

**EMPLOYMENT AND INCOME OPPORTUNITIES IN TOMATO SUB-SECTOR
IN ILULA, KILOLO DISTRICT, TANZANIA**

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**A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE
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ABSTRACT

The main objective of this study was to assess employment and income opportunities within tomato sub-sector in Ilula. The specific objectives of the study were: to identify the main marketing channels of tomatoes; to identify existing businesses and business networks related to tomato; to examine the marketing margin and gross margin of the actors of tomato market; and to assess the influence of tomato business and business networks on employment creation in Ilula. Cluster random sampling was used to select two streets, Itunda and Itabali of Ilula Ward and Nyalumbu Ward respectively. Data was collected from 282 respondents by using semi-structured questionnaires. The findings of the study reveal that there were four main marketing channels through which farmers and traders sell their fresh tomatoes in Ilula. The most common marketing channel comprises of tomato farmers who sell their produce to the assemblers. The second channel includes farmers who sell their produce to the wholesalers. The third channel comprises of tomato farmers who sell their produce to the retailers and the shortest marketing channel comprises of tomato farmers who sell their produce directly to the consumers. The businesses/ services related to tomato that were identified in the study area include: inputs supply, tomato farming, assembling, wholesale, retail, sorting, loading, transportation, supply of crates and baskets, mobile money services and street food selling. The results show that the employment multiplier in tomato business in Ilula is 1.18. Many Non-farm activities in Ilula are based on backward and forward linkages with tomato sub-sector; such activities have created employment opportunities. It is therefore recommended that improvement in marketing services; strengthening of market linkages; and facilitation of new and existing business associations are necessary to increase employment opportunities in tomato sub-sector in Ilula.

DECLARATION

I, Diana Peter Mallogo, do hereby declare to the Senate of Sokoine University of Agriculture that, this dissertation is my own work done within the period of registration and that it has neither been submitted nor being concurrently submitted in any other institution.

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Above declaration is confirmed by;

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LIST OF ABBREVIATIONS AND ACRONYMS

ANOVA	Analysis of Variance
ASDP	Agricultural Sector Development Programme
d.f.	Degree of freedom
ESRF	Economic and Social Research Foundation
EUC	Emerging Urban Centre
FAO	Food and Agriculture Organisation
GM	Gross margin
IFAD	International Fund for Agricultural Development
IFC	International Finance Corporation
ILFS	Integrated Labour Force Survey
MSc.	Masters of Science
OPV	Open pollinated variety
RUCROP	Rural Urban Complementarities for the Reduction of Poverty
SIDO	Small Industries Development Organization
SNAL	Sokoine University National Agricultural Library
SUA	Sokoine University of Agriculture
TASAF	Tanzania Social Action Fund
TR	Total Revenue
TVC	Total Variable Cost
TZS	Tanzanian Shilling
URT	United Republic of Tanzania

CHAPTER ONE

1.1 Background Information

The economy of Tanzania is predominantly rural-based where agriculture plays an important role in employment, food security and export earnings. The working age population in Tanzania comprises of 25.8 million persons whereby 66.3% of the working age population is employed in agriculture and 21.7% of the working age population is employed in the informal sector (URT, 2015).

Agriculture sector exhibits a high degree of vibrancy in job creation but it suffers from low productivity and low technology use and the use of rudimentary tools. The dominant mode of employment in agriculture is self-employment with households operating smallholdings and using low levels of technology, simple and rudimentary tools, hence low productivity (Nangale, 2012). It is estimated that the agricultural labour force is growing at a maximum of 2.1% per annum due to rural-urban migration and the growth of non-agricultural informal rural activities (URT, 2014).

In Tanzania, tomato production has become an important economic activity for rural, urban and peri-urban farmers (Sanga *et al.*, 2016). Farmers have been attracted to this economic activity mainly due to monetary gains in a relatively shorter period (Nyamba *et al.*, 2016). Tomato production is higher than any other fruit and vegetable crop in Tanzania with a total production of 129 578 tons, which represents 51 percent of the total fruit and vegetable production (Sanga *et al.*, 2016). The leading tomato producing areas in Tanzania are Iringa with an acreage of 4 248 ha, Tanga (1 289 ha), Kilimanjaro (900 ha),

Mbeya (380 ha) and Dar es Salaam (353 ha). Other Regions with significant tomato production include Morogoro, Arusha, Mwanza and Dodoma (Mvena *et al.*, 2013).

Tomato accounts for 63% of the total vegetables produced in Iringa (URT, 2012). It is estimated that 60 000 farmers are involved in tomato production in Iringa. According to the 2008 national sample census of agriculture, Kilolo District had the largest planted area of tomatoes (51% of the total area planted with tomatoes) and accounted for more than 60% of tomato produced in Iringa (URT, 2012). Kilolo District is also moderately important for maize production in Iringa. The introduction of improved tomato seeds in 1980s in the District led to more commercialization of tomato than maize in Ilula. The expansion of tomato production in 1990s influenced the increase in the other types of businesses in Ilula (Lazaro *et al.*, 2013).

The expansion of tomato production, availability of social services and development of other businesses have led to the fast growth of the Ilula to an emerging urban centre. In 2006 Ilula was officially declared as a township (Lazaro *et al.*, 2013). The development of Ilula into a trading centre for tomato provides livelihood opportunities for the residents and migrants as a range of new activities emerge to support the tomato supply chain. A study that was done by Saga (2012) revealed that tomato sub-sector facilitated growth of other businesses such as consumer goods, retail shops, transportation, agro-based businesses and food vending centres.

1.2 Problem Statement and Justification

Tanzania is struggling to create more decent employment opportunities that will contribute to improvements of the wellbeing of both the rural as well as urban population (URT,

2012). The government of Tanzania has implemented a number of measures and policies to strengthen the labour market institutions and systems that promote and coordinate employment. However, the past efforts have not been sufficient to prevent an increase in national unemployment and underemployment rates (World Bank, 2015).

According to the 2014 Integrated Labour Force Survey (ILFS), the unemployment rate in the country was 10.3%. The unemployment rate in the urban areas was 13.4% while in the rural areas, unemployment rate was 8.4% (URT, 2015). Moreover, it has been estimated that each year, about 800 000 young people enter Tanzania's labor force and the labour force is expected to increase from 20 million in 2015 to 40 million in 2030 (World Bank, 2015). Nangale (2012) argues that unsatisfactory performance of the agriculture sector, together with lack of alternative employment opportunities in rural areas lead to forced rural-urban migration, which compounds unemployment in urban areas. Nangale further argues that the efforts on increasing employment in non-farm activities in the rural areas are growing at a very slow pace in Tanzania.

Christiaensen *et al.* (2015) argue that poorer people in rural areas find it easier to connect to growth and jobs in and around small urban centres nearby than when these jobs are created further away in large cities due to a series of migration barriers. The findings of their study that was done in Kagera Region using a data set of 4 339 migrants revealed that most people were engaged in the surrounding non-farm economy or moved to small urban centres.

Ilula is among the emerging urban centres that are expected to serve as employment destination centers for job seekers from rural areas in Tanzania. It has been established that about 21% of the population growth in Ilula has been facilitated by the development

of tomato sub-sector through in-migration (Saga, 2012). It has been revealed that commercialization of tomato has attracted substantial inflow of traders and other people seeking employment within tomato industry in Ilula (Lazaro *et al.*, 2013). It has not, however, been empirically evaluated to what extent the development of tomato business and the businesses networks in the emerging urban centre have created employment opportunities.

This study aims to explore the employment creation opportunities resulting from the development of tomato business and business networks in Ilula emerging urban centre. The study will assist policy makers to recognize the employment opportunities that are generated in the emerging urban centres through expansion of agricultural markets and business networks.

1.3 Objectives

1.3.1 Overall objective

The overall objective of this study is to assess employment and income opportunities within tomato sub-sector in Ilula emerging urban centre.

1.3.2 Specific objectives

The specific objectives of this study are to:

- i. Explore the major channels of tomato marketing in the study area.
- ii. Characterize the existing businesses and business networks related to tomato sub-sector in the study area.
- iii. Examine the marketing margin and gross margins of the tomato market actors in the study area.

- iv. Assess the influence of tomato business and business networks on employment creation in the study area.

1.4 Research Questions

- i. Where do farmers and traders sell tomatoes? How do they sell tomatoes?
- ii. How developments of tomato market and business networks in Ilula influence opportunities for employment (both non-farm & farm) creation?
- iii. What are the strategic initiatives in EUC that have influenced employment opportunities? (Initiatives by the government (central, local), private sector, civil society organizations, communities and individuals).

1.5 Hypothesis to be Tested

- H_0 : There is no significant difference in gross margins among the actors of tomato market in Ilula.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Employment in Tanzania

According to the Tanzania national definition of employment, employed population includes all persons above a specified age who did some work in the reference period either for pay in cash or in kind (paid employees) or who were in self-employment for profit or family gain. This includes persons with small scale and large scale businesses working on their own enterprises. Excluded in this category are persons who are self-employed in agriculture and those who are temporarily absent from their work or underemployed during the reference period due to economic reasons such as no suitable land for cultivation, off-season and lack of capital (URT, 2015).

Agriculture sector still accounts for the vast majority of employment in Tanzania despite the fall in agriculture as a share of in total gross domestic product (GDP). The weight of the agriculture sector in GDP decreased from 50% in 2000 to 28% in 2010, and is forecast to decline further to 18% by 2025. However, the sector's role in providing employment is forecast to remain close to 50% until 2025 (World Bank, 2015).

The findings of the 2014 Integrated Labour Force Survey (Table 1) show that agriculture, forestry and fishing industry has the highest proportion, 66.9% of total employment in Tanzania. The second and third industries with highest proportions of total employment are wholesale and retail trade; repair of motor vehicles and motorcycles with 12.7% and; accommodation and food service activities with 3.9% (URT, 2015).

Table 1: Percentage distribution of employed persons aged above 15 years by**industry**

Industry	Total (Percentage)
Agriculture, forestry and fishing	66.9
Mining and quarrying	1.1
Manufacturing	3.1
Construction	2.1
Wholesale and retail trade; repair of motor vehicles and motorcycles	12.7
Transportation and storage	2.6
Accommodation and food service activities	3.9
Administrative and support service activities	0.6
Education	2.1
Human Health and social work activities	0.8
Others	4.1
Total	100

Source: Integrated Labour Force Survey 2014 Analytical report

2.2 Employment and Income Opportunities in the Emerging Urban Centres

Emerging urban centres are geographical areas that undergo rapid transformation from being rural villages to become centers of attraction where majority of residents are migrants (Lazaro *et al.*, 2014). Many researchers (Tacoli, 2004; Diamantini and Nichia, 2014; Satterthwaite, 2016) across the world refer the emerging urban centres as the small urban centres. Small urban centres are market towns that offer markets and services for local agricultural producers and retail and service provisioning for their populations and the surrounding populations. On the other hand, they are also administrative towns in which a large proportion of the population derives their income from government services and government-funded services (Akkoyunlu, 2013).

Small urban centres have a considerable impact on Regional and economic development, since they enhance agricultural productivity by providing agricultural inputs, urban goods and services; non-farm employment; markets for agricultural products; and processing agricultural products (Tacoli, 2004).

Nchito (2013) analyzed the growth and functions of small urban centres (Mazambuka and Kilomo) in Zambia. The role of Mazabuka and Kalomo in terms of rural-urban linkages was presented in the study with the transport sector and movement of shoppers. The study found that, small towns such as Mazabuka and Kalomo act as central places offering higher order goods to their hinterland. Despite small towns not being able to provide adequate services, the study findings showed that small towns presented a level of urban concentration which was able to generate employment and economic growth.

Christiaensen *et al.* (2015) assessed the role of small towns in Tanzania in Kagera Region using a data set of 4 339 migrants of the 1992 and 2010 Kagera Health and Development Survey. It was found that 189 respondents moved to cities, 775 moved to towns, 751 remained in the rural off-farm sector and 1 661 in the rural farm sector. The findings of the study revealed that towns attracted four times more people from the sample and contributed twice as much to total income growth. This implies that people found more employment opportunities in small towns than in the cities. Moves to small towns made up a much larger share of total growth and poverty reduction than moves to cities as a result of their closer proximity to the rural poor, network density, socio-cultural similarity and different linkages with the rural hinterlands.

2.3 Rural-urban Linkages, Business Networks and Employment

Rural-urban linkages can be defined as the structural social, economic, cultural, and political relationships maintained between individuals and groups in the urban environment and those in rural areas (Ndabeni, 2014). Rural-urban linkages can also refer to spatial and sectoral flows that occur between rural and urban areas. Spatial flows include flows of people, goods, money, technology, knowledge, information, and waste.

By contrast, sectoral flows include flows of agricultural products going to urban areas, and goods from urban manufacturing areas going to more rural areas (Olariu, 2010). Typically, rural-urban linkages are often articulated in the nature and forms of migration, production, consumption, financial and some investment linkages that occur within the rural-urban symbiosis (Ndabeni, 2014).

A study on the potential of rural–urban linkages for sustainable development and trade in developing countries by Akkoyunlu (2013) found that the demand created by the urban-based markets was crucial for rural producers and it was the urban-based markets that linked rural producers to Regional and international markets. Moreover, the study revealed that trade agreements and business networks enhanced rural-urban linkages and thus the share of off-farm employment and the diversity of employment opportunities in rural areas.

Another study that was done by Rezvani *et al.* (2014) on the impact of rural-urban linkages on diversification of the rural economy with emphasis on woodcraft in India revealed that the development of woodcraft workshops in villages built and strengthened rural-urban linkages and rural-urban linkages played a major role in employment creation and diversification economic activities in the villages.

2.4 Review of Empirical Studies on Tomato Value Chain in Kilolo District

There are studies that have been done on tomato sub-sector in Kilolo District. Khasa and Msuya (2016) assessed gender roles in the tomato value chain in Kilolo District and Dodoma Municipality in Tanzania. In both study areas the identified actors were input suppliers, producers, transporters, coolies, assemblers, traders and consumers. Crate and basket makers were identified in Kilolo District but not in Dodoma Municipality. The

study revealed that different gender categories like youth, middle and old aged people of both sexes play different roles in the tomato value chain including input supplying, production, transportation and marketing.

Nyamba *et al.* (2016) examined the status of tomato marketing with respect to information sharing and power relations between farmers and market masters in the tomato value chain. The study revealed a complex web of actors with complex relationships whereby each actor had a different function. The main actors in the chain were farmers, businesspersons, transporters and consumers. Farmers constituted the main players and were supported by other actors including input suppliers and agriculture extension officers. At the marketing level, there were also a number of actors who play different roles including the market masters/ market brokers, crate makers and transporters.

Mwagike and Mdoe (2015) analyzed the role of middlemen in fresh tomato supply chain in Kilolo District. The findings of the study revealed that 58% of smallholder tomato farmers sold their produce to middlemen due to being geographical separated from the markets, poor local road network and poor access to market information. The study concluded that the use of middlemen to sell tomato produce cannot be avoided unless smallholder farmers are linked with urban markets.

Mwagike (2015) examined the coordination mechanisms used in the fresh tomato supply chain in Kilolo District. The findings revealed that tomato supply chain was coordinated using two mechanisms, horizontal coordination and vertical coordination. Moreover, the study found that there were informal contractual arrangements among input suppliers and smallholder farmers and among smallholder farmers and traders and among traders themselves. Contractual arrangements allowed actors to obtain credit from other actors for businesses purposes.

2.5 Approaches Used on Examining the Impact of Agricultural Markets on Employment

Omore (2004) analyzed direct and indirect employment generated through small scale dairy marketing in Ghana, Kenya and Bangladesh by using employment based analysis. The method involves tallying of the number of jobs created by some economic activity per some defined units over a given period of time. The results of the study revealed that the number of both direct and indirect jobs created totaled from 0.3 to 2.0 in Kenya, from 0.02 to 5.6 in Bangladesh and from 1.7 to 10 in Ghana for every 100 litres of milk traded.

Brazil (2010) examined the importance of agricultural growth on rural non-farm incomes and employment in Alabama. The study used cross-section data to estimate econometrically the indirect rural employment and income generated by agricultural growth. The study adopted an economic base model developed by Richardson (1985) to analyze the data. The model assumes that while agricultural output is constrained by technology, land and agro-climate, rural nonfarm activity is constrained only by demand. Improved agricultural technology increases farm output and hence the demand for nonfarm inputs and consumer goods. The results showed a negative rural-urban growth linkage, implying that agricultural based rural development policies did not lead to employment growth in Alabama over the studied period.

Hughes *et al.* (2008) examined the net impact of farmers' markets on the West Virginia economy. A combination of vendor survey data and an Impact Planning (IMPLAN) based Input-Output model were used in the study. The findings of the study showed that gross impacts were 119 jobs (69 full-time equivalent jobs) and \$2.389 million in output including \$1.48 million in gross state product. IMPLAN based Input-Output model was also used in the study that was done by United Nations Economic and Social Council

(2012) on livestock value chains in Eastern and Southern Africa. The study estimated the employment multipliers for meat products, livestock feeds, dairy products, livestock, milk, poultry and animal fibre. The results indicated that the employment multipliers were 11.7 (for meat products), 10.0 (for livestock feeds), 8.24 (for dairy products), 1.92 (for livestock), 1.57 (for milk), 1.48 (for poultry) and -1.17 (for animal fibre).

Dudensing and Manthei (2009) assessed the economic contribution of agriculture and agribusiness to the North Central Texas council of governments Region. The study used employment multipliers to estimate the contribution of agriculture and agribusiness in the Regions. The findings showed that agriculture and agribusiness contributed more than 31 596 jobs to the Region. The direct employment in agriculture production was 26 079, indirect employment was 3 782 and induced employment was 1 734.

2.6 Theoretical Framework

This study was based on the growth pole theory that was developed by French Regional economist, Francois Perroux (1955). According to this theory Regional growth occurs when concentration of economic activity leads to dynamic forces of attraction that causes more economic growth. The theory is used to explain the difference in growth between urban areas and their hinterlands. Urban areas are considered to be engines of growth and it is proposed that linkages between rural and urban areas would lead to distribution of urban growth benefits to rural areas (Spence *et al.*, 2009).

The development of Ilula typically explains the growth pole theory whereby commercialization of agriculture, introduction of financial services and provision of electricity services led to the development of Ilula village into an emerging urban centre.

This study has considered the agricultural markets and business networks as the main economic forces behind the livelihood and development of Ilula emerging urban centre. The expansion of agricultural markets and business networks in Ilula generates employment opportunities and attract migrants from the rural hinterlands and other Regions to settle in the emerging urban centre.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Description of the Study Area

3.1.1 Geographical area and demography of the study area

The study was carried out in Ilula emerging urban centre which is within Ilula township authority in Kilolo District, Iringa. Ilula emerging urban centre is situated between latitudes $36^{\circ} 2'$ and $36^{\circ} 4'$ East and longitudes $7^{\circ} 41'$ and $7^{\circ} 68'$ South. Ilula was officially declared a township in 2006 as per Local Government Act. No.8 of 1982. This declaration was a result of a transformation or upgrading of what was formerly known as Mazombe division that was predominantly rural area (Saga, 2012).

The township is divided into two Wards: Ilula and Nyalumbu; and 12 streets. The streets of Nyalumbu Ward are Mtua, Mwaya, Sokoni, Matalawe, Ding'inayo, Itabali and Ngelango. The streets of Ilula Ward are Itunda, Igunga, Madizini, Masukanzi and Ikokoto. The study mainly focused on Ilula emerging urban centre (EUC) which is part of the Ilula township. Saga (2012) considered Ilula EUC to be made of the 12 streets of Ilula township and the immediate hinterland. Mshote (2015) considered Ilula EUC to be comprised of five main streets namely; Mtua, Mwaya, Ding'inayo, Ngelango and Sokoni. This study considered eight urbanized streets namely; Itunda, Igunga, Madizini, Mtua, Mwaya, Sokoni, Matalawe, Itabali and Ngelango to comprise the Ilula EUC. These urbanized streets are characterized by: concentration of variety of businesses (such as retail shops, wholesale shops, carpentry workshops, petty trades) and availability of social, health and financial services. The other four streets (Ding'inayo, Masukanzi, Ikokoto and Ikuvala) are still rural. According to the 2012 Tanzania National Census, Ilula township has a total

population of 32 801 people. Nyalumbu and Ilula Wards have a total population of 15 306 and 11 109 respectively. About 70% of the population in the study area is employed in agriculture (URT, 2013).

3.1.2 Economic activities in the study area

According to the 2013 Socio-economic profile of Kilolo District council, tomato business is the third important economic activity in the District. Ilula township is an important geographic cluster for the production and marketing of tomatoes mainly the *Roma*¹ and *Tanya*² tomato varieties, which are in greater demand compared to other varieties. Other crops that are produced in Ilula include beans, onions, green pepper and maize. Commercialization of tomato production, introduction of financial services and other services in 1980s led to the transformation of Ilula from rural to urban setting with relatively faster growth in population, social and economic activities. In 2006, Ilula village was declared a township¹ as per local government Act No. 8 of 1982 (Lazaro *et al.*, 2013).

3.2 Rationale for Selection of the Study Area

Ilula emerging urban centre is among the emerging urban centres in Tanzania that has exhibited population growth due to the growth of agricultural trade and other economic activities which attract many people from the rural hinterlands and urban areas. Agricultural trade and other economic activities in Ilula emerging urban centre have been influenced by the development of tomato sub-sector. For this reason, Ilula emerging urban

¹ *Roma* is an open pollinated variety (OPV) cultivated in rainy season only. It has short shelf life. Commonly grown in the southern highlands of Tanzania. About 70 % of the farmers in Kilolo district use Roma variety (Mwagike and Mdoe, 2015).

² *Tanya* is an open pollinated variety (OPV) cultivated in rainy and dry season. It has long shelf life up to two weeks. Most commonly grown in southern highlands, Lake Zone and northern zone of Tanzania. About 30 % of the farmers in Kilolo district use Tanya variety (Mwagike and Mdoe, 2015).

centre was selected for this study in order to assess the employment creation opportunities that result from the development of tomato sub-sector.

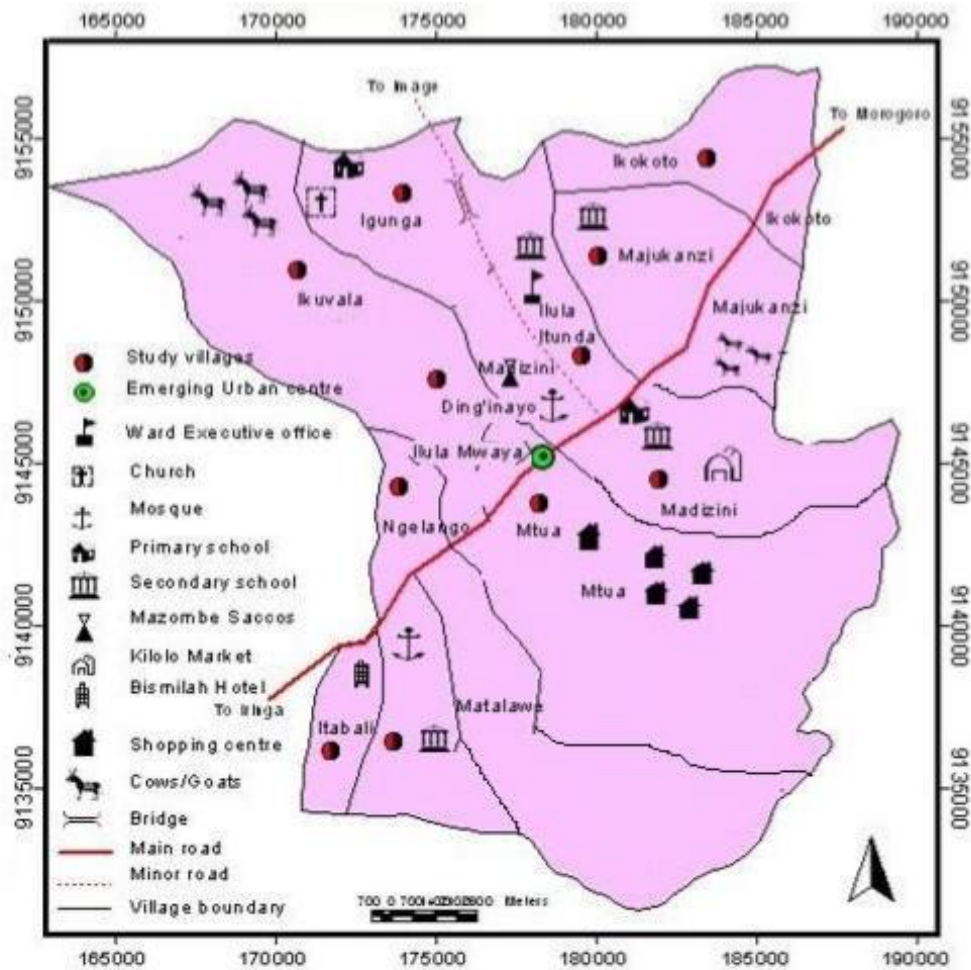


Figure 1: A map of the study area, Ilula emerging urban centre

3.3 Study Design

The study was of cross sectional design and the population of interest was the actors of the tomato markets and other businesses that were linked to tomato sub-sector in Ilula emerging urban centre.

3.4 Sampling Method

Cluster random sampling, specifically area sampling was used to randomly select two streets, Itunda street from Ilula Ward and Itabali street from Nyalumbu Ward. A complete list of 13 streets represented the sampling frame. Then two streets were chosen randomly as the source of primary data. The two streets were the primary sampling units and were the geographical clusters for this study. The secondary sampling units constituted of all actors that are involved in marketing of tomatoes, marketing of agricultural inputs and other businesses that are related to tomatoes marketing in the study area. The sampling frame consisted of the inputs suppliers, tomato farmers, assemblers of tomatoes, wholesalers of tomatoes, retailers of tomatoes, sellers of crates and baskets, transporters, loaders, sorters, food vendors and the mobile phone money agents. The sampling frame was prepared with the assistance of the chairpersons of the two streets.

A total of 282 individuals were interviewed during the field survey; 94 in Itunda street and 188 in Itabali street of Ilula and Nyalumbu Wards respectively. The respondents were the heads of the households that were engaged in tomato business and other businesses related to tomato in the study area. The respondents included 2 inputs suppliers, 101 tomato farmers, 30 assemblers of tomatoes, 48 wholesalers of tomatoes, 10 retailers of tomatoes, 5 sellers of crates, 18 sellers of baskets, 11 transporters, 34 loaders, 17 food vendors and 6 mobile phone money agents. The respondents who were engaged in more than one activity related to tomato marketing were counted only once for accuracy. Table 2 shows total respondents that were interviewed.

Table 2: Total number of respondents as per each street

Respondents	Itunda	Itabali	Total
Farmers	41	60	101
Wholesalers	11	37	48
Assemblers	14	16	30
Retailers	3	7	10
Input suppliers	0	2	2
Transporters	4	7	11
Basket sellers	1	3	4
Basket renters	1	13	14
Crate sellers	1	4	5
Mobile money agents	2	4	6
Food vendors	6	11	17
Loaders	9	25	34
Total	94	188	282

3.5 Data Collection

Primary data was collected through direct interviews using semi structured questionnaires. Three types of semi structured questionnaires were used for data collection. The first set of questionnaires was designed for tomato farmers, the second set of questionnaires was designed for tomato traders (wholesalers, assemblers, brokers and retailers) and third set of questionnaires was for other actors who businesses related to tomatoes (basket makers, crate makers, transporters and food vendors).

Secondary data were collected by reading various books, reports, published and unpublished research works from Sokoine National Agriculture Library (SNAL) and internet. Data of the population was collected from the offices of the Ward Executive Officers (WEOs) of Ilula and Nyalumbu Wards.

3.6 Data Analysis

Both qualitative and quantitative approaches have been used to analyze data and make inferences. Quantitative analysis includes descriptive and inferential statistics while qualitative approach includes cluster analysis and use of flow charts.

3.6.1 Tomato marketing channels

Cluster analysis was used to identify different marketing channels of tomato in the study area. The Cluster Analysis is an explorative analysis that tries to identify structures within the data. Specifically, the study used divisive approach of cluster analysis which started by grouping all farmers in the same cluster, farmers were then segregated by the people to whom they sell their produce (that is assemblers, wholesalers, retailers and consumers). Assemblers and wholesalers were then segregated by the people to whom they sell their produce. Flow chart was also used to show the main marketing channels of tomatoes in the study area.

3.6.2 Existing businesses and business networks related to tomato sub-sector

Both qualitative and quantitative methods were used to identify and characterize the existing business networks in the emerging urban centre, Ilula. Descriptive statistics including frequencies and percentages were used in the analysis. Social network analysis techniques were used to characterize the business networks. . In analysis of social networks, social relations are considered channels that transport information, services, or goods between people or organizations. Network analysis reveals social structure and helps to trace the routes that goods and information may follow (Nooy *et al.*, 2005).

In this study, business relations were considered as channels that transport market information, services and goods between actors of the tomato market. A network graph, partition of network and analysis of business ties techniques were used to analyze the business networks. A graph is a set of vertices and a set of lines between pairs of vertices. A vertex (singular of vertices) is the smallest unit in a network, it represents an actor. A partition of a network is a classification or clustering of the vertices in the network such

that each vertex is assigned to exactly one class or cluster (Nooy *et al.*, 2005). A partition of a network technique was used to classify actors of the business networks and the graph was used to show the structure of the business network in tomato sub-sector in the study area.

3.6.3 Marketing margins and gross margins of the actors in the tomato market

Marketing margin analysis was used to assess the price difference between tomato assemblers, wholesalers and retailers. Marketing margins were derived using the data on the average buying and the selling prices of October- December, 2015 season.

$$\text{Marketing Margin} = \frac{\text{Selling price} - \text{Buying price}}{\text{Selling price}} \times 100 \dots \dots \dots (1)$$

The Gross margins were analyzed in order to determine the returns realized by different actors of tomato markets in Ilula. Gross Margins were analyzed by using the collected data on variable costs and the revenue based on prices. The analysis of gross margins was based on the prices and volumes of tomatoes traded in October- December, 2015 season. The analysis of the gross margins relied on an assumption that fixed costs are so small that they do not affect the sustainability of the businesses.

$$GM_i = \sum TR_i - \sum TVC_i \dots \dots \dots (2)$$

Where:

GM = Gross Margin of i^{th} market actor (TZSs/ Kg);

TR = Total revenue of i^{th} market actor (TZSs/ Kg);

TVC = Total variable cost of i^{th} market actor (TZSs/ Kg);

Total revenue was calculated by multiplying the average yield in kilograms of tomatoes by the average market price of tomatoes. Total variable costs included the production costs, storage cost, transportation cost, wage labour costs, opportunity costs of family labour and marketing costs per kilogram of tomatoes.

3.6.4 Testing of hypothesis

One way Analysis of Variance (ANOVA) was done to determine whether there is significant difference in marketing margins and gross margins of the tomato farmers, assemblers, wholesalers and retailers. Analysis of variance (ANOVA) is a method for testing the hypothesis that there is no difference between two or more population means (usually at least three). It is often used for testing the hypothesis that there is no difference between a number of treatments (Heron, 2009).

3.6.5 The influence of tomato business and business networks on employment creation

Employment multiplier effect was used to determine the influence of tomato business and business networks on employment creation in the study area. The employment multiplier measures the amount of direct and indirect employment created (or lost) in an area (Bivens, 2003).

$$\text{Total Employment (T)} = \text{Direct Employment (D)} + \text{Indirect Employment (I)} \dots\dots\dots (3)$$

$$D = T - I \dots\dots\dots (4)$$

$$D/T = (T - I)/T \dots\dots\dots (5)$$

$$D/T = 1 - I/T \dots\dots\dots (6)$$

$$D = T(1 - I/T) \dots\dots\dots (7)$$

$$T = D \left(\frac{1}{1-I/T} \right) \dots\dots\dots (8)$$

$$\text{The employment multiplier is } \left(\frac{1}{1-I/T} \right) = T/D \dots\dots\dots (9)$$

The employment multiplier effect from above equations is obtained by multiplying the direct employment by the multiplier and then deducting the direct employment.

$$\text{The employment multiplier effect} = D(T/D) - D \dots\dots\dots (10)$$

This study considered direct employment as the number of respondents who were wage labour of tomato farmers, assemblers, wholesalers, retailers of tomatoes, sellers and renters of crates and crates and assemblers in the study area.

Indirect employment included the number of respondents who were employed in services that support agricultural marketing. These included suppliers of agricultural inputs, labour employed by input suppliers, transporters, loaders, sorters, mobile money agents and food vendors.

The employment multiplier effect was used to estimate the employment generated through tomato business and business networks in the study area. The employment multiplier was estimated for each street that was studied.

3.7 Conceptual Framework

The flow of goods and services between rural and urban areas is an essential factor for development of rural areas. The urban centres serve as the engines for agricultural growth through provision of services and markets for tomatoes produced in the rural areas.

Expanding markets in the urban centres (due to population growth) and agricultural support services help to increase the productive capacity of the rural producers and promote the commercialization and specialization of tomato in Ilula. Commercialization of tomato influences other economic activities that emerge to support supply chain of tomatoes. Emerging economic activities generates employment opportunities for the residents of the Ilula emerging urban centre and the rural hinterlands. Business networks are developed among farmers, traders and actors of other businesses as different economic activities emerge to support the supply chain of tomato.

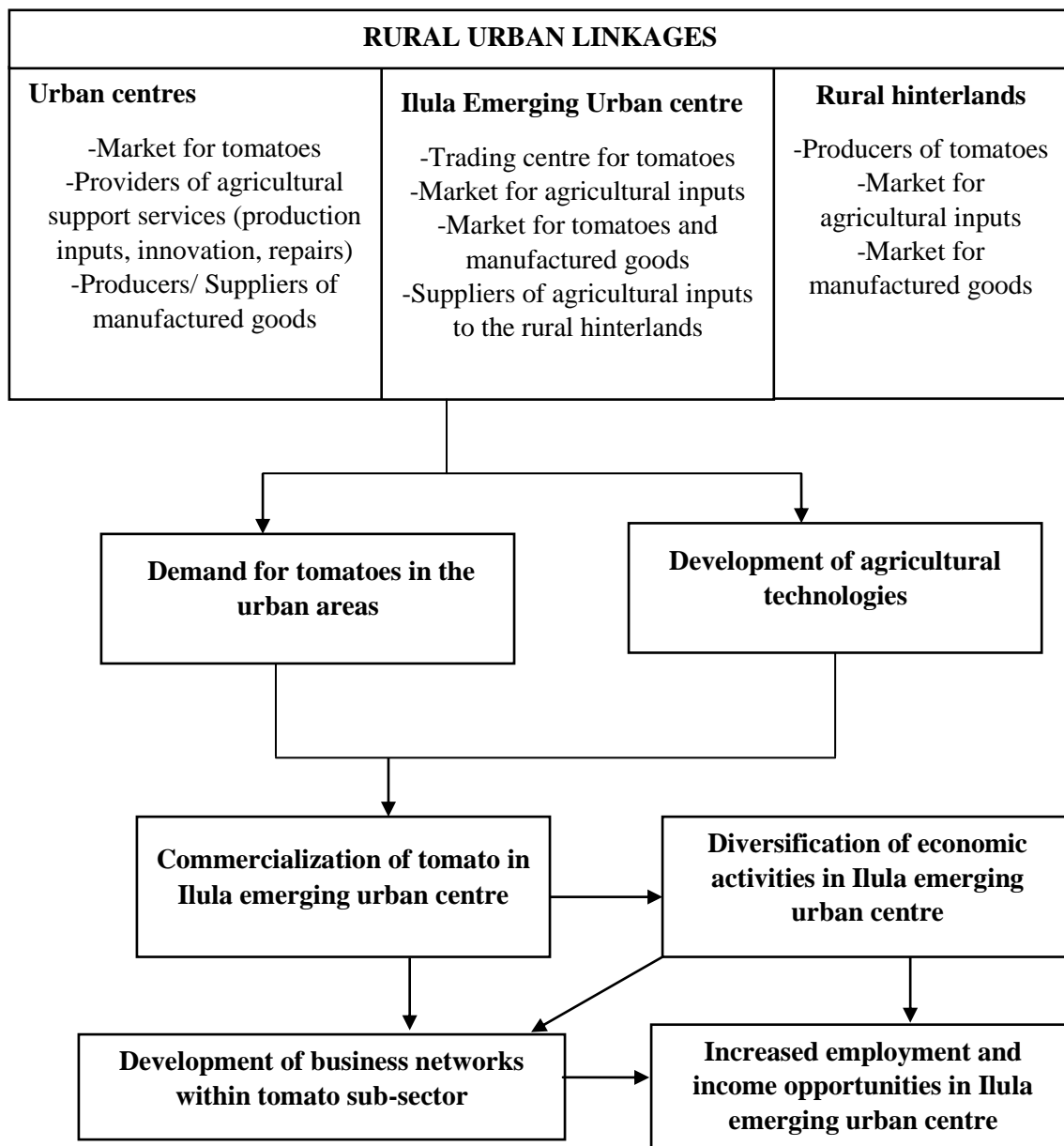


Figure 2: The conceptual framework

Source: Own conceptualization

3.8 Limitations of the Study

The study has used the employment multiplier effect to estimate the number of jobs that have been influenced by tomato business and business networks in Ilula emerging urban centres. The approach used involves aggregating the numbers of all actors and the wage labour they employ. It was revealed that, the business networks among actors of tomato markets and other businesses in tomato sub-sector extend to the other Districts in Iringa and other Regions. Some of the actors employ wage labour in other Districts or other Regions. The study has not considered the wage labour employed in other Districts or other Regions on estimation of the employment multiplier effect.

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

This chapter presents major findings and interpretation of data related to assessment of the employment opportunities resulting from the development of tomato sub-sector in Ilula emerging urban centre. This chapter starts by presenting the main characteristics of tomato actors in the study area. The second section presents the findings of the marketing channels of tomato that has been identified in the study area. The third section presents the types of businesses related to tomato and characteristics of business networks. The fourth section presents the gross margins of the tomato farmers and traders and the fifth section present the findings of employment opportunities that have been influenced by the tomato sub-sector in the study area.

4.1 Social Economic Characteristics of the Respondents

4.1.1 Social economic characteristics of the tomato farmers

Results show that tomato farmers in the study area cultivate small areas under tomato. The average area cultivated by the tomato farmers was 2.5 acres and the area cultivated under tomato ranged from 0.5 acre to 12 acres. Farmers cultivate small areas under tomato because they rely on hand hoe as the main cultivating tool.

The findings of the study show that majority of the sampled tomato farmers (55%) were relatively young aged between 36 and 55 years. The average age of the farmers was 38 years and the age of the farmers ranged between 20 and 67 years. These findings support findings of other studies that were done by ESRF (2010) and Khasa and Msuya (2016) which revealed that majority of the farmers are middle aged (aged between 36 and 55

years) with the average of 41. More middle aged people were engaged in tomato production than young people and elderly people partly because tomato is the main commercial crop in the study area that provide income opportunities for the middle aged people but requires intensive methods of cultivation. Moreover, tomato production requires high capital investment as well as prodigious management of the farm activities.

The findings of the study show that, 68% of the sampled farmers were males while 32% were females. This is because men mostly engage in producing more paying cash crops than women who engage in the production of less paying subsistence crops (Khasa and Msuya, 2016).

Migration is one of the concepts of the rural-urban linkages. Migration is a change of residence either permanently or temporarily and it can be internal or international in terms of spatial boundaries. Internal migration is the movement of individuals within a country whereas international migration involves the flow of individuals between countries where national boundaries are crossed (Wondimagegnhu, 2012). The findings show that 33% of the farmers migrated to Ilula from elsewhere within Iringa Region and other Districts. The majority of the farmers (67%) were natives of Ilula Township. This could be related to the issues of land ownership for agricultural activities in Ilula.

Of the interviewed tomato farmers, only 4% reported to have salaried employment occupation while 97% of the farmers reported to have no salaried employment occupation. Table 3 shows description of the economic activities of the interviewed farmers.

Table 3: Social economic characteristics of the tomato farmers (%)

		(n=101)
Sex	Male	68
	Female	32
Total		100
Age	16-35	40
	36- 55	55
	Above 55	5
Total		100
Education	Non-formal education	3
	Primary education	70
	Secondary/ higher education	27
Total		100
Place of birth	Ilula	67
	Other place in Iringa	20
	Other Region in Tanzania	13
Total		100
Acreage of tomato farm	Between 0.5and 1 acres	43
	Between 1.1 and 3 acres	37
	More than 3 acres	20
Total		100
Years of tomato farming	Less than 10 years	44
	Between 10 and 20 years	32
	More than 20 years	24
Total		100
Have salaried employment	Yes	3
	No	97
Total		100
Engage in other businesses related to tomato	Yes	12
	No	88
Total		100
Hire wage labour	Yes	92
	No	8
Total		100

The results indicate that 27% of the interviewed farmers had secondary or higher education (Table 2). Moreover, findings show that 67% of the farmers with secondary education were youths aged between 16 and 35 years (Table 4). This could be a result of Ward level secondary schools that encourage more youths to go for secondary education.

Table 4: Education level of farmers based on different age groups (%)

	No formal education (n=3)	Primary education (n=71)	Secondary/Higher education (n=27)
Age group			
16- 35 years	0	30	67
36- 55 years	33	65	33
Above 55 years	67	5	0
Total	100	100	100

The findings of the study reveal that 12% of tomato farmers were engaged in other business activities that are related to tomato in the study area. These include supply of inputs, transportation, loading of tomatoes, sale of baskets, sale of crates and mobile money services. The results indicate that 3 farmers in Itunda street and 9 farmers in Itabali street were engaged in other businesses and related to tomato (Table 5).

Table 5: Farmers engaged in other businesses (frequencies)

Type of business	Itunda (n=41)	Itabali (n=60)	Total (n=101)
Inputs supply	1	0	1
Sale of baskets	0	5	5
Sale of crates	0	1	1
Loading	0	1	1
Transportation	1	1	2
Mobile money services	1	1	2
Total	3	9	12

4.1.2 Social economic characteristics of tomato traders and other business people

Tomato traders include wholesalers, assemblers and retailers who are involved in marketing of tomatoes in the study area. Other business people include input suppliers, sellers of baskets, sellers of crates, transporters, loaders, food vendors and mobile money agents. These business people are involved in businesses or provision of services that are linked to tomato business in the study area. A total of 181 tomato traders and other business people were interviewed for this study (Table 6).

Results of the study show that a greater percentage of tomato traders and other business people (56%) were aged less than 36 years. This is an indication of active youth involvement in tomato marketing and other business activities related to tomatoes.

The findings reveal that 76% of the interviewed tomato traders and other business people were males while only 24% were females. The aforementioned findings follow a particular pattern and could imply that even though both men and women can take tomato marketing and other businesses related to tomato as a source of employment, tomato marketing and other businesses related to tomato are dominated by males.

The results show that 21% of the tomato traders and other business people had secondary or higher education and 76% had primary education. This implies that the respondents were fairly educated which is important in their marketing decision-making process. Table 5 shows the social economic characteristics of the tomato traders and other business people in the study area.

Table 6: Social economic characteristics of tomato traders and business people (%)

		Percentage (n=181)
Sex	Male	76
	Female	24
Total		100
Age	16-35	56
	36- 55	42
	Above 55	2
Total		100
Education	Non formal education	3
	Primary education	76
	Secondary/ higher education	21
Total		100
Place of birth	Ilula	39
	Other place in Iringa	27
	Other Region in Tanzania	34
Total		100
Years in business	Less than 10 years	80
	Between 10 and 20 years	15
	More than 20 years	5
Total		100
Hire wage labour	Yes	73
	No	27
Total		100

The findings of the study show that 84% of the tomato traders and other business people had less than ten years of experience in doing businesses related to tomatoes and only 3% had more than 20 years of experience in doing businesses related to tomatoes. Of the interviewed traders and other business people, 73% hire wage labour while 27% of the tomato traders and other business people do not hire labour (Table 7).

Moreover, the findings show that 78% of the traders and other business people who hired wage labour had less than 10 years of experience in businesses related to tomato and 42% of the traders and other businessmen who hired wage labour were the natives of Ilula Township (Table 7).

Table 7: Proportion of traders and business people who hire wage labour (%)

	Hire labour (n=132)	Do not hire labour (n=49)	Total (n=181)
Years in business			
Less than 10 years	78	88	81
Between 10 and 20 years	17	10	15
More than 20 years	5	2	4
Total	100	100	100

4.2 Tomato Marketing Channels in the Study Area

There are four marketing channels through which farmers and traders sell fresh tomatoes in the study area (Figure 3). The most common marketing channel comprises of tomato farmers who sell their produce to the wholesalers through the assemblers in Ilula. The main role of assemblers is to connect buyers with farmers at the wholesale markets. Other functions that assemblers may perform include aggregating supply from multiple farmers, arranging transport logistics, temporarily storing tomatoes at markets and distributing them to multiple wholesalers. Wholesalers sell tomatoes to the secondary wholesalers or retailers in the urban markets. It was found that 69% of the interviewed tomato farmers sold their produce through this channel during the October-November, 2015 cropping season.

The second channel is shorter and comprises of farmers who sell their produce directly to the wholesalers without involving assemblers. This happens when wholesalers have direct contacts to farmers in the villages and purchase tomatoes directly from the farmers without involving assemblers. The wholesalers may purchase tomatoes from the farmers in the villages or tomato farmers may transport the produce to the wholesalers they have business relations with in the urban markets (Kariakoo, Ilala, Mabibo, Kibaha markets and other markets in the cities/towns). Wholesalers sell tomatoes to the secondary wholesalers

or retailers in the urban markets. Approximately 18% of the interviewed farmers sold their tomatoes through this channel. This finding supports findings of a study that was done by Mwangi and Mdoe (2015) that revealed that 18% of tomato farmers in Kilolo District sold their produce to the wholesalers.

The third channel comprises of tomato farmers who sell their produce to the retailers. Retailers sell tomatoes in small quantities. They are either based at an established retail market place or in its surrounding streets, or they sell in villages or along main roads. Retailers who are based in the streets may individually buy one basket of tomatoes at a time or they may jointly buy more than one baskets of tomatoes and share. Retailers sell primarily to consumers but may also sell to street food vendors or restaurants. It was found that 7% of the farmers sold their produce through this channel.

The shortest channel comprises of tomato farmers who sell their produce directly to the consumers. Direct sale of tomatoes by the farmer or its family members to the consumer occurs mainly along the roadside or in the villages. Farmers sell their produce in buckets to neighboring households or passers-by consumers. This channel allows selling of oversupply and quantities that are too small for commercial trade or do not qualify for urban market, quality-wise. The findings of the study show that 6% of the farmers sold their produce through this channel.

These findings show that 94% of the tomato farmers do not have direct links with the end consumers and/or buyers at the terminal markets in the urban centres. This may have been attributed by a number of factors. In the study that was done by Sanga and Mgimba (2016), it was found that; lack of access to credit; lack of access to storage facilities; lack of market information, poor road infrastructure; and high transportation costs were the main constraints that affected farmers in tomato marketing. Mwangi and Mdoe (2015)

found that the main factor that limited tomato farmers to access urban markets was high transportation costs due to poor road networks and distance to the terminal markets.

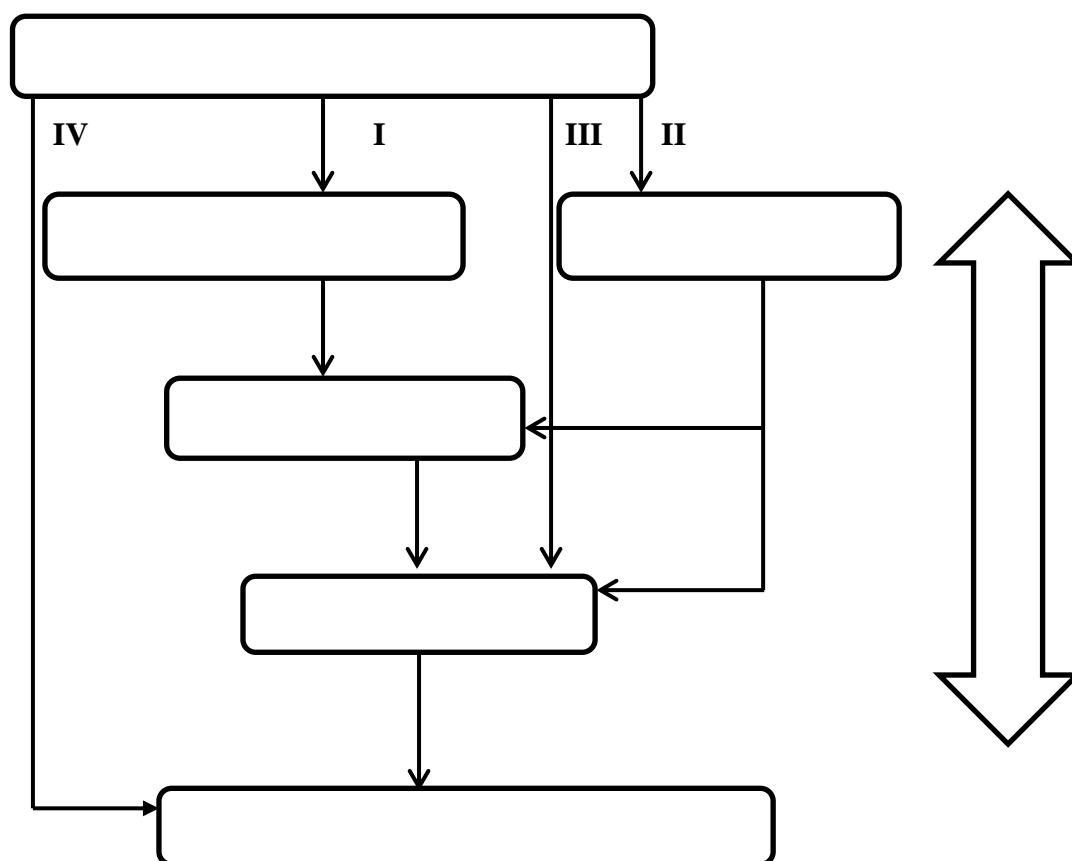


Figure 3: The main marketing channels of tomatoes in Ilula

Channel I: Farmers→ Assemblers→ Wholesalers→ Retailers→ Consumers

Channel II: Farmers→ Wholesalers→ Retailers→ Consumers

Channel III: Farmers→ Retailers→ Consumers

Channel IV: Farmers → Consumers

4.3 Businesses Related to Tomatoes in the Study Area

4.3.1 Tomato farming

Tomato is the main cash crop in the study area. Tomato farming is dominated by smallholders who cultivate between 0.5 acres and 3 acres. The findings show that 80% of

the interviewed farmers were smallholders whereas 43% of the tomato farmers cultivated less than 1 acre and 37% of the farmers cultivated between 1.1 acres and 3 acres of tomato farms. The findings reveal that majority (68%) of the farmers were males. Of the interviewed farmers, 99% reported that they depend on tomato farming as the main source of income for their households. Tomato farming provides income to 33% of the farmers who migrated to Ilula from the other Regions and other Districts of Iringa. The findings show that 44% of the interviewed farmers had been engaged in tomato farming for less than 10 years and only 24% have been engaged in tomato farming for more than 20 years (Table 8).

Table 8: Proportion of farmers who hire wage labour (%)

	Hire wage labour (n=101)		Total
	Yes	No	
Years in business			
Less than 10 years	42	62	44
Between 10 and 20 years	32	25	32
More than 20 years	26	13	24
Total	100	100	100

4.3.2 Input supply

Supply of inputs including tomato seeds, industrial fertilizer, pesticides and fungicides as well as sprayers and other farm tools is done by agro dealers. The agro dealers sell the inputs to farmers through retail agrovet shops that are found in different places of Ilula Township. It was found that there were two inputs suppliers in Itabali street and one input supplier in Itunda street. The two input suppliers were males (Table 9).

4.3.3 Assembling of tomatoes

This involves collection of tomatoes from the farmers and delivering them to the wholesalers. Assemblers perform a simple yet a very important function in the tomato

marketing chain. They connect buyers (wholesalers, retailers) and sellers (farmers) and facilitate the informal relationship between the two. Assemblers work for different wholesalers and they are responsible for identifying farmers who sell tomatoes.

The other functions that assemblers perform include mediating on sorting and packaging of tomatoes, temporarily storing tomatoes and distributing them to multiple wholesalers. The results of the study show that assembling of tomatoes was mainly done by men whereas 83% of the assemblers were males. Moreover, assemblers constitute of 17% of all traders and other business people in the study area (Table 9).

4.3.4 Wholesale of tomatoes

Wholesale business involves purchase of large quantities of tomato and resale of tomatoes to other traders. Wholesalers purchase tomato at farm gate, from assemblers and farmers in a larger volume than any other marketing actor does. Wholesalers sell to retailers, other wholesalers, and industrial users but do not sell significant amounts to final consumers. Wholesalers have direct relationship with the assemblers who help them to purchase tomatoes from the farmers. Results of the study show that wholesale of tomatoes was dominated by men whereby 69% of the wholesalers were males. Moreover, wholesalers constitute of 27% of all traders and other business people in the study area (Table 9).

Results of the study revealed that, 48% of the wholesalers migrate to Ilula from the other Regions (Dar es Salaam and Morogoro) during the tomato seasons only. There are two tomato seasons in the study area, May-July season and October-December season. During the interviews, wholesalers reported that when tomato season is over in Ilula they often migrate to Morogoro (to Mlali and Doma) where the tomato season starts to kick off.

Table 9: Distribution of tomato traders and other business people by sex (%)

Type of business	Males	Females	Total
Input suppliers	100	0	1
Wholesalers	69	31	27
Retailers	30	70	6
Assemblers	83	17	17
Transporters	100	0	6
Basket renters	93	7	7
Basket sellers	100	0	2
Crate sellers	60	40	3
Loaders	100	0	19
Food vendors	18	82	9
Mobile money agents	83	17	3
Total	76	24	100

4.3.5 Retail of tomatoes

Retailers sell tomatoes to consumers, street food vendors and restaurants in smaller quantities. The majority (70%) of the retailers are women. Retailers are based on the retail markets, in the streets of the villages or along the main road. Retailers purchase their produce from the farmers or wholesalers of tomatoes. Retailers buy one to three baskets of tomatoes at a time, which they sell by different units of measurement, either by bucket (which varies from 2 to 20 kilograms in size) or by quantity, specifically in groups of four or five tomatoes of similar size. Retailers based in proximity to a formal market place usually buy from farmers that bring tomatoes to the market, whereas retailers along the roads or in villages are often farmers who sell their own produce.

4.3.6 Transportation

Transportation of tomatoes from the farms to the market places is done by individual people or private transport companies. Large trucks are used to transport large quantities of tomatoes (5 or more tons) over long distances. While for shorter distances, a variety of means are used including motorbikes, motorized tricycles, bicycles and push-carts. Approximately 88% of the farmers are forced to transport the tomatoes to the market

places on their own to find buyers. For short-distances, farmers would transport tomatoes to market places by using motorbikes, bicycles or hiring casual labor to carry tomatoes baskets on the heads. For long distance farmers would use trucks commonly known as pickups which can carry about one to three tons of tomatoes.

Wholesalers and assemblers often use larger trucks to transport tomatoes from the Ilula to the urban markets. These markets include Kariakoo, Ilala, Mabibo, Temeke markets in Dar es Salaam and Morogoro urban market. The results show that 29% of the transporters came from other Regions including Tanga and Dar es Salaam. Transportation of tomatoes by motor vehicles was mainly done by males as all transporters that were interviewed in the study area were males. On the other hand, women were hired to carry baskets of tomatoes on head for shorter distances, from the farms to storage or market places.

4.3.7 Sorting

Sorting is done prior to packaging in order to remove damaged tomatoes and to ease arrangement of tomatoes in crates or baskets by size and ripening quality. It was revealed that sorting and packing is not the farmers' responsibility but it is the responsibility of the wholesalers and assemblers. It was found that wholesalers and assemblers hired casual workers to sort tomatoes in the crates and baskets and the sorters were paid per one crate (of 40 kg) or one basket (of 50 kg) of tomatoes. Sorting and packaging is done mostly by young men and women aged between 16 and 35.

4.3.8 Loading

This involves loading and unloading of tomato baskets and crates in vehicles during transportation. Loading is done mainly by energetic young men aged between 16 and 35.

Loaders are paid per one crate (of 40 kg) or one basket (of 50 kg) of tomatoes that they load or unload. It was found during field survey, that the loaders have their own associations which help them to effectively deliver their services. The associations help them to organize themselves when their services are demanded. Moreover, it was found that members of the loaders associations hired other people temporarily to help them at different times. The loaders associations in Itabali street and Itunda street have 25 members and 9 members respectively. The association names are *Kikundi cha wapakiaji wa Itabali supermarket* and *Umoja ni nguvu*.

4.3.9 Supply of crates and baskets

The traditional baskets made of bamboo wood (commonly known as *matenga*) and wooden crates are used for packaging of tomatoes. The demand for baskets and crates has created business opportunities to residents and non-residents of Ilula who supply crates and baskets. It was found that there are two categories of the suppliers of baskets. The first category includes those who make and sell the baskets and the second category includes those who rent baskets. The later purchase baskets from those who make them and rent the baskets to tomato farmers and traders. There are also two categories of suppliers of crates. The first category includes those who make and sell new crates and the second category include those who sell used crates. The later purchases used crates from the wholesalers in urban markets and transport the used crates to the villages for resale. The findings show that women were partly engaged in sale of crates as 40% of the crate sellers were females, however only 7% of the basket sellers were females.

It was revealed that crate makers and basket makers purchase their inputs (woods and bamboo trees) from Mufindi District. Suppliers of baskets and crates hire casual labour in

the other District where they source inputs. Such inputs are bamboo wood and timber which are used to make baskets and crates.

4.3.10 Supply of packaging materials

Papers and ropes are used to cover tomatoes when tomatoes are packed in baskets and crates. Brown papers are used to cover tomatoes in the baskets and crates to reduce damages of tomatoes that may be caused by physical bruising during transportation. Sisal ropes are used in the baskets in order to keep the grass or paper covers intact to avoid post-harvest losses. Demand for papers and ropes by traders and farmers, has created business opportunities for the young men. It was found that, young men aged between 16 and 30 were engaged in the supply of papers and sisal ropes at the Itabali tomato market in Itabali street. Suppliers of the papers and sisal ropes purchase materials in wholesale shops in Dar es Salaam.

4.3.11 Mobile phone money transfer services

There are agents of mobile money transfer services who provide mobile money services which include M-Pesa, Tigo pesa, Halotel money and Airtel money. Mobile money agents are independently owned entities that facilitate cash in and cash out transactions through mobile phones. The findings of the study reveal that 83% of the mobile phone money agents were males and 17% were females (Table 9). Furthermore, 75% of the agents operate in grocery shops in the streets. In Itabali tomato market, the agents of mobile money services are concentrated in the market place while in Itunda village, the agents were scattered.

4.3.12 Street food vendors

These are people who supply cooked food and beverages in the streets. Majority of the food vendors prepared food in the informal settings. This business is dominated by women

who sell food at lower prices compared to the prices of the formal restaurants in the study area. The findings of the study show that 82% of the food vendors in the study area were females and 18% were males. Men were involved in sale of potato chips, barbeque and coffee while women sell rice, maize meals, *chapati*, soups and tea. It was observed during field survey that food vendors were concentrated at the places near tomato markets or along the road where many tomato retailers, basket and Crate makers do their activities.

4.4 Business Networks in the Study Area

4.4.1 Business associations

The business networks are characterized by horizontal coordination among the actors in tomato sub-sector in the study area. Horizontal coordination is the process of alignment and control among actors within a single segment of the value chain, such as between farmers (Vroegindewey, 2015). It was found that assemblers, basket renters, transporters sorters and loaders had their own associations. The existence of these business associations are a basis for business and communication networks and provide social capital for its members. However, it was found that there were no associations of the farmers in the two streets that were sampled.

The findings show that 20% of the wholesalers and 57% of the assemblers were members of associations. Moreover, 45% of the transporters in the study area were members of the association of the transporters that is based in Tanzania Social Action Fund (TASAF) tomato market in Madizini street. The name of the association is *Transporters Camp* and it had 56 members.

The association of the basket renters in Itabali market had only 6 members. The association of assemblers in Itabali market is known as *Chama cha madalali Itabali*

supermarket and it had 17 members. The loaders association of Itabali market is known as *Kikundi cha wapakiaji Itabali market* and it had 25 members. The other association of the loaders is known as *Kikundi cha jitegemee* which is based in Itunda street and it had 9 members. The association of the sorters of Itabali market is known as *Umoja ni nguvu* and it had 10 members. The other association that respondents reported to belong to is *Umoja wa wafanyabiashara TASAF* which was based in TASAF market and it had 89 members.

In Itabali street, the associations of the assemblers, sorters and loaders were based at the Itabali tomato market. The tomato market of Itabali has leadership which has chairperson, vice chairperson and secretary. It was found that, the leadership of the market was responsible for managing all the groups/ associations of the traders. Table 10 below shows membership of the traders and other actors in business associations.

Table 10: Membership of traders and other business people in associations (%)

Actors	Member of an association (n=181)	
	Yes	No
Input suppliers	0	100
Wholesalers	20	80
Retailers	0	100
Assemblers	57	43
Transporters	45	55
Basket renters	43	57
Basket sellers	0	100
Crate sellers	0	100
Loaders	100	0
Food vendors	0	100
Mobile money agents	0	100

4.4.2 Sharing of market information among actors

The principal channel used by the majority of the farmers and traders (wholesalers, assemblers and retailers) on accessing market information is through mobile phones. The

findings show that 59% of the traders (wholesalers, assemblers and retailers) and 55% of the farmers use mobile phones to contact other farmers and traders at distant places/markets. They exchange information of the prices and availability of the produce. On the other hand, 37% of the tomato traders and 32% of the farmers rely on personal contacts with the traders to exchange market information. Moreover, 10% of the farmers reported that they get market information from other farmers through personal contact. The findings show that only 4% of the traders (wholesalers, assemblers and retailers) and 3% of the farmers get market information through the media. Table 11 shows different sources of market information.

Table 11: Sources of marketing information (%)

Source of market information	Tomato farmers (n=101)	Tomato traders (n= 181)
Phone contact with other traders/farmers	55	59
Personal contact with other traders/farmers	42	37
Media	3	4
Total	100	100

4.4.4 Business relations among farmers

Farmers in the study area were largely operating individually. There were no groups/organizations of tomato farmers that existed in the two streets that were surveyed in Ilula. There were no joint marketing efforts among tomato farmers which undermines their bargaining power.

4.4.5 Business relations among assemblers, retailers and wholesalers

Assemblers had their own coordination mechanism where they have formed their own informal associations. Assemblers' associations enable them to share information on the

prevailing market prices of tomatoes and provide assistance to each other in social activities. Assemblers reported that they normally organize meetings where they share knowledge related to market prices and information about buyers. There were no associations of wholesalers and retailers in the study area, however the findings show that 17% of wholesalers were members of the trader's association called *Umoja wa wafanyabiashara TASAF*. The association helps the wholesalers to get financial assistance, share market information and organize transport services. The association is not linked to any financial institution. Members of the association make monthly contributions of money and buy shares in the association. Members of the association often organize meetings where information related to source of supply, prices, buyers and markets.

4.4.6 Business links between tomato farmers, wholesalers and assemblers

Assemblers may either be approached by the farmers who are ready to harvest and looking for a buyer or they may be approached by wholesalers in need of buying tomatoes. Moreover, it was revealed that farmers rely on assemblers to obtain information on the prices that vary from time to time. Furthermore, some of the farmers reported that they get loans from the assemblers which help to finance their farming activities. The findings of the study indicate that 69% of the interviewed farmers depend on assemblers for selling their produce.

Wholesalers have direct business relations with assemblers. Wholesalers contact assemblers who aggregate supply from different farmers. The findings of the study indicate that 71% of the wholesalers depend on assemblers to purchase tomatoes from farmers (Table 12). Assemblers negotiate prices on behalf of the wholesalers. However,

their room for independent decision-making is restricted by the party on whose behalf they are negotiating. Assemblers are bound to a maximum price at which the wholesaler is willing to buy tomatoes from the farmer. On the other hand, they must get approval from the wholesalers before lowering the price below an agreed threshold.

4.4.7 Business link between farmers and wholesalers

Some wholesalers have established business relationships with farmers and do not need the services of the assemblers. Such wholesalers go direct to the village to purchase tomatoes from the farmers. The findings of the study show that 29% of the wholesalers purchase tomatoes directly from the farmers without involving assemblers (Table 12). Moreover, some farmers get loans from the wholesalers with whom they have built trustworthy business relations.

Table 12: Sources from which wholesalers purchase tomatoes (%)

Source of tomatoes	(n=48)
Farmers	29
Assemblers	71
Total	100

4.4.8 Business links between farmers, traders and suppliers of baskets

The findings of the study show that farmers rent baskets from the suppliers of baskets when they harvest tomatoes. Traders also rent the baskets when they purchase tomatoes from farmers in the villages and when they need to temporarily store the tomatoes before transporting them to the urban markets. Some of the traders have trusted relationships with the renters of baskets where they rent baskets on credit and make the payments after they sell tomatoes or after they are paid the commission fees with their clients, in case of the assemblers. It was found that one basket was rented for TZS. 500.

4.4.9 Business link between suppliers of crates and wholesalers

It was revealed during the field survey that crates are used when tomatoes are transported to the markets in the cities. When tomatoes are transported in municipalities or towns, only baskets are used. Wholesalers have built trustworthy business relations with the suppliers of crates whereas wholesalers would make their orders to the suppliers of crates prior to the purchase. During the interview, the suppliers of crates reported that they often supply crates to the wholesalers on credit. Wholesalers pay the suppliers of crates after they sell tomatoes in the urban markets. The other suppliers of crates purchase the used crates from the wholesalers in the urban markets and transport them back to Ilula for resale. Used crates were sold at lower price than the new crates. New crates were sold at between TZS. 2500 and TZS. 3000 per crate, whereas used crates were sold at between TZS. 1500 and TZS. 2000 per crate.

4.4.10 Business links between sorters, loaders and traders

It was found that traders hired sorters to sort and pack tomatoes in the crates or baskets before transporting to the urban markets. Traders pay sorters per one basket or crate they work on. It was revealed that sorters were paid between TZS. 500 and TZS. 700 per one basket or crate sorted.

Loaders work in groups and they are paid per one basket or crate loaded in the truck. When traders need to load crates or crates of tomatoes, they would approach a group of loaders to do the work. It was found that loaders were paid between TZS. 300 and TZS. 500 per one crate or basket loaded or unloaded.

4.4.11 Business relations between food vendors and other actors in tomato sub-sector

Food vendors purchase the tomatoes that are left over after sorting from the traders or farmers. Tomatoes which are of low quality (damaged or smaller in size) are sorted out before packaging. Food vendors are the main customers of the left over tomatoes which they use in preparing food. Food vendors sell ready to eat food to different people including the actors of tomato markets. Some actors developed trust based relationship in which food vendors sell to them food on credit on daily basis. Food vendors were paid their money in the evenings where many actors close their businesses.

4.4.12 Business links between transporters and other actors in tomato sub-sector

Transporters have close links to all other actors in the tomato sub-sector. Tomato traders often hire transporters with large trucks (with a capacity of carrying 220-360 crates of tomatoes equivalent to 12 tons) for transportation of tomatoes from Ilula to the urban markets. Farmers hire transporters of smaller trucks (with a capacity of carrying 1.5 tons of tomatoes) to transport tomato from the farms to the market places. /makers of crates and baskets also hire transporters with large trucks (with a capacity of carrying 12- 15 tons) to transport timber and bamboo wood. All other actors have close links with the transporters. The business links between transporters and actors in the tomato sub-sector extend to the other Regions, mainly Dar es Salaam, Tanga and Morogoro. The findings indicate that 29% of the transporters that were interviewed came from other Regions.

4.4.13 Other business links between different actors in tomato sub-sector

These include link between farmers and input suppliers where apart from purchase of farm inputs, farmers get information and advice on new technologies on farming activities. The other link is between basket renters and basket makers. Basket renters purchase baskets from those who make baskets and rent the baskets to the traders and farmers. Prior to purchase, basket renters put the order to the basket makers of the quantity of baskets they

need. After purchasing baskets, each basket renter would mark their baskets with different symbols and colours to distinguish them from others. There is also a link between suppliers of baskets and crates and suppliers of timber and bamboo wood in Mufindi District. Approximately 95% of basket makers and crate makers source their inputs (timber and bamboo trees) from Mufindi District (Table 13).

Table 13: Places where Crate and Basket makers source timber/wood (%)

Place where timber/wood is sourced	(n=48)
Kilolo District	5
Mufindi District	95
Total	100

Providers of mobile phone money transfer services have links with all other actors in tomato sub-sectors. All respondents reported that they use mobile phone money transfer services during the interviews where as 100% of the respondents reported that they use the services for business transactions except 2% of the farmers (Table 14).

Figure 4 shows the business networks among actors in tomato sub-sector. The business networks are formed by business links between different segments of actors.

Table 14: Actors who use mobile phone money transfer services (%)

Actor	Use mobile phone service		Total
	Yes	No	
Farmers	98	2	100
Input suppliers	100	0	100
Wholesalers	100	0	100
Retailers	100	0	100
Assemblers	100	0	100
Transporters	100	0	100
Basket renters	100	0	100
Basket sellers	100	0	100
Crate sellers	100	0	100
Loaders	100	0	100
Food vendors	100	0	100

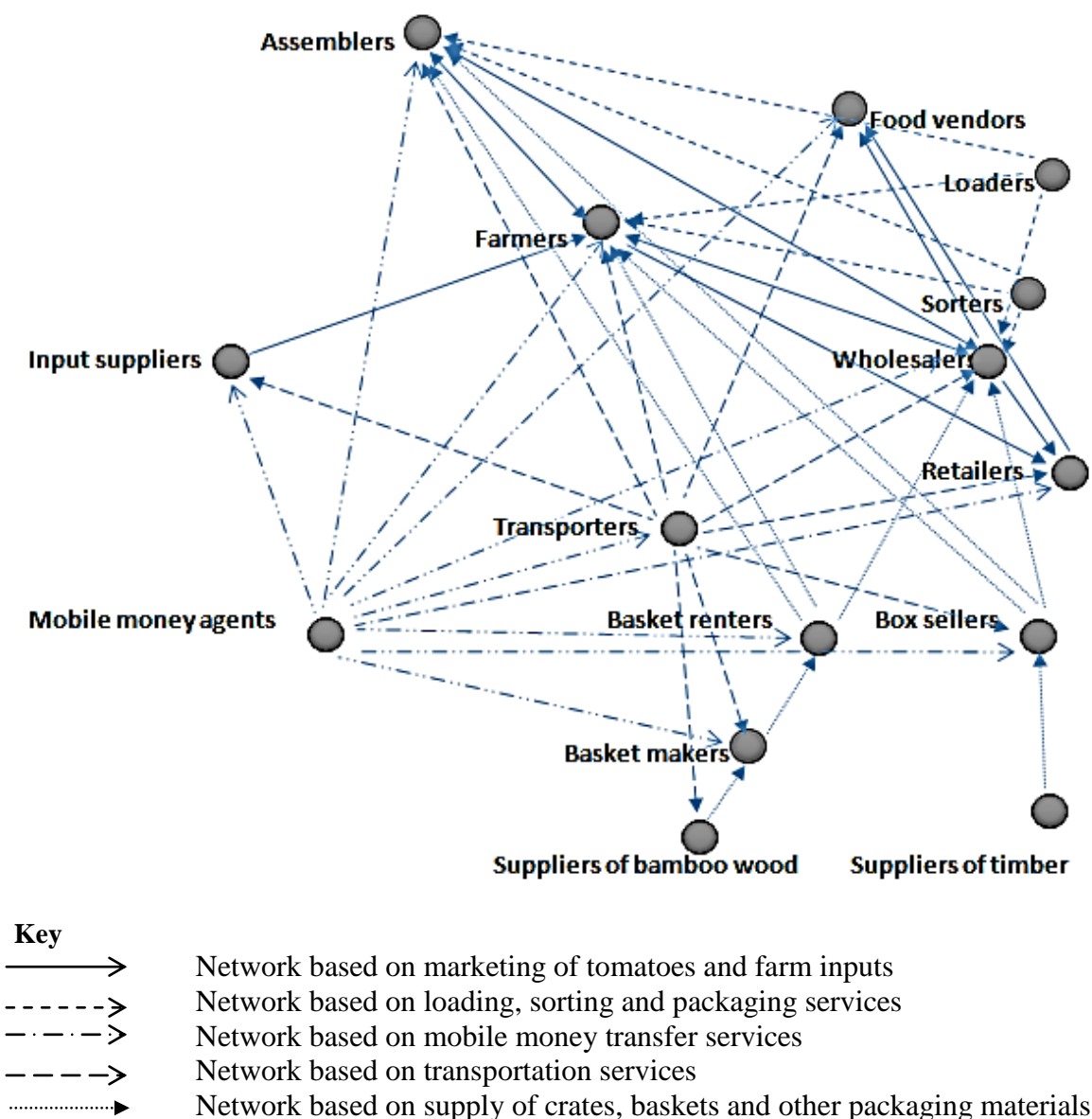


Figure 4: A network graph showing business networks among the actors of tomato sub-sector in Ilula EUC

4.5 Marketing Margins and Gross Margins of the Actors of the Tomato Market

Gross margin is given as a difference between the gross income accrued and the variable costs incurred. It does not take into account overheads, capital investment, or cost of borrowed capital. Such approach is adopted because small scale farmers do not often incur much of these costs and partly because such information is often difficult to obtain (SIDO,

2009). Gross margins were analyzed in order to determine the returns obtained by the tomato farmers, assemblers, wholesalers and retailers in the study area.

Gross margins were derived by using the collected data on variable costs and the revenue based on prices and volume sold by farmers and traders in October-December 2015 season. The minimum price received by farmers in that season was TZS. 50 per kilogram while the maximum price received by farmers was TZS. 900 per kilogram of tomatoes. The average selling price of the farmers was TZS. 407 for October-December 2015 cropping season.

Moreover, findings of the study show that wholesalers had the higher marketing margin than assemblers and retailers. This is because wholesalers fetch higher selling prices than assemblers and retailers. Table 15 shows the marketing margins, average buying and selling prices of tomatoes incurred by farmers, assemblers, wholesalers and retailers for October-December 2015 cropping season.

Table 15: Prices of tomatoes per one kilogram in October- December 2015 season

	Average buying price (TZS/Kg)	Average selling price (TZS/Kg)	Marketing margin (%)
Farmers	-	407	-
Assemblers	350	486	16
Wholesalers	467	782	38
Retailers	390	698	12

Assemblers and wholesalers handled larger volumes of tomatoes than farmers and retailers. Results show that both assemblers and wholesalers handled the maximum volumes of 750 000 kilograms of tomatoes. Retailers handled the maximum volume of

5 000 kilograms of tomatoes while farmers handled the maximum volume of 50 000 kilograms of tomatoes for October-December 2015 cropping season. The average volumes handled by wholesalers, assemblers and retailers were 353 350 kilograms, 202 100 kilograms and 1950 kilograms for October- December 2015 cropping season respectively. The average volumes sold by farmers of Itunda and Itabali streets were 10 600 kilograms and 19 950 kilograms for October-December 2015 cropping season. respectively. The volumes sold by the farmers and traders are shown in Table 16 and Table 17.

Table 16: Volumes of tomatoes produced by farmers in October- December, 2015

Volumes (Kg)	Itunda	Itabali
Maximum	50 000	15 000
Minimum	500	150
Mean	10 600	19 950
Standard deviation	12 000	27 150

Table 17: Volumes of tomatoes handled by traders in October- December, 2015

Volumes (Kg)	Assemblers	Wholesalers	Retailers
Maximum	750 000	750 000	5 000
Minimum	3 000	500 000	200
Mean	353 350	202 100	1 950
Standard deviation	230 000	231 950	1 650

The findings of the study show that, the gross margin of the farmers was TZS. 98 per kilogram while the assemblers, wholesalers and retailers were TZS. 88, TZS. 148 and TZS. 76 per kilogram of tomatoes respectively (Table 15). Wholesalers had the highest gross margin as compared to farmers and other traders. Findings nevertheless, show that wholesalers had the higher average costs than other actors. The highest cost item for the traders is the transport from the Ilula emerging urban centre to the market. Other costs which wholesalers incur include cost of packaging materials, assemblers' commission,

market fees and taxes are paid both to the District where the tomatoes are produced as well as to the District where they are sold. Retailers had the lowest gross margin as compared to other traders and farmers. Spoilage of tomatoes is the largest cost item of the retailers. Retailers may fail to sell damaged tomatoes or they may sell damaged tomatoes significantly below the prevailing market price. Other costs that retailers incur include transportation costs and market fees. The gross margins of the farmers and traders are shown in Table 18.

Table 18: Gross margins for tomato farmers and traders of Ilula

Actors	Description	Sales/ Costs (TZS/ Kg)
Farmers	Average revenue	405
	Less	
	Average costs	307
	Average Gross Margin	98
Assemblers	Average revenue	437
	Less	
	Average costs	349
	Average Gross Margin	88
Wholesalers	Average revenue	717
	Less	
	Average costs	569
	Average Gross Margin	148
Retailers	Average revenue	594
	Less	
	Average costs	518
	Average Gross Margin	76

F=3.65**, d. f. =3, P<0.05

One way analysis of variance (ANOVA) was used to test the null hypothesis which stated that there is no significance difference in gross margins among the actors of tomato market in Ilula. The ANOVA results show that difference in the gross margins of the farmers, wholesalers, assemblers and retailers was statistically significant at 5% significance level (P <0.05).

Moreover, findings of the study reveal that farmers had different gross margins depending on the marketing channel through which they sold their produce. Direct selling to the consumers involves less marketing costs (Sanga and Mgimba, 2016). For this reason, farmers who sell direct to the consumers had the highest gross margin of TZS. 124 per kilogram. On the other hand, farmers who sold to the wholesalers had the lowest gross margin of TZS. 59 per kilogram of tomatoes this is because farmers are often price takers and can not negotiate prices from a strong position (Mutayoba *et al.*, 2015). Farmers who sold their produce to the assemblers and retailers had the gross margin of TZS. 109 and 105 per kilogram of tomatoes respectively. Table 19 shows the gross margins of the farmers.

Table 19: Gross margins of the farmers

Category	Description	Sales/ Costs (TZS/ Kg)
Farmers who sell direct to consumers	Average revenue	559
	Less	
	Average costs	435
	Average Gross Margin	124
Farmers who sell to assemblers	Average revenue	388
	Less	
	Average costs	279
	Average Gross Margin	109
Farmers who sell to wholesalers	Average revenue	375
	Less	
	Average costs	316
	Average Gross Margin	59
Farmers who sell to Retailers	Average revenue	398
	Less	
	Average costs	293
	Average Gross Margin	105

F= 4.65**, d. f. =3, P<0.05

4.6 Employment from Tomato Business and Business Networks

Employment in tomato sub-sector in the study area is segmented between self-employment and wage employment. Self-employment includes small and large business

persons who are involved in tomato business and other businesses related to tomato sub-sector in the study area. Wage employment includes persons who are hired by the hour or day or for the performance of specific tasks and receive means of subsistence in exchange of labour-power. The findings of the study reveal that 88% of the farmers, 89% of the traders and 83% of the other business people hire wage labour. Furthermore, the results show that 84% of the farmers, 76% of the traders and 67% of other actors (who hired labour) sourced their wage labour within Ilula EUC. Table 20 shows the proportion of the respondents who hire wage labour. This implies that tomato business provided livelihood opportunities to other people who were employed by tomato farmers and traders as wage labour.

Table 20: Proportion of the respondents who hire wage labour

		Frequency	Percentage
Farmers			
Hire wage labour	Yes	89	88
	No	12	12
	Total	101	100
Place where labour is sourced			
Ilula EUC		75	84
Other villages out of Ilula EUC		14	16
Total		89	100
Traders (wholesalers, assemblers and retailers)			
Hire wage labour	Yes	78	89
	No	10	11
	Total	88	100
Place where labour is sourced			
Ilula EUC		59	76
Other villages out of Ilula EUC		19	24
Total		78	100
Other business people			
Hire wage labour	Yes	77	83
	No	16	17
	Total	93	100
Place where labour is sourced			
Ilula EUC		62	67
Other villages out of Ilula EUC		15	33
Total		77	100

The findings of the study indicate that direct employment was 839. This is the number of persons who were directly employed in tomato business. Direct employment include wage labour of tomato farmers, assemblers, wholesalers, retailers of tomatoes, suppliers of baskets, suppliers of crates, as well as wage labour employed by the assemblers, wholesalers, retailers, suppliers of crates and baskets in the study area. Furthermore, the findings indicate that 294 people and 545 people were directly employed in tomato business in Itunda and Itabali streets respectively. Table 21 shows total direct employment in the two sampled streets.

Table 21: Direct employment in all two sampled streets

Actors	Self employed	Wage labour employed by the actors	Total
Farmers	-	414	414
Assemblers	30	78	49
Wholesalers	48	144	192
Retailers	10	11	21
Suppliers of baskets	18	44	62
Suppliers of crates	5	37	42
Total	111	728	839

Source: Field data, 2016

The findings show that non-direct employment was 151. This is the number of persons who were employed in other businesses and services that are related to tomato sub-sector in the study area. Non-direct employment included transporters, input suppliers, loaders, mobile money transfer agents, food vendors, suppliers of papers and ropes and wage labour employed by the actors of these businesses and services in the study area. A total of 48 people and 103 people were employed in the other business and services in Itunda and Itabali streets respectively. Table 22 shows total non-direct employment in the two sampled streets.

Table 22: Non-direct employment in all two sampled streets

Actors	Self employed	Wage labour employed by the actors	Total
Input suppliers	2	2	4
Loaders	34	14	48
Transporters	11	25	36
Mobile money agents	6	4	10
Food vendors	17	36	53
Total	70	81	151

Source: Field data, 2016

Results of the study indicate that the employment multiplier in the study area is 1.180. This implies that every 100 jobs in tomato business generated 18 jobs in the other businesses related to tomato sub-sector. Furthermore, it implies that the employment multiplier effect of the 839 jobs in tomato business (direct employment) is 151 jobs in the other businesses and services related to sub-sector (indirect employment) in the study area. The employment multiplier effect in tomato business is the number of jobs created in input supply, transport of tomatoes to the urban markets, loading, fast food outlets and mobile money transfer services.

Findings show that total employment that has been influenced by the tomato business and the business networks in tomato sub-sector in the two sampled streets was 990. Total employment in Itunda and Itabali streets were 342 and 648 respectively. The employment multipliers of Itunda and Itabali streets are 1.163 and 1.189 respectively. Table 23 shows the employment multipliers, total direct and indirect employment in the two sampled streets.

Itabali street has the higher number of people who are directly employed and indirectly employed in tomato sub-sector than Itunda street. This is attributed by the presence of the

local tomato market in the area which is popularly known as Itabali tomato market. The market attracts many tomato wholesalers, assemblers and assemblers from nearby streets and villages. Moreover, presence of the Itabali tomato market has influenced development business groups/ associations which are based in the tomato market.

Table 23: The employment multipliers in the two sampled streets

	Itunda	Itabali	Total
Main actors in tomato business	33	78	111
Labour employed by the actors	261	467	728
Total direct employment	294	545	839
Actors in other businesses	21	49	70
Labour employed by the actors	27	54	81
Total non-direct employment	48	103	151
Total employment	342	648	990
Employment multipliers	1.163	1.189	1.179

Source: Field data, 2016

CHAPTER FIVE

5.0 CONCLUSION AND RECOMMENDATIONS

This chapter presents conclusion of the study and recommendations for further consideration basing on the findings of the study. The main objective of this study was to assess employment and income opportunities resulting from the development of tomato sub-sector in Ilula emerging urban centre. The specific objectives of this study were: (i) to explore the major channels of tomato marketing in the study area (ii) to characterize the existing businesses and business networks related to tomato sub-sector in the study area (iii) to examine the gross margins of the tomato market actors in the study area and to (iv) to assess the influence of tomato business and business networks on employment creation in the study area.

5.1 Conclusion

Findings of the study have revealed that there are four main marketing channels of tomatoes in the study area. Three marketing channels involve market middlemen/intermediaries who purchase tomatoes from the farmers and sell them to the consumers or other middlemen. The study found that majority (94%) of the tomato farmers sold their produce to the middlemen (assemblers, wholesalers and retailers). This implies that middlemen in tomato markets provide access to markets to the smallholders by purchasing tomatoes from the farmers.

It was found that farmers who sell direct to the consumers had the highest gross margin because of less marketing costs involved in that channel. On the other hand, farmers who sold their produce to the wholesalers had the lowest gross margin due to weak bargaining

position. Wholesalers had higher gross margin compared to farmers, assemblers and retailers because they have access to market information and have strong bargaining position that enables them to buy tomatoes from farmers and assemblers at lower prices.

The study has found that there is a complex web of actors in tomato sub-sector in the study area who have business ties. Those actors do different businesses and services that include input supply, tomato production, wholesaler, assembling, retail, Crate making, basket making, basket renting, transportation, loading, sorting, food vendors, mobile money services and supply of timber and wood. Each segment of actors is linked to the other segments of actors through market exchange of goods and services within tomato sub-sector.

It was found that tomato traders (wholesalers and assemblers), transporters, loaders, sorters and basket renters had their own associations. The associations served as a means through which they formed business networks that enabled them to share market information, coordinate their activities and provide financial support to the members.

Many non-farm activities revolve around Ilula emerging urban centre based on backward and forward linkages with tomato sub-sector. Farmers are the main players in the tomato sub-sector and they contribute to the local employment through forward and backward production linkages. Forward production linkages emerge from marketing of tomatoes to the wholesale and retail markets while backward production linkages emerge from farmers' growing demand for inputs from the non-agricultural sector.

Tomato business and business networks in tomato sub-sector have employment multiplier effect on input supply, transport of tomatoes to the urban markets, loading, fast food

outlets and mobile money transfer services. The findings of the study have revealed that youths aged between 16 and 35 years were actively involved in tomato business and other activities related to tomatoes. Moreover, findings show that tomato business and other businesses related to tomatoes were dominated by males with an exception of the retail of tomatoes and sale of cooked food.

5.2 Recommendations

In the view of the above discussion and conclusions, the study recommends as follows:

Tomato farmers in Ilula should foster collaboration among themselves in order to enhance their bargaining power with buyers. Government and private organisations should facilitate farmers to form their own business associations. This will help farmers to have joint marketing efforts that will improve their bargaining power and increase their access to information, new technologies and urban markets.

Market linkages should be strengthened in order to increase livelihood earnings of the smallholding farmers, particularly the poor farmers. Government and other partner institutions should strengthen markets for tomato by creating adequate market linkages. Farmers should be well informed on markets for tomatoes.

Tomato producers in Ilula should have access to improved marketing services. Storage facilities and collection centres should be established in the producing areas in order to provide farmers with a platform to market their tomatoes directly to traders. There is a need for promoting awareness on international market requirements and standards among tomato traders in order to increase access to new markets, income, business opportunities and hence increase employment opportunities in the study area.

Women's access to credit should be improved in order to increase their participation in tomato business and other business activities related to tomatoes. Moreover, women should be involved in farmers and entrepreneurs' study groups and they should be trained on technical and negotiation skills to help them to network amongst women and with men in tomato sub-sector.

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APPENDICES

Appendix 1: Questionnaire for Farmers

EMPLOYMENT OPPORTUNITIES IN TOMATO SUB-SECTOR IN ILULA EMERGING URBAN CENTRE

1. Date of interview.....
2. Ward.....
3. Village.....
4. Name of the respondent
5. Name of the interviewer.....
6. Questionnaire No.....

CODE	QUESTION OR VARIABLE	RESPONSE	CODING KEY																
A. BACKGROUND INFORMATION																			
A001	Sex of the respondent		1. Male 2. Female																
A002	Age of the respondent																	
A003	Education level of the respondent		1. Non formal education 2. Adult education 3. Primary education 4. Secondary education 5. College/University																
A004	Place of birth		1. Ilula 2. Other place in Kilolo District 3. Other District in Iringa 4. Other Regions in Tanzania (specify).....																
A005	If not born in Ilula. When you did migrate to Ilula (year)?																	
A006	How many people live in your household?		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">Age group</th> <th style="width: 25%;">Males</th> <th style="width: 25%;">Females</th> <th style="width: 25%;"></th> </tr> </thead> <tbody> <tr> <td>Below 18</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Above 18</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Total</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Age group	Males	Females		Below 18				Above 18				Total			
Age group	Males	Females																	
Below 18																			
Above 18																			
Total																			
A007	What is your main source of income?		1. Tomato production 2. Other crops production 3. Livestock keeping 4. Salaried employment 5. Other (specify).....																

[illegible]

B007 Please provide information on the costs that you incur in tomato production per season

Item	Units	Quantity of units	Cost per unit	Total cost
Land rent				
Rent of farm equipment and machines				
Seeds				
Fertilizer				
Pesticides				
Other				
Total				

C. MARKETING PRACTICES

C001	To whom do you sell your produce (tomatoes)? Please rank depending on the volume you sell to each market		Market options	Rank	
			Local wholesalers		
			Local assemblers		
			Local retailers		
			Direct to the urban markets		
			Non local traders		
			Others (Specify)		
C002	Where do you sell most of your produce?		1. Ilula 2. Iringa 3. Dar es Salaam 4. Morogoro 5. Other Regions in Tanzania 6. In other countries		
C003	Are you a member of any farmers' or traders' organization?		1. Yes 2. No		
C004	If yes. Name the organization		.....	
C005	Do you rely on the organization on selling your produce?		1. Yes 2. No		
C006	Which markets do you access through farmers' organization?		1. Local markets 2. Non-local markets		
C007	What other services do you benefit from the organization?		1. 2.		
C008	Do you rely on middlemen on selling your produce?				

C009	If yes, What type of middlemen do you rely on?		1. 2.							
C010	How do you get market information?		1. Fellow farmers 2. Radio/ Newspapers 3. Traders 4. Market places 5. Mobile services (telephone) 6. Other (specify).....							
C011	What were the selling prices per basket of tomatoes in last season?		<table border="1"> <tr> <td colspan="2">Selling price</td> </tr> <tr> <td>Maximum price</td> <td></td> </tr> <tr> <td>Minimum price</td> <td></td> </tr> </table>	Selling price		Maximum price		Minimum price		
Selling price										
Maximum price										
Minimum price										
C012	How do you get the packaging materials?		1. Renting 2. Buying							
C013	Where do you get the packaging materials?		1. Within the village 2. From other villages in Ilula 3. From other places (specify)..... ...							
C014	Do you hire tracks to transport your produce to the selling point?		1. Yes 2. No							
C015	If yes, where do you get the transport services?		1. Within the village 2. From other villages in Ilula 3. From other places (specify)..... ...							
C016 Please provide information on the marketing costs that you incur										
Item	Units	Quantity of units	Cost per unit	Total cost						
Packaging materials										
Transportation										
Storage										
Labour										
Market fees										
Other costs										
Total										
D. ACCESS TO OTHER SERVICES										
D001	Do you have access to financial services?		1. Yes 2. No							
D002	If yes, what kind of financial services do you access?		1. Formal financial services 2. Informal financial services							

D003	From which institutions/organizations do you get financial services?		1. 2.	
D004	Do you get loans from other actors of tomato market?		1. Yes 2. No	
D005	If yes, which actors give you loans?		1. 2. 3.	
D006	Do you give loans to other actors of tomato market?		1. Yes 2. No	
D007	If yes, which actors do you give loans?		1. 2. 3.	
D008	Describe other service providers that are you have business relations with?		1. 2. 3. 4. 5.	

Appendix 2: Questionnaire for Traders

EMPLOYMENT OPPORTUNITIES IN TOMATO SUB-SECTOR IN ILULA EMERGING URBAN CENTRE

1. Date of interview.....
2. Ward.....
3. Village.....
4. Name of the respondent
5. Name of the interviewer.....
6. Questionnaire No.....

CODE	QUESTION OR VARIABLE	RESPONSE	CODING KEY	
A. BACKGROUND INFORMATION				
A001	Sex of the respondent		1. Male 2. Female	
A002	Age of the respondent		.....
A003	Education level of the respondent		1. No formal education 2. Adult education 3. Primary education 4. Secondary education 5. College/University	
A004	Place of origin		1. Ilula 2. Other place in Kilolo District 3. Other District in Iringa 4. Other Regions in Tanzania (specify).....	
A005	If not born in Ilula. When you did migrate to Ilula (year)?		.....
A006	What type of business are you doing?		1. Supplier of baskets 2. Supplier of crates 3. Input supplier 4. Transporter 5. Mobile money agent 6. Other (specify).....	
A007	Nature of business		1. Full time 2. Part time	
A008	Is your business registered?		1. Yes 2. No	
A009	Where is your business registered?		.....
A010	What is your main source of income?		1. Business related to tomato crop 2. Business related to other crops 3. Business related to consumer	

			goods/services (e.g mobile phone voucher selling/mobile money 4. Business related to farm inputs 5. Business related selling cooked food vending/beer brewing and selling 6. Livestock keeping 7. Salaried employment 8. Other (specify).....	
A011	Specify other business you do that is related to tomato crop?		..... .....
A012	What was your occupation before getting into tomato business?		1. Farming 2. Employment 3. Student 4. Other business 5. Other occupation (specify).....	
B. MARKETING PRACTICES				
B001	When did you start to be engaged in tomato business in Ilula?		.....
B002	How much did you purchase last season? (Tomato quantity in baskets)?		.....
B003	From whom do you purchase most of your produce (tomatoes only)?		1. Farmers 2. Assemblers 3. Wholesalers 4. Other (specify).....	
B004	Who buys tomatoes for you?		1. Self 2. Commission agent 3. Other (specify).....	
B005	From how many different sources do you purchase tomatoes?		1. One 2. Two 3. Three 4. Four or more	
B007	Where do you sell most of your produce?		1. Ilula 2. Iringa 3. Dar es Salaam 4. Morogoro	

			5. Other Regions in Tanzania 6. In other countries																
B008	Who buys your produce?		1. Other traders 2. Institutions 3. Consumers 4. Others (specify).....																
B009	How much did you sell during the last season (Volume in baskets)?																	
B010	What were the buying prices and selling prices per basket of tomatoes in last season?		<table border="1"> <tr> <td colspan="2">Buying Price</td> <td colspan="2">Selling price</td> </tr> <tr> <td>Max. price</td> <td></td> <td>Max. price</td> <td></td> </tr> <tr> <td>Min. price</td> <td></td> <td>Min. price</td> <td></td> </tr> </table>				Buying Price		Selling price		Max. price		Max. price		Min. price		Min. price		
Buying Price		Selling price																	
Max. price		Max. price																	
Min. price		Min. price																	
B011	Are you a member of any traders' organization?		1. Yes 2. No																
B012	If yes. Name the organization																	
B013	What services do you benefit from the organization?		1. 2. 3.																
B015	Do you hire any labour?		1. Yes 2. No																
B016	Describe the wage labour that you hire depending on different activities?		1. 2. 3.																

B017 Please provide information on the labour force that you hire

[illegible]

B018	How do you get market information?		1. Fellow traders 2. Radio/ Newspapers 3. Traders 4. Market places 5. Mobile services (telephone) 6. Other (specify).....	
B019	How do you get the packaging materials?		1. Renting 2. Buying	
B020	Where do you get the packaging materials?		1. Within the village 2. From other villages in Ilula 3. From other places (specify).....	
B021	Do you hire tracks to transport your produce to the selling point?		1. Yes 2. No	
B022	If yes, where do you get the transport services?		1. Within the village 2. From other villages in Ilula 3. From other places (specify).....	

C015 Please provide information on the marketing costs that you incur				
Item	Units	Quantity of units	Cost per unit	Total cost
Packaging materials				
Transportation				
Storage				
Labour				
Market fees				
Other costs				
Total				

C. ACCESS TO OTHER SERVICES				
C001	Do you have access to financial services?		1. Yes 2. No	
C002	If yes, what kind of financial services do you access?		1. Formal financial services 2. Informal financial services	
C003	From which institutions/org anizations do you get financial		1. 2.	

	services?			
C004	Do you get loans from other actors of tomato market?		1. Yes 2. No	
C005	If yes, which actors give you loans?		1. 2.	
C006	Do you give loans to other actors of tomato market?		1. Yes 2. No	
C007	If yes, which actors do you give loans?		1. 2.	
C008	Describe other service providers that are you have business relations with?		1. 2. 3. 4. 5.	

Appendix 3: Questionnaire for Business People

EMPLOYMENT OPPORTUNITIES IN TOMATO SUB-SECTOR IN ILULA EMERGING URBAN CENTRE

7. Date of interview.....
 8. Ward.....
 9. Village.....
 10. Name of the respondent
 11. Name of the interviewer.....
 12. Questionnaire No.....

CODE	QUESTION OR VARIABLE	RESPONSE	CODING KEY	
D. BACKGROUND INFORMATION				
A001	Sex of the respondent		1. Male 2. Female	
A002	Age of the respondent		.....
A003	Education level of the respondent		1. Non formal education 2. Adult education 3. Primary education 4. Secondary education 5. College/University	
A004	Place of origin		1. Ilula 2. Other place in Kilolo District 3. Other District in Iringa 4. Other Regions in Tanzania (specify).....	
A005	If not born in Ilula. When you did migrate to Ilula (year)?		.....
A006	What type of business are you doing?		1. Supplier of baskets 2. Supplier of crates 3. Input supplier 4. Transporter 5. Mobile money agent 6. Other (specify).....	
A007	Nature of business		1. Full time 2. Part time	
A008	Is your business registered?		1. Yes 2. No	
A009	Where is your business registered?		.....
A010	What is your main source of income?		1. Business related to tomato crop 2. Business related to other crops 3. Business related to consumer	

			goods/services (mobile phone voucher selling/mobile money 4. Business related to farm inputs 5. Business related selling cooked food vending/beer brewing and selling 6. Livestock keeping 7. Salaried employment 8. Other (specify).....	
A011	Specify the business you do that is related to tomato crop?		..... .....
A012	What was your occupation before getting into tomato business?		1. Farming 2. Employment 3. Student 4. Other business 5. Other occupation (specify).....	
E. MARKETING PRACTICES				
B001	When did you start to be engaged in the business in Ilula?		.....
B002	Who are your main customers?		.....
B003	Are you a member of any traders' organization?		1. Yes 2. No	
B004	If yes. Name the organization		.....
B005	What services do you benefit from the organization?		1. 2. 3.	
B006	Do you hire any labour?		1. Yes 2. No	
B007	Describe the wage labour that you hire depending on different activities?		1. 2. 3.	

B008 Please provide information on the labour force that you hire										
Activity	Family labour					Hired labour				
	Hours s/day	Number of people		Days	Labour cost per day per person	Hours /day	Number of people		Days	Labour cost per day per person
		Male	Female				Male	Female		
Total										
B009	Where do you get the inputs or raw materials?				1. Within the village 2. From other villages in Ilula 3. From other places (specify).....					
B010	Do you hire tracks to transport your produce to the selling point?				1. Yes 2. No					
B011	If yes, where do you get the transport services?				1. Within the village 2. From other villages in Ilula 3. From other places (specify).....					
F. ACCESS TO OTHER SERVICES										
C001	Do you have access to financial services?				1. Yes 2. No					
C002	If yes, what kind of financial services do you access?				1. Formal financial services 2. Informal financial services					
C003	From which institutions/organizations do you get financial services?				..... .....				
C004	Do you get loans from other actors of tomato market?				1. Yes 2. No					
C005	If yes, which actors give you loans?				1. 2.					
C006	Do you give loans to other actors of tomato market?				1. Yes 2. No					
C007	If yes, which actors do you give loans?				1. 2.					
C008	Describe other service providers that are you have business relations with?				1. 2. 3. 4.					