production – this theme looked at the practices carried out by men and women tomato farmers in the production of tomato. If there were differences in practices carried out and why that was.
ii. Benefits received by men and women tomato farmers – this theme focused on benefits received by men and women farmers through tomato production, which gender had more benefits, how the benefits were used and who had more decision making power over the use of income generated from tomato production between men and women.
iii. Challenges faced by men and women tomato farmers – this theme focused on the different challenges faced by men and women tomato farmers during the production of the crop. Whether the two genders faced different challenges and which gender faced more challenges.

4.3.2 Focus Group Discussions

Focus group discussions were conducted as a form of triangulation. Nyumba et al (2018) recommend using focus group discussions to gain an in-depth understanding of social issues. This study used split session group focus group discussions (Fetters et at., 2016) which involves splitting a focus group into two, having separate discussions with the respective groups as well as having a combined focus group. Taylor & Pereznieto (2014) further recommend splitting male and female discussants as they will be freer to express themselves. Therefore, for this study separate focus group discussions were held with men and women after, the 2 groups combined and were requested to report on the answers they gave. The rationale behind this was to observe the reactions of the one

gender as the other was reporting on results and to gauge if answers would change once they were combined.

The focus group discussion were conducted in each of the four districts; Mumbwa, Chibombo, Kafue and Chongwe. An interview guide was used as a data collection tool. The issues discussed were the roles played by men and women along the tomato value chain and whether there were any differences and the reasons for these differences. Other topics discussed included the challenges and the benefits that men and women tomato farmers, who had more challenges and benefits and possible reasons for this. The discussants were purposively sampled based on their engagement with the interview schedule and recommendations from the camp officers. 12 focus groups were conducted across the districts with 7 members in each group. The selected age were youth and adults ranging from 18 to 35 and 36 to 55 years of age. In terms of language Tonga was used in Chibombo and Nyanja was used in the focus group discussions in Chongwe, Mumbwa and Kafue districts. The individual discussions lasted 30 minutes and the combined discussions lasted 45 minutes due to debates that arose. The discussions were recorded on a mobile phone and notes were also being taken as observations were made. For the combined discussions reactions to responses by opposite genders were noted. The individual discussions were moderated by the lead researcher while the research assistant took notes and key observations while the combined discussions were moderated by the research assistant to allow the lead research to pay particular attention to the observations and reactions of the opposite genders to the reports being made.

4.3.3 Semi Structured Interviews

At the transportation and marketing node, semi-structured interviews were used to collect data from transporters, brokers, vendors, key informants and farmer-traders. An interview guide was used to collect the data. At the marketing node data was collected from transporters and farmers as well because they were also found at the market and interacted with the brokers. The interviews were recorded using a mobile phone and back up with notes made in field notebooks. Interviews with the transporters, vendors, brokers and farmer-traders were conducted at Soweto market in Lusaka while key

informant interviews were conducted from the respective key informants' workplaces. Informed consent was obtained prior to the conduct of the interviews.

4.4 Data Analysis

Content analysis was used to analyse the qualitative data from semi structured interviews, focus group discussions and unstructured interviews. The data was mostly in the local language, Nyanja, hence, the first step was to transcribe it. The transcription was done by listening to the interviews and writing the exact translation of the entire conversation in English. After which the data was read multiple times until categories were formed, responses were then matched to categories and the frequencies were added. The software used for analysis was QDA Minor and Excel.

For the quantitative data a Two Sample Z-proportions Test was used to analyse who used pesticides more between men and women and a Chi Square test was used to test if there was an association between gender and decisions made overuse of income generated from tomato production. An adjusted standardised residual test was also carried out to determine which gender had higher decision making power if an association was found. All the statistical tests were conducted at a significance level of 0.05 with the aid of the statistical software Minitab 14 and SPSS.

4.5 Research Ethics

When conducting research, it is imperative to always be mindful of the research participants and actively protect their interests (Guillemin & Gillam, 2004). In order to protect the rights of the respondents the following research ethics were upheld:

1. Informed consent - an introductory letter was given to the respondents before data collection and permission was sought by explaining that the data that was being collected was for academic purposes only. The study further ensured requests for permission to record respondents.
2. Confidentiality and anonymity - the identity of the respondents was withheld to ensure that their sharing of information would not cause any harm. This information was explained to the respondents to ensure that they did not have

any doubts or hold back when responding. In addition, the different cultures were respected by wearing wrappers, having respectful conversations and respectful body language.

4.6 Validity and Reliability

To ensure validity and reliability instruments were used correctly following Taherdoost, (2016). Respondents were not allowed to view the questions being asked to them to avoid answers being manufactured. The interview schedule was administered to the primary adult male and primary adult female of a household. Difficult concepts were correctly translated into local languages and time was taken to explain any concepts that respondents found confusing to ensure the answers they gave were in line with the question. With reference to Zohrabi (2013), validity and reliability were further ensured through triangulation. Data was collected using different methods; survey, focus group discussions and interviews. It has been revealed by Hobart et. al, (2012) that reliability and validity can be determined by sample sizes ranging from $n \geq 20$ to $n \geq 80$. This study ensured to have a large enough sample size at n=232

4.7 Limitations of the study

The limitations of the study included:

1. The study planned to use stratified sampling but due to the unavailability of lists of tomato farmers and the long distances between homes it could not be used. The study however, adopted convenient sampling to select respondents. To ensure statistical inference the study used a large sample size. According to McEwan (2020), the more samples included in a skewed distribution the more the sample statistic begins to approach a normal distribution. Krithikadatta (2014) expounds that a sample attains normal distribution when the sample size is 30 or more, of which for this study sample size was 232.
2. Inability to interview some respondents who gave consent because their spouses would not allow them to do so. To counter this, permission was sought from the spouses to allow them to take part in the focus group discussions by explaining

that they would be with fellow women. Some spouses agreed which gave the women an opportunity to air their views. Some spouses, however, did not grant permission.

CHAPTER FIVE: RESULTS AND DISCUSSION

5.0 Chapter Overview

This chapter presents the results with reference to the aim of the study which was to examine the gendered experiences in the tomato value chain in the Lusaka city region. The results are presented on i. The main actors along the tomato value chain ii. The practices carried out by men and women along the tomato value chain iii. The challenges faced by men and women along the tomato value chain and iv. The benefits accrued by men and women along the tomato value chain. A discussion then follows under each objective. The results are then presented in summary.

5.1 Household Characteristics

The quantitative data was collected from 232 households. Data was collected from 115 women and 117 men in four districts; Mumbwa, Chibombo, Kafue and Chongwe (Table 5.1). All respondents were smallholder tomato producers. Houses were categorised as being either male and female adult houses or female adult only houses.

Table 5.1: Household characteristics of respondents

District	Number of Farmers Interviewed	Number of Women Farmers	Number of Men Farmers	Male & Female Adult Household	Female Adult Only Household
Mumbwa	58	27	31	46	12
Chibombo	58	23	35	47	11
Kafue	58	36	22	38	20
Chongwe	58	29	29	50	8

5.2 Value Chain Mapping of Tomatoes

A mapping of the tomato value chain (Figure 5.1) was done to understand how exactly the tomato value chain operates, the main actors involved, how and at which stage value is added.

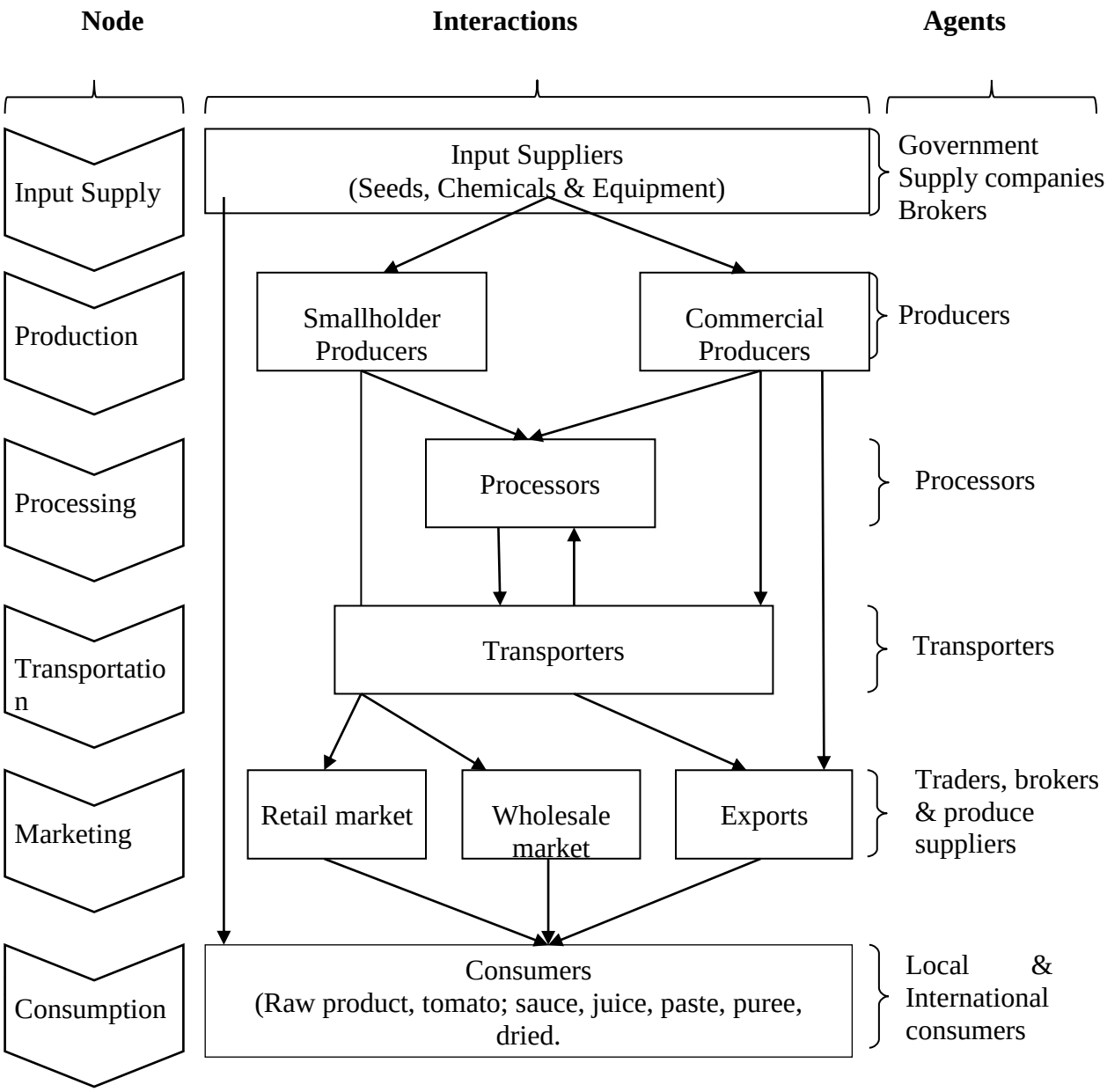

Figure 5.1: Mapping of the tomato value chain. (Adapted from Sarma, 2019).

5.2.1. Input Supply

This is the genesis of the tomato value chain. At this node all inputs needed for the success of tomato production are supplied to producers. Inputs include credit, seed, fertiliser, herbicides, pesticides and a range of farming equipment. Input supply companies such as Seedco, Zamseed, Syngenta, Monsanto, Cropserve and Amiran Ltd supply different inputs to producers with some of the companies having depots in different districts to make it easier for producers to access their products.

Brokers found at Soweto market also act as agent suppliers. They form links with smallholder tomato producers who they assist with the purchase and delivery of input supplies. The Zambian government is a key supplier of inputs as evidenced from the Farmer Input Support Program (FISP) and farming equipment supplied by the Ministry of Gender to mechanise farming and empower women. However, farmers complained that FISP is mostly only accessible by maize farmers and as such they struggle to access inputs. Further, the key informant from the Ministry of Gender advised that the ADVANCE project that has seen women agricultural groups being given agricultural equipment has not yet been introduced to the tomato value chain. Therefore, women involved in tomato production do not have access to inputs coming from this project.

5.2.2 Production

Under the production node there are smallholder farmers who produce tomatoes both for subsistence and for sale. They turn tomato seeds into the final crop by preparing land; planting the seeds; watering; tying the plants to poles; applying fertiliser, pesticides and herbicides; harvesting and packaging the crop into boxes ready for transportation. They are key suppliers of wholesale markets such as Soweto market.

5.2.3 Transportation

The transportation node involves transporters transporting tomatoes and tomato farmers to and from the market. The transporters either work for transporting companies, own the truck themselves or duel as transporters and farmers.

5.2.4 Marketing

Two types of markets are found at this node. These are the wholesale market and the retail market.

5.2.4.1 Wholesale Market

The wholesale market consists of an interaction between transporters, farmers, brokers and vendors. Here tomato produce is brought to Soweto market by transporters and farmers who go with their produce to the market. Once the crop reaches the market, the brokers take over the show. They offload the boxes of tomatoes and begin to shout prices, selling them to vendors, retailers and even individuals who may be interested in buying. The vendors then create stacks of tomatoes and begin to sell them to consumers within the market and on the side of the roads. Some vendors buy boxes to go sell in different localities such as their residential areas and smaller markets found around the city.

5.2.4.2 Retail Market

The main actors at this node are retailers who supply tomatoes and tomato produce directly to consumers. Chain stores such as Shoprite, Pick n Pay and Choppies fall under this node.

5.2.5 Processing

This node is made up of processors who turn the tomato raw product into different finished goods such as tomato sauce, tomato paste, tomato puree, tomato powder, tomato juice and even dried tomatoes. The processing companies purchase tomato directly from smallholder farmers, from the wholesale market or have their own tomato fields where they grow tomatoes for processing. Some of the tomato processors in Zambia include Freshpikt, Rivonia and Sylva foods. After processing, the products are packaged and distributed to the retail market as well as exported to other countries.

5.2.6 Consumption

Consumers purchase tomatoes from the roadside, wholesale market and the retail market as a raw product or processed depending on need.

5.3 Practices Carried Out Along the Tomato Value Chain by Men and Women.

This section looks at the practices carried out along the tomato value chain by men and women at production, transportation and marketing nodes. The results are presented according to each node.

5.3.1 Production Node

At the production node, 11 activities were identified. The first is the preparation of land which involves removing shrubs and residue from the previous harvest that may have remained on the land. The land is then tilled through an ox-drawn plough or by hand. Rows are created and holes are dug to plant the seeds. The next activity is the application of lime. Under this activity lime is added to the land to reduce on its acidity and to makes the soil more fertile. The lime is added to each row that is created. The soaking of holes is the next activity that was identified. Here water is added to the holes before seeds are planted to ensure that there is moisture in the ground and the crops do not die out. This activity is especially important in the hot dry season. Seeds are then planted and the crop is watered frequently.

Once the crop grows they are tied to poles to keep them upright. This activity involves going to collect branches from trees, cutting the branches; placing them in the ground next to the tomato plants or alternatively placing them in the ground at the same time the seeds are being planted to avoid root damage. Once the first flowers begin to come out the plants are tied to the poles using strings. Other activities that are carried out include the application of fertiliser which can either be from animal waste or chemical fertiliser and the application of herbicides to kill weeds that threaten the growth of the crop. The herbicides are mixed and are placed into knapsack sprayers which are then strapped to the back and the spraying commences. Weeding is also done manually although it is time consuming and increases labour requirements. Once the crop is ripe the next

activity is harvesting and then packaging into boxes/crates in preparation for transportation.

The study found that both women and men were active in similar activities with a participation rate above 70 percent (*n=232)* by both genders for all the activities (Figure 5.2). This indicates that women and men both put in high amounts of labour into the production of tomatoes. Although the levels at which they carried out specific activities were varied.

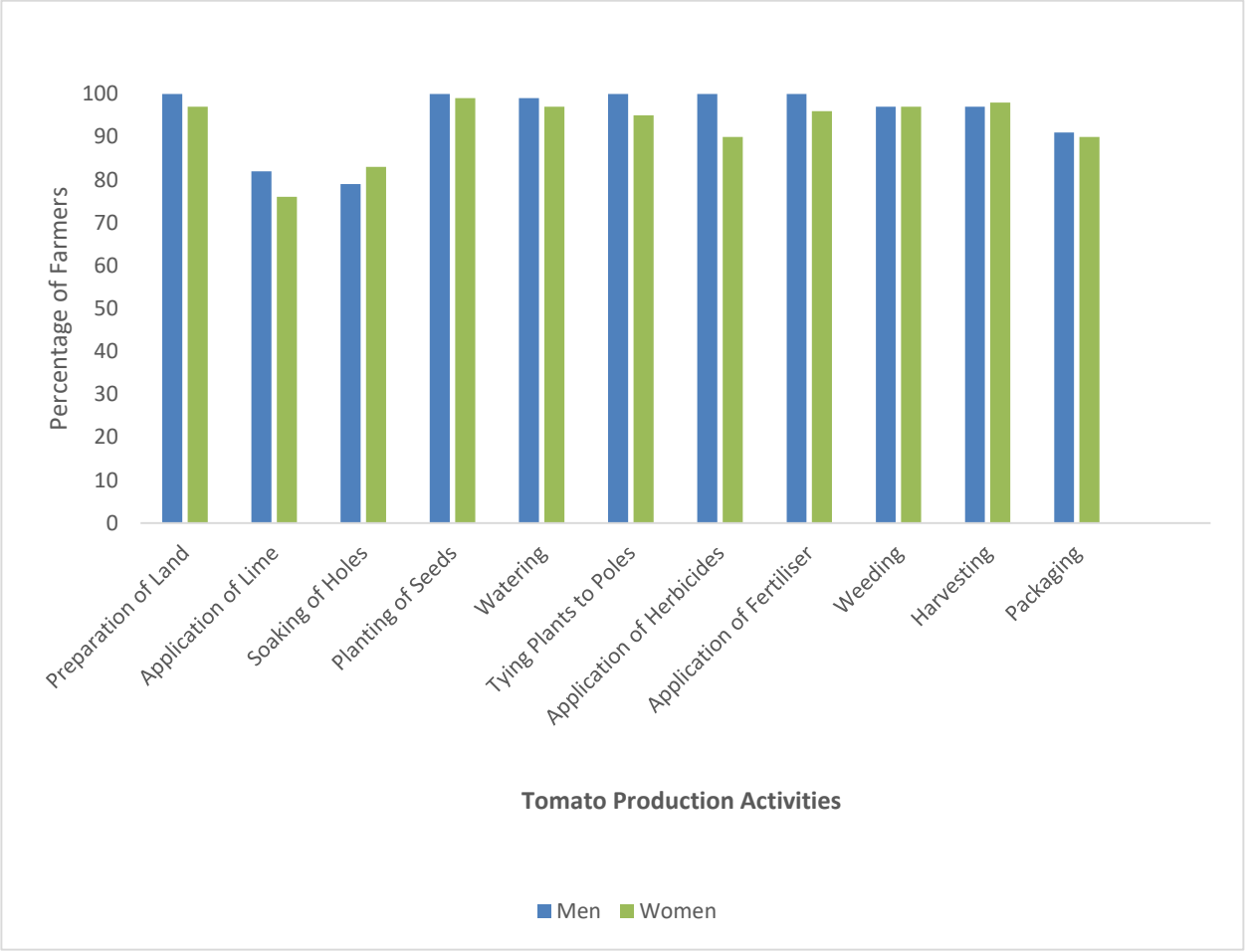

Figure 5.2: The roles performed by men and women farmers in the production of tomatoes

Some male discussants agreed that women could not perform the same activities at the same capacity as the men in tomato production. This was attributed to women not being

as strong as men, women not knowing how to carry out certain activities and women having reproductive responsibilities. The men were very adamant about these reasons. A male discussant in a single focus group discussion with men from Kafue district averred that, "*No, there are just some things women cannot do, like carry the tank for herbicides, it's very heavy*." The study therefore, sought to determine if the proportion of men who sprayed herbicides was greater than the proportion of women who sprayed herbicides (Figure 5.3) of which it was determined that this was indeed the case (Z = 3.49, p = 0.0001). This was mainly as a result of the activity being too labour intensive. There is a belief that it is not good for women to engage in risky activities such as handling and spraying of herbicides because if they were to get sick as a result of herbicide exposure, children and the rest of the family would suffer more than a situation in which men got sick due to women being the primary caregivers. Another reason given was that the risk of children getting poisoned from herbicides was higher if women handled the herbicides because they are the ones who look after the children.

Test and CI for Two Proportions

Sample	X	N	Sample p
1	117	117	1.000000
2	104	115	0.904348

Difference = p (1) - p (2)
Estimate for difference: 0.0956522
95% CI for difference: (0.0418977, 0.149407)
Test for difference = 0 (vs not = 0): Z = 3.49 P-Value = 0.000

* NOTE * The normal approximation may be inaccurate for small samples.

Fisher's exact test: P-Value = 0.000

Figure 5.3: Two sample proportion Z test results

Nyanga et al., (2012) reported that men and women had clear but differentiated tasks regarding the use of herbicides. One reason given for the gendered differences in the use of herbicides was that men had more physical strength than women. The knapsack

sprayer ranges from 16-20 litres and carrying this on their backs as they spray the crops can be a daunting task. Another reason highlighted was that it was not good for women to engage in risky activities like handling and spraying of herbicides because if they were hurt or got sick in the process of spraying the children and the rest of the family would suffer more than if something happened to the men This study similarly found that women were less active in the spraying of herbicides, stating that the sprayer knapsacks were too heavy for them to carry and for those with babies it was impossible because they could not have babies on their backs and also carry the tanks. There were also local norms against women handling herbicides that were related to their reproductive roles, as was similarly found by Ayoola et al., (2011).

The respondents further narrated that the men understood how to mix the chemicals better and as such it was safer for the women to stay away from the activity to avoid being poisoned. Other scholars have similarly observed that women do not adopt herbicide use as fast as men do because of lower levels of education, low levels of herbicide use safety, training on proper use of herbicides and the fear of using herbicides (Mrema, 2017; Pelekamoyo and Umar, 2019).

Some women however, felt that they did the same activities as the men and to the same capacity. In the single focus group discussion with the women a female discussant from Kafue district retorted that, "*We do the same work, what men do we also do, there's no difference, am I lying*?" This sparked a debate among the discussants. Gradually the women started to accept that in as much as they can perform the same tasks as men; they face some challenges that prevent them from doing so. As one female discussant later admitted, "*I cannot spray herbicides on the tomatoes, I usually have a baby on my back and the sprayer is just too heavy for us women to carry*." The women also agreed that the instructions on how to apply herbicides were hard for them to understand and they feared making a mistake.

Women from female headed households however, tended to carry out more activities than the women from male headed households. These women expressed strong views on how women were capable of carrying out the same activities as the men and contended

that women were limited by their men who took control of most activities. One widowed discussant lamented that,

> we can manage to do the same things that men do, where I am today I can mix chemicals, carry the sprayer and do the job, what stops a lot of these young girls is their minds, they need to change how they think, look at me my husband died and I have been managing on my own.

Another female discussant agreed,

> we women give ourselves limits, that is why we never do better than men, I have heard of some women in this community that are doing well they have hired workers, they go to the market, we just bring ourselves down.

Women in Chibombo had similar views but when prompted on whether they were ready to start carrying out the same activities as men they refused. In the combined focus group one woman explained; "*no, not all the tasks, just going to the market but not carrying the poles or spraying, that's a man's job, things are fine just like this*." The men agreed with this stating that it is their responsibility to carry out certain tasks, "that *is what being a man means*", one of them declared. This points to how entrenched gender roles are in culture and tradition, which demand that men conduct most of what is considered heavy duty work requiring physical strength that women do not possess. Women are smaller in size, have less physical strength and are more susceptible to injuries than men; these physiological differences dictate that men operate heavy machinery, carry heavy loads and take up most of the strenuous agricultural activities (McCoy et. al, 2002; Sachs et. al, 2016). Jones et al. (2012) find that men take on all activities that require physical strength, such as, land preparation, ploughing and use of mechanical technologies. Meanwhile, women tend to undertake the more labour-intensive work that requires less physical strength such as planting, watering, applying fertilizer, hand weeding, harvesting and packaging.

Fischer et al. (2017) found differing results, with women and men tomato farmers participating in the same activities at production. This gives rise to the possibility that perhaps it is not physical strength but gender dynamics at play with beliefs that men

should carry out the strenuous work as women take on the less labour intensive activities. This means that men may be overworked which could in turn affect their productivity. The focus group discussions held in Chongwe district attest to this theory. The men were adamant that women cannot be expected to carry out certain activities, which is why the men are there. Then the women despite complaining about not having the same capacity as the men were contended that they did not want to perform the more strenuous activities that the men did.

The study found contrasting results from the survey and the focus group discussions. The survey asked if the respondents participated in the different activities listed and majority of the women (>70%) said yes to almost each of them but during the focus group discussions their responses changed and they admitted that they had lower levels of participation in certain activities such as the application of herbicides and the tying of plants to poles. Both in the separate discussion where they were just women alone and even as the groups combined to report on what they discussed. The men were in agreement with the fact that women did not participate as much in some of the strenuous activities like tying plants to poles, spraying herbicides and applying fertiliser. The difference in the findings could be as a result of group influence that allowed the women to speak out and express their actual level of participation in the activities. It is common to find different results from different methods, as was reported by Orr et al., (2015) who found contradicting results from a survey and focus group discussions on women's control over groundnuts, with the focus groups having more extreme results. This, points to the strength of using mixed methods for triangulation because it increases validity in the findings (Hurmerinta-Peltomaki & Nummela, 2006).

5.3.2 Transportation Node

The transportation node was dominated by men. The role of the transporters was to go to the tomato farms, transport the tomatoes and the farmers to the market and then take them back. When asked why women were not in the transportation business, one of the respondents contended that, "*women cannot manage to drive trucks; even small cars are hard for them*." Another respondent admitted that he had never thought about the situation before; *"I have never thought about it, that is just how it is, women don't do*

this work." Other views over why women could not be transporters were that it was unsafe for them and they could not spend long periods of time away from home.

This study did not find any women engaged in the transportation of tomatoes to Soweto market. Khasa and Msuya (2016) similarly found that men were mostly in charge of transporting tomatoes from homes to the market because transportation was mainly linked to tomato marketing, which most men tended to dominate. Me-Nsope and Larkins (2016) noted that cultural restrictions on women's mobility and gender disparities in the transportation of produce exclude them from participating in markets.

During the focus group discussions the farmers were probed on why women were not engaging as transporters and for some, not even passively by taking their produce to the market with the transporters. The men discussants were of the view that a woman's place is at home looking after the children and the family. In the combined focus group discussion a male discussant from Mumbwa expressed that, "*women need to take care of the family, if they are out working the whole day who will cook and watch the children*? *Men are already working and looking for money, women don't need to do it.*" This statement angered the women and they complained about the unfairness of the expressed sentiment. They held that they wanted to carry out certain tasks just like the men, especially the transportation of tomatoes to the market. A study by ADB, (2013) reported that women's mobility restrictions are tied to their reproduction roles, they cannot be far from home for long periods because they must look after the children, cook, and clean.

A key informant from ZNFU stated that, "I'm not sure why women don't transport tomatoes. Perhaps because it is tedious and it's a challenge for them to travel long distances and be away from home so it's better for the men to transport while the women stay back and look after the home." This speaks of the gender relations in the rural areas with a woman's place being at home, taking care of the family, where as the man should go out to make money.

5.3.3 Marketing Node

The marketing node had four categories of actors in the tomato value chain; Farmers, transporters, brokers and vendors.[1] The farmers found at Soweto market at the time of data collection were all men. Although the researcher was informed that women farmers go to the market but nowhere near as often as the men farmers. The farmers waited for the boxes of tomatoes to be sold by the brokers to the vendors and then shared the earnings between themselves and the brokers, who got 10% to 15% of the total earnings. The brokers were all men. The brokers controlled the trade of tomatoes between farmers and vendors; they offloaded the tomato boxes from the trucks and sold them to the vendors. At first glance one would think that they owned the produce as they stood over the boxes and called out prices and negotiated with the vendors. Majority of them are political cadres of the ruling Patriotic Front party. They seem to be feared and forcefully place themselves in this role of brokers as a quick and easy way for them to earn an income. When asked why there were no women who were brokers reasons given included, "women are too weak", "the boxes are too heavy for women", and "women can easily be swindled.' Vending was dominated by women. The vendors bought boxes of tomatoes from the brokers then repackaged them and sold to consumers in various smaller quantities.

At the marketing node women tend to be active as vendors (Giziew, 2014; Msuya et al., 2016), with men dominating the brokering aspect. This study further found that physical strength was one of the main reasons cited pertaining to why women are not brokers but it should be noted that this is not always the case. Ghana's wholesale markets are dominated by market queens (Issahahu, 2012) who are in charge of the markets; produce coming in, selling the produce for the farmers and controlling the general activities in the markets. Upadhya (2016) in their study also report women actively working as loaders and off loaders at the markets in India. This therefore, raises questions on the validity of the claims that women are not strong enough to be brokers at Soweto market. What could be at play however, are entrenched gender roles and cultural beliefs at the

[1] Commonly known as marketeers

Market that actors ascribe to with no questions asked. Women further face barriers to entry seen through their husbands not allowing them to go to the market.

5.4 Challenges faced by men and women along value chain

This section focuses on the challenges faced by men and women at each node of the tomato value chain.

5.4.1 Production Node

Men and women tomato farmers were asked if they experienced any of the following six challenges with regards to tomato production: lack of capital, lack of access to productive inputs, too many responsibilities in the household, too many responsibilities in the community, lack of access to agricultural land and society restrictions (Figure 5.4). Lack of capital was the most commonly mentioned challenge by both men (77 percent) and women (66 percent) tomato farmers. The second highest challenge for women (47 percent) was too many responsibilities in the household. Ugwu, (2019) equally found that women make significant daily contributions to their households as caretakers to their families and elders, limiting their productive time. For the men their second highest challenge was lack of access to productive inputs. Some respondents, 20 percent of the men and 10 percent of the women reported not facing any challenges.

A key informant from the Ministry of Agriculture explained that as a Ministry, they were aware of the fact that farmers experienced challenges with capital and inputs. She explained that this was one of the reasons why the Farmer Input Support Programme (FISP) was introduced; to aid farmers' access farming inputs. The key informant acknowledged that the ministry had not particularly promoted tomato production but stated that the programmes' long-term goal was to be reachable to all farmers and not just maize farmers.

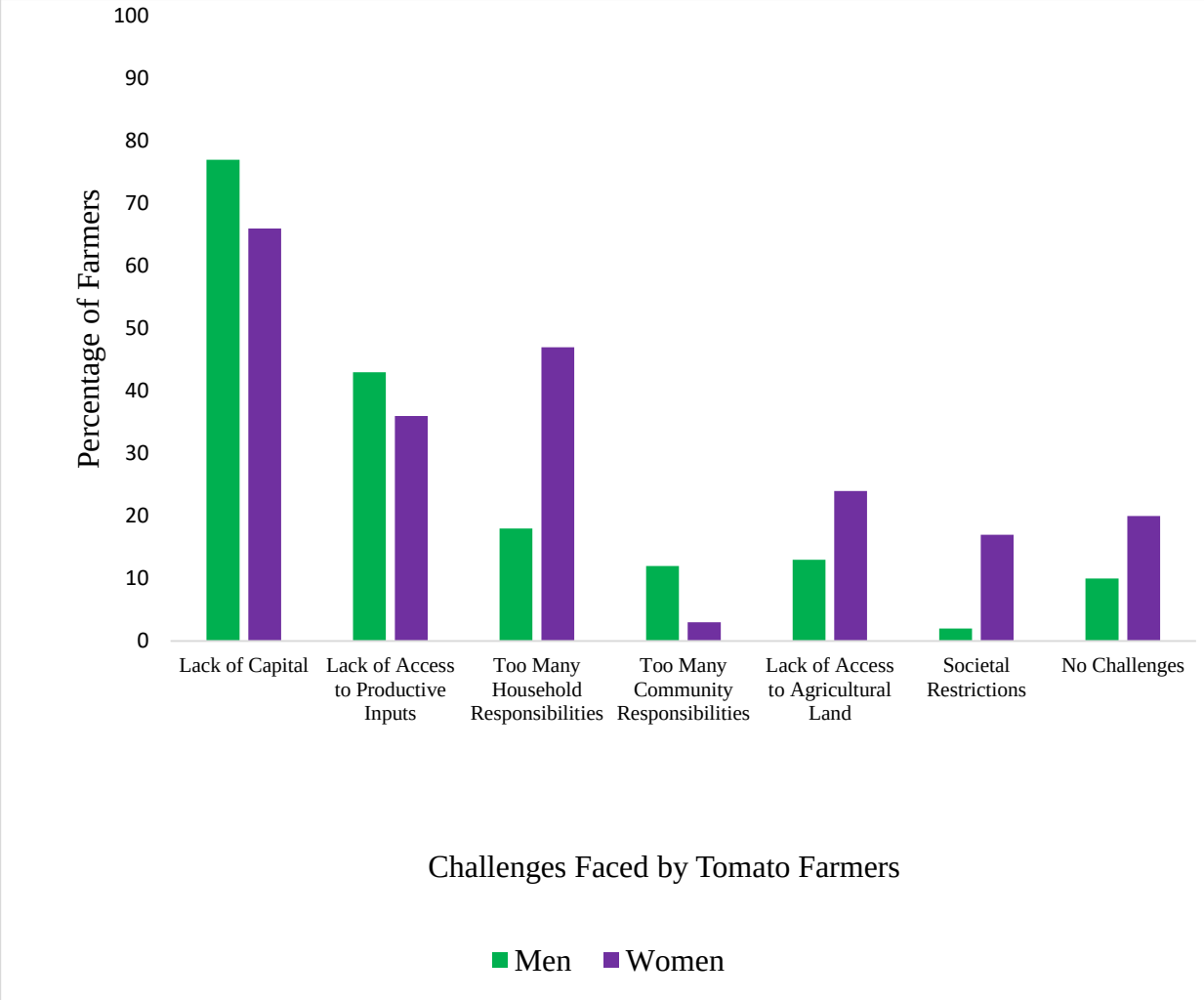

Figure 5.4: Challenges faced by women and men tomato farmers at the production node

The discussants agreed that lack of capital was one of the main challenges faced by tomato farmers. However, some of the male discussants were of the view that this challenge was particularly worse for women because it is harder for them to find money. In the words of one male discussant, "*for us men although finding capital is hard for women it is even worse, we can borrow and hustle, but women are mostly at home with very few options*." The women agreed with this and explained that sometimes they considered farming on their own but had nowhere to get capital from.

A discussant from Chongwe narrated that,

> I don't pay much attention to farming tomatoes because my husband controls everything, I don't even see the profit, but I help him farm. He doesn't allow

> me to take the tomatoes to Soweto but when he goes, he comes back with different stories all the time, if I could just find capital, I would really make money.

Fellow women discussants agreed with her saying that they had tried in the past to get money, but it never worked. They complained that all they did was work on the farm with no rewards. In spite of this, the women did acknowledge that for a man there was more pressure to find money. One female respondent from Kafue stated, "Okay kunkalamwamunaivutako, responsibility yonseimankalanaiwe, kugulavokudya, kusungamukaziwako, kupelekabanakuskulu. That's why tikambaatiiyivutoyosapeza capital iliko worse nabamuna." [Translated as "Okay being a man is hard, all the responsibility is on you, buying food, looking after your wife, sending the children to school. That's why we are saying that this problem of not finding capital is worse for men."].

The study further found that a higher proportion of women mentioned having too many household responsibilities than the proportion of men that perceived this to be a problem (Figure. 5.4). Women are the primary care givers in a household and their roles include taking care of children, cooking, cleaning, and taking care of sick or older family members. Along with these responsibilities the women still need to dedicate some time to farming and being productive. However, a woman cannot dedicate her time to being in the field the whole day as the men do because households need to keep functioning. This results in lower yields for them and a challenge with accessing the other nodes along the tomato value chain. As Pelekamoyo & Umar (2019) contend women are expected to undertake their triple roles while the men engage in income earning activities. As household heads, men are looked to for household purchases that require cash. Hence the men focus on productive activities. Women's household responsibilities also give rise to mobility challenges and limitations to value addition nodes. Women expressed that they would like to be more involved in transporting and marketing but the men discussants insisted that they could not allow it.

One male discussant in the combined discussions captured the men's general sentiments with the following statement, "*Women are not understanding, there are other things we*

need to pay for that's why the money finishes but no I cannot let my wife go whilst I sit at home waiting for her." Another male discussant agreed by adding, "*ma transporters tibaziba, nzeluzabotiyaziba, awe mommy simuzalipila ma box aya, ili so na so, ninshi kwasilaba kupoka mukazi*" [Meaning, "We know the transporters, we know how they think, no mommy you won't pay for these boxes it's like this and like that, then that's it they have taken your woman"]. The women were extremely offended and visibly annoyed by this statement. One of them disagreed by saying, "*no that is a lie, you men are the ones who go to Lusaka, make some money, and come back with a new wife, then we still have to farm the land while your new wife enjoys*". The discussion ended without the men and women agreeing on this point. The men maintained that they could not allow their wives to go to the market to sell tomatoes. This debate indicates strongly entrenched cultural perceptions on gender roles.

Baba et al., (2015) suggests that the most glaring obstacle for women in agriculture is the gender inequality faced by women in all spheres of life. This is seen through customs, beliefs, women's economic and domestic workloads that impose severe time burdens on them and laws that impede women's access to credit and production inputs. It should be noted however that there is a dearth of literature on men's challenges in agriculture. With the focus being put mainly on women and how they have more challenges seen through lack of capital, productive inputs, labour and as a result of too many responsibilities seen through their triple roles (Obi & Peart, 2016; Murray et al., 2016; Quisumbing et al., 2014; Huyer, 2016). This study similarly found such results although men also experienced challenges with capital and other productive resources. Of which the men were considered to be worse off than the women because of the gender relations that see men have to be the head of the house; provide for the family including extended family, bring in money and generally be a source of security.

5.4.2 Transportation Node

There were four challenges highlighted by transporters (Table 5.2). The main challenge reported by majority of the respondents (64 percent) was bad roads. The transporters had to travel great distances on gravel roads to reach the farms. One of the transporters in Chibombo stated that, "*when it rains the roads are very bad, we get stuck for days and*

the tomato even gets spoiled at times, because of this only a few of us risk following the farmers when it is raining, it is not worth it." Some of the transporters (21 percent) acknowledged that their biggest challenge was the distance to the market. This was especially raised by the transporters along the Mumbwa route who could only transport every other day due to the distance from Mumbwa to Lusaka (159.3 km) and even longer because they also had to cover the distance from the farms to the main road. One of the transporters along the Mumbwa route stated that, "*I don't make as much money as I should because I cannot go to Soweto every day. This business of going to the market after a day is quite hard: It makes me lose out on money. My friends in Chongwe are making more money than me*."

Table 5.2: Challenges faced by transporters

Challenge	**Percentage**
Bad roads	64
Distance to the market	21
Price fluctuations	7
Toll gate fees	7

A few of the transporters (7 percent) reported their biggest challenge to be price fluctuations and others (7 percent) considered the toll gate fees to be their biggest challenge. Njenga et al., (2015) reported that there are a lot of challenges faced by transporters when it is raining because the roads become impassable. Farmers then resort to other means of transportation to reach the main roads so that they can avoid making losses; head-loading, bicycles and motorcycles. This study similarly found bad roads

especially when it is raining and long distances as a challenge faced by transporters which impact on farmer's efficiency as well.

5.4.3 Marketing Node

At the marketing node some women (47 percent) and men (48 percent) complained that price fluctuations were their biggest challenge because when the prices were very low, they made losses (Table 5.3).

Table 5.3: Challenges faced at the marketing node

Challenge	Percentage of Women	Percentage of Men
Price Fluctuations	47	48
Brokers	21	17
Spoiling of Tomatoes	11	22
Low Demand	5	0
No Challenges	11	0

A key informant from Zambia National Farmers Union attributed the tomato price fluctuations to farmers failing to manage the crop due to factors such as cold weather and pests such as bollworms (helicoverpaarmigera) and early blight (Alternariasolani). When it is cold, tomato does not do well. As a result, the prices go up. Just like when there are pests, farmers spend more money on pesticides. To ensure that losses are not made, the price is hiked to as high as ZMW300 or ZMW400. When the opposite happens, when it is much warmer and there are no pests there is a lot of tomato in circulation, dropping the price to as low as ZMW10 a box resulting in extreme losses for

farmers and wastage of the product (Figure 5.5). Ugonna et al., (2015) similarly found some of the major challenges in the tomato value chain in Nigeria were wastage of tomatoes due to the seasonal price instability, poor storage systems, lack of a good transportation and lack of processing technology.

Figure 5.5: Tomatoes gone to waste at Soweto market (Source: Nyati, 2018).

Other women (21 percent) expressed that their biggest challenge was the brokers who hiked box prices, a challenge expressed by a few men (17 percent) as well. One female respondent who complained about the brokers stated, "*I would like to be an agent, women should be agents and not men because we have softer hearts and we will be fairer*." Tschirley and Hichaambwa, (2010) in their study found that brokers were an issue of concern because farmers feel obliged to sell through the brokers which creates issues of transparency as there are no official rules governing the brokers' behaviour, and the sellers have no way of knowing with certainty what effective commission they are paying for the brokerage service. Munsaka (2018) further reports that brokers exhibit opportunistic behaviour. In that they don't put in any labour into producing and transporting crops to the market but take advantage of farmers who come from far away

and may not be aware of current prices. This often results in slow sales, with farmers for the most part incurring losses or obtaining very little to no profit. This study similarly found that brokers were calling out prices and selling boxes of tomatoes, sometimes with the farmer not in sight. One of the vendors mentioned that, "*brokers increase the price of boxes, sometimes you find that they add on an extra k50 which they keep on top of the percentage given to them by the farmers. In the end it's us who suffer."* Figure 5.6 shows a broker trading in Soweto market.

Figure 5.6: A broker at Soweto market standing on crates of tomatoes as he sells to vendors (Source: Field data, 2019).

Other men (22 percent) and women (11 percent) highlighted tomatoes easily spoiling as their main challenge. Arahet et al., (2015) reported that losses of tomato result from lack

of processing factories and lack of reliable market information. This study found that processing of tomato is almost non-existent among small-holder tomato farmers, a factor that sees tomatoes go to waste every year. A few men (11 percent) further included the unstable market for tomatoes as a challenge. A key informant from World Food Programme stated that the unstable market for tomatoes prevents big organisations from investing in the sector. They stressed that it is challenging to find a market for the product especially because of its perishable nature; as such they offer no assistance to tomato farmers and would rather concentrate on crops that are easier to manage. This then sees farmers lose out on reforms that may see the product gain more value such as processing plants.

There were some women (11 percent) however, who stated that they had no challenges with one female respondent stating, "I can't say that I have problems. *I am grateful that I can pay rent and look after my children with the money I make selling tomatoes. That is all that matters*."

5.5 Benefits accrued by men and women at each node of the value chain in the study area.

This section highlights the benefits accrued by men and women at each node of the tomato value chain.

5.5.1 Production Node

At the production node benefits were interpreted as any income or profit received from tomato production activities. There were differing views on whether men had more benefits or if men and women had equal income from tomato production. To better understand the variances in views the study considered decision making power of men and women over income received from tomato production (Table 5.4). It was found that there was an association between gender and control over the use of income generated from tomato production [$\chi 2$, (n = 232) = 17.9, p = 0.0001]; with men having more decision-making power than women (Adjusted residual = 4.1).

Table 5.4: Chi Square test results on difference in association between men and women's decision making power

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	17.925[a]	2	.000
Likelihood Ratio	19.608	2	.000
N of Valid Cases	232		

Gender * Decision Cross tabulation

			Decision			Total
			Input into Most or All Decisions	Input into Some Decisions	No Input or Input in Few Decisions	
Gender	Man	Count	106	11	0	117
		Expected Count	93.3	22.2	1.5	117.0
		Adjusted Residual	4.1	-3.7	-1.8	
	Woman	Count	79	33	3	115
		Expected Count	91.7	21.8	1.5	115.0
		Adjusted Residual	-4.1	3.7	1.8	
Total		Count	185	44	3	232
		Expected Count	185.0	44.0	3.0	232.0

These results indicate that when income is brought into the household whether from the men or women, the men are at an advantage because they get to decide how it will be used. This means that women are not able to make choices to improve their lives or that of their children. Focus group discussant gave insight into this with one male discussant saying, "*we do all the hard work. The money should be ours, but we still share it with our wives. Women do nothing but that is just how it is*." Other discussants however, contended that benefits were equal but mostly because women received benefits they did not work for. A male discussant from Mumbwa stated that, "*the benefits are the same. I do more work than my wife and then I give her money. Even when she hasn't done any work, I must still give her money*." The women seemed to be offended but did not argue the point much as one female discussant stated that, "*very few men do that, a lot of*

women do not see the benefits from tomatoes, even when they have worked, it just depends on the understanding as a couple but in this community a lot of the women do not get money from their husbands."

The female discussants highlighted that men received more benefits because they were the ones who went to the market. A female discussant from Chibombo lamented,

> "I would like to take tomatoes to the market one day and see what happens. My husband always tells stories about how the price of tomatoes was very low or they were caught by police and he had to pay them. That is why most of the money has finished but I do not believe him."

There is a general perception among men that women's productive contribution is marginal relative to that of their male counterparts. Consequently, men had more benefits than the women, because they actively participated at and dominated the value addition nodes. The women only received the income that the men decided to give to them. Women's efforts and work tend to be overlooked; with no value being placed on the reproductive and community roles they play and their productive roles are disregarded (Bucch et al., 2012; Galie et al., 2013; Palacios-Lopez et al., 2017). A key informant from Ministry of Gender acknowledged that women's work is not accounted for and seen as any other task women should perform, whereas men's work is seen as real money- making work. Women are involved in primary agriculture and the men are found where the value chain is enhanced. As a result the men receive more benefits than the women.

In line with these findings Mofya-Mukuka & Sambo (2018) reported that decision making in the use of income from agriculture is dominated by men. In agricultural production women do most of the work while men decide which results in more benefits for the men because they take the lead in the marketing of cash crops. According to Adhikari (2013) women are heavily involved in the initial work; preparation of land, planting of seeds, harvesting and packaging of tomatoes but the men take charge of the transporting and marketing of produce to maximise on profits which they then make most of the decisions over how it is used.

5.5.2 Transportation Node

At the transportation node, the main benefit was that the transporters had a steady flow of income. One respondent narrated that, "*sometimes the tomato prices are very bad but that doesn't affect me, for as long as I've taken the tomatoes to the market, the farmer must pay me*." Some transporters were also farmers and said that they received 'double profit' from selling tomatoes and from transporting. One of the farmers who is also a transporter stated that, "*I make enough money to live comfortably, even when the price of tomatoes goes down the farmers I am transporting for still need to pay me, I have built a house because of this business*."

5.5.3 Marketing Node

Respondents found at the marketing node were asked about the different benefits that they had received from the tomato business and their responses are summarised in Table 5.5. The vendors who were women highlighted their main benefit to be supporting their family in terms of paying rent, feeding their children and looking after their parents and other family members. Another benefit that the vendors highlighted were the saving and lending groups which entail daily contribution of a set amount of money by group members. Group members are then given the money on a rotational basis. They stated that this was good especially when tomato trading was slow as they get to use the money to pay for rent and buy food. The brokers who control the market highlighted their main benefits to be steady income and ability to support their family. They get a commission on each box of tomatoes they sell, hence for as long as tomatoes are coming into the market they have a source of income. The transporters found at the market who were all men were able to support their families, had a steady flow of income and invest in other businesses such as ownership of shops which saw more income coming their way.

The farmers at the market who were only men mentioned that the benefits for them were supporting their family, purchasing assets such as trucks and houses as well as investing in other businesses. Some of the farmers had trucks and also transported as a way of making more money. This therefore reflects how men are driven by profit maximization; they dominate the value addition nodes and use the money on other profit making

investments. Whereas the women dominate very few roles, receive minimal benefits which they use to support the children and family.

UN Women (2019) contends that income controlled by women is more likely to be used to improve family food consumption and welfare, reduce child malnutrition and increase the overall wellbeing of the family. This is reflected at the marketing node of this study, where women's profit from selling tomatoes is used to support the family and invest in micro financial groups of which the money is once again used to support the family. On the other hand, the men do as much as possible to increase their profits and purchase assets such as trucks for transportation which will in turn increase their profits.

Table 5.5: Benefits accrued by tomato actors at Soweto market.✔= has highlighted benefit, x = no benefit highlighted.

Benefits	Farmers	Transporters	Brokers	Vendors
Support family	✓	✓	✓	✓
Steady Income	x	✓	✓	x
Purchase assets	✓	x	x	x
Invest in other business	✓	✓	x	x

Contribute to saving & lending groups (Chilimba)	x	x	x	✓

5.6 Summary

The results revealed that men and women performed similar activities in the farming of tomatoes although to varying degrees with women being slowed down by their triple roles and gender relations. One such activity was the spraying of pesticides which was male dominated due to women not being able to lift the sprayer tanks, women carrying babies and not having adequate knowledge of how to mix the chemicals. The results further showed that most women were not allowed to transport tomatoes because of societal and cultural restrictions. The marketing node was male dominated and controlled by the brokers who were all men. The brokers controlled the trade of tomatoes between farmers and vendors and as such hiked the prices for their own benefit. Women were mostly dominant as vendors with a few as farmers at the market. Men faced more challenges in the production of tomato with both genders having lack of capital as their biggest challenge. At the transportation node long distances and bad roads especially when there was rain was their main challenge, at the marketing node price fluctuations resulting in wastage was reported as the main challenge for both men and women. In terms of benefits, men had more benefits throughout the value chain with them having more decision-making power over the use of income generated from tomato production. The study further found that women were more concerned with the welfare of their family which is where they directed most of their income, while men were driven by profit maximisation.

CHAPTER SIX: CONCLUSION & RECOMMENDATIONS

6.0 Chapter Overview

This chapter provides a conclusion of the study, highlighting the main results and their implications. It ends by providing recommendations to relevant actors, based on the findings of the study.

6.1 Conclusion

The study aimed to examine the gendered experiences in the tomato value chain in the Lusaka city region. The objectives were to identify the actors along the tomato value chain; establish the practices carried out along the tomato value chain by men and women; analyse the challenges faced by men and women along the tomato value chain in the study area; analyse the benefits accrued by men and women along the tomato value chain in the study area.

6.1.2 Practices Carried out by Men and Women

At the production node men dominated the labour intensive and riskier activities such as tying of plants to poles, applying fertiliser and spraying herbicides. Whereas the women participated more in activities such as preparing the land, planting seeds, weeding, harvesting and packaging. The study found that in as much some of the activities were strenuous especially for mothers with small babies; there was also a belief that that is how the roles should be divided.

The transportation node is male dominated with women facing mobility constraints; child care, restrictions by husbands and home care responsibilities. With a lack of access to value addition nodes women lack direct access to benefits.

Men dominated the brokering role at the market and the transporters and farmers found supplying the crop were also men. Women dominated vending. When the tomatoes are brought in by the farmers and transporters, the broke offload and sell the crop on behalf of the farmers who sit or move around until the boxes of tomatoes are sold. The vendor by the tomatoes from the brokers and begin to sell them to consumers. Once the brokers

are done selling, they give the farmers the money, of which they then get paid a 10-15% commission on each box that was sold.

6.1.3 Challenges Faced by Men and Women

Some of the main challenges highlighted at the production node were lack of capital, too many responsibilities in the household and lack of access to productive inputs. Women were not able to access credit as easily as men and were weighed down by their domestic responsibilities such as childcare and meal preparations. The study found that men faced more challenges than women because of their role as provider and head of the house. If they failed to farm the whole family would suffer.

At the transportation node the main challenges were the long distances to the market and bad roads especially when it rained which resulted in trucks getting stuck.

At the marketing node the main challenges were the price fluctuations and the perishable nature of the product which resulted in major losses and wastage. Other challenges were brokers who controlled the market by taking over the sale of produce once it got to the market. They therefore, reduce the farmer's profit..

6.1.4 Benefits Accrued by Men and Women

Benefits at the production node were informed of income from the sale of produce which respondents used differently depending on need. The men received more benefits because they took the produce to the market. The men further had more decision-making power with regards to the way income from tomatoes was spent. Women complained of the men getting second wives once they had money, hiding money from them and using the money to buy beer.

Transporters had a steady flow of income; they were always guaranteed of payment irrespective of price fluctuations.

At the marketing node men had more benefits seen through their ability to invest in trucks, build homes and even invest in other businesses. For women however, their income was just enough for basic survival; pay rentals, look after the children and

contribute to money lending groups and go through the same cycle without necessarily progressing. Women are more family oriented which saw them use their profit on their families. Whereas, men are driven by profit maximisation; they use their profit to make more money.

The results of the study reflect how women invest a lot of labour into the production of tomatoes. However, they face barriers of entry into the other nodes. This means that they do not have direct benefits from the value addition nodes. For the women who do have access to the market, they are mostly only active as vendors, a role which has the least benefits amongst the actors at the value chain. Smallholder farmers face a number of constraints in tomato production. This may have consequences for the growth of the tomato sector in Zambia. Farmers may begin to favour crops such as maize which has input support from the government. This study therefore, concludes that there is a lack of gender equity resulting most from entrenched gender roles and gender relations seen through the inability of carrying certain roles such as transporting tomatoes and brokering. Women further do not have as much access to productive resources as the men and therefore tend to be less productive. It should also be noted that men have disadvantages along the chain; high labour expectations, challenges with regards to capital and inputs.

6.2 Recommendations

The study therefore recommends that:

1. The Government through the Ministry of Agriculture introduce an input support programme for tomato farmers as they are facing challenges with capital and access to inputs.
2. The Government through the Ministry of Gender should incorporate the ADVANCE project into the tomato value chain to empower the women tomato farmers, through mechanising the agricultural process for women which will increase productivity levels and have ripple effects for the men as well as they will reduce on the amount of labour they put into tomato production.

3. The Government through the Ministry of Local Government should put an end to the reign of brokers at Soweto market. The study recommends having a market committee that is voted into power by the people themselves, not to instil fear and control trade but to ensure the market is running smoothly and that all agricultural value chain players found at the market are represented.
4. The Government through the Ministry of Local Government should set up major markets closer to the farmers to increase accessibility and enhance trade in the different districts.

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APPENDICES

Appendix A: Interview Schedule

MODULE G1. INDIVIDUAL IDENTIFICATION

	CODE		CODE
G1.01 Household Identification		**G1.05** Outcome of Interview	Completed……1 Too ill to Respond/Cognitively Impaired...……2 Respondent Not at Home/Temporarily Unavailable….3 Respondent Not at Home/Extended Absence.…….….4 Responded Refused……...5 Could not Locate Respondent…..……..…….6
G1.02 Name of Respondent		**G1.06** Ability to be Interviewed Alone	Alone……1 With Adult Females Present…….2 With Adult Males Present…….……....3 With Adults Mixed Gender Present…….……4 With Children Present……...5 With Adults Mixed Gender and Children Present...….6
G1.03 Gender of	Man……1		

Respondent:	Woman……2
G1.04 Type of Household	Male and Female Adult….1 Female Adult Only…….2
G.1.05 District	Chibombo……..1 Mumbwa……2 Chongwe……3 Kafue……4

MODULE G2: ROLE IN HOUSEHOLD DECISION-MAKING AROUND PRODUCTION AND INCOME GENERATION

Now I'd like to ask you some questions about your participation in certain types of work activities and on making decisions related to the farming of tomatoes	**Did you yourself participate in the activity mentioned within the past 12 months?**	**Who normally makes the decision regarding the stated activity?**	**How much input did you have in making decisions about [ACTIVITY]? USE DECISION CODES FOR G2.03/G2.05; IF NO DECSION MADE, ENTER 98 AND MOVE TO THE NEXT ACTIVITY**	**To what extant do you feel you can make personal decisions regarding the stated activity?**
Activity Description	**G2.01**	**G2.02**	**G2.03**	**G2.04**

A. Preparation of land	Yes…….1 No…….2	Self……1 Spouse……2 Other HH Member…….3 Other Non-HH Member.4 Non-Applicable…….98		Not at all……1 Small Extent…….2 Medium Extent….3 To a high extent....4
B. Application of Lime	Yes…….1 No…….2	Self……1 Spouse……2 Other HH Member…….3 Other Non-HH Member.4 Non-Applicable…….98		Not at all……1 Small Extent…….2 Medium Extent….3 To a high extent....4
C. Soaking of holes	Yes…….1 No…….2	Self……1 Spouse……2 Other HH Member…….3 Other Non-HH Member.4 Non-Applicable…….98		Not at all……1 Small Extent…….2 Medium Extent….3 To a high extent....4
D. Planting of seeds (Circle source below) i. Own a nursery ii. Purchased	Yes…….1 No…….2	Self……1 Spouse……2 Other HH Member…….3		Not at all……1 Small Extent…….2 Medium

seedlings		Other Non-HH Member.4 Non-Applicable…….98		Extent….3 To a high extent....4
E. Watering	Yes…….1 No…….2	Self……1 Spouse……2 Other HH Member…….3 Other Non-HH Member.4 Non-Applicable…….98		Not at all……1 Small Extent…….2 Medium Extent….3 To a high extent....4
G2.03/G2.05 DECISION CODES: NO INPUT OR INPUT IN FEW DECISIONS……..……..…01 INPUT INTO SOME DECISIONS……..….02 INPUT INTO MOST OR ALL DECISIONS…….....03 NO DECISION MADE ……..……98				
F. Tying plants to piles	Yes…….1 No…….2	Self……1 Spouse……2 Other HH Member…….3 Other Non-HH Member.4 Non-Applicable…….98		Not at all……1 Small Extent…….2 Medium Extent….3 To a high extent....4
G. Application of Herbicides	Yes…….1 No…….2	Self……1 Spouse……2 Other HH Member…….3		Not at all……...…1 Small Extent…….2

		Other Non-HH Member.4 Non-Applicable…….98		Medium Extent….3 To a high extent....4
H. Application of fertiliser	Yes…….1 No…….2	Self……1 Spouse……2 Other HH Member…….3 Other Non-HH Member.4 Non-Applicable…….98		Not at all……1 Small Extent…….2 Medium Extent….3 To a high extent....4
I. Weeding	Yes…….1 No…….2	Self……1 Spouse……2 Other HH Member…….3 Other Non-HH Member.4 Non-Applicable…….98		Not at all……1 Small Extent…….2 Medium Extent….3 To a high extent....4
J. Harvesting	Yes…….1 No…….2	Self……1 Spouse……2 Other HH Member…….3 Other Non-HH Member.4 Non-Applicable…….98		Not at all……1 Small Extent…….2 Medium Extent….3 To a high extent....4

K. Packaging	Yes…….1 No…….2	Self……1 Spouse……2 Other HH Member…….3 Other Non-HH Member.4 Non-Applicable…….98		Not at all……...…1 Small Extent…….2 Medium Extent….3 To a high extent....4
G2.03/G2.05 DECISION CODES: NO INPUT OR INPUT IN FEW DECISIONS…….01 INPUT INTO SOME DECISIONS……...….02 INPUT INTO MOST OR ALL DECISIONS…….....03 NO DECISION MADE ……98				
L. Transporting to the market	Yes…….1 No…….2	Self……1 Spouse……2 Other HH Member…….3 Other Non-HH Member.4 Non-Applicable…….98		Not at all……1 Small Extent…….2 Medium Extent….3 To a high extent....4
M. Sale of Produce at the Market	Yes…….1 No…….2	Self……1 Spouse……2 Other HH Member…….3 Other Non-HH Member.4 Non-Applicable…….98		Not at all……1 Small Extent…….2 Medium Extent….3 To a high extent....4

G2.03/G2.05 DECISION CODES:

NO INPUT OR INPUT IN FEW DECISIONS……..……..……01

INPUT INTO SOME DECISIONS……..….02

INPUT INTO MOST OR ALL DECISIONS…….....03

NO DECISION MADE ……98

QNO.	Question	Response
G2.05	How much input do you have in decisions on the use of income generated from tomato production?	No input or input in few decisions……..…01 Input into some decisions…….02 Input into most or all decisions…….....03 No decision made …….98

MODULE G3: GENDER FOCUS

NOTE: More than one option can be given where appropriate.

G3.01. i. Do women and men perform different activities in the farming of tomatoes?
(A) Yes (B) No

If Yes,

ii. Why do women and men perform different activities?
(A) That is just how it is (B) Men cannot perform the tasks women perform (C)Women cannot perform the tasks men perform

Other (Specify)_____

G3.02. i. Which gender faces more challenges in the farming of tomatoes?
(A) Men (B) Women (C) Equal challenges faced by both men and women

ii. What are the main challenges faced by tomato farmers:

Men: □□ Lack of capital; □□ Lack of access to productive inputs; □□ Lack of hired labour; □□ Too many responsibilities in the household; □□ Too many responsibilities in the community; □□ Lack of access to agricultural land; □□ Societal restrictions e.g. not being allowed to perform certain activities;

other (Specify) _____

Women: □□ Lack of capital; □□ Lack of access to productive inputs; □□ Lack of hired labour; □□ Too many responsibilities in the household; □□ Too many responsibilities in the community; □□ Lack of access to agricultural land; □□ Societal restrictions e.g. not being allowed to perform certain activities;

other (Specify _____

G3.03. i. Which gender has more benefits from the farming of tomatoes?
(A)Men (B) Women (C) Equal benefits for both men and women

Only answer ask G.6.03 ii if the answer in G6.03. i is A or B.
ii. Why do they have more benefits?

□ Men perform most of the farming activities. □□Women perform most of the farming activities. □□Men are the head of the house. Women are the head of the house. □□Men have better access to the benefits. □□Women have better access to the benefits.

Other (Specify): _____

G3.04. i. Which gender is more active in the transportation of tomatoes to the market?
(A) Men (B) Women (C) Equal participation by men and women

Only answer ask G.6.04 ii if the answer in G6.04. i is A or B.

ii. What is the reason for them being more active?

□ Women cannot do it. □□Men cannot do it. □□Women need to take care of the home. □Men do not have access to transport. Women do not have access to transport. □□It is too expensive for men. □□It is too expensive for women. □□Men need to take care of the children. □□Women need to take care of the children.

Other (Specify): _____

G3.05. Which gender is more active in the selling of tomatoes at the market?
(A) Men (B) Women (C) Equal participation by men and women

Only answer ask G3.05 ii if the answer in G3.05. is A or B.

ii. What is the reason for men or women being more active?

□ Women cannot do it. □□Men cannot do it. □□Women need to take care of the home. □□Men can easily be crooked at the market. Women can easily be crooked at the market. □□Women should not go to a market to far from home. Men should not go to a market too far from the home. □□Men need to take care of the children. □□Women need to take care of the children.

Other (Specify): _____

END OF QUESTIONAIRE. FILL OUT COVER PAGE OUTCOME G1.05.

Appendix B: Key Informant Interview Guide

Demographic Information:

Organisation:

Position:

Gender:

Age:

Main Questions:

1. What is the mandate of the Organisation? Membership in Lusaka Region: how many men and women, how many women's groups? What activities are the members engaged in? how many (If any) in tomato production?
2. Large variations in tomato prices since last year (from K10 to K400 per box. Currently at around K300 per box. Ask him to speculate on reasons. How do these large variations affect farmers (probe to discuss men and women farmers separately)?
3. How would you describe the performance of the Tomato value chain in the recent past?
   - Reason for the performance?
   - Reason for changes if any?
   - Is there anything being done about it?
4. What roles do men and women play in tomato farming?
   - Why is it that way?
   - Challenges being faced by men at production, transportation, marketing phases?
   - Challenges being faced by women at production, transportation, marketing phases? (probe on which node women are most disadvantaged)
   - Benefits for men?
   - Benefits for women?
5. Where are women most active in the tomato value chain?
   - Reasons for this?
   - any gender mainstreaming programmes?
   - In what ways could women tomato farmers be empowered? How does he understand empowerment? What would an empowered woman tomato farm look like?
   - If something is being done are there any notable changes?
6. Is there anything else you would like to add?

Appendix C: Interview Guide

Demographic Information

Age of respondent

Gender

Role

Main Questions

1. What does your role involve?

2. Large variations in tomato prices since last year (from k10 to k400, currently at around 300). Ask them to speculate on reasons. How do these variations affect them?

3. What roles do men and women play in the tomato value chain?

a. For a farmer question should be directed at the farming, transportation and market stage?

b. For transporter ask what they have observed at the farm, in the transporting of tomatoes and at the market.

c. For traders and brokers stick to the situation at the market.

- For the answer given ask why it is that way?

- The challenges being faced by women.

- The challenges being faced by men.

- Benefits for men.

- Benefits for women.

4. Where are women most active? Production, transportation or the market?

- If the market, under what role.

- Reasons for this?

- Should things change to make women more active if they are not and why?

5. Is there anything else that you want to add that we may not have covered?

Appendix D: List of Topics-Focus Group Discussions

List of Topics

1. Practices carried out during the production of tomato.
2. Challenges faced by women and men in the production of tomato.
3. Benefits accrued by men and women in the production of tomato.
4. Access to productive resources in the production of tomato.
5. Control of use of income generated from tomato production.