International Journal of Science and Research (IJSR)
ISSN: 2319-7064
ResearchGate Impact Factor (2018): 0.28 | SJIF (2019): 7.583

Tomato Value Chain and Local Economic Development in Domboshava Area in Goromonzi Rural District Council, Zimbabwe

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Abstract: ***The main objective of this paper was to identify the key actors in the tomato value chain, their roles and how their roles contributed to shaping the final product for the consumer. Furthermore, the paper sought to examine the effect of the tomato value chain on the local economic development of regions or territories specifically through employment creation, income generation and poverty reduction. The study adopted mixed methods to collect data from respondents and found that the key actors in the tomato production value chain in Dombosahva were input suppliers, tomato farmers, transporters, wholesalers, retailers and the consumers. Every actor directly contributed towards the final product by playing their distinct but important roles. However, the results also revealed that the various actors faced many distinct challenges that negatively impacted on their roles. Some of the major challenges faced were primitive farming methods; lack of access to finance, inadequate infrastructure, and lack of access to markets. The study concluded that the tomato value chain in Domboshava promoted local economic development through job creation, income generation and poverty reduction. The study added to the growing available body of literature on the use of horticultural value chains to promote local Economic Development.***

Keywords: Value Chain; Value Chain Analysis, Value Chain Development, Local Economic Development; Competitive Advantage

1. Introduction

The world over, the creation of sustainable agricultural value chains has played a significant role in promoting local economic development (LED) particularly in Sub Saharan Africa (SSA) where more than 70% of the population lives in rural areas and mainly depends on agriculture as the main source of livelihoods. According to ZimStat (2017) 68% of the Zimbabwe's population lives in rural areas where the major economic activity is agriculture. Furthermore, ZimTrade (2016) estimated that about 60-70% of the country's labour is employed in the agricultural sector. The horticultural sector is one of the most important agricultural activities in Zimbabwe contributing to LED through employment creation, income generation and poverty reduction (Proctor *et* al, 2001). Empirical studies have revealed that tomato is one of the most important and widely cultivated crops in the country. A ZimTrade (2016) report indicates that tomatoes are grown in all the 10 provinces of Zimbabwe. Goromonzi Rural District Council is one of the 9 rural district councils in Mashonaland East province engaged in tomato production. It has a population of 224 987 the majority (50.5%) of whom are females while the rest (49.5 %) constitutes males (ZimStat, 2017). The unemployment rate hovers above 80% with the majority of jobs located in agricultural production.

Domboshava is situated in the North of Goromonzi Rural District Council and the land use pattern is largely communal with only 2 of the 8 wards in the area being zoned commercial agriculture. Tomato is widely grown in the area because of its high yields and potential to generate high profits per unit area. It is also an important source of nutrition for the farmers. Thus, the activity can become a key source of employment creation and income generation for the poor people in the area if properly managed.

However, the tomato value chain in Domboshava has not been analysed and developed in order to improve the economic wellbeing of all actors in it. Generally, the actors involved have not received much support from relevant stakeholders. In a study of the tomato source value chain in Zimbabwe, Sithole (2016) found that farmers were producing more tomatoes than the fresh market could absorb resulting in huge losses owing to the perishability of the product. Paradoxically, while tomato producers were losing crop in that way, the study found that processors right at the end of the chain lacked a constant supply of good quality raw tomatoes to produce tomato source. Despite its importance, very little is known about the actors in the tomato value chain in Domboshava, their roles and the challenges they face. Previous studies have mainly focused on a single rather than all the players in entire the tomato value chain. Furthermore, studies on the effect of tomato value chains on LED have also been neglected. It is against this backdrop that this current study sought to bridge this gap.

The main aim of the study was to examine the actors in the tomato value chain in Domboshava area of Goromonzi Rural District Council; their roles and the challenges they face as well as the effects of an improved tomato value chains on LED. The study adopted mixed methods to gather both qualitative and quantitative data from the various actors and stakeholders. The specific objectives were:

- To identify the actors in the tomato production value chain.
- To investigate the roles of the actors in the tomato value chain.
- To identify the challenges faced by the actors in the tomato value chain.

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- To determine the impact of an effective tomato production value chain on LED.
- To recommend the strategies for developing the tomato value chain.

Government, non-governmental organisations (NGOs) and the private sector have in the past designed many programmes and interventions aimed at improving the tomato value chain in Domboshava but these have not achieved the intended goals due to inadequate information. The current study was intended to benefit these and other stakeholders by providing valuable information for the design of their policies and programmes. The first section introduced the study, its context; the main aim and its specific objectives as well as why it was important. The second section briefly analysed the various definitions of the value chain and LED concepts, their relationship and how both these concepts evolved. The third section outlined the methods used in the study before results were presented in the fourth section. The fifth section discussed the results, implications and their significance before recommendations were made and conclusions drawn.

2. Definition of Concepts and Their Evolvement

2.1 LED Defined

The available body of literature reveals that LED has many definitions. Rodrigue-Pose & Tijmstra (2005) defined LED as the process in which local authorities, private and not-for-profit sectors, and local citizens have the chance to cooperate and improve their local economy through enhancing competitiveness, increasing sustainable growth and ensuring that growth is inclusive. Furthermore, the ILO (2006) defined LED as a participatory development process that encourages partnership arrangements between the main public and private stakeholders of a defined territory, enabling the joint design and implementation of a common development strategy, by making use of local resources and competitive advantage within the global context, with the final objective of creating decent jobs and stimulating economic activity. This definition ties with that put forward by the German Agency for International Cooperation (GIZ) (2007) which defined LED as an on-going process by which key stakeholders and institutions from all spheres of society, the public and private sector as well as civil society, work jointly to create a unique advantage for a locality and its firms, tackle market failures, reduce bureaucratic obstacles for local businesses and strengthen the competitiveness of firms.

Leigh & Blakely (2010) defined LED as a combination of disciplines and an amalgamation of policies and practices based on four factors: indigenous resources and local control; new wealth formation; new capacity building and resource expansion. It encompasses a range of disciplines including physical planning, economics and marketing and also incorporates many local government and private sector functions including environmental planning, business development, infrastructure provision and real estate development and finance.

Four important major characteristics of LED emerge from all the above definitions. First, although LED is rooted in the field of development economics, its tentacles transcends across many disciplines and thus touches every aspect of life. Second, LED is a stakeholder approach to development based on partnerships, networks and cooperation between and among many actors. Third, LED success depends on the ability of the stakeholders to leverage on the resource endowments within their territories in order to gain competitive advantage. Fourth, it should lead to improvement in the quality of life of the inhabitants of a territory through job creation, income generation and poverty amelioration.

2.2 Value Chain Defined

The concept of value chain, just like LED, has been defined in many ways (Akpeko, 2018). Donovan *et* al (2015) defined it from three perspectives as follows: value chain as a full range of activities; value chain as set of actors and value chain as a strategic network. For Donovan *et* al, value chain as a set of activities describes the range of activities needed to create or produce a particular product or service through the different phases including the procurement of raw materials and other inputs. As a set of actors, value chain refers to actors connected along a chain producing, transforming, and bringing goods and services to end users through a sequenced set of activities (UNIDO, 2011). Donovan *et* al further argued that as a strategic network, it does not only refer to a particular space, but is built as an appropriate way to serve consumer needs or demands. This definition corresponds with that suggested by the GIZ (2007) which added that value chain is the full range of the parties involved and perform functions of producers, processors, dealers, distributors, wholesalers and retailers for a given product. Furthermore, Nutz & Sievers (2015) defined value chain as describing a full range of activities involved to bring a product or service from conception through intermediary stages of production and distribution to the final consumers.

In the agricultural sector, value chain describes a set of activities and actors that work to bring a basic agricultural product from production in the field until it is finally consumed, where at each stage value is added to it (Akpeko, 2018). According to the Food and Agriculture Organisation (FAO) (2010), a value chain can be either a vertical linking or a network between various independent business organisations and can involve processing, packaging, storage, transport and distribution. The tomato production value chain outlines the roles and responsibilities of the various actors within and along the value chain as well as their relationships and linkages. Furthermore, it traces the flow of the tomato commodity and value including the activities performed by the different actors, right from its production until it gets to the end users. According to available body of literature, there are two forms of value chain which are: global and local value chains. Global value chains transcend across national boundaries to regional and global markets such as cars, computers, machinery, and smartphones (Gereffi & Fernandez-Stark, 2011). On the

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other hand, local value chains are confined within national boundaries and include tomatoes, fish, onions, cabbages and chicken when consumed within national boundaries.

2.2.1 Value Chain Analysis

In order to fully understand the tomato value chain in Domboshava, there is need to carry out value chain analysis. Value chain analysis refers to the study of the make-up and the dynamics of the value chain for the purpose of drawing up a strategy or an approach to the value chain (European Commission, 2011). Additionally, Nutz & Sievers (2015) defined value chain analysis as the evaluation of the value chain study findings out of which strategies for value chain development can be formulated. Furthermore, value chain analysis assesses the whole value chain process in order to suggest interventions for an effective value chain system. Akpeko (2018) argued that value chain analysis diagnoses the agricultural produce, how the actors relate, develops the interventions, and enables recommendations to be made on the ways the value chain can be maintained or improved.

2.2.2 Value Chain Development

According to Donovan *et* al (2015) value chain development can be defined from two perspectives. First, they argued that value chain development can be defined from an actor or chain type that focuses on strengthening certain actors and improving how these actors in the chain relate to one another as well as enhancing these linkages. Second, Donovan *et* al argued that value chain development can be defined from the business environment type perspective that centres on trying to enhance the environment in which the chain actors operate. Similarly, UNIDO (2011) defined value chain development as a desirable change in a value chain that enhances production and results in social change such as economic growth; job opportunity creation; poverty reduction; income generation; gender equity and environmental performance.

2.3 How Value Chain and LED Concepts Evolved

2.3.1 The evolution of LED

According to the World Bank (2005), LED has passed through three critical phases in history. The first phase covered the period between the 1960s and the mid-1980s when it was mainly focused on the attraction of mobile manufacturing investments (World Bank, 2005). Leigh & Blakely (2013) argued that the first phase of LED began in the 1930s and mainly focused on industrial recruitment adding that it concentrated on creating good business climate through tax abatements, loan packages, and infrastructure and land development. Leigh & Blakely further argued that the first phase of LED was mainly anchored on two theoretical underpinnings, that is, the regional and community development theory which looked at international development and the industrial location theory based on firm behaviour.

The second phase covered the period from the 1980s to the mid-1990s and put the retention and growth of existing business and inward investment at the fore (World Bank, 2005). According to Rucker & Trah (2007), the second phase of LED prompted the shifting of policy attention to endogenous economic potentials, having to support competitiveness of existing firms, promoting entrepreneurial skills and business start-ups. The main tools for LED support during this phase included the availing of business incubators; start-up support and technical support for small, medium and microenterprises (SMMEs)

The third and last phase of LED was from the mid-1990s to the present and has seen LED focusing on soft infrastructure investments, public private partnerships, networking and highly targeted inward investments attraction world (World Bank, 2005). According to Pike *et* al (2007) this phase has adopted a holistic approach and was previously confined to the global North. Rogerson & Rogerson (2010) argued that it is during this phase that the individual business support and the sectorial development paradigms of the second phase are enhanced by making the entire business and community environment more enabling to economic development.

2.3.2 How the Value Chain Concept Evolved

According to Da Silva & De Souza Filho (2007), just like LED, the concept of value chains transcends across disciplines and has evolved over time. Available body of literature reveals that the concept started with scientific debate on vertical production and distribution in the 1960s in France to analyse the methods used in agricultural systems in developing countries. The main emphasis was on how local production systems were linked to processors, traders, exporters and final consumers (van den Berg *et* al, 2009). The rationale was to define the movement of inputs required in the manufacture of final products in respect of their interconnectedness and collaboration. According to Roduner (2004) this concept was largely discredited for its failure to show the fluctuations in commodity; knowledge flows; the emergence and demise of the actors in the value chain. This led to the introduction of the concept of the sub-sector in the 1970s which also significantly contributed to the further development of the concept of value chain. The ILO (2011) defined the concept as an interdependent collection of businesses, resources, laws, and institutions that participate in the production, processing and distribution of an agricultural product.

According to the ILO (2011), the value chain concept was further developed by Porter in the mid-1980s as a means for ascertaining the efficacy of each step in the production process to determine the source of a firm's competitive advantage. Porter (1985) argued that the firm's competitive advantage could not be determined by looking at the company as a whole, but by breaking up the various components that make up the production process. According to van den Berg *et* al (2009) Porter disaggregated the activities into primary and support categories. Primary activities refer to inbound logistics, operations, outbound logistics, marketing, sales and services, and have a direct bearing on the value and quality of the product. Additionally, van den Berg *et* al defined support activities as those that have an indirect bearing on the value of the product. However, available literature reveals that Porter's concept of value chain fell short because of concentration on the firm level production processes and abandoning the examination of other upstream or downstream activities that occur outside

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the firm's chain.

Consequently, the concept of Global Commodity Chain (GCC) emerged in the mid-1990s. It was championed by Gereffi (1996) and sought to investigate the methods in which companies and countries were globally interconnected and what determined global income distribution. The concept mainly focused on how the global production architecture was regulated. According to Gereffi there were four elements of the GCC which included: input-output structure; territorial structure; institutional structure and governance structure. The concept of world economic triangle was developed by Messner (2002) based on the assumption that the actors, governance and regulation systems were the major determinants of how regions behaved in the global chains. Messner argued that actor constellations; interests; power dynamics; situational mind sets; action orientation and trust are critical aspects in the economic triangle. According to Sturgeon (2008) the GCC concept has further been developed into global value chains (GVCs) which reflect a more dynamic view of chain governance. On the basis of the above evidence, it can be argued that both concepts of value chain and LED emerged at similar times in history and have both evolved in response to the pressures of the globalisation. Furthermore, their evolution is continuous given the uncertain and fast paced developments in the global environment coupled with the unending technological advances, climate change and the emergence of global pandemics like the Coronavirus disease which require constant adaptation.

2.4 The Symbiotic Relationship between Value Chain and LED

One of the major benefits of understanding value chain is to devise interventions that enhance the competitiveness of local businesses. The definitions proffered by various scholars and development agencies show the relevance of value chains to LED. In addition, value chains have proved to be effective as devices that enhance the collaboration of all actors in the chain and even other relevant stakeholders outside the chain.

Hobson (2012) argued that value chains help describe the economic production of a locality in a way closer to reality than the traditional economic and social analysis methods. Hobson added that value chains are ideal in tackling LED questions relating to employment creation, income generation and poverty because they delineate the disparities in power distribution among the actors across the chain. Thus, they help identify the inequalities that exist amongst the actors in accessing the benefits of a local economic activity. Empirical evidence on the use of value chain approaches in developing better integrated, pro-poor and sustainable environmentally friendly intervention programmes in Vietnam shows that strengthening value chains significantly contributes to the economic empowerment of women, their bargaining power, increased income and employment opportunities in rural areas as well as preserving the environment (Lang, 2010). The value chain approach to LED helped uncover training needs and the challenges faced thus informing the designing of appropriate training programmes and interventions.

Furthermore, Helmsing (2010) argued that the value chain concept primarily serves as investigative tool to analyse the sophistications of economic development since it is concerned with understanding the networks and arrangements that exist between the actors involved. Helmsing further argued that the value chain conception of economic development enhances communication between the different partners which in itself enhances LED since its success depends on strong partnerships. In an investigation of the degree and nature of alignment of value chains with LED strategies and policies of various players in a specific locality or region, Helmsing found that understanding local value chains helps local firms and stakeholders respond to the challenges and pressures exerted by globalisation. This evidence shows that understanding production value chains for a specific locality or region has a positive effect on LED.

Additionally, local production value chains can enhance LED by helping to appreciate the actors in the chain. By appreciating the actors involved, the relevant stakeholders can gain valuable information necessary for the designing of local inclusive interventions. Empirical studies have shown that understanding production value chains within a territory can help enhance the competitiveness of local businesses which results in profitability and business expansion, which in itself enhances their capacity to pay local taxes and create additional jobs. When this happens, service delivery and human livelihoods are enhanced leading to improved LED. This line of argument bolsters the conviction that production value chains should be embedded in LED strategies and interventions for specific territories or regions in order to improve livelihoods.

According to the ILO (2011) VCD and LED can support pro-poor development and job creation by strengthening firms, business relationships, improving marketing structures and the business environment. The ILO further argued that VCD and LED approaches can reinforce each other adding that both address the question of how private sector development can be customised to include the poor in the ensuing benefits. The ILO argued that while VCD aims to improve the operation of the whole value chain system by examining it and crafting strategies to ameliorate bottlenecks and constraints, LED interventions seek to determine the economic potential of a locality in order to empower local players to collaborate for job creation and economic growth. Thus implementing the two approaches jointly can eliminate the shortcomings of each thereby reaping maximum benefits from the hybrid approach. The ILO further claimed that combining the strengths of each provides customised solutions for a specific local area and enables local citizens to identify with the processes. LED's close association with local governance and development planning can add value to the multi-sectorial approach of VCD meaning that a better appreciation of local contexts through LED can assist to avoid the shortcomings of VCD.

Furthermore, VCD is also vital in understanding final demand of any given product meaning that there is need for effective cooperation and communication among the

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stakeholders in a value chain (ILO, 2011). This can ensure that the final product is of high quality and meets market demand. Since LED is a participatory based approach which relies on the collaboration of the various stakeholders, it can improve VCD and final product quality by enhancing the knowledge flows along value chains thus making them more effective and inclusive. The LED approach has been castigated for over-emphasising strategy and planning with little or no action at all. In addition, it was criticised for its emphasis on local areas which hazed the understanding of final demand in national and international markets. The value chain approach can augment the appreciation of markets outside local or regional boundaries which in itself strengthens market analysis in LED. This symbiotic relationship between VCD and LED was best illustrated by the ILO when it implemented the LED approach to develop the value chain of ornamental fish project in Pronnoruwa in Sri Lanka. The ILO employed an all stakeholder LED approach to successfully resolve conflict between fish and paddy farmers over water.

Furthermore, in their study of how the value chain approach can benefit the rural poor in Latin America, Mitchell *et* al (2009) concluded that the concept is ideal for appreciating how the rural poor in global south can improve their engagement in national, regional or global trade. They added that the approach appreciates the lack of economic power of certain groups in society and emphasises the economic viability and sustainability of local areas. This explains why most LED theories are being reformulated and embedded with the models of competitive advantage and value chains.

3. Methodology

A cross-sectional study with the first quarter of 2020 being the reference period was carried out to collect relevant data from tomato farmers in Domboshava and key stakeholders in the value chain. Stratified random sampling was used to collect data from key stakeholders that included tomato farmers; extension officers; suppliers of inputs; local authority officials; buyers at the formal market; open market vendors and consumers of tomatoes. A random sample of 150 tomato farmers was selected from the households in Domboshava to respond to the questionnaire designed to collect quantitative and qualitative data on income and employment and challenges faced in tomato production. A random sample of 350 consumers of tomatoes was selected to respond to a questionnaire capturing the views of consumers on prices and quality of tomatoes on the market. A combination of purposive and stratified random sampling was used to select a sample of 40 extension officers, 15 suppliers of inputs and 5 local authority officials to respond to relevant questions associated with their role in the value chain.

Processing of quantitative data was done in Excel and SPSS. Descriptive statistics and graphical presentation were used in the presentation of findings from quantitative data. Data matrices in Excel were used to analyse qualitative data from key informants. Reflective discussions and content analysis were used to analyse responses from key informants. This generic approach to qualitative data analysis provides ways of discerning, examining, comparing and contrasting, and interpreting meaningful patterns or salient themes related to value chain analysis.

4. Results

The main findings of the study are divided into four analytical categories namely: mapping of the tomato value chain in Domboshava and the actors in the value chain; their roles and the challenges faced; and the effect of the value chain on LED with specific reference to employment creation and income generation.

4.1 Actors and Tomato Value Chain Mapping

The results of the study indicated that the main actors in the tomato value chain in Domboshava were input suppliers; farmers; transporters; wholesalers; retailers; and the consumers. The results also indicated that there were many other actors classified as retailers in the value chain. For example, the actors in the retail business included supermarkets; fruit and vegetable shops and open market vendors.

Figure 1: [Adapted from Porter (1985)]

4.2 Roles of the Actors and their Challenges

4.2.1 Input Suppliers

All (100%) respondents indicated that their major roles included supply of seed varieties; fertilisers; pesticides; water; equipment; tools; labour and advice to the farmers. They also ensured that inputs were available in adequate quantities and quality at appropriate times.

All (100%) participants indicated the shortage of foreign currency; high cost of borrowing and high production costs were the major challenges affecting their businesses. They indicated that although most of their raw materials were imported, it was difficult to secure enough foreign currency from the formal banking system. Participants reported that they obtained 90% of their foreign currency from the informal market and the rest (10%) from the formal banking system. All (100%) participants indicated that they could not secure credit to expand their businesses due to high interest rates.

4.2.2 Support Services

The results of the study showed that support services are a critical component of the tomato value chain. Their major roles included providing training and extension services; information; financial and research services. Secondary data obtained from the Ministry of Lands, Agriculture, and Rural

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Resettlement records indicated that Goromonzi district had a total of 89 extension officers of which 22 serviced the Domboshava area. The data indicated that the ideal extension officer-farmer ratio should be 1: 300 but the actual stood at 1: 600.

Secondary data obtained from the same Ministry's records indicated that the major challenges faced by extension officers were the shortage of transport and communication devices. All (100%) of surveyed extension officers had no motorcycles and had to rely on public transport to access the farmers. All (100%) of the extension officers had no employer provided communication devices or internet services to effectively communicate with the farmers.

4.2.3 Farmers

All the participants (100%) responded that their major role was to grow tomatoes until they were ready for the targeted market. They were involved in land preparation, planting, weeding, irrigating the crop; spraying; general maintenance; harvesting and transportation of the crop to Chirodzero Wholesale Farmers' Market.

As regards land preparation, all (100%) the farmers reported that they used ox-drawn ploughs and harrows. All (100%) participants indicated that they used hand tools such as hoes, forks, shovels and knapsacks for .planting, weeding, spraying and general maintenance of the crop. The majority of participants (75%) indicated that they used buckets to fetch water from the river to irrigate their crop and the rest (25%) used diesel or petrol pumps and pipes for the purpose. All respondents (100%) indicated that they relied on the hand picking method to harvest their crop. The majority of participants (60%) responded that they relied on hired vehicles to transport their produce to the market while the rest (40%) indicated that they used ox drawn carts.

The results indicated that Rodade, Tengeru and Tovistar were the most preferred seed varieties grown. All (100%) participants indicated that drought and disease resistance as well as the target market were the factors influencing choice of seed variety grown. All (100%) respondents indicated that inputs were expensive.

The results indicated that the average yield per hectare in Domboshava was 35 tonnes per hectare with each farmer contributing about 0.2 hectares. The data indicated that the Domboshava area produced a total of 35 000 tonnes of tomatoes per annum.

Regarding production seasons, participants indicated that tomato production is done all year round. However, the area under tomato was reduced significantly during winter due to frost damage. All (100%) surveyed farmers reported that the ideal months for growing tomatoes in Domboshava were from August to April, while they were off season from May to July.

All (100%) participants responded that the challenges faced were high input and transport costs; shortage of draught power and irrigation equipment; inadequate labour; lack of information about inputs and markets; poor storage facilities; lack of processing plants in the areas of production. The majority (60%) ranked poor storage facilities as the most serious challenge afflicting their businesses.

4.2.4 Transporters

Farmers were responsible for ensuring that their produce reached the market. All (100%) participants reported that they used hired vehicles or ox drawn scotch carts to ferry their produce to the market.

All (100%) respondents indicated that the activity was hampered by bad roads and the high cost and shortages of fuel.

4.2.5 Wholesalers

All (100%) participants indicated that the majority of the wholesale business occurs at the Chirodzero Farmers Market. The main roles of wholesalers included bulk-selling, grading and storing. Secondary data obtained from the local authority's records at the market indicated that wholesalers mainly sold their products to middlemen (20%); processors (30%); fruit and vegetable shops (15%); supermarkets (15%); open market vendors (10%) food chain outlets (5%) and individual households (5%).

All (100%) the participants indicated that their business was negatively affected by the high space and entrance fees; poor lighting; poor storage facilities and the lack of water and sanitation services at the market. All (100%) reported that they were forced to sell their produce at low prices for fear of losing their commodities due to poor storage facilities at the market.

4.2.6 Retailers

Secondary data obtained from the local authority's records listed supermarkets, fruit and vegetable shops, small grocery stores and open market vendors as the major retail outlets that sold tomatoes. All (100%) the participants indicated that their major role was bulk-breaking and distributing the product to the final consumers. They were involved in bulk-buying; transporting; cleaning; grading; storing and selling the tomatoes. Regarding the source of tomatoes, 70 % of respondents indicated that they bought the commodity from Chirodzero Farmers Market. The rest (30%) responded that they bought the tomatoes from the farm gate.

The results indicated that different retailers in the tomato value chain faced distinct challenges. Processors, supermarkets and fruit and vegetable shops indicated that poor quality of product was of the highest concern. All (100%) open market traders indicated that their business was negatively impacted by shortage of space, poor storage facilities; lack of water and sanitation services and high space rentals. Food chain outlets and individual households were mainly concerned with the high price of the commodity.

4.2.7 Consumers

The results of the study indicated that the final consumers of the product were processors, individual households and food chain outlets. Their major roles were to buy, store, process and eat the tomatoes. Regarding their level of satisfaction

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with the quality of the tomatoes, 60% of participants indicated that they were not satisfied, 30% responded that they were satisfied and 10% reported that they were very satisfied. Consumers were asked to indicate their views on the price of tomatoes on the market. The highest proportion (50%) of consumers reported that tomatoes were very expensive, 30% indicated that the price was fair and 20% were of the view that the price was low.

4.3 Effect of tomato value chain on LED

The study sought to have an appreciation of the effect of the tomato value chain in Domboshava on LED through job opportunity creation and income generation and the following were the results.

4.3.1 Tomato Value Chain and Employment Creation

Study results indicated that the entire tomato value chain created jobs at every stage. Surveyed tomato farmers in Domboshava were asked to state the source of labour for their business. All (100%) the farmers reported that they used family labour for their business. They reported that there was high demand for farm labour. Surveyed tomato farmers were asked to indicate the gender distribution of the labourers who worked on their farms. The farmer survey revealed that 70% of labour was provided by women and the rest (30%) by men. The survey revealed that the highest proportion (50%) of labour force for tomato production was in the 30-39 year age group and the lowest proportion (5%) of labour force was in the age group 50 years and above.

4.3.2 Tomato Value Chain and Income Generation

The results of the study revealed that all the actors in the tomato value chain earned income from their businesses. All (100%) local farmers reported generating income from tomato farming. They indicated that their livelihoods had improved since they were able buy food and clothing for their families. All (100%) participants among producers and open market traders responded that they were able to pay school fees for their children through income realised from tomato sales. The majority (70%) of participants reported that they were also able to pay for primary healthcare for their families.

5. Discussion, Recommendations & Conclusion

5.1 Discussion and Recommendations

5.1.1 Cost of Inputs

The results of the study implied that increase in tomato production in Domboshava was impeded by high input costs. This forced the farmers to reduce the amount of inputs applied per her hectare thereby lowering production quality and quantity. There is need for the local authority to craft policies that attract investment in innovation; research and development in the district to enable the farmers to gain competitive advantage through cost leadership. The local authority should offer free land and other incentives to those willing to invest in the district which would lead to more inputs being produced locally. This would enhance competition which would eventually lead to reduction in the price of inputs and boost production. Central government should also consider offering subsidies in the tomato production sector in order to reduce the cost of inputs. Furthermore, the central bank should prioritise the industry in allocation of foreign currency to reduce the cost of production of inputs.

5.1.2 Access to Supporting Services

The results indicated that tomato farmers in Domboshava lacked access to extension services. The lack of access to extension services negatively affected the farmers' ability to choose appropriate inputs for their business, their ability to maintain their crop and other post harvesting activities. The results also indicated that the few extension officers that were available to tomato farmers lacked the capacity to effectively discharge their duties as they did not have adequate equipment. Empirical studies have shown that the lack of necessary tools of the trade has a negative effect on the motivation of workers which in itself leads to poor performance. There is need for central government to prioritise the recruitment of more extension workers in order to enhance access to extension services. In addition, the government should ensure that these extension workers have adequate equipment for them to effectively perform their tasks.

5.1.3 Access to Information

The study results indicated that tomato farmers in Domboshava had no access to valuable information about the industry. Empirical studies have shown that the lack of information about the supply side can result in low production as it can limit the farmers' ability to choose suitable inputs for their business. Additionally, the lack of valuable information about the demand side seriously inhibits the farmers' ability to produce optimal quantities in order to avoid losses associated with excess supply of the product on the market. There is need for Goromonzi Rural District Council to enter into partnerships with CSOs or the private sector and other chain influencers to invest in simple and inexpensive digital platforms that can be used by the various chain actors to interact and access timely and accurate information about the supply and demand sides. This digital platform would enhance information flow between and among the tomato value chain actors thereby improving networks, relationships and collaboration.

5.1.4 Access to Markets

The results implied that the farmers' had limited access to markets which resulted in them incurring huge losses. Their over-reliance on Chirodzero Farmers' Market clearly exposed them to manipulation by unscrupulous buyers. The results indicated that the farmers had no access to the lucrative regional and international markets which have the potential to earn foreign currency to improve their businesses. This current study confirmed the results of previous studies on tomato value chains. In a study of how to improve value chains for greenhouse tomatoes in Albania, Musabelliu (2010) pointed out that producers' access to the market was fragile and unreliable. There is need for the local authority and other chain influencers to help open new markets and link the farmers to the more rewarding regional and global value chains. However, there is also need for the relevant stakeholders to build the farmers' production

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capacity and enhance quantity and quality of tomatoes before venturing into the global value chain characterised by cut throat competition and domination by those that have control over international markets.

5.1.5 Farming Methods and Improved yields

The results also indicated that tomato farmers in Domboshava were still heavily reliant on archaic and traditional methods of agriculture which has negatively impacted the quality and quantity of tomatoes. This practice was labour-intensive and inefficient and affects the profitability of the farmers' in the short and long terms. The yield per hectare was relatively low as compared to other studies. There is potential to increase yields to 40 000 tonnes per hectare or above with better farming methods; use of high yielding seed varieties; reduced input costs; better access to extension services and optimal use of labour. Studies done in Florida, United States revealed that tomato yields can be as high as 147 000 tonnes per hectare (Deepak *et* al, 1996). In Africa, studies done in the Wakiso district of Uganda recorded a yield of 46 000 tonnes per hectare (Kasenge *et* al, 2001). There is need for the government and the private sector to help farmers invest in modern farming methods such as greenhouses, drip irrigation and hydroponic technology in order boost product quality and quantity.

5.1.6 Storage Facilities and Value Addition

The results indicated that many farmers were losing their produce due to poor storage and lack of processing facilities in their areas of production. In their study of tomato value chain competiveness in Malawi and Mozambique Mango *et* al (2015) also found that lack of value addition impedes producers from maximising profits. The farmers had to transport their produce to Chirodzero Farmers' Market where there were no proper storage facilities and shortage of space. This state of affairs put the farmers in a desperate situation and at the mercy of unscrupulous buyers who engage in unfair business practices. This situation clearly eroded the farmers' bargaining power thereby forcing them to be 'price takers' rather negotiating for a fair price for fear of losing their produce. This coupled with the need to pay high space rental fees seriously affects the profitability of their business. There is need for the local authority, CSOs and the private sector to invest in proper storage facilities in Domboshava. Furthermore, the private sector should invest in the construction of a processing plant in the area in order to promote LED through value addition, job creation and better access to markets.

5.1.7 Enabling Infrastructure

The study findings implied that the Domboshava area was lagging behind in terms of the necessary infrastructure to facilitate LED. The majority of the actors in the chain lamented the lack of enabling infrastructure to facilitate their businesses. The implication of the results is that the local authority had no material and financial capacity to provide those goods and services in order to improve the tomato value chain and LED. The local authority should enter into strategic partnerships with the private sector and CSOs to mobilise the requisite resources for the provision of enabling infrastructure. The local authority should also consider adopting co-production with the citizens and various actors in the tomato value chain to improve the provision of public goods and services in order to stimulate LED.

5.1.8 Networks and Relationships

The results indicated that the tomato value chain is uncoordinated and fragmented with middlemen transcending across some stages of the chain thereby disrupting the smooth flow of business. Furthermore, the study exposed the serious power disparities and inequalities between the chain actors which prejudiced the producers. This practice may disrupt the whole production value chain by reducing production and making the final product very expensive on the market. As Dijk & Klep (2005) found, the collaboration among different farmers can help producers deal with various market challenges. Thus, the tomato value chain in Domboshava needs to be strengthened in order to empower the farmers and enhance their bargaining power. The government, local authority, CSOs and the private sector should implement capacity building programmes for the various actors in the chain to enhance coordination, collaboration and the development of networks.

5.1.9 Effect on LED through Income Generation

The findings also indicated that the tomato value chain had resulted in income generation for the poor families in the area and improved livelihoods. The study confirmed the results of previous studies on tomato value chains. In value chain analysis of tomato marketing systems in the Karnataka state of India, Ramappa & Manjunatha (2016) found that in addition to providing nutrition to local poor people, tomato value chain was also a main source of income. There is need for the local authority to provide incentives such as tax exoneration, holding of field events, and awards for the best tomato producers in order to stimulate production and LED.

5.1.10 Effect on LED through Income Generation

The results of the study showed that tomato production has the potential to create employment at every stage of the value chain if appropriate interventions are implemented by the different actors. The results implied that the improvement of the tomato value chain in Domboshava can lead to job opportunities not only for the rural farmers but for all the actors in the entire chain leading to LED. Furthermore, results revealed that the tomato value chain approach can be used as a useful device to address the gender disparities that are inherent in most rural communities in Domboshava by creating more job opportunities for women and youths. The results also indicated that value chain development can be an empowerment tool for women and girls in line with sustainable development goal (SDGs) number five. The results confirm the findings of other previous studies. In a review of the potential of value chain for rural economic development in Ethiopia, Gashaw (2016) found that tomato value chains when developed to their fullest potential had an impact on economic development of rural farmers especially for women through employment creation. There is need for the local authority and the Ministry of Lands, Agriculture, and Rural Resettlement to craft deliberate policies and initiatives aimed at expanding and improving the tomato value chain.

5.2 Conclusion

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The study managed to identify the actors in the tomato value chain in Domboshava, their roles and how they related to each other. The results showed that the tomato value chain was not properly coordinated and had no networks and collaboration between and among the actors. Each actor appeared to be concerned with maximising their own returns at the expense of other actors. The study also revealed that all actors in the value chain faced some of the challenges which included high costs of production, lack of access to information, poor storage facilities; shortage of infrastructure to mention just a few. The paper suggested possible interventions that can be adopted by the various stakeholders in order to ameliorate some of the challenges. The main results of the study answered the main questions of the study on whether the promotion of tomato value chains can lead to LED through employment creation and income generation for vulnerable groups such as women and youths.

However, this current study was conducted during a mandatory Zimbabwe government lockdown to stop the spread of the Coronavirus. Thus, it was not possible for this researcher to make observations to verify the validity of some of the data gathered due to time and budgetary constraints. There is scope for further research to investigate how the use of ICTs would enhance communication and cooperation between and among the chain actors. Furthermore, how the use of value chain analysis would help improve value chain governance of other agricultural activities such livestock production would also need to be explored.

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