

**EFFECTS OF RURAL-URBAN LINKAGES ON MARKETS ACCESS IN
KIBAIGWA EMERGING URBAN CENTRE, KONGWA DISTRICT, TANZANIA**

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**A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE
REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN
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ABSTRACT

This study assessed the effects of rural-urban linkages on markets access in Kibaigwa Emerging Urban Centre (EUC), in Kongwa District. Specifically, the study aimed at characterizing the agricultural markets; examining factors affecting market accessibility to smallholder farmers; determining the contribution of rural-urban linkages on expansion of markets, market networks, and access to market and livelihood strategies in Kongwa District. A total of 202 respondents were randomly selected, whereby 120 were smallholder farmers, 42 were traders and 40 were transporters. Gini coefficient and descriptive statistic were used to characterize the existing markets. The results show that there was high concentration in the market with low degree of competitiveness. In estimating the factors affecting market access by farmers, binary logistic regression was used. The results show that distance from home to the market, road conditions, availability of agricultural information, the means of transport owned and age of the farmer, statistically influenced market access by smallholder farmers in Kibaigwa. Moreover, network analysis, descriptive statistics and Sustainable Rural Livelihood (SRL) framework were used to determine the contribution of rural-urban linkages on markets and market networks expansion, and access to livelihood resources/strategies. The results revealed that through economic, marketing and social activities market networks expand from the villages to the urban. Furthermore, the results from Analysis of Variance (ANOVA) show that the linkage contributes more to EUC than to rural farmers on access to market. However, rural farmers were found to have low access to livelihood resources/strategies than EUC farmers. In conclusion, rural-urban linkages have a great impact on markets access and market expansion for smallholder farmers if they are well informed about quality and price of produce and are connected to towns and small towns market centres. Therefore, it is recommended that the government and agricultural development partners should improve infrastructures and provide agricultural information to farmers so as to enable them benefit effectively from such linkages.

DECLARATION

I, Jocelyne Mushi, do hereby declare to the Senate of Sokoine University of Agriculture that this dissertation is my own original 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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The above declaration is confirmed by;

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Date

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DEDICATION

This work is dedicated to my parents Peter Mushi and Celina Kataya together with my young brother Richard Mushi and my young sister Christabelah Mushi for their encouragement during my studies.

TABLE OF CONTENTS

ABSTRACT	ii
DECLARATION.....	iii
COPYRIGHT	iv
ACKNOWLEDGEMENTS.....	v
DEDICATION.....	vi
TABLE OF CONTENTS.....	vii
LIST OF TABLES	xiii
LIST OF FIGURES	xiv
LIST OF APPENDICES.....	xv
LIST OF ABBREVIATIONS, SYMBOLS AND ACRONYMS.....	xvi
CHAPTER ONE.....	1
1.0 INTRODUCTION.....	1
1.1 Background Information	1
1.1.1 The state of agricultural markets in Africa and Tanzania	2
1.1.2 Maize market accessibility in Tanzania	3
1.1.3 Rural-urban linkage in Kibaigwa Emerging Urban Centre (EUC)	4
1.2 Statement of the Problem	5
1.3 Justification of the Study.....	6
1.4 Objectives.....	7
1.4.1 Overall objective	7
1.4.2 Specific objectives.....	7
1.5 Hypotheses	7

1.6	Research Questions	7
1.7	Organisation of the Dissertation.....	8
CHAPTER TWO.....		9
2.0	LITERATURE REVIEW	9
2.1	Theoretical Framework	9
2.1.1	Definition of terms	9
2.1.1.1	Rural-urban linkage.....	9
2.1.1.2	Market access	11
2.1.1.3	Small-scale farmers	12
2.1.1.4	Livelihood	13
2.1.2	Theories in relation to rural-urban linkages	14
2.1.2.1	Dualism theory	14
2.1.2.2	Growth pole theory.....	15
2.1.2.3	Core-periphery/ central place theory	16
2.1.3	Theory in relation to market (market structure, conduct and performance model).....	17
2.1.4	Network theory.....	18
2.1.5	Characteristics of agricultural markets.....	20
2.1.5.1	Structure of market.....	20
2.1.5.2	Market conduct.....	21
2.1.6	Factors affecting market accessibility by small scale farmers	22
2.1.6.1	Market information factor	23
2.1.6.2	Physical factors	24
2.1.6.3	Produce quality, market relation and education level factors	26

2.1.7	Rural-urban linkages	27
2.1.7.1	Rural-urban linkage in Tanzania	28
2.1.7.2	Rural-urban linkages and expansion of market and market networks	29
2.1.7.3	Small scale farmers' linkages in agricultural market	31
2.1.7.4	Rural-urban linkages and access to market and livelihood strategies/ resources.....	32
2.2	Empirical Literature Review	34
2.2.1	Literature gap	38
2.3	Conceptual Framework	39
CHAPTER THREE		42
3.0	RESEARCH METHODOLOGY.....	42
3.1	Research Design	42
3.2	Description of the Study Area	42
3.2.1	Description of Kongwa District	42
3.2.2	Description of Kibaigwa Ward	42
3.2.3	Population size	44
3.3	Sampling Design	45
3.4	Sample Size	45
3.5	Data Collection.....	46
3.6	Methods of Data Analysis	46
3.6.1	Characteristics of agricultural (produce) markets	46
3.6.2	Factors affecting market accessibility	47
3.6.3	Rural-urban linkage and market/networks expansion.....	51

3.6.4	Rural-urban linkages and access to market and livelihood strategies/ resources	52
3.7	Limitation of the Study	52
CHAPTER FOUR		54
4.0	RESULTS AND DISCUSSION.....	54
4.1	Socio –economic Characteristics of Respondents.....	54
4.1.1	Social-economic characteristics of farmers/producers.....	54
4.1.2	Social-economic characteristics of traders and transporters	56
4.2	Agricultural Market System and Characteristics	57
4.2.1	Volume of maize marketed and transported in Kibaigwa market.....	57
4.2.2	Market structure	59
4.2.2.1	Number of market players in Kibaigwa market	59
4.2.2.2	Main market players (buyers and sellers) at Kibaigwa cereal market	60
4.2.2.3	Concentration ratio of maize traders in Kibaigwa market	62
4.2.3	Market conduct.....	63
4.2.3.1	Selling practices	63
4.2.3.2	Mechanisms used in marketing process	64
4.2.4	Satisfaction level with market system	65
4.3	Market Accessibility by Small Scale Farmers	66
4.3.1	Factors affecting market accessibility to small scale farmers	66
4.3.2	Testing of hypothesis	71
4.4	Rural-Urban Linkages and Expansion of Markets and Market Networks	72
4.4.1	Linkages of Kibaigwa EUC with Kinangali and Ndurugumi villages.....	72

4.4.1.1	Sectorial (agricultural) linkage	73
4.4.1.2	Marketing/economic linkages	74
4.4.1.3	Linkage in terms of remittances flow	79
4.4.1.4	Social linkage	80
4.5	Rural-Urban Linkages and Access to Market and Livelihood Strategies/ Resources	84
4.5.1	Rural-urban linkages and market access	84
4.5.2	Rural-urban linkage and access to livelihood strategies/resources	86
4.5.2.1	Livelihood strategies	86
4.5.2.2	Livelihood resources/assets	88
4.6	Summary of Key Findings	91
4.6.1	Market characteristics	91
4.6.2	Factors affecting market accessibility	92
4.6.3	Rural-urban linkages and expansion of market and market networks	92
4.6.4	Rural-urban linkages and access to market and livelihood strategies/ resources	94
	CHAPTER FIVE	96
	5.0 CONCLUSION AND RECOMMENDATIONS	96
5.1	Conclusion	96
5.2	Recommendations	100
5.2.1	Recommendation to local government	100
5.2.2	Recommendation to policy makers	101
5.2.3	Recommendation to farmers	101
5.2.4	Recommendation to traders	101

5.2.5 Areas for further research.....	102
REFERENCES	103
APPENDICES	128

LIST OF TABLES

Table 1:	Summary of selected sample size.....	46
Table 2:	Summary of explanatory variables.....	51
Table 3:	Social-economic characteristics of farmers/producers.....	55
Table 4:	Social-economic characteristics of traders/transporters.....	56
Table 5:	Volume of maize traded and transported per week.....	58
Table 6:	Produce sellers at Kibaigwa market.....	60
Table 7:	Sales distribution and inequality coefficients of marketers in Kibaigwa market.....	63
Table 8:	Agricultural produce sold by respondent.....	64
Table 9:	Respondents' satisfaction with market system.....	66
Table 10:	Results of binary logistic regression model on factors affecting market accessibility.....	68
Table 11:	Place where agricultural activity is done.....	73
Table 12:	Buying and selling products outside the village/EUC.....	74
Table 13:	Place where respondents buy or sell products.....	75
Table 14:	Maize marketing and transporting places.....	76
Table 15:	Remittances receiving and sending to relatives.....	80
Table 16:	One-way ANOVA test of sale of maize in three sampled areas.....	85
Table 17:	Economic activity done by the respondent.....	86
Table 18:	Small scale farmers involved in maize business.....	87
Table 19:	Water location and distance from household.....	88
Table 20:	Electricity service availability in household and its source.....	89
Table 21:	Characteristic of house owned by respondents.....	91

LIST OF FIGURES

Figure 1: Rural-urban linkages conceptual framework	41
Figure 2: Map of the study area	44
Figure 3: Estimated volume of maize traded in five years in Kibaigwa market.....	58
Figure 4: Scale of traders existed in Kibaigwa market	60
Figure 5: Type of traders existed in Kibaigwa market	61
Figure 6: Mechanism used to sell maize.....	65
Figure 7: Maize flow and market networks	77
Figure 8: Type of products respondents buy or sell outside village/EUC	79
Figure 9: Social service searching networks.....	81
Figure 10: Social purpose of visiting town/EUC	82
Figure 11: Information flow networks.....	83

LIST OF APPENDICES

Appendix 1: Survey Questionnaire for farmers 128

Appendix 2: Survey Questionnaire for Traders and Transporters 132

Appendix 3: Interview guide for Key Informant (KI) interviews and Focus Group
Discussion (FGD)..... 135

LIST OF ABBREVIATIONS, SYMBOLS AND ACRONYMS

ANOVA	Analysis of Variance
Df	Degree of freedom
DFID	Department for International Development
ESRF	Economic and Social Research Foundation
EUC	Emerging Urban Centre
Exp(β)	Exponential of Betas (coefficients)
FAO	Food and Agriculture Organisation
Fig.	Figure
Freq.	Frequency
GATT	General Agreement on Tariffs and Trade
GIS	Geographical Information System
GoT	Government of Tanzania
ha	Hectare
IFAD	International Fund for Agricultural Development
IIED	International Institute for Environment and Development
ISOCARP	International Society of City and Regional Planners
km	kilometre(s)
masl	metres above sea level
min.	minute(s)
NBS	National Bureau of Statistics
NFRA	National Food Reserve Agency
OECD	Organisation for Economic Co-operation and Development
PHC	Population and Housing Census

Prop.	Proportion
REPOA	Research on Poverty Alleviation
RSA	Republic of South Africa
RSB	Roundtable on Sustainable Biomaterials
RUCROP	Rural-Urban Complementarities for the Reduction of Poverty
SAGCOT	Southern Agricultural Growth Corridor of Tanzania
SCP	Structure Conduct Performance
S.E	Standard Error
Sig.	Significance
SRL	Sustainable Rural Livelihood
SSA	Sub-Saharan Africa
Std	Standard
SUA	Sokoine University of Agriculture
Tshs	Tanzanian shillings
UCINET	University of California Irvine NETWORK
URT	United Republic of Tanzania
USAID	United State Agency for International Development
χ^2	Chi-square
<	Less than
\geq	Greater or equal to
β	Beta

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background Information

Rural-Urban linkages comprise the interactions of rural and urban people together with the movement of goods and services between rural settlements and urban centres. Rural-urban linkages can be looked at as a special link that allows a flow of people, goods, capital, information, technology, and waste (Motiee *et al.*, 2014; Sar and Sivaramakrishnan, 2014). According to Bari and Munir (2014), in economic terms, rural-urban linkages are usually distinguished in terms of consumption linkages (demand for final products), production linkages (supply of inputs among businesses), and financial linkages.

The existing interaction between rural and urban areas aims at linking social, economic, and agricultural activities and thus, contributing much to the development of agricultural and industrial sectors. As Akkoyunlu (2015) argues, it is better to understand the opportunities and constraints of rural-urban linkages in order to contribute to sustainable development through the adoption of appropriate economic and social policies as well as interventions. This is particularly because economic development and structural change depend much on the consideration of rural-urban linkages. Besides, rural-urban partnerships approach help economic development through enhancing the production of public goods, achieving economies of scale in public services, developing new economic opportunities and capacity building, improving administration, taking into account negative externalities, and dealing with the coordination failures (Organisation for Economic Co-operation and Development (OECD), 2013).

1.1.1 The state of agricultural markets in Africa and Tanzania

The market in Sub-Saharan Africa (SSA) is believed not to be functioning well because of poor infrastructure, weak institution and lack of credit leading to inefficiency (Barrett and Stephens, 2011). Poorly performing Agricultural markets discourage producers from intensifying input use and expanding production by increasing input prices and hence depressing output prices (Futakuchi *et al.*, 2013). If agricultural markets do not work well, it will be inconceivable to increase crop yields, as it requires the increase of purchased inputs and the marketing of increased output (Futakuchi *et al.*, 2013). Again, African domestic and regional agricultural markets are characterised with less quality requirements that impede the production of export commodities at large quantity in the world market. Although several countries in Africa have undertaken different market reforms during last two decades, food markets in the region still appear highly inefficient (Delgado *et al.*, 2002). Markets can be inefficient either because the trader behaviour appears non-competitive or because the cost of doing business seems to be high (Abdulai *et al.*, 2004). However, greater market efficiency should diminish the degree of price fluctuation in market and raise producers' mean price for products (Dorward *et al.*, 2006). Rising in the price of the produce price along with falling of inputs price would enable producers in African countries to participate fully in marketing processes.

Small scale farmers in Tanzania produce about 98% of total maize production and yet are engaged in fragmented marketing of their maize surplus with traders, millers and National Food Reserve Agency (NFRA) (Mhlanga *et al.*, 2014). In Tanzania, marketing of agricultural produce has been liberalized since 1990s (URT, 2008). However, the Government of Tanzania (GoT) has been interfering with the marketing processes by effecting measures such as export bans on maize to ensure food security and stability of

domestic price for maize (Mhlanga *et al.*, 2014). Despite of agricultural marketing reforms, still 80% of maize is consumed and traded locally in Tanzania (FAO, 2015). Agricultural marketing in Tanzania has been a major impediment against agricultural growth and overall prosperity of the farming communities around the country during the post-trade liberalization regime (Economic and Social Research Foundation (ESRF), 2013). Hence, the current agricultural marketing systems can be made better by reviewing the evolution of government policies that affect marketing of agricultural produce in the country.

1.1.2 Maize market accessibility in Tanzania

In Tanzania, about 82% of all Tanzanian farmers produce maize as a staple crop, and much (80%) of produced maize is under smallholder production system (NBS, 2014). The maize production sector in Tanzania exhibits low productivity and supply, even with improved seeds (Smale *et al.*, 2011). This observation may be linked to the low level of access to market for the majority of smallholder farmers in Tanzania (Haug and Hella, 2013). Other researchers (Maziku, 2015; Sebatta *et al.*, 2014) argue that market access for smallholder farmers plays a great role for the participation of the households in the market, but this participation is claimed to be limited only to village markets and only a few manage to access district and region markets. This trend might be linked to the argument that maize marketing is characterized by lack of trust, information and goodwill between producers, traders and processors despite the recorded successes stories such as that of Kibaigwa maize market (FAO, 2015).

1.1.3 Rural-urban linkage in Kibaigwa Emerging Urban Centre (EUC)

To a large extent the development of the Kibaigwa EUC was based on the maize production, and trade or marketing (Lazaro and Birch-Thomsen, 2013). Farmers from surrounding villages and regions sell their agricultural produces at Kibaigwa market. The existing linkage between Kibaigwa EUC and rural hinterlands enable the residents from rural hinterlands to have economic activities at Kibaigwa EUC. In addition, incomes of Kibaigwa residents depend much on the sale of services rendered to traders and farmers that come to trade maize at Kibaigwa market (Lazaro and Birch-Thomsen, 2013).

Besides, rural-urban interactions have had an impact on markets as well, whereby market accessibility has improved agricultural commodities value chain (RUCROP, 2014). In other words at the macro level, the demand created by the urban-based markets is crucial for rural producers and it is the same urban based markets that link rural producers to regional and international markets (Tacoli, 2006). While access to markets is clearly a key for producers, physical infrastructure and limited information on market mechanisms can be overwhelming obstacles, especially for small producers (Tacoli, 2002). On other hand, analysing rural-urban linkages is necessary in order to find a suitable solution in establishing a balanced development between urban and rural and in solving the problem of rural-urban migration (Ali *et al.*, 2014). This study therefore, focused on identifying the role of rural-urban linkages in the accessibility and expansion of agricultural markets¹ and market networks at Kibaigwa ward, in Kongwa District.

¹Focused on produce market of the case of Kibaigwa which is maize

1.2 Statement of the Problem

Rural communities are characterized by low development resulting from low agricultural development, poor market accessibility and unclear market for farm products notwithstanding the reality that some of the agricultural products are perishable (IFAD, 2003). Market accessibility of agricultural produce remains a serious challenge to small scale farmers in rural areas; and this is particularly because most of these farmers to a large extent have very low incomes and thus subject to high poverty levels (IFAD, 2003).

In Tanzania, 80% of maize is consumed and traded locally (FAO, 2015). Despite of the existing linkages between rural and urban areas and the efforts made by government and development partners in developing the agricultural sector in Tanzania, the potential to link farmers to markets and make the market accessible to small scale farmers is still a challenge. As Egizabher (2001) argues, in order to increase agricultural productivity and to have a sustainable rural development; macro policies, institutions and technical innovation alone will not bring envisaged changes. Additional measures that focus on markets are also needed. This is because farmers are faced with marketing obstacles due to lack of demand and markets access (Egizabher, 2001). Furthermore, the existing rural-urban linkages do not bring the balanced benefit between rural and urban areas. Urban people benefit more economically and socially with the linkages than do the rural people. In most cases, small scale farmers in rural hinterlands are most affected since they are not well linked with agricultural markets for inputs and output. Hence, faced with difficulties in markets access, operate in uncertainty and risk economic environments, poor farmers often sell their produces at low prices and buy inputs and products at high prices (IFAD, 2003).

Several studies (e. g. Braun, 2007; Hughes and Litz, 1996; Idowu *et al.*, 2008) have been done on the roles of rural-urban linkages in agriculture for poverty reduction and employment creation in general. However, few of these studies focused on the assessment of the effect of rural-urban linkages on small scale farmers' access to markets especially for maize produce. Thus, this study assessed the effects of the existing linkages between urban, Kibaigwa EUC and rural hinterlands on market access by small scale farmers so as to fill the existing research gap. The study also looked at the accessibility of output (specific to maize) market resulting from existing economic and social linkages in the study area.

1.3 Justification of the Study

Findings from this study would provide the basis for policy formulation aimed at addressing agricultural and marketing problems faced by small scale farmers in rural hinterlands. The findings would also provide guidance in revising the current policies pertaining to agricultural markets in Tanzania to ensure the accessibility of agricultural markets through rural-urban linkages. Therefore, the study would be useful to the Ministry of Agriculture, Livestock and Fisheries, and Ministry of Industries, Trade and Investment in reformulating policies which would create favourable conditions for enabling agricultural products have easy access to markets. These policies would potentially enable smallholder farmers to have links and access to markets, have an increase in the sales of their produce, have a raise in income level, have improved livelihood status and hence the reduction of their poverty levels.

1.4 Objectives

1.4.1 Overall objective

The overall objective of this study was to assess the role of rural-urban linkages in accessibility to the agricultural (produce) markets for improving small scale farmers' livelihoods at Kibaigwa EUC, Kongwa District, Tanzania.

1.4.2 Specific objectives

The specific objectives of this study were as follows:

- i. To characterize the existing agricultural markets in the study area;
- ii. To examine factors affecting market accessibility by small scale farmers in the study area;
- iii. To determine the contribution of rural-urban linkages on expansion of market and market networks in the study area and;
- iv. To assess the contribution of rural-urban linkages on accessing the market and livelihood strategies/resources in the study area.

1.5 Hypotheses

H₁: Socio-economic factors do not affect market accessibility in Kibaigwa.

H_A: Socio-economic factors affect market accessibility in Kibaigwa.

H₂: Rural-urban linkages do not contribute to market access in Kibaigwa.

H_A: Rural-urban linkages contribute to market access in Kibaigwa.

1.6 Research Questions

- i. What are the major characteristics of existing markets of the produce at Kibaigwa?
- ii. How do rural-urban linkages contribute to the expansion of market and market networks in Kibaigwa?

- iii. To where does maize market and market networks expand?
- iv. Do rural-urban linkages contribute to the accessibility of livelihood strategies and resources in Kibaigwa?

1.7 Organisation of the Dissertation

This report consists of five chapters. Chapter one presents the introduction and background information of rural-urban linkage and objectives. Chapter two presents the literature review, whereby agricultural markets, market access, conceptual and theoretical frameworks and empirical studies on rural-urban linkage were reviewed. Chapter three presents the research methodology which involves the description of the study area, research design and statistical measures. Chapter four presents the findings and discussions of the findings. Lastly, Chapter five presents the conclusion and recommendations of the study.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Theoretical Framework

In many developing countries most rural people depend on agriculture. This has made many agricultural and economic researchers take special interest in working towards rural transformation. The move towards poverty reduction has motivated scholars into developing different development theories and models. The theories and models thus developed have necessitated the analysis of how rural economy, which is largely agrarian, could be economically transformed to meet the demands of the modern commercialized economy (Idowu *et al.*, 2008). The direction of linkages can also be from commercialized economy to the largely agrarian sector. There is no reason why this cannot happen. On the whole, development should be a two way processes. Among the theories which have been developed to explain rural-urban linkages include the dualism theory, central place or centre-periphery (core-periphery) and growth pole theories or models. These models provide explanation on economic performance in urban and rural areas when they both interact in a meaningful way.

2.1.1 Definition of terms

2.1.1.1 Rural-urban linkage

Rural-urban linkages are both a cause and a consequence of social and economic development (Dhanai and Negi, 2015). The linkages are composed of structural, social, economic, cultural and political relationships maintained between individuals and groups in urban and rural areas (Ndaben, 2013).

Rural-urban linkages are defined as the relationship in exchanging resources, food, finance and ideas between rural and urban areas (Tacoli, 1998). Similarly, the International Institute for Environment and Development (IIED) (2012a) defines rural-urban linkages as linkages across space (such as money, goods, people and information flows) and linkages between sectors (such as agriculture and industry sectors) which include activities taking place in both urban and rural areas. Elsewhere, Kalkoti (2015) defines rural-urban linkages based on four categories:

- i. Agricultural products linkage: This is the linkage whereby rural areas are centres for agricultural production whereas urban centres provide flourishing markets for local consumption, processing, industry and export;
- ii. Demographic linkage: This is the movement of people between rural and urban areas. The movement includes rural-urban migration and tourism activities occurring in the urban and rural centres;
- iii. Money transfer: This is the financial flow that helps rural and urban dwellers to have access to financial services and remittances from both financial institutions and their relatives;
- iv. Information flow: Through means of communication, rural and urban people are linked. The linkage help farmer to have access on market information and subsidies.

Therefore, rural-urban linkages allow the mobility of people and flow of information between rural and urban areas; a flow of agricultural and other products from rural to urban areas, and vice versa, a flow of manufactured products from urban to rural areas Tacoli (2004). With this mobility urban and rural areas are interdependent on each other in economic and in social terms in areas such as employment, education, transport and resource use (Eppler *et al.*, 2015).

2.1.1.2 Market access

Bagwell and Staiger (2001), define market access in General Agreement on Tariffs and Trade (GATT) to reflect the competitive relationship between imported and domestic products. When government reduces its import tariff, it alters the competitive relationship between imported and domestic units of the product, thus providing greater market access to foreign producers (Hugo *et al.*, 2006).

Elsewhere, IFAD (2003) defines market access in terms of three dimensions, physical access to market, structure of the market and producers' lack of skills, information and organization.

- i. Physical access to markets: Distance to the markets and lack of roads or bad condition of roads in the rural areas;
- ii. Market structure: Asymmetry of relations between large number of small producers in rural areas and few market intermediaries. Such market is uncompetitive, inequitable and unpredictable;
- iii. Lack of information, skills and organization: Small scale farmers lack access to markets due to the lack of market information, business skills and collective organizations.

However, the word “market access” in this study has been used by considering the physical accessibility (infrastructures and transportation), information availability and the structure of the market and not the physical presence of Kibaigwa international market. Therefore, this study adopted the three dimensions market access definition as defined by IFAD.

2.1.1.3 Small-scale farmers

As a matter of fact, small-scale farmers should also be defined in terms of agricultural activity. Thus, agricultural sector is made up with farmers whose main goal is to produce food for their families on a daily basis. Under such circumstances, only surplus is considered for sale in order to supplement household's income and diversify their diet (Tshuma, 2014). It includes scale of operation which is too small to attract the provision of services needed in order to increase productivity (Kirsten and Zyl, 1998).

Different terms are used to refer small scale farmers, including smallholder farmers and family farmers. According to Calcaterra (2013), smallholder farmers can be defined basing on the following options and indicators:

- i. Market orientation: categorise farmers according to primarily production for household's subsistence, regularly production for markets and primarily production for the markets;
- ii. Labour input: smallholder define based on the origin, the type and quantity of labour used in the farm. This is considered as an indicator of whether family labour is the main source of farm activities;
- iii. Income level: Small scale farmers are defined linked to the costs of certification which are harder to cover for poor farmers with low income, since majority of small scale farmers get household income from on-farm activities;
- iv. Farming system: the production system used by the farmers is also used as an indicator of a small scale farmer. Small scale farmers use diversified farming system, with low inputs and low technology level, thus result to low productivity;
- v. Capacity: small scale farmers are considered to have low capacity on overall farm management compared to professional farmers. This capacity level includes literacy, farm management, administration and marketing activities.

Small scale farmers are characterized by reliance on family labour, low use of external inputs, lack of access to decent inputs (including smart technologies) and lack of access to capital, information and credit. IFAD (2008) defines small scale farmers as those who hold or cultivate farms of two hectares or less of land. Murphy (2012), used the term small scale farmers in terms of the nature of the farm's production rather than the size of land holding. Therefore, this study used the term small scale farmers based on the above mentioned characteristics of small-scale farmers.

2.1.1.4 Livelihood

According to USAID (2005), livelihoods are the means by which households obtain and maintain access to the resources necessary in ensuring their immediate and long term survival. Moreover, livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for means of living (Chambers and Conway, 1992) and jointly determine the living gained by the household (Ellis, 1998). These essential resources are categorised as:

- i. Financial: These are financial assets available to a person or a household. For example access to credit, remittances and salaries;
- ii. Physical: These include infrastructures and equipment such as houses, machines, tractors and livestock;
- iii. Natural: Are the non-made assets which individual/households can access and use for their well-being. These assets include waters, timber, land, minerals and energy (e.g. Electricity);
- iv. Human: these are non-tangible assets which enable a person to have the ability of pursuing economic or social activities through other assets such as natural and physical. These assets include labour power, skills and education;

- v. Social: these are social network which enable a person to have connection with other groups or society. For example neighbourhoods and religious groups.

The accessibility and efficient use of these resources enable households to increase income through economic activities, and hence improve their livelihood status. However, households normally use these resources to cope with shocks, risks and stress which jeopardize their well-being. Therefore, out of five categories of livelihood resources mentioned above, in this study farmers' livelihood status was examined based on physical (house) and Natural (water and electricity availability) resources.

2.1.2 Theories in relation to rural-urban linkages

2.1.2.1 Dualism theory

The two sectors model emphasised the importance of having two sectors which are agricultural and industrial sectors. Lewis (1954) divides the economy into two sectors (agriculture and industry) thus produces different commodities and therefore trade with each other. Lewis (1954) in his theory of dualistic economic development assumes that the agricultural sector has surplus labour which is needed to be supplied to industrial sector. The model explains the transition from traditional rural sector to a modern urban sector. The model explains further that economic growth does not only come from capital accumulation in the modern sector but also from interaction between rural and urban areas.

According to Ranis (2003), the dualistic theory remains useful in the relationship between growth and distribution of income, for the determination of domestic inter-sectorial terms of trade. Furthermore, Ranis (2003) argues that, the model fits the historical experience of

countries such as England, Japan and Taiwan and will also be applicable to the experience of many developing countries in the future. However, the Lewis model fails to explain the formal versus informal sectors in less developed countries (Hosseini, 2012). The assumption of disguised unemployment with zero marginal productivity of labour has been criticised by several writers such as Schultz (1964) and Otsuka (2001). Schultz (1964) argues that, marginal productivity of agricultural labour in traditional sector is not zero and surplus labour does not exist. Hayami and Kikuchi (1982) demonstrate that, with labour marginal product, wages do not adjust and institutionally rigid wage rates cannot be determined in agrarian communities (Otsuka, 2001).

2.1.2.2 Growth pole theory

Growth pole theory developed by Francois Perroux who stated that, economic growth starts at few centres and spread to other areas with varying effects. The growth pole theory suggest that to have economic growth, developing countries should invest heavily in capital-intensive industries in urban centres, and this growth is supposed to spread to the rural areas in a process of regional development (Adel, 1999). The theory believes that, free market forces will provide conditions for development through a trickle-down effect by putting various economic forces together that spreads economic growth from urban to rural areas (Adel, 1999). As Douglass (1998) argues, rural-urban linkage acts as the backdrop of growth pole theory in development planning as coming from generative roles played by towns with their rural hinterlands, and thus economic growth and modernisation required a surplus transfer from the agricultural sector to the industrial sector. The existing relationship between rural and urban centres has an impact on agricultural production. However, according to Egizabher (2001) the existing rural centres and emerging urban centres act as:

- i. Local markets or collecting points for produce;
- ii. Collection centres for exported produce in other words, the beginning of a chain of movement from the farm to overseas consumers; and
- iii. Provide specific agricultural inputs and services to the producers/farmers.

In the growth pole theory, rural service centres are considered as engines of growth to rural hinterlands. Again small towns are markets that help to increase the productive capacity of rural producers and promote the commercialisation of agriculture in the national economic growth (Hinderink and Titu, 1988). This relationship between the emerging urban centres and the countryside is the crux of strategy to bring rural and regional development within a country (Egizabher, 2001).

However, in the view of Kessides (2005), the use of growth pole theory as growth diffusion theory does not work in African countries. Similarly, Mitchell-Weaver (1991) argues that, development theories based on hypothetical relationship work in capitalist urban economic system but are inappropriate in most of the developing countries. Perroux's growth pole robs the concept of usefulness in regional economic analysis (Parr, 1999) and was defined in purely spatial terms (Gore, 1984).

2.1.2.3 Core-periphery/ central place theory

Core-periphery theory explains the relationship between rural and urban areas including the flows of people, information, services and goods between these two places. The core-periphery (or centre-periphery) model is a spatial metaphor which describes and attempts to explain the structural relationship between the advanced or metropolitan centre and the less developed periphery within a particular country (Simon, 2011). The centre-periphery

theory elaborates the existing links between particular areas of the centre and periphery through examining the articulation of different modes of production.

Again Hughes and Litz (1996) define core as an area within a region that determines the structure of the economy in the surrounding region (the periphery). The surrounding rural periphery is largely dependent on the central place for its supply of goods and services. Trade may also flow from the periphery to the core or from the periphery to other national and international markets (Hughes and Litz, 1996). The central place theory is based much on how the market or rural towns are promoted to fill the gap between city and countryside (Douglass, 1998). According to Christaller (1966), region communities can be ordered from villages to towns based on the effective demand for goods and services. Hughes and Litz (1996) argued that there are backward linkages between sectors of the core economy and those industries that function as their input suppliers in the periphery. However, on other hand Sullivan (2005) argued that, central place theory is not applicable to firms oriented toward local inputs, the introduction of such firms in the model may disrupt the urban hierarchy.

2.1.3 Theory in relation to market (market structure, conduct and performance model)

Market Structure-conduct-performance (SCP) model is analytical framework derived from neo-classical microeconomic theory. The SCP approach used to study market and explain how the structure of market and behaviour of market players affect the performance of market. Specifically, market structure includes stable features and characteristics of the organization of the market which influence market players operating in the market (USAID, 2008). The market structure is determined by the factors such as the number and

size of buyers and sellers of the produce or products in the market and marketing relation among market players. Market conduct refers to the behaviour of the market players or actions that market players practice in adapting to the market in which they buy and sell (Bukar *et al.*, 2015). These include price determination methods and buying and selling practices. Furthermore, the performance of the market refers to economic results of the market players' conduct and structure of the market that fulfil the desired social and private goals such as volume and quality of the produce sold in the market. These economic results include price integration between markets and product suitability in relation to consumer preference (Mutayoba, 2015).

However, the model is static in nature, does not explain the evolution of structure, conduct and performance over time (Lipcynski *et al.*, 2009). For example, the existing market structure is assumed to be given and market conduct and performance are described from that while the structure might change and changes might lead to unexpected forms of market conduct and performance (Pisanie, 2013). The inefficiency of market structure and conduct might lead to poor performance of the market. Therefore, in this study the model was adopted as the key theoretical model to characterise the market.

2.1.4 Network theory

Network or social network theory describes the interaction and relationship among entities/actors in different aspects such as economic, social and marketing. The theory helps to understand how interaction influences social and economic activities such as trading, agricultural production and transportation. The network perspective recognizes the interdependent between actors and their actions (Houston *et al.*, 2004). The theory emphasizes the value of typical connections, which tend to connect various types of

information, products or resources that others are more likely to exchange (Wolfer *et al.*, 2015). Also the theory has an implication in most of the organizational inquiries such as inter-firm collaboration (Jones *et al.*, 1997), stakeholder relations (Rowley, 1997) and entrepreneurial activities (Renzulli *et al.*, 2000). On other hand, market networks explain the flow and exchange of products or produce from different stages such as from production to consumption or from marketing to consumption. Furthermore, through repeated interaction in marketing activities (for example between buyer and seller), the market network helps to mitigate many problems related to moral hazard and adverse selection (Jackson, 2010).

However, Emirbayer and Goodwin (1994) argue that, network theory fails to show exactly how intentional and creative human actions serve to constitute social network so powerfully. Watts (2003) argues that, the theory is static, whereby it focuses on the consequences of network properties and fails to take account that actors have agency and constantly change their ties and positions (Borgatti *et al.*, In press). In network analysis, the concepts of actor, relational tie, group, relation and network are not treated equally (Parkhe *et al.*, 2006). Wellman (1988) observes that, the theory shifts the focus from atomistic explanation of attributes of independent to relationships among system of dependent actors. In this study, the theory was adopted to guide the analysis and discussion on expansion of market and market networks.

Therefore, from the theoretical analysis, dualism theory is useful in analysing rural-urban linkages based on labour mobility and capital accumulation between two sectors agricultural and industrial sector. The theory does not explain the marketing trickle-down strategies between the two sectors. The core-periphery and growth pole theories reveal the

existence of trickle-down effect between developed and less developed periphery. In contrast, the growth pole theory is largely concerned with market oriented activities while core periphery is limited to a particular economic activities such as consumer services, demand and supply consideration which are basic to growth centre (Kwon, 1979). However, SCP theoretical model is more useful to characterise various types of market while network theory has more implication in marketing activities and networks. Therefore, this study was guided by SCP theoretical model, growth pole, core-periphery and network theories.

2.1.5 Characteristics of agricultural markets

Agricultural markets are types of markets with special characteristics which are different from other markets. This is mainly due to different factors affecting the supply of agricultural produce (such as transport condition, government policies and factor prices) and lack of bargaining power of small scale producers (who are main producers in Tanzania) in this sector. The agricultural markets can be characterised based on structure, conduct or performance of the market such as exchange functions and behaviour (power system) of market players.

2.1.5.1 Structure of market

The structure of market refers to the numbers and size (large or small) of firms or market players involved in the market. The structure shows both the market is dominated by many or few and small or large firms (market players) and interdependence between firms.

The agricultural market is competitive with many buyers and sellers (price takers) competing in the same market. Maize market is dominated by large group of small scale

producers while large and medium scale producers represent small share of produced maize. According to Eskola (2005), local markets are characterised by small or local farmers who are traders, regional markets are characterised by small, medium and large traders, while national and export markets are dominated by large traders. Similarly, maize markets are characterised with large number of small scale under-capitalised traders and few large trading enterprises with national and international operations (Meridian Institute, 2010). However, number of medium traders at district level is higher than large traders in a given market location, but lower than small traders (WFP, 2016). The maize market in Tanzania is commercially widely dispersed. Maize trading is not dominated by one group while traders and businesses of many different sizes participate in the marketing and processing of maize (Mahdi and Zorya, 2009).

2.1.5.2 Market conduct

The market conduct refers to the behavior that market actors follow and how they adjust to changing market conditions. This includes price setting behavior and buying and selling practices (USAID, 2008). Exchange function as a process of buying and selling of agricultural produce is facilitated by different market actors. WFP (2016) describes how this function is performed by cereal markets agencies in Kasulu District whereby: local farmers/collectors (sell the produce informally to neighbouring households and local small traders in local markets); small traders (purchase from producers and sell directly to consumers); medium traders (purchase maize from collectors, smallholder farmers and traders, and sell to small traders or consumers at retail and wholesale units); large traders (purchase stock after harvest from transporters and local producers, store the food for selling in future lean season at high price). According to Mahdi (2012), maize traders are classified into two groups: small itinerant traders that buy maize directly from farmers and

medium to large maize traders who buy maize from markets and village based traders. Moreover, local traders collect produce from farmers and send it to the collection points and market center ready for large scale buyers to transport the produce to the district, region and international markets (Mwakaje, 2010).

Furthermore, the agricultural markets are characterised with different power system of firms and various agencies that have power and perform different marketing activities. The most crucial of these institutions are middlemen such as brokers, speculative and processors who are involved in purchasing and selling of the produce and move from producers to consumers. Agricultural markets are dominated by middlemen with substantial market power (Mitchell, 2011) while marketing processes are much dominated by personal relationship (Mwakaje, 2010). However, middlemen normally behave opportunistically against small scale farmers during marketing processes. This includes the use of power to change produce prices making them gain more than do the farmers.

2.1.6 Factors affecting market accessibility by small scale farmers

Despite the fact that institutional and physical infrastructures are necessary to ensure access to competitive and well-functioning agricultural markets (Egbetokun and Omonona, 2012), small scale farmers still face different constraints during marketing activities at local, district, regional and even national markets. Most of these constraints are related to physical difficulties (i.e. road networks, affordable transport and distance to markets places), market relations (especially power relations between different actors such as producers, traders and consumers) and access to information on how markets operate (IFAD, 2001). Moreover, the problem of market access is linked to the inability of

smallholder farmers to meet market standards, low volumes of produce, presence of middlemen and low prices of produces in formal market (Abakah *et al.*, 2013).

2.1.6.1 Market information factor

Lack of access to market information is one of the major constraints in the marketing of agricultural produce (Martey, 2014). Information on access to markets enhances farmers' access to markets through better negotiation and meets the standards of the market (Barrett, 2008).

Information on market mechanisms (including price fixation and fluctuations) is still insufficient in most rural locations. In its absence, producers often tend to base their decisions on the production costs. Moreover marketing information tends to be lower when the supply is high, leading to overproduction or gluts in the market, and therefore lowers the market prices (Tacoli, 2002). Such a trend is exacerbated when the trader is also the only source of information on prices and other relevant market information (IFAD, 2003).

In addition, smallholder farmers have limited technical skills and poor access to information and training for improving their production practices and also lack bargaining power (Giulian *et al.*, 2009). Due to lack of market information, farmers fail to negotiate better on the prices of their produces and thus are paid little (Magesa *et al.*, 2014b). Again, lack of market access and marketing information make smallholder farmers to have low returns on the marketed agricultural produce as a result of meagre payment (Eskola, 2005).

Moreover, lack of market information is also caused by weak marketing linkage between rural and urban market players. The weak linkages lead to poor transformation of

information from one actor to another. Therefore, rural-urban linkages should be strengthened among market actors to facilitate the transfer of information to rural farmers in time.

2.1.6.2 Physical factors

Most of the physical factors that farmers face during marketing process are transportation problem, bad condition of roads and long distances to the market place. These physical factors undermines farmers' ability of accessing inputs and selling the produce due to high transportation and transaction costs, which leads to uncompetitive monopsonistic markets (IFAD, 2003). As observed by Devaux *et al.* (2009) claim that smallholder farmers have limited access to physical and financial resources restricting their ability to expand and invest in technology that increases efficiency and add value to primary production. Therefore, these difficulties restrict opportunities for smallholder farmers to invest in more income generation ventures.

Moreover, according to IFAD (2003), remoteness increases uncertainty and reduces choices of marketing agricultural produce; resulting in more limited marketing access opportunities, reduces farm gate prices and increase in input costs, thus in turn resulting in subsistence rather than market oriented production systems. The problem of long distance to markets and high transportation costs are associated with insecurity among farmers (particularly to women) to their earnings and commodities (Chirwa *et al.*, 2005).

On other hand, access to agricultural produce markets depends on the condition of the road. Poor road condition leads to poor market access by rural farmers and discourage maize traders against travelling to the rural areas to buy produce. As Musumba and Costa

(2015) observe, bad condition of roads reduces market access and increase transportation costs to rural farmers. Due to poor condition of the roads, farmers receive unfair prices for their produce and make them vulnerable to several risks during farming, transportation and marketing of the produces (Furuholt and Matotay, 2011).

Inadequate physical infrastructure is a major constraint that affects mainly small scale farmers. For example in Southern Tanzania, agricultural production for export markets is severely hampered by lack of roads and transport system; thus small producers can hardly afford transport costs to farmer cooperatives in designated locations, which are the only official purchasing points for exporters (Tacoli, 2002). In contrast, improved infrastructure leads to increased market integration and more commercially oriented production systems (IFAD, 2003). However, there is still a long way to go for more isolated rural population to reach improved market access through improved roads (Dorosh *et al.*, 2012).

Therefore, additional means of transport such as cars and tractors are an important factor in maize marketing, whereby maize could be transported from the farm to the home, store or to the market place. Unpredictable transport contributes to chaotic agricultural produce collection system through middlemen who smallholder farmers largely depend on for access to markets (Bradbury *et al.*, 2017). Poor state of the transport sector in Tanzania contributes to high cost of domestic transport and creates barrier to trade (Kweka, 2006). For example in rural areas, most smallholder farmers own and depend much on traditional tools such as oxen carts, man driven carts, and bicycles. According to Magesa *et al.* (2015), smallholder farmers experience poor market access situation of carrying the produce on the heads, using cow-carts, bicycle and donkeys to transport the produce to the nearby markets. However, optimal performance of transportation requires investing in

modern means of transportation to enable the farmers use less time, maintaining produce quality and minimizing costs (Bee, 2009).

Thus, physical factors are more important in facilitating the linkage between rural and urban dwellers. For example, the presence of high quality road from rural to urban areas link farmers to the formal markets. And by using modern transportation equipment farmers can transport their produce to the market at low cost and at the optimal minimum time. Therefore, the presence of strong linkages between rural and urban areas, quality roads (connect farmers to market places) and modern transportation equipment is inevitable.

2.1.6.3 Produce quality, market relation and education level factors

In spite of the great potential of the agricultural sector in Tanzania there are still many challenges facing the sector including low quality of produce (Mmasa, 2013). In addition, low level of education and poor market relation between market players are among the constraints for small scale farmers to have access to the market.

Poor quality of seeds which are used result in poor quality of the produced products (Daisy *et al.*, 2015). Due to low quality of produce, small scale farmers often face difficulties in accessing the market and trading their produce (Adegbidi, 2012). For example, loss of maize quality resulting from mycotoxin contamination is one of the obstacles against market access and against linking smallholder farmers to the markets (Magembe, 2017). On the other hand, buyers assess the quality of maize depending on moisture content and make decisions on the price based on the degree of dryness they observe (Ismail, 2014).

Moreover, commercial maize market is controlled by a small number of very strong and influential dealers that are well adapted to handle irregular and opportunistic trade (FAO, 2015). As IFAD (2003) argues, the rural markets are characterised by extreme asymmetry of relations between small scale producers, consumers and a few market intermediaries. Such market relations are characteristically uncompetitive, unpredictable and highly inequitable. Rural producers who face difficulties in accessing markets often become dependent on traders who come to the village to buy agricultural produce and sell the inputs and consumer goods to rural communities (Gatare *et al.*, 2015).

Education level also has an effect on market accessibility. Most farmers in rural areas have low education level and few have no formal education. An educated farmer is likely to make good decision during maize marketing process. On other hand, low level of education diminishes the bargaining power small scale farmers (Magesa *et al.*, 2015).

Therefore, strong rural-urban linkage together with social, formal and informal networks between rural and urban actors will enable small scale farmers who have no power and formal education to seek advice and information from knowledgeable market actors.

2.1.7 Rural-urban linkages

Rural-urban linkages include the flow of produce, goods, information, finance and people from rural to urban areas and vice versa (Akkoyunlu, 2015). The linkages include production linkages and linkage from expenditure or consumption resulting from increased earnings in both farm and non-farm sectors (RSA, 2012). Agricultural produce flows from rural to urban markets, both for local consumers and for regional, national and international markets (Tacoli, 2003). The flow of information includes information on

market mechanisms (such as price fluctuations), and information on employment opportunities for potential migrants. Remittances and goods also flow between rural and urban settlements after being sent by migrants or natives. These spatial flows overlap with linkages across various economic sectors at household and local level and include backward and forward linkages between agricultural, manufacturing and service sectors (Mulongo *et al.*, 2010).

2.1.7.1 Rural-urban linkage in Tanzania

Rural-urban linkages play an important role in the development and growth of Tanzania's economy. The linkages on social, economic and agricultural activities facilitate the flow of people, goods, information and agricultural produce from one region to another within the country. In Tanzania urban centre within districts, regions and the country as a whole are the focal points for economic growth, market places and services delivery for rural areas (URT, 2001). Small towns such as Kibaigwa EUC (in Dodoma Region) and Mbulu town (in Manyara Region) are considered as the economic and social opportunity that provide a range of goods and services for the surrounding rural hinterland (Baker and Wallevik, 2003). According to Akkoyunlu (2013), Himo town centre played an important role in the development of its surrounding regions because it has been connected to the national and international trade networks.

Moreover, the presence of economic opportunity in Dar es Salaam Region facilitates the interactions with small towns that lead to the flow of people from rural hinterlands to urban area (Dar es Salaam). As observed by Christiaensen *et al.* (2017), the flow of people from the rural areas forms an ever increasing proportion of urban population of Tanzania. The decline of rural economies evidently has led to rural-urban flow among the

Tanzanians in search for both formal and informal opportunities such as social services (Ndembwike, (2006).

In Tanzania, despite the fact that many rural regions are heavily agricultural and poorly linked to national or global markets (Bevan *et al.*, 2016), the agricultural sector plays a major role in linking with non-farming sectors (Katega and Lifuliro, 2014). This sectorial linkage (such as between agriculture and business sector) allows the flow of produce and services interchangeably between rural and urban areas. For example, small scale farmers in rural hinterlands rely on a network of social relation (to get marketing information) from local traders to relatives in many urban centres in Tanzania (Bah *et al.*, 2003). These linkages which include social relations and marketing linkages help the rural Tanzanian small scale farmers to interact with traders to marketing their agricultural produce.

2.1.7.2 Rural-urban linkages and expansion of market and market networks

Rural-urban linkages and expansion of market

Rural-urban linkages through communication and road networks, information, finance and people's flow play an important role in agricultural markets. This eventually is expected to lead to the expansion of agricultural markets in which farmers and traders operate (Egbon and Okoh, 2005). However, expansion of non-farm and farm activities is possible through linking rural areas to external markets that help expand the rural markets (Haggblade *et al.*, 2010).

The linkages between rural and urban areas which are determined by economic, social, cultural and environmental factors are influenced by infrastructure including roads and transport networks, which link rural areas to urban centres where the markets are located

(Acheampong *et al.*, 2015). Small urban centres and EUC have the potential of playing a more direct role in the development of rural areas and provides a crucial connection between rural and urban areas, a more diversified local economic base and link to a wider market (Losch *et al.*, 2013). The linkage enables more people living in rural areas travel to small towns in search for goods and services which widen marketing activities (Lindert and Steel, 2017). Similarly, at Kibaigwa ward, people from hinterland villages travel to Kibaigwa EUC to buy consumer goods and sell maize at the Kibaigwa cereal market.

Moreover, markets for agricultural produce which are facilitated through mobile phones are expanding, whereby small scale farmers access markets through communicating with middlemen such as retailers, wholesalers and brokers (Braun *et al.*, 2012). This communication flow helps the rural poor by improving access to agricultural information and expanding the markets (Swanson and Rajalahti, 2010). According to Kiondo *et al.* (2010), access to agricultural information interplaying with other factors such as road networks and quality produce can expand agricultural markets and enable farmers to better access markets. However, the massive flow of people, goods, finance and information result in access to wider world markets (Haan and Ufford, 2001).

Rural-urban linkages and expansion of market networks

Marketing activities takes place on networks whereby rural and urban market actors interact with each other. The interaction within market networks (i.e. information exchange) enables market players to buy and sell their produce. In addition, farmer may lack information or access to alternative buyers or markets, but linkage through mobile services may play a role in broadening their market networks and facilitating contacts (Braun *et al.*, 2012).

Furthermore, the existence of rural-urban linkages integrates rural economies to the national markets and trade networks (Ndaben, 2013), which then lead to the expansion of market networks. However, rural-urban linkages are not limited to urban-hinterland relationships but extend to wider networks of villages and towns (Douglass, 1998). According to Avery *et al.* (2017), rural-urban linkages broaden the market and connect rural producers to wider urban markets and enable them to participate in the national and regional economy. It is through marketing linkage, where remittances, information and people's flow play a vital role in facilitating the expansion of rural and urban market networks from village to urban centres, and to the national and international markets.

2.1.7.3 Small scale farmers' linkages in agricultural market

Small scale farmers provide about 80% of the food supplied in SSA (FAO, 2012). Despite of these statistics, most poor farmers are not linked to the markets for a variety of reasons including, remoteness, low production, low farm-gate prices and lack of information (Keats and Wiggins, 2013). In areas where production volumes are small and scattered between several small farms, local traders operating on a small scale are often the only link with markets (Tacoli, 2003).

Keats and Wiggins (2013) suggest three sets of factors for successful links between small scale farmers and markets, which are;

- i. Business case for small scale farmers and partners in the supply chain: these include buildings which enable rural investment climate and the provision of rural public goods (roads, health, education, water, research and extension);
- ii. Organising the link: find champions to make the links and group small scale farmers to overcome diseconomies of small scale farmers. For example,

companies can facilitate market linkage through linking farmers with buyers (Lundy *et al.*, 2008);

- iii. Approaches to linking: enable and facilitate learning and overcoming unforeseen obstacles. These approaches of linking farmers to the market include the use of retailers (interaction between market actors), price negotiating and transportation of the produce to the market place.

Moreover, through learning and knowledge mobilizing with farmers support groups, community groups and farmers associations, farmers are able to link with more marketing networks and collectively shaping the common goals (Shaw and Kristjanson, 2014). Technical assistance providers link large buyers with smallholder farmers through village aggregation centres in order to create new direct relationships (Olofsson, 2011). Linking smallholder farmers to the markets provides an opportunity for poverty reduction and ensures the delivery of commercially viable produce to the consumers (Lundy *et al.*, 2012). In addition, the link to maize quality management practices such as drying and maize quality measurement tools such as moisture meters will increase access of maize with the required standards to the market (FAO, 2014).

2.1.7.4 Rural-urban linkages and access to market and livelihood strategies/ resources

Rural-urban linkages and access to market

Rural-urban linkages have vital roles in facilitating accessibility of agricultural markets by small scale farmers. On the other hand, the performance of smallholder agriculture in Africa is highly dependent on the market accessibility of their produce. As Adegbedi (2012) argues, market access is one of the most important elements that influence

performance of smallholder agriculture in developing countries. However, access to agricultural markets and marketing information are essential factors in promoting competitive markets and improving agricultural sector development (Magesa *et al.*, 2014a). Increasing access to domestic and regional markets is a key to poverty reduction, food security and economic growth as well as a necessary step towards improving the country's capacity to trade with the rest of the world (USAID, 2005). Improved access to market is most likely to pave way for the poor rural populations to improve their livelihoods (Romanik, 2008). However, these can only be possible if the strong linkages between rural and urban areas exist.

Lack of market linkages represents a significant impediment to market access especially for poor smallholder farmers. The lack of market linkage increases transaction cost, increases post-harvest losses, perpetuates farming as a social rather than business activity, and reduces market efficiency (RSA, 2012). However, through marketing cooperatives, contract farming, agro-processor, exporters and domestic traders, small scale farmers are able to link to the markets. Linking small scale farmers to markets facilitates market access, leads to an increase in income, increase rural employment and sustains agricultural growth (Dorward *et al.*, 2004).

Rural-urban linkage and access to livelihood strategies/resources

At a micro level, rural-urban linkages are more important as tools for understanding people's livelihood and their strategies (Akkoyunlu, 2015). Improvement in small scale farmers' livelihood status depends much on livelihood strategies which include farm and non-farm activities and connection to the urban markets. However, the livelihoods of urban dwellers can have rural components since a resident from city can be engaged in the

agricultural production or marketing and rural dwellers can have urban components by being engaged in the off-farm activities (Garrett and Chowdhury, 2004).

Rural dwellers make their living from land and thus are more dependent on access to natural resources (Mylott, 2009). The existing rural-urban linkages provides numerous services to rural areas including markets for agricultural produce which enable rural farmers to sell their produce and increase their income level so as to have access to livelihood assets or resources. However, the mobility and remittances are key elements of livelihood which diversify income. Through market information farmers mobilize returns from livelihood strategies; strengthen networks between rural hinterlands and central markets, and thereby creating livelihoods (Seraje, 2007). Likewise, through linkages with surrounding emerging urban centres, farmers' livelihood strategies are drawn from a combination of agricultural intensification and non-farm activities (Thanh *et al.*, 2005).

Furthermore, rural people have their own strategies of securing their livelihood, and these differ from one farmer to another depending on factors such as social and economic status, education and the stage in the household life cycle (Wagayehu, 2004). Even though, smallholder rural farmers are involved in diverse livelihood activities, access to different income sources beyond agriculture varies across and depending the ownerships of different livelihood assets (Yizengaw *et al.*, 2015).

2.2 Empirical Literature Review

Haliru and Ibitoye (2014) evaluated the market structure of gum Arabic marketers in North-Eastern Nigeria and found that the concentration of gum Arabic marketers in Adamawa, Taraba and Yobe states was 0.812. The concentration ratio was very close to one, which

means that there was unequal revenue distribution among marketers in the study areas. The study found further that there was a great variation in the revenue generated out of 150 gum Arabic marketers, whereby only 18% of marketers gained about 98.6% of total revenue generated; while 82% gained only 1.4%. This implies that there was unequal revenue distribution among marketers.

In another study, Ranganath *et al.* (2013) analysed the structure and competitiveness of maize market in Davanagere, in India and found that, the coefficient of inequality of maize traders in in Davanagere market was 0.206, which was close to zero. This implies that, there was a higher degree of competitiveness for maize in Davanagere market and the market concentration was less.

Elsewhere, Amin and Mukweyho (2014) examined the factors that affected small scale cabbage producing farmers in accessing the market. The findings of their study indicate that transaction costs, agricultural extension education, the level of education, distance from farm to market and equipment owned by farmers were the factors that account for the most differences in market access. The study recommended for measures of mitigating these constraints to be adopted in order for small scale farmers to access markets of their produce.

Bhagat and Dhar (2011), identified and described the main factors affecting market accessibility of small farmers from supply chain perspective in West Garo Hills, in India. In their study an attempt was done to identify statistical significant relationships between market access and factors such as access to information, distance, education level, and extension services. Their findings revealed that access to information and extension support were the prime factors impacting small farmers' access to markets of their produce in West Garo Hills.

Elsewhere, Idowu *et al.* (2008) examined the impact of rural-urban linkage on the incomes of rural farming households in Ile-Ife area of Osun State, Nigeria. Descriptive statistics and regression analytical techniques were used. The study revealed that although farm sizes increased as one moves further away from the city, there was a negative relationship between distance and the net income. A kilometre increase in distance away from the city decreased the net income by three percent.

Hughes and Litz (1996) assessed the economic linkages between a small urban core and the surrounding rural periphery in Monroe, in Louisiana. Researchers demonstrated the contribution of agriculture; especially in the rural periphery to the urban core (Ouachita Parish) economy. The assessment was also made on the possibility of using the core's food processing sector to facilitate periphery economic growth. While the results demonstrated stronger rural-urban linkages than those found in other regions, the growth in the urban food processing industry did not imply rapid growth in the periphery areas (i.e. Franklin and West Carroll parishes).

REPOA (2000) investigated the reciprocal rural-urban and urban-rural relationships adopted by households in Ifakara, in Tanzania. The findings show that about 86% of household in Ifakara town had farms in the surrounding rural villages. The rural households serve as the market for town traders and bus operators; and town dwellers were employed in some of the big rural farms. Also, it was found that, Ifakara town was a source of supplies and services to rural residents and a market for rural products.

In other study, Chan-Kang *et al.* (2005) assessed the contribution of rural growth to the reduction of both rural and urban poverty and the impact of urban growth on rural and urban poverty reduction in China and India. The results showed that agricultural growth

contributed to poverty reduction in both rural and urban areas in China. But the effect on rural poverty was larger than the effect on urban poverty. On the other hand, urban growth contributed to only urban poverty reduction and its effect on rural poverty reduction was negative or statistically insignificant. In India, the results revealed that rural growth helped to reduce rural poverty but its effect on reducing urban poverty was statistically insignificant. Urban growth contributed to urban poverty reduction and its effect to rural poverty was not statistically robust.

Bari and Munir (2014) attempted to explore the rural-urban linkages in Basti city, in India. The results revealed that the rural areas are dependent upon urban centres, as 75% of the respondents visit the city daily or weekly for marketing, education, jobs and health purposes that lead to social, economic and cultural transformation. Similarly, urban areas benefit from the rural areas in many ways; for instance villagers send about 38% of their agricultural products (food grains 65%, milk 20%, and vegetable 15%) and other necessary food items to the city markets. The study found that the quality of roads and distance of the villages Amauli (5km), Karh (5km), Sinhari (12km) and Paedi (18km) from the city has a major negative impact on the rural-urban linkages.

Egizabher (2001) examined the nature and magnitude of rural-urban linkages in Robe and Limu in Ethiopia. The study used data from surveyed farm; and urban households and traders to provide background information. Ten testable hypotheses were investigated. The researcher found that the farm sector in the study areas shows consumption linkages in terms of expenditures on urban goods and on selected social services. The hinterlands had also shown limited marketing linkages in the sale of rural products in small towns. However, most of the expected linkages such as input, financial and processing linkages

between the hinterlands (Chime, Sude Welte, Bofa Regibe and Teba Robe) and the small towns (Robe and Limu) did not exist.

Lerise *et al.* (2001) explored how different groups rely on rural-urban interactions and linkages in and around Lindi town in Southern Tanzania. The findings show that, small scale farmers tend to sell directly to trading agents despite that the sales occurred at the assembly points due to difficulties in affording transport costs. Furthermore, Lindi town provide urban markets with goods and labour to the surrounding areas.

Tilahun (2014) assessed sustainable livelihood of rural households through rural-urban linkage. The study examined the livelihood resources/assets of Guba Lafito District. The findings revealed that only 25% of the households had access to electricity service, 69% had shared water supply while 31% had water services at their home. This shows that rural households still lack access to essential services which provide the basis for production and business development.

Seraje (2007) examined the livelihood strategies and their implications for rural-urban linkages in Wolenkomi town and rural Kebeles, in Addis Ababa. The findings indicated that though rural and urban households derive a larger proportion of their income from farming, trade and service provision, respectively, households combine livelihoods from different sources. That is agricultural produce marketing showed strong linkages with the local, regional and national urban centres. Therefore, rural-urban linkage plays a role for rural and urban people to have access to markets in Wolenkomi and Kebeles areas.

2.2.1 Literature gap

Despite the fact that most of the literature reviewed namely, Idowu *et al.* (2008), Bari and Munir (2014), Egizabher (2001), focused on assessing the effects of rural-urban linkages

towards poverty reduction and development in general, none of them assessed the impact of rural-urban linkages on markets accessibility for small scale farmers and specifically to the emerging urban centres and surrounding hinterlands. Therefore, it was in this context that this study set out to assess the effects of rural-urban linkages on markets access in Kibaigwa Emerging Urban Centre.

2.3 Conceptual Framework

According to Okali *et al.* (2001), rural and urban areas are interdependent in the exchange of ideas, goods, services and money with the aim of meeting common human needs. These interactions are affected by historical, political, economic, socio-cultural and environmental factors. Rural-urban interactions are reflected by spatial flows which include flows of people, commodities, services and information and by sectorial activities, which include farming, trading inputs and products in the markets. Rural areas are mostly based more on access to natural resources while the urban areas are mostly based on employment opportunities and industrial sector for their livelihood, hence the importance of having linkage between rural and urban areas. The effectiveness of these flows strengthens linkages between rural and urban areas, and hence facilitates the accessibility of markets, expansion of markets activities and market networks.

As Braun (2007) demonstrates, the spatial flows increase the urban demands for rural resources such as land and water. The most visible change is associated with the physical expansion of urban areas, as urbanization has led to the extension of urban space onto rural space to accommodate growing urban populations and the growing levels of economic activity. Based on sectorial flows agricultural productivity growth is essential to

launching an economy-wide growth, especially in predominantly agrarian societies (Diao *et al.*, 2007).

Furthermore, through marketing activities together with money flow, rural and urban dwellers trade among each other. By assuming that all factors (negative) remain constant, the linkage enables rural small scale farmers to access market for their produce. On the other hand, availability of social networks together with information flow among rural and urban actors facilitate the expansion of market and market networks. The interactions between traders, transporters or consumers provide more opportunities for market networks to expand further to the villages, different EUC, and town. Therefore, the positive effect of economic and social factors to sectorial and spatial flow facilitates rural-urban linkage, and hence increases accessibility to and expansion of the market and market networks to small scale farmers.

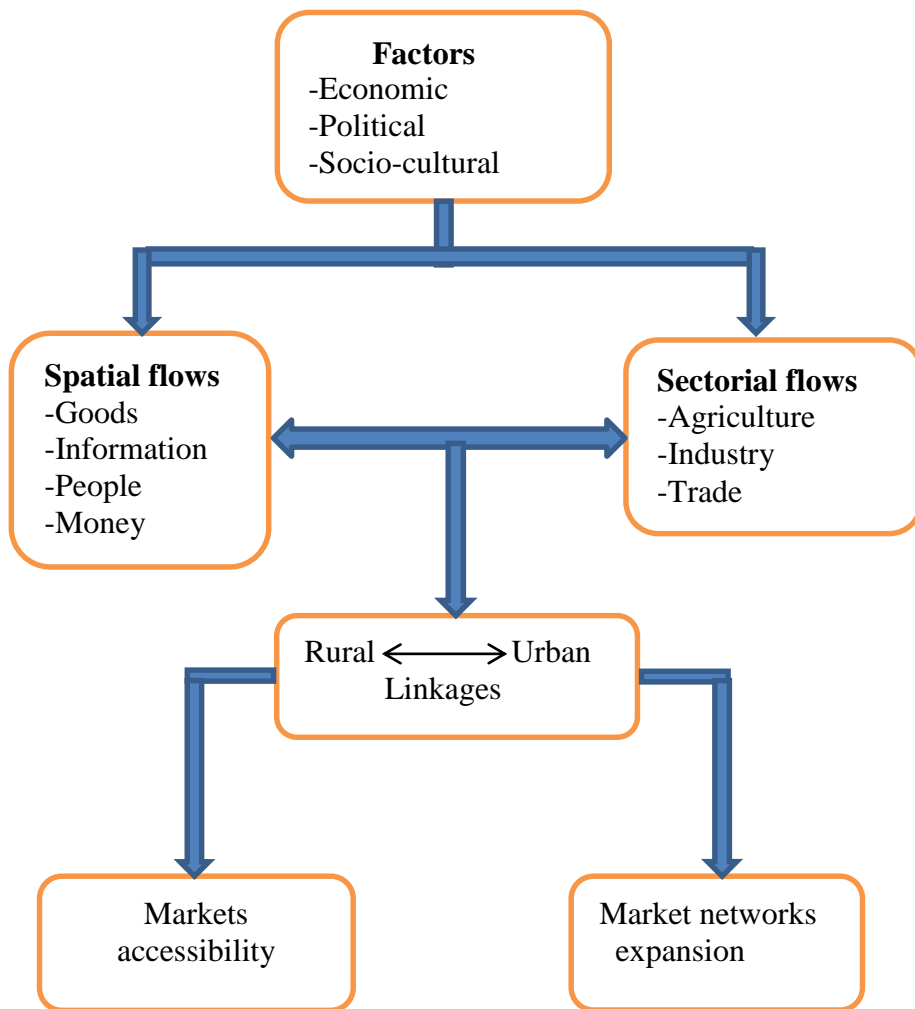


Figure 1: Rural-urban linkages conceptual framework

Source: Adopted and modified from Okali *et al.* (2001)

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Research Design

In this study a cross-sectional research design was used, whereby the data were collected at a single point in time. The design used survey techniques during data collection since it is inexpensive and not time consuming. Cross-sectional studies also provide a clear snapshot of outcome and characteristics associated with outcome at a specific point of time, and draw inferences from existing differences between groups (Bethlehem, 1999).

3.2 Description of the Study Area

3.2.1 Description of Kongwa District

The study was conducted in Kibaigwa Ward in Kongwa District, Dodoma Region. Geographically, Kongwa District is located at Latitude 6°12' South of Equator and Longitude 36°25' East of Greenwich. It is bordered by Manyara Region in the North, Morogoro Region in the East, Mpwapwa District in the South and Chamwino District in the West. Kongwa District has 404 100 ha, whereby 363 690 ha are arable land suitable for agriculture, of which only 258 690 ha are in use for agricultural activities (Dodoma Region profile, 2014). In Kongwa, the main crops cultivated are maize, sunflower, millet, sorghum and groundnuts. Administratively, Kongwa District has three divisions, 22 wards and 82 villages (Dodoma Region profile, 2014).

3.2.2 Description of Kibaigwa Ward

Kibaigwa is one of the 22 administrative wards in Kongwa District. The ward has three villages which are Kinangali, Ndurugumi and Kibaigwa and it has 16 sub villages (Dodoma Region profile, 2014).

Kibaigwa Ward is located at 6°6' South of Equator and 36°38' East of Greenwich with an elevation of 1184 masl. Kibaigwa emerging urban centre is located along the Morogoro to Dodoma main road, about 160 km from Morogoro town and 100 km from Dodoma town. Ndurugumi village is located at a distance of 5km from Kibaigwa centre while Kinangali village is located at a distance of 3km from Kibaigwa centre. The total area of Kibaigwa is about 45km², whereby Kibaigwa centre has 10km², Kinangali 15km² and Ndurugumi has a total area of 20km².

The economy of Kibaigwa depends much on agricultural and business activities. People living in these villages (Kibaigwa centre, Ndurugumi and Kinangali village) are engaged in farming activities (cultivation of crops such as maize, groundnuts and sunflower) and small businesses. The presence of Kibaigwa cereal market attracts migrants (farmers and businessmen) from other rural and urban areas within Kongwa District and even outside Dodoma Region. Again the physical location of Kibaigwa provides an opportunity for farmers and traders to have access to agricultural markets and transportation services. Agricultural produce are transported from rural hinterlands to Kibaigwa centre then to the district, national and international markets, while agricultural inputs are transported from urban to Kibaigwa centre.



Figure 2: Map of the study area

Source: SUA GIS (2017)

3.2.3 Population size

Demographically, based on Population and Housing Census (PHC) of 2012, Kongwa District is estimated to have a population size of 309 973 out of which 149 221 are males and 160 752 are females (URT, 2013). Out of the District population about 279 961 people live in rural areas and about 30 012 people live in the urban areas (URT, 2013).

Furthermore, based on PHC of 2012, Kibaigwa Ward was estimated to have a population size of 24 761 out of which 11 808 are males and 12 953 are females. At the village level, the population size was estimated to be 2320 in Kinangali, 4906 in Ndurugumi and 17 535 in Kibaigwa centre.

3.3 Sampling Design

The purposive sampling method was used to select Kibaigwa Ward. However, all the villages in Kibaigwa ward (Kibaigwa centre, Kinangali and Ndurugumi) were selected and from each selected village the sample unit (farmers) was randomly selected; while traders and transporters were randomly selected from Kibaigwa market. Kibaigwa ward was purposively selected because of its intense commercial activities and the existing linkages with other urban centres, as well as rural communities due to the presence of international cereal market. The study area offers a suitable rural-urban setting for an in-depth study of the inter-linkages between the town centre and its surrounding hinterlands.

3.4 Sample Size

A representative sample for the study was obtained from the residents of Kibaigwa centre and nearby villages (Kinangali and Ndurugumi). The targeted sample size for this study was 202 respondents that selected randomly from the targeted population (small scale farmers, traders and transporters). The sample size was drawn from a total population of 24 761 of Kibaigwa ward. Out of the 202 respondents, 40 were transporters, 42 traders and 120 farmers who were involved in the interviews. The sample size was calculated based on Yamane (1967) simplified formula of determining sample size. The summary of selected sample size in each village is presented in Table 1.

The sample size was calculated as follows:

$$n = \frac{N}{1 + N(e)^2} \dots\dots\dots (1)$$

Whereby;

n = Sample size

N = Population size

e = the precision error of 7%

$$n = \frac{24761}{1 + 24761(0.07)^2} = 202 \dots\dots\dots (2)$$

Table 1: Summary of selected sample size

District	Ward	Village	Sample unit	Sample size
Kongwa	Kibaigwa	Kibaigwa	Farmers	60
			Traders	42
			Transporters	40
		Ndurugumi	Farmers	30
			Kinangali	Farmers
		Total		

3.5 Data Collection

The combinations of qualitative and quantitative tools were used in this study. Because of the dynamic nature of the processes involved in rural-urban interactions, more attention was on qualitative tools. These tools include in-depth interviews with key informants, and survey method and both structured and unstructured questionnaire were used (Appendix 1 and 2).

3.6 Methods of Data Analysis

3.6.1 Characteristics of agricultural (produce) markets

Descriptive statistic was used to characterise the market and to present arguments pertaining market characteristics as part of analysing specific objective one. This involved

the use of frequency, cross-tabulation and percentages. In this study the maize market was characterised basing on structure and conduct of the market. These characteristics include main dominant(s) market players in existed maize market, the number of sellers and traders in maize market, exchanging functions (buying and selling practises), and mechanisms used in marketing produce.

Furthermore, Gini coefficient was used to measure the concentration ratio of marketers (traders) in Kibaigwa maize market. Gini coefficient is a measure of statistical dispersion which used as measure of inequality of income or shares distribution. The ratio values ranging from 0 to 1, whereby when a ratio is 0 the market is perfect competitive (equal income/sales share distribution) and if it is 1, the market is perfect monopoly (unequal income/sales share distribution). The model is expressed as follows:

$$\text{Gini coefficient} = 1 - \sum_{i=1}^k X_i Y_i \dots\dots\dots (3)$$

Whereby:

X_i = Cumulative percentage of traders in ith class of trader

Y_i = Percentage of shares in ith class of trader

K = Number of traders

3.6.2 Factors affecting market accessibility

Binary logistic regression was used to examine factors that affect accessibility of markets to small scale farmers as part of analysing specific objective two. The model was used because it is a flexible tool in predicting a categorical (dichotomous) variable from a set of predictor variables. According to Horst (2014), logistic regression is particularly useful in determining the probability of a categorical outcome occurring based on the value or

category of input variables. The dependent variable takes a value of between 0 and 1. The variable was described 1 if the rate of market accessibility is high and 0 if otherwise. The estimated model is expressed as follows:

$$P = \frac{\text{Exp}\left(B_0 + \sum_{i=1}^k B_j X_i\right)}{1 + \text{Exp}\left(B_0 + \sum_{i=1}^k B_j X_i\right)} \dots\dots\dots (4)$$

In linear form Eq. (3) was expressed as follows;

$$\ln\left(\frac{P(Y = 1/X)}{1 - P(Y = 1/X)}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_{10} X_{10} + \varepsilon \dots\dots\dots (5)$$

Whereby:

P = Probability

Y = Dependent variable

β_0 = Constant

β_s = Parameters

X_s = Explanatory variables

ε = Disturbance term

X_1 in the model represents age of respondent. Market access was assumed to be determined by the age of respondent whereby the probability of a farmer to have access to the market decreases with an increase of age. Therefore, the age of the respondent was expected to positively or negatively affect the market access.

X_2 in the model represents sex of respondent. Access to market was assumed to be different between men and women. Again, it was assumed that, men are more likely to have access to market easily than women because of the belief that, at the household level

(not all) men are more responsible in marketing activities than women. Therefore, the sex of respondent was expected to have positive relation with market access.

X₃ represents education level. Education helps farmer to have more networks with other market actors and to understand market dynamics. It was assumed that, respondent with high level of education can access market easily than non-educated respondent. Therefore, education level of the respondent was expected to have positive effect on market access.

X₄ represent quality of produce (produced maize). The quality of maize produced by a farmer is an important determinant to the accessibility of market. A farmer with high quality of produced maize has higher chances of competing and selling the produce at higher price at a given market than is the case with low quality produce. Therefore, the quality of maize was expected to positively relate to market access.

X₅ represents distance from home to market place. The accessibility of market depends on distance from farm to home to market place. Long distance to the market place increases the costs, which causes the farmer to face difficulties during marketing processes, and thereby difficulties in accessing the market. Therefore, the distance to the market was negatively related to market access.

X₆ represents the condition of the roads. The probability of a farmer to have access to market depends on the condition of road used in transporting maize to market place. Good road helps farmer to transport maize to market place easily, in time, and at low price as opposed to bad roads, which hinder accessibility of market by small scale farmers in rural areas. Therefore, road condition was expected to have a positive or negative relation with market access.

X₇ represents access to information. Availability of market information such as market price and the required quality of the produce has an effect on accessibility to the market. A farmer who gets more information on market has high probability of accessing the market. Therefore, access to market information was expected to positively relate to market access.

X₈ represents availability of transport. The ownership or accessibility of means of transport such as vehicles and motorcycle enables farmers to have access to the market by transporting the produce to the market place in time. A farmer who owns or has access to modern means of transport was expected to access the market easily than a farmer who does not own any means of transport. Therefore, ownership of means of transport was expected to have a positive or negative relation with market access.

X₉ represents farm size. It was assumed that, large size of farm land cultivated by a farmer enables farmer to have surplus production (other factors remain constant) for sale at the market. Therefore, the large size of land cultivated increase income of the household (from the sold surplus maize), thus the income would be used by the farmer to search for marketing information so as to access the market. Therefore, farm size was expected to positively relate to market access.

X₁₀ represents household income. A farmer with high income has more access to market than a farmer with low income. For example with high income, a farmer is able to search for market information during marketing processes. Therefore, income level was expected to positively relate to market access.

Table 2: Summary of explanatory variables

Variable	Description	Expected sign
X ₁ = Age	Age of farmers measured in number of years	+/-
X ₂ = Sex	1= male, 2 = female	+
X ₃ = Education level	1= None formal education, 2=Primary, 3= Form four, 4=Form six, 5=Not finish, 6=Adult, 7= College/university level	+
X ₄ = Quality of produce	1=High quality, 2=low quality	+
X ₅ = Distance	Distance from farm to market (km/time walked)	-
X ₆ = Roads condition	1= Good, 2= Bad	+/-
X ₇ = Access to information	1=Has access, 2= Otherwise	+
X ₈ = Transport availability	1= Ownership, 2= Otherwise	+/-
X ₉ = Farm size	Land size in acreage	+
X ₁₀ = HH income	Income of household in Tshs.	+

This model assumes that an individual (farmer) has only two alternatives either to have access to market or not to, depending on factors such as being young, adult or older, being a male or female, attainment of education high level, having access to information or not to, ownership of means of transportation or not, having high or low quality produce, the land size cultivated, the income level in Tshs, distance to the market and the condition of the road.

3.6.3 Rural-urban linkage and market/networks expansion

Descriptive statistics was used to describe marketing activities, people, information, and remittance flows between Kibaigwa EUC, Kinangali and Ndurugumi village as part of analysing specific objective three. The descriptive statistics used include percentages, cross-tabulation and frequencies. The description was to show how rural-urban linkages contribute to the expansion of markets and market networks.

In addition, network analysis/structure was used as graphical-theoretical presentation of existing linkages between Kibaigwa centre, Kinangali and Ndurugumi villages. The analysis was done by using UCINET 6 software for social network analysis. The network graph was used to visualise the existing social linkage, information flow and the expansion of maize markets and market networks from villages to different places in the country. According to Freeman (1984), the network analysis shows a visual representation of the structural and relational positions of network nodes.

3.6.4 Rural-urban linkages and access to market and livelihood strategies/resources

One-way ANOVA analysis method was used to test and determine if rural-urban linkage through marketing activities (sale of maize) at Kibaigwa market contributed to market access by small scale farmers in three study villages. The analysis was also used to show if the contribution on market accessibility was different between farmers from Kibaigwa centre, Kinangali and Ndurugumi village (objective four).

On other hand, Sustainable Rural Livelihood (SRL) framework developed by Department for International Development (DFID) was adopted to assess the contribution of rural-urban linkages on livelihood of smallholder farmers. The livelihood analysis was conducted based on livelihood strategies (economic activities) and resources (natural – water and electricity and physical – houses). The framework is useful to analyse and understand the livelihoods of the poor and assess the effect of the existing efforts to reduce poverty (DFID, 1999).

3.7 Limitation of the Study

During data collection in some cases it was difficult to meet with the head of households especially men in Ndurugumi and Kinangali villages. Most of the households visited by

the researcher and her assistants had women (men were engaged in other economic activities). Inability of obtaining information was another challenge in field study whereby some of the respondents were unable to provide detailed explanations to some questions. Some respondents were unable to remember some information based on harvest of past years, this was because majority of small scale farmers in rural areas do not keep records.

These limitations were mitigated by the researcher and research assistants by searching for information from men in some of the households in Ndurugumi and Kinangali villages to avoid bias of getting information from women only. Moreover questions were well elaborated to enable the respondents to follow the issues at hand and provide the required information.

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

4.1 Socio –economic Characteristics of Respondents

4.1.1 Social-economic characteristics of farmers/producers

Socio-economic characteristics of the respondent such as age, sex and level of education play an important role in making decision on production and marketing processes. The results show that 70% of the respondents in Kibaigwa centre, 63% in Ndurugumi village and 63% in Kinangali village were young, aged between 18 and 39 years old. This means that within the study area farming activities were mainly handled by young household members as opposed to older farmers. However, the findings revealed further that about 25% of the respondents at Kibaigwa centre, 30% at Ndurugumi village and 33% at Kinangali village were aged between 40 and 59 years old. The results show that the percentage of older respondents in all the villages is low; for example, at Kibaigwa centre only 5% of the respondents were aged above 60 years old. This shows that these villages have more productive young aged farmers, hence they should be supported with modern agricultural production and marketing technology. This is because young farmers are more dynamic with the adoption of innovations that would enhance productivity (Alhassan *et al.*, 2012).

Moreover, the results show that out of the 60 respondents 57% were males and 43% were females at Kibaigwa centre, in Ndurugumi out of 30 respondents 37% were males and 63% were females and in Kinangali out of 30 respondents 39% were males and 70% were females (Table 3). This implies that farming at Kibaigwa center was carried out by male headed households while in Ndurugumi and Kinangali villages it was by female headed households.

Table 3: Social-economic characteristics of farmers/producers

Variable	Kibaigwa centre		Ndurugumi		Kinangali	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Age						
18 - 39	42	70.0	19	63.3	16	53.3
40 - 59	15	25.0	9	30.0	10	33.3
≥ 60	3	5.0	2	6.7	4	13.3
Total	60	100.0	30	100.0	30	100.0
Sex						
Male	34	56.7	11	36.7	9	30.0
Female	26	43.3	19	63.3	21	70.0
Total	60	100.0	30	100.0	30	100.0
Education						
None-formal education	8	13.3	4	13.3	5	16.7
Primary	39	65.0	21	70.0	19	63.3
Form four	8	13.3	3	10.0	1	3.3
Form six	2	3.3	0	0.0	0	0.0
Not finish primary	2	3.3	2	6.7	4	13.3
Adult education	0	0.0	0	0.0	1	3.3
College/university	1	1.7	0	0.0	0	0.0
Total	60	100.0	30	100.0	30	100.0

The results revealed further that most of the respondents (65% in Kibaigwa centre, 70% in Ndurugumi village and 63% in Kinangali village) had educational qualification of only up to primary level, followed by individuals, that is, 13% at Ndurugumi and Kinangali villages and 17% in Kibaigwa centre with no formal education (Table 3). These results are almost similar to those reported in a study by Daniel (2013) who found that majority (73%) of the respondents had attained primary education, 11% had no formal education and only 2% had college education. This implies that farming activities are mainly carried out by farmers with primary education and none educated ones. Consistently, URT (2004) found that there was a large number of farmers who had attained primary education and below primary in Tanzania.

4.1.2 Social-economic characteristics of traders and transporters

Age of respondent: The findings show that most of the traders i.e. 95% and 100% of the interviewed transporters were aged between 18 – 39 years (Table 4). This implies that the trading activities and transportation of maize was dominated by younger traders and transporters who are more active and strong. Similar findings are reported by Mgeni and Temu (2010) who found that 95% of marketing along the fruit and vegetable value chain was performed by economically active group.

As for gender of the respondent, the results show that majority of traders (69%) and 100% of maize transporters were males. This implies that maize trading and transportation was dominated by men. This is because at the household level men are more involved in marketing activities than is the case with women.

Table 4: Social-economic characteristics of traders/transporters

Variable	Traders		Transporters	
	Freq.	Percent	Freq.	Percent
Age				
18 - 39	40	95.2	40	100.0
40 - 59	2	4.8	0	0.0
≥ 60	0	0.0	0	0.0
Total	42	100.0	40	100.0
Sex				
Male	29	69.0	40	100.0
Female	13	31.0	0	0.0
Total	42	100.0	40	100.0
Education				
None-formal	1	2.4	4	10.0
Education				
Primary level	11	26.2	9	22.5
Form four	25	59.5	23	57.5
Form six	2	4.8	4	10.0
College	3	7.1	0	0.0
Total	42	100.0	40	100.0

Education of respondents: most traders (60%) and transporters (58%) had completed Form Four. This implies that trading and transportation activities in Kibaigwa are dominated by people who have attained ordinary level of secondary education, and who are considered to be better in communication than people with primary level of education. This is an advantage to them since Kibaigwa market is an international market and language especially English is important in business communication. Similar findings are reported by Agwu and Ibeabuchi (2011) who found that majority (54%) of traders in Abia State, Nigeria, had attended secondary school

4.2 Agricultural Market System and Characteristics

4.2.1 Volume of maize marketed and transported in Kibaigwa market

Fig. 3 shows the volume (in tonnes) of maize bought and sold by different market players such as producers and traders in the last five years. The results show that the trend of volume of maize bought and sold increased from 2012 to 2014, then started to decrease from 2014 to 2016. The increase or decrease in volume of maize traded in the market depends on the production level. A farmer or producer with high production level has enough surplus maize to sell. The higher the production the higher the maize supplied to the market. This increase and decrease trend in maize produced could be due to a change in climate condition in different areas.

The interview findings with traders and transporters revealed that most of traders (52%) were capable of buying and 50% were capable of selling maize at a maximum of 50 tonnes daily or weekly (Table 5). As for transport activity, about 75% of transporters transported maize with a maximum of 50 tonnes per trip.

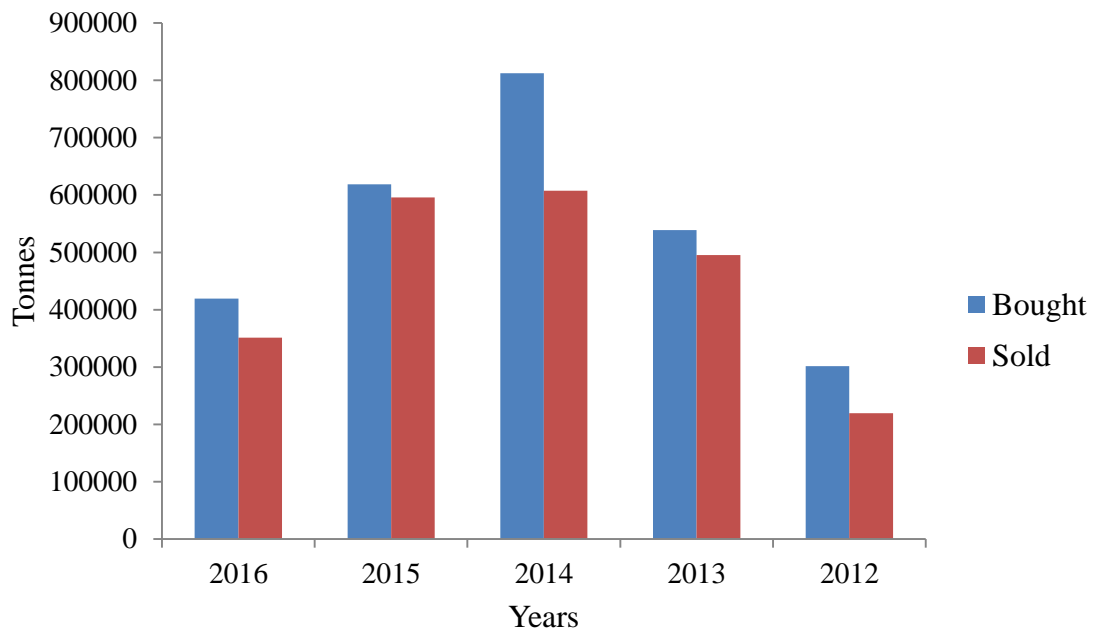


Figure 3: Estimated volume of maize traded in five years in Kibaigwa market

Source: Kibaigwa market management (2017)

In other study, WABS Consulting Ltd. (2008) found that, intermediary traders in Ghana bought 15 – 20 tonnes of maize from villages and transported to larger traders in larger towns or cities. This shows that maize transportation depends on the maize that has been bought by different traders and selling capacity of producers. The larger the volume of maize traded the higher the volume of maize transported from the villages to the market and from the market to other regions.

Table 5: Volume of maize traded and transported per week

Variable	Bought		Sold		Transported	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
1 – 50 tonnes	22	52.4	21	50.0	30	75.0
51 – 100 tonnes	7	16.6	8	19.0	5	12.5
≥ 101 tonnes	13	31.0	13	31.0	5	12.5
Total	42	100.0	42	100.0	40	100.0

4.2.2 Market structure

4.2.2.1 Number of market players in Kibaigwa market

Traders and transporters

The Kibaigwa cereal market was characterised by different size of market actors who are involved in trade and transportation activities. Based on the provided information from market management, there were about 100 maize transporters and more than 300 maize traders, who trade maize in the market and transport maize from different surrounding villages to market and to different areas within Dodoma Region, within the country and even outside the country. However, out of the 300 traders, there were about 50 large traders, 100 middle traders and 150 small traders in the market.

Sellers (producers/farmers)

Almost all small scale farmers in all villages were expected to be selling agricultural produces at Kibaigwa cereal market. The results show that out of the 60 respondents 78% of respondents from Kibaigwa centre were sellers of produce at Kibaigwa market, while out of 30 respondents, 53% from Ndurugumi village and 60% from Kinangali village were the sellers of produce at Kibaigwa market (Table 6). This means that in all the villages, the majority of farmers sold their produce at the market. These findings concur with the findings reported by Magesa *et al.* (2014b) who found that majority of farmers in Hai district sold their produce at the markets. However, few farmers (18% in Ndurugumi and 37% in Kinangali villages) were not selling maize at the market. The Findings are in line with the findings reported in a study by FAO (2014), who found that few smallholder maize growers (28%) in Meru and Bungoma were pure subsistence farmers who did not sell maize in the market.

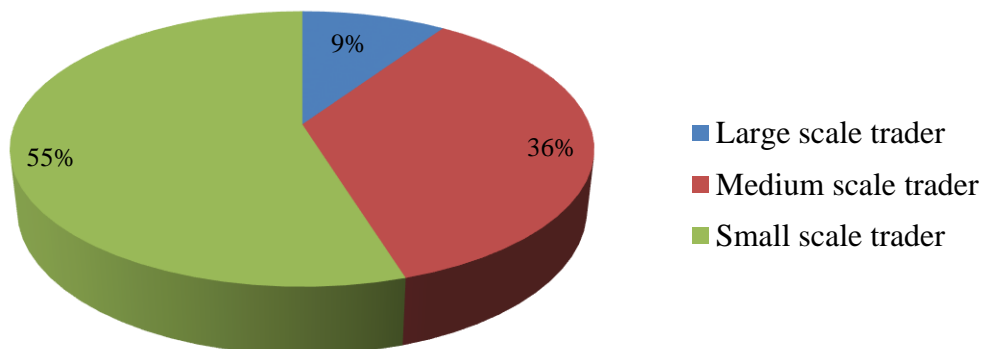
Table 6: Produce sellers at Kibaigwa market

Variable	Kibaigwa centre		Ndurugumi		Kinangali	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Sellers	47	78.3	16	53.3	18	60.0
Not sellers	11	18.3	13	43.3	11	36.7
Other	2	3.4	1	3.4	1	3.3
Total	60	100.0	30	100.0	30	100.0

4.2.2.2 Main market players (buyers and sellers) at Kibaigwa cereal market

Traders

Kibaigwa market was characterised by small, medium and large scale traders, who buy and sell maize in the market and in other areas. The findings show that out of 42 interviewed traders, 9% were large scale traders, 36% were medium scale traders and 55% were small scale traders (Fig. 4). This implies that the market was more dominated by small scale traders than medium and large scale traders. Small scale traders characterised by small initial capital (starting from 500 000 Tshs.) while large and medium scale traders had more capital (from 10 000 000 Tshs.). The difference in the amount of starting capital differentiate small, medium and large scale traders in terms of volume of maize traded in and outside the market. Traders with high capital have bigger capacity of buying large volumes of maize and sell them in different regions in the country than is the case with small trader.

**Figure 4: Scale of traders existed in Kibaigwa market**

In addition, out of the 42 sampled traders in Kibaigwa market 19% were found to be local collectors, 40% were retailers and 41% were wholesalers (Fig. 5). These findings are in line with the findings in a study by Makorere (2014) who found that, the market for citrus fruits is dominated by wholesale traders in Muheza District. This means that in the market the trading activities were dominated by wholesalers followed by retailers.

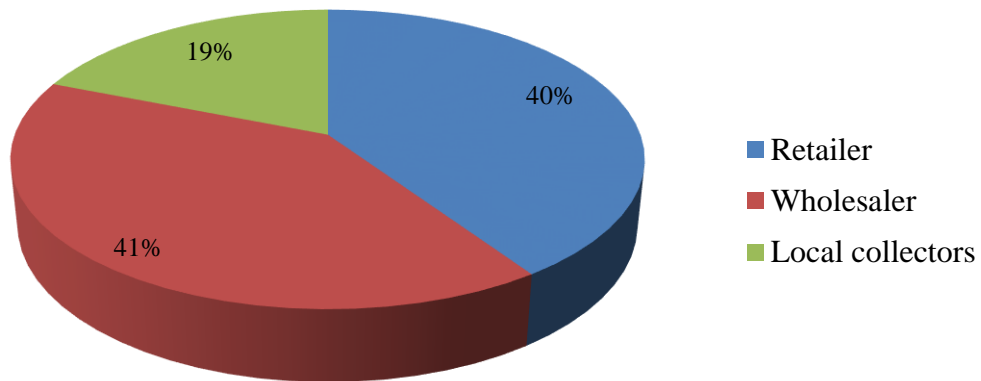


Figure 5: Type of traders existed in Kibaigwa market

Wholesalers buy and sell maize to other traders and large processors. Retailers buy and sell maize at retail price and in small quantities to consumers. While local traders in Kibaigwa buy maize from different villages around the Kibaigwa EUC and sell the produce to the market. However, it was reported that the majority of buyers (traders) were from other regions within and outside the country.

Farmers (sellers)

Information from interviewed village chairpersons and market leaders show that the cereal market at Kibaigwa ward was characterised by small, middle and large scale farmers (sellers) from within and outside Kibaigwa EUC. It was noted further that most of the maize sold by farmers at the market were cultivated outside Kibaigwa EUC such as Kiteto

in Manyara region. These findings are in line with the findings in a study by Gabagambi (2013) who found much (75%) of the maize delivered at Kibaigwa market is from Kiteto District. This implies that the market was dominated by middle and large scale farmers who were the most beneficiary of the Kibaigwa cereal market than small scale farmers, because small scale farmers had low incomes and cannot afford the costs of cultivating maize outside the region.

4.2.2.3 Concentration ratio of maize traders in Kibaigwa market

The results show that the Gini coefficient of maize traders in Kibaigwa market is 0.6935. Since the ratio approached one; this implies that Kibaigwa market is characterised by low level of competitiveness as the market concentration was high. The findings are similar to the ones on a study by Girei *et al.* (2015) who found that the market structure (with Gini coefficient of 0.6686) of retailers of cowpea in Yola North and South local areas in Nigeria was not competitive and had high concentration. According to Bakare (2012), the high inequality level of income lies between 0.50 and 0.70 while relative equitable distribution of income lies between 0.20 and 0.35. Similar to this study, the Gini coefficient obtained 0.6935 (69%) lying between 0.50 (50%) and 0.70 (70%), which implies that the market was also characterised by unequal distribution of sales share among marketers. This indicates that the concentration of sales share (67%) is in the hands of few marketers (21% of the marketers) (Table 7).

Table 7: Sales distribution and inequality coefficients of marketers in Kibaigwa

market							
Sales (Tshs)	Freq. of traders	Prop. of traders (X)	Cumulative frequency	Total sales (Tshs)	Prop. of sales	Cumulative proportion (Y)	XY
≤100 000	22	0.52	0.52	894 000	0.06	0.06	0.0312
100 001- 500 000	7	0.17	0.69	2 006 000	0.13	0.19	0.0323
500 001- 800 000	4	0.10	0.79	2 158 400	0.14	0.33	0.0330
≥800 001	9	0.21	1.00	9 915 200	0.67	1.00	0.2100
Total	42	1.00		14 973 600	1.00		0.3065

Therefore Gini coefficient = $1 - \sum XY$

$$= 1 - 0.3065 \dots\dots\dots (6)$$

$$= 0.6935$$

4.2.3 Market conduct

4.2.3.1 Selling practices

The results revealed that in all the villages, maize was the main cultivated and traded crop followed by sunflower. The finding shows that 93% of the respondents in Kibaigwa centre, 87% in Ndurugumi, and 67% in Kinangali village sold the maize (Table 8). Farmers who sold sunflower were 67% in Kibaigwa centre, 60% in Ndurugumi and 57% in Kinangali village. In all the villages few farmers sold pigeon peas since most of them did not cultivate pigeon peas in that year. It was reported that, subsistence production is practised by some of the farmers who produce maize just enough for food without having surplus for selling. It was also noted that, selling of crops depends on the amount of agricultural produce harvested whereby during bumper harvest (depending on weather condition) farmers would have enough surplus of their produce to sell. However, farmers do sell after having stocked their food reserves (SAGCOT, 2015).

Table 8: Agricultural produce sold by respondent

Variable	Kibaigwa centre		Ndurugumi		Kinangali	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Maize						
selling	56	93.3	26	86.7	20	66.7
Not selling	4	6.7	4	13.3	10	33.3
Total	60	100.0	30	100.0	30	100.0
Sunflower						
Selling	40	66.7	18	60.0	17	56.7
Not selling	1	1.7	3	10.0	7	23.3
Other	19	31.7	9	30.0	6	20.0
Total	60	100.0	30	100.0	30	100.0
Pigeon peas						
Selling	4	6.7	2	6.7	1	3.3
Not selling	1	1.7	5	16.7	0	0.0
Other	55	91.7	23	76.7	29	96.7
Total	60	100.0	30	100.0	30	100.0

4.2.3.2 Mechanisms used in marketing process

The results revealed that about 20% of the respondents in Kibaigwa centre, 7% in Ndurugumi village and 13% in Kinangali village (Fig. 6) sold maize directly to neighbours at home. Moreover, the findings show that 53% of the farmers in Kibaigwa centre, 63% in Ndurugumi and 50% in Kinangali village sold their maize directly to middlemen (Fig. 6). The findings are in line with those reported by Mdoe and Mwangike (2015) who found that the majority (58%) of smallholder farmers in Kilolo District sold their produce directly to middlemen.

However, it was noted that there was a problem with the middlemen during marketing activities. According to one of the farmers (sellers), *“during the process of selling produce at the market we have no direct contact with buyers, normally at the market middlemen buy produce on behalf of buyers with low price compared to the real market price”*. The presence of middlemen between buyers and sellers lead to opportunistic behaviour

whereby middlemen at Kibaigwa market pay farmers below than the real market price.

However, to avoid this problem, some farmers decide to sell their produce at home.

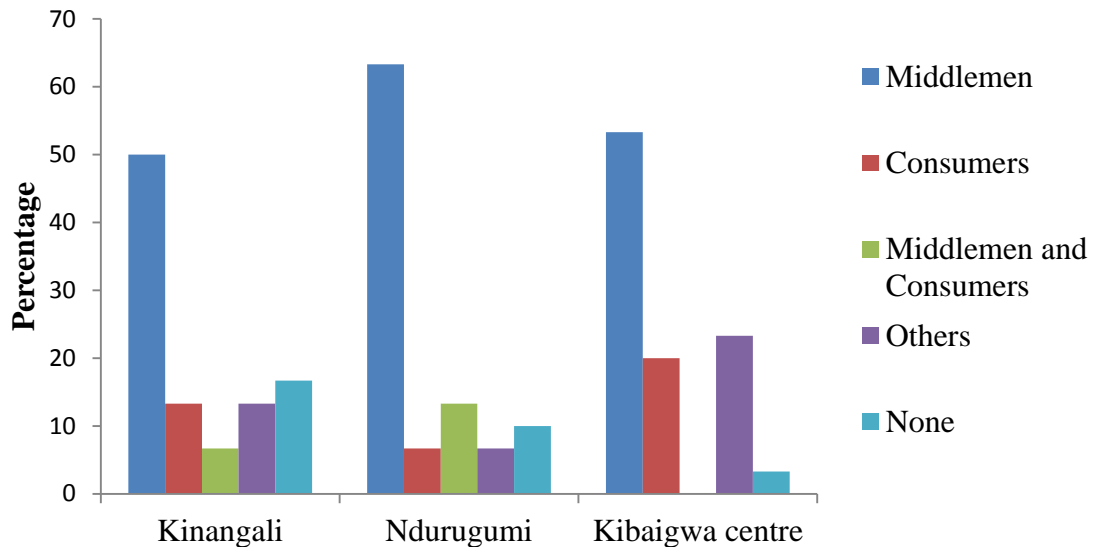


Figure 6: Mechanism used to sell maize

4.2.4 Satisfaction level with market system

The results reveal that out of 60 respondents 73% were not satisfied with the market system in Kibaigwa centre. While out of 30 respondents, 73% in Ndurugumi and 67% in Kinangali village were not satisfied with the present market system (Table 9). Specifically at the Kibaigwa market, farmers were not satisfied with the management system due to various reasons including the reason that there was no direct communication between farmers (sellers) and buyers in the market (there are middlemen who buy from farmers and sell to buyers). There is weighing problem as well; and there was no feedback provided on the collected revenue and expenditure, there were also high rate of levies and prices written on the notice boards at the market which were different from the real market prices.

Table 9: Respondents' satisfaction with market system

Variable	Kibaigwa centre		Ndurugumi		Kinangali	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Satisfied	16	26.7	8	26.7	10	33.3
Not satisfied	44	73.3	22	73.3	20	66.7
Total	60	100.0	30	100.0	30	100.0

Therefore, this shows that the market was also characterised by arbitrage and asymmetry of information between market actors. The asymmetry of information exists in the market as traders (middlemen) and market leaders have more information concerning the market system (such as price and revenue collected) than is the case with the farmers. While arbitrage of information raises due to the behaviour of the middlemen to take advantage of price difference by distorting the market price since they buy on behalf of buyers.

4.3 Market Accessibility by Small Scale Farmers

4.3.1 Factors affecting market accessibility to small scale farmers

Binary logistic regression model was used to analyse data on different factors such as information, distance, education, age, road condition, transport availability and produce quality that affect small scale farmers in accessing the market. The results reveal that age was statistically significant affecting market accessibility at $p(0.081) < 0.10$ significance level (Table 10). The results show further that age has a negative effect to market access with an odd ratio of 0.498. Since the odd ratio is less than 1, then the probability of accessing market by small scale farmers in Kibaigwa EUC is lower with the unit increase in age. Age is therefore considered to be an indicator of the household position in the life cycle and ability of an individual to comprehend and use accessed market information (Heltberg and Tarp, 2001). This implies that as farmer becomes older the chances of having contacts and updated information are more reduced than is the case with younger

and adult individuals. Young farmers have many opportunities of accessing marketing information using social networks that enable to make better production and marketing decision that reduce marketing cost. These findings are in line with of findings in study by Alhassan *et al.* (2012) who reported that younger farmers are more dynamic with the adoption of innovations that enhance productivity and marketing at low cost.

Distance from home to the market was negative and statistically significant with access to market with $p(0.004) < 0.01$ (Table 10), meaning that this variable was the determinant of market access by small scale farmers. Similar results were reported by Mulinge *et al.* (2015) who revealed that distance to the output market negatively and significantly influenced access to the output market among all households in Machakos, Kenya. Similarly, Anim and Mukweyho (2014) found that, distance from the farm to the market was statistically significance in terms of market access with $p\text{-value} < 0.05$ in Limpopo, South Africa. In other study, Minten (1999) found that distance to the market had a negative effect and was significant in terms of accessing the market in different villages in Madagascar. Since the regression coefficient was negative (-1.889) and odds ratio was 0.151, means that the probability of small scale farmer to have or not have access to market is lower with the unit increase in the distance form farm to the market. The increase in one kilometre from home to market could reduce accessibility of the market by small scale farmers by 0.151 odds ratio. Long distance increases travel time and transportation costs, thus impacting negatively on market access in Kenya (Mathenge and Olwande, 2010).

Table 10: Results of binary logistic regression model on factors affecting market accessibility

Variable	β	S.E	Sig.	Exp(β)
Constant	0.673	1.727	0.697	1.960
Age	-0.698	0.400	0.081	0.498
Sex	0.197	0.486	0.685	1.218
Education level	0.130	0.150	0.388	1.138
Produces quality	0.163	0.525	0.756	1.177
Distance	-1.889	0.665	0.004	0.151
Road condition	-1.594	0.542	0.003	0.203
Information	1.644	0.435	0.000	5.176
Transport availability	-1.242	0.533	0.020	0.289
Farm size	0.637	1.060	0.548	1.891
HH income	0.087	0.770	0.910	1.091

The binary logistic regression equation developed from table 12 is presented as follows;

$$M.Acc. = 0.673 - 0.698X_1 + 0.197X_2 + 0.13X_3 + 0.163X_4 - 1.889X_5 - 1.594X_6 + 1.644X_7 - 1.242X_8 + 0.637X_9 + 0.087X_{10} \dots \dots \dots (7)$$

Whereby;

M.Acc. = Market access

X_1 = Age

X_2 = Sex

X_3 = Education level

X_4 = Quality of produce

X_5 = Distance to market

X_6 = Road condition

X_7 = Information availability

X_8 = Transportation availability

X_9 = Farm size

X_{10} = House hold income

Similar to results on distance, the results on road condition were negatively and statistically significant to market access with a p value of 0.003 (Table 10), meaning that the market access is negatively influenced by road condition. The study by Minten (1999) found that hard infrastructure (infrastructure with low quality) was highly significant to market access during the seasonal spread of agricultural produce in Madagascar. Since the variable had the odd ratio (0.203) of less than one (Table 10), it means that the probability of a farmer to access the market was lower with odd ratio of 0.203 in the presence of bad road condition in rural areas. The presence of high quality road condition from farm to market place enables rural farmers to have access to market easily hence reducing transportation cost.

Availability of information showed a positive effect to market access and was statistically significant with a p (0.000) < 0.01 (Table 10). This suggests that high availability of marketing information such as price and quality of produce gives smallholder farmers a higher chance of accessing the market. However, most of the small scale farmers faced difficulties with accessing the market due to lack of required information. A similar factor was reported in a study done by Bhagat and Dhar (2011) who revealed that access to information is the prime factor impacting farmer's access to market in West Garo hills, in India. The variable (information) had an odd ratio of 5.176, which is greater than one; this means that the probability of a farmer has accessing the or not accessing the market is higher with an increase in the unit of availability of marketing information. Thus, farmers who have access to information are likely to access to the market by 5.176 high ratios. This might be due to the reason that marketing information helps producers to plan in the marketing process (Belete *et al.*, 2014). Therefore, farmers with access to market

information are more informed on market requirements in terms of price and quality of the maize needed by traders (Bwalya *et al.*, 2013).

Ownership of the means of transport was statistically significant in determining accessibility of the market with a p value of $0.020 < 0.05$ but negatively related with the market access (Table 10). These results are in line with the results reported by Mulinge *et al.* (2015) who found that ownership of the means of transport significantly influenced access to the output market in Kenya. This implies that not having or having difficulty in owning means of transport such as bicycle, ox-carts or motorcycle to small scale farmers in Kibaigwa EUC reduced farmers' probability of accessing the market by 0.289 odd ratio. This finding concur with the findings in a study by Anim and Mukweyho (2014) who found that the means of transport owned by farmer were statistically significant with market access in Limpopo, South Africa. Therefore, the ownership of means of transport helps farmer to transport their produce from farm to market place and reduces transportation cost.

However, the results in Table 13 show that, five predictor variables (sex, education level, produce quality, farm size and household income) were not statistically significant to market access.

Sex: the results show that sex was statistically insignificant with market access with p (0.685) > 0.10 . This means that sex of respondents has no effect on market access. Therefore, being a male or a female does not determine market accessibility.

Education level: the education level of respondent was statistically insignificant to market access with p (0.388) > 0.10 . This means that there is no association between market

access and the level of education of a farmer. Since education has no effect on market accessibility, there was no difference between educated farmer and non-educated farmers in accessing the market.

Produce quality: the quality of maize was statistically insignificant with market access with $p (0.7560 > 0.10)$. This means that there was no association between the quality of maize sold and access to market. Therefore, the quality of produced maize does not have direct effect on accessing the market.

Farm size: the results show that farm size was statistically insignificant with market access with $p (0.548) > 0.10$. This means that the farm size cultivated by a farmer does not have any effect on market access. There was no difference between farmer who cultivate 5acres of land and a farmer who cultivate 1acres of land in accessing the market.

Household income level: the income level was statistically insignificant with market access with $p (0.910) > 0.10$. This means that there was no association between the income level of a farmer and market access. Therefore, there was no difference in market accessibility between a farmer with high income and a farmer with low income level.

4.3.2 Testing of hypothesis

The Chi-square (χ^2) test was used to test the hypothesis and goodness of fit of the model and the effect of socio-economic factors (age, sex, education level, produce quality, distance, road condition, information, transportation, farm size and income level) on market accessibility. Moreover, the test was used to show the association between market access and socio-economic factors. The results revealed that p value for overall model fit

(0.000) < 0.01 is significance with ($\chi^2 = 41.8$, 10df), meaning that there was statistically significant association between market access and at least one of the socio-economic factors.

4.4 Rural-Urban Linkages and Expansion of Markets and Market Networks

Rural-urban linkages were examined in terms of marketing, social and economic activities were carried outside the household's living place, remittances, people and information flow. It was assumed that the higher the social and economic or marketing activities carried out in places other than the home-land, the higher the markets and market networks expansion. According to Seraje (2007), towns where trade is conducted serve as collection, distribution, and service centres, thus linking rural population with wider networks of markets.

4.4.1 Linkages of Kibaigwa EUC with Kinangali and Ndurugumi villages

The linkage between Kibaigwa urban center and two selected villages (Kinangali and Ndurugumi village) was directly or indirectly linked by agricultural, marketing/economic and social activities. The study revealed that these linkages flow in two directions:

- i. From Kibaigwa EUC to the hinterland villages (Ndurugumi and Kinangali); this involves the flow of information and people (farmers, traders and transporters) from the centre to the hinterland villages to produce, buy and even transport maize;
- ii. From Ndurugumi and Kinangali village to Kibaigwa town centre; the linkages revealed were the flow of information, money and people from hinterland villages to Kibaigwa centre for the purposes of transporting and selling maize at Kibaigwa market, to buy food and non-food items and social services.

The study found further that, through four components of rural-urban linkages (sectorial, economic/marketing activities, social linkages and information flow) the market and

market networks expanded to different areas in the country. However, these findings are presented and discussed in the following sub-sections based on different activities carried out by the respondents.

4.4.1.1 Sectorial (agricultural) linkage

The linkage between Kibaigwa and other areas inside and outside Dodoma region was expected to motivate people to have agricultural activities outside Kibaigwa EUC. The results show that about 24% of the farmers in Kibaigwa centre, 27% in Ndurugumi and 21% in Kinangali villages, cultivated maize within Kibaigwa ward (Table 11). This shows that there was a sectorial linkage between Kibaigwa EUC and its rural hinterland villages, whereby people from both sides, that is, rural and urban produced maize from other locations apart from their villages of domicile.

Table 11: Place where agricultural activity is done

Variable	Kibaigwa centre		Ndurugumi		Kinangali	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Other ward (in Dodoma region)	21	35.0	1	3.3	6	20.0
Outside Dodoma region	15	25.0	2	6.7	3	10.0
Within Kibaigwa	24	40.0	27	90.0	21	70.0
Total	60	100.0	30	100.0	30	100.0

The results in Table 11 show further that 35% of the respondents in Kibaigwa centre, 3% in Ndurugumi and 20% in Kinangali villages, cultivated maize in other wards within Dodoma region. However about 25% of the farmers in Kibaigwa centre, 7% in Ndurugumi and 10% in Kinangali villages, cultivated maize outside Dodoma region (Table 11). This shows that apart from existing sectorial linkage within the study villages, sectorial linkage also existed between selected three villages and other wards inside and outside Dodoma

region. However, it was reported that farmers who decided to cultivate crops outside the ward and others who cultivated outside the region went to Kiteto and Manyara region in search for fertile land (because of difficulties in accessing fertilizers) in order to increase maize production level.

4.4.1.2 Marketing/economic linkages

Marketing linkages contribute much on access/expansion of markets and market networks. The linkage between Kibaigwa Centre, hinterland villages and other towns in country allows the flows of market information and agricultural produce in both directions (urban to rural and vice versa).

Products buying and selling in study villages and other areas

The findings show that out of 60 respondents 42% at Kibaigwa centre admitted that they travelled to towns and to the hinterland villages (such as Ndurugumi) to buy and sell different products. However, there was high frequency of people flowing from the hinterland villages to Kibaigwa centre, whereby out of the 30 respondents, 87% in Ndurugumi admitted that they normally travel to Kibaigwa Centre to buy some products. The results show further that out of the 30 respondents in Kinangali village, 97% travelled out of the village (such as to Kibaigwa Center) to buy some goods (Table 12). These results imply that, there was an interaction across the study villages that facilitate the flow of people, produce, or products in different directions such as from Kibaigwa Centre to Ndurugumi village or from Kinangali to Kibaigwa Centre.

Table 12: Buying and selling products outside the village/EUC

Variable	Kibaigwa centre		Ndurugumi		Kinangali	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Yes	25	41.7	26	86.7	29	96.7
No	35	58.3	4	13.3	1	3.3
Total	60	100.0	30	100.0	30	100.0

Moreover, the existing linkage between Kibaigwa Centre and the hinterland villages contributed much to the expansion of market and market networks through movement of people and good outside the home land. Table 13 shows that at Ndurugumi village, out of the 30 respondents 80% travelled to Kibaigwa Centre for the purpose of buying or selling products. At Kinangali village out of the 30 respondents 87% travelled to Kibaigwa Centre to buy or sell products. However, in Kibaigwa Centre, 27% of the respondents travelled outside Dodoma Region to as far as Gairo and Dumila for marketing purposes (Table 13).

The findings show further that the respondents from immediate hinterlands normally travelled to Kibaigwa Centre for selling and buying different products for business purposes and for home consumption. This shows that village dwellers depend much on Kibaigwa EUC for marketing purposes (buying and selling products or agricultural produce) because the Centre provides different marketing services which are needed by rural dwellers. The presence of shops and market enable them to get what they need and to sell what they have. As Farrington *et al.* (2002) argue, rural producers normally visit urban markets to buy and sell rural produce. Therefore, these marketing interactions lead to the expansion of agricultural markets to different market actors in different areas through a flow of people and marketing activities which carried out by the villagers.

Table 13: Place where respondents buy or sell products

Variable	Kibaigwa centre		Ndurugumi		Kinangali	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Other ward (in Dodoma region)	9	15.0	2	6.7	2	6.7
Outside Dodoma region	16	26.7	0	0.0	1	3.3
Kibaigwa centre	-	-	24	80.0	26	86.7
Within ward	35	58.3	4	13.3	1	3.3
Total	60	100.0	30	100.0	30	100.0

Maize trading and transportation

The results show that, about 45% of the traders bought maize from the hinterland villages; while 33% of traders sold maize to other regions in the country (Table 14). According to WABS Consulting Ltd. (2008), there were 150 micro-buyers in Nkoranza town in Ghana, buying maize from villages and selling to larger and middle traders who come from outside the District. Similarly, IFAD (2011) found that small traders in Zambia travelled to the isolated villages to buy and sell small quantities of produce (such as maize, beans, and groundnuts) from farmers. However, it was found that about 68% of the transporters, transported maize from Kibaigwa to different places in the country while 33% of the transporters transported maize from hinterland villages to Kibaigwa market (Table 14). This means that, traders and transporters played a vital role in marketing activities within and between Kibaigwa ward and other places in the country. They facilitate the flow of agricultural produce from rural areas to Kibaigwa market to other areas in the country; and hence they help to expand the market and market networks.

Table 14: Maize marketing and transporting places

Variable	Marketing place				Transporting place			
	Buying place		Selling place		From		To	
	Freq.	Percent	Freq.	Percent	Freq.	Percent	Freq.	Percent
Kibaigwa market	23	54.8	28	66.7	27	67.5	12	30.0
Other villages (in Kongwa District)	19	45.2	0	0.0	13	32.5	0	0.0
Other Regions	0	0.0	14	33.3	0	0.0	28	70.0
Total	42	100.0	42	100.0	40	100.0	40	100.0

Traders and transporters facilitate the marketing linkage between rural and urban areas. Transporters transport maize from hinterland villages such as Ndurugumi, Ngomai, Mlali and Pandambili to Kibaigwa market, while other transporters transport maize from Kibaigwa market to other places such as Dar es Salaam, Mwanza, Moshi and Arusha

within the country. Through these connections and transportation activity, maize flow from rural areas to towns and to other market places which enable farmers from the study villages to sell maize and gain income. Therefore, through marketing and transportation activities, traders and transporters help to expand the market to other markets in the rural and urban centres.

Flow of maize

Fig. 7 shows the flow of maize through marketing activities. The network graph visualizes the trading and transportation activities, whereby traders buy maize from hinterland villages and Kibaigwa market and sell it to or transported (by transporters) to other urban areas within the country. This flow implies that the existing market linkage/activities influence and contribute to the expansion of markets and market networks from villages to EUC and to the urban areas.

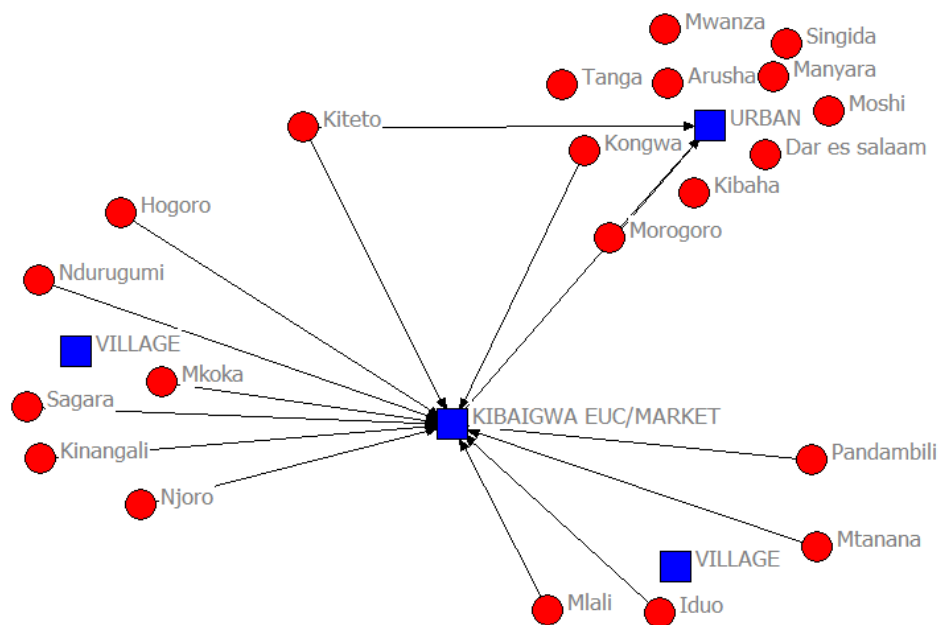


Figure 7: Maize flow and market networks

There are strong relational ties of maize flow from Kibaigwa market/EUC to urban (such as Dar es salaam region) and from rural hinterlands of Kongwa District to Kibaigwa market/EUC (Fig. 7). The network structure reveals that the majority of the flow ties are directed to Kibaigwa EUC while other places such as Kiteto and Morogoro directed by fewer ties. Therefore, these linkages suggest the structural relationship of core-periphery and network theory as flows ties from peripheries (example Mtanana and Hogoro) to the core (Kibaigwa EUC) and to other national markets/areas (such as Manyara and Tanga).

Products type buying or selling in study villages and other areas

The results show that about 22% of respondents in Kibaigwa Centre travelled to other areas such as Ndurugumi village to buy or sell food items, while 23% of the respondents in Ndurugumi and 13% of the respondents in Kinangali villages travelled to Kibaigwa Centre to buy or sell food items (Fig. 8). The respondents who travelled to other villages to buy or sell non-food items were about 15% in Kibaigwa Centre, 17% in Ndurugumi and 23% in Kinangali villages.

This means that residents in Kibaigwa town centre depend on food items from rural areas, because it was reported that respondents from Kibaigwa EUC travelled to hinterland villages to buy maize and sunflowers. However because of the growth of non-agricultural economic activities in Kibaigwa Centre such as the presence of wholesale and retail shops rural dwellers were motivated to travel to the Centre searching for the needed goods, both food and non-food items.

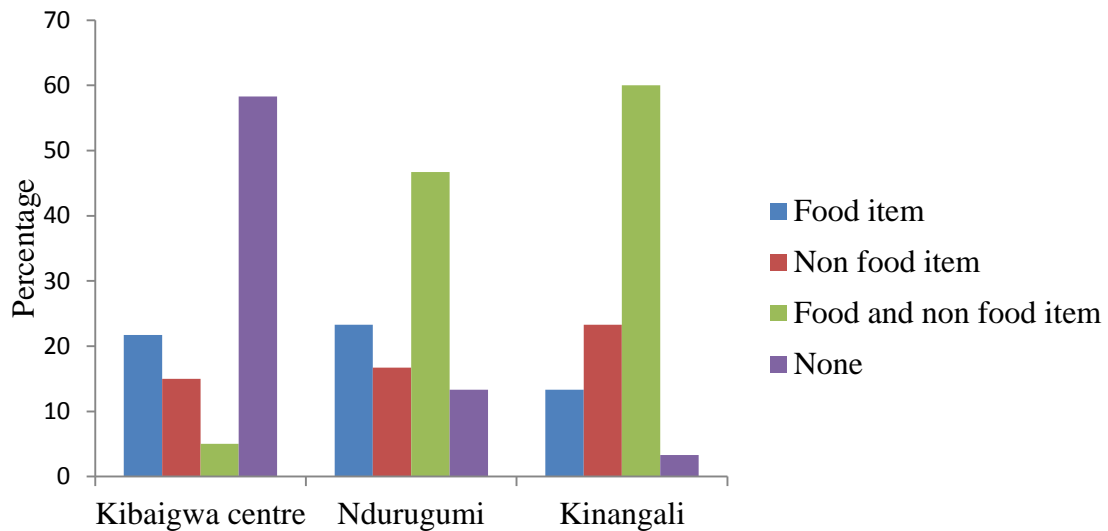


Figure 8: Type of products respondents buy or sell outside village/EUC

4.4.1.3 Linkage in terms of remittances flow

The linkage was examined in terms of the remittances or receiving and sending money between respondents who live in sampled villages and their relatives living in other areas. The existed linkage allows the flow of goods and money from EUCs to towns and hinterland villages, and vice versa. Table 15 present results of receivers and senders of remittances to relatives living outside of respondents' home-land. The results also show that in Kibaigwa Centre, out of the 142 respondents (transporters and traders included) 98 (69%) sent money or goods to relatives and 56 (39%) received money or goods from relatives living outside Kibaigwa. In Kinangali village, only five respondents out of the 30 received money or goods from relatives and 11 respondents (36%) sent remittances to relatives (Table 15). These findings were consistent with the findings by Lesetedi (2003) who reported that 31% of the respondents in Botswana sent money to their relatives.

These remittances from urban areas help to contribute in the development of rural areas and improve the livelihood status of rural dwellers. The received money from urban

dweller normally helps the rural people in agricultural activities and in purchasing basic needs of the households. In the opposite direction, rural people send agricultural produces (food) and money to relatives in urban or other rural areas. The linkage helps to strengthen the relationship among relatives from both the two parts by depending on each other. However, residents lived in Kibaigwa Centre, Ndurugumi and Kinangali villages send money to their relatives for different purposes such as paying for school fees, food and treatment.

Table 15: Remittances receiving and sending to relatives

		Remittances sending to relatives								
		Kibaigwa centre			Ndurugumi			Kinangali		
		Yes	No	Total	Yes	No	Total	Yes	No	Total
Remittances receiving from relatives	Yes	52	4	56	6	4	10	1	4	5
	No	46	40	86	7	13	20	10	15	25
	Total	98	44	142	13	17	30	11	19	30

4.4.1.4 Social linkage

The findings on a search for social services, the results in Fig. 10 weak, moderate and strong relational ties between Kibaigwa EUC, Kinangali and Ndurugumi village. The network structure shows the flow of people who were travelled from EUC to the villages and vice versa in search of social services.

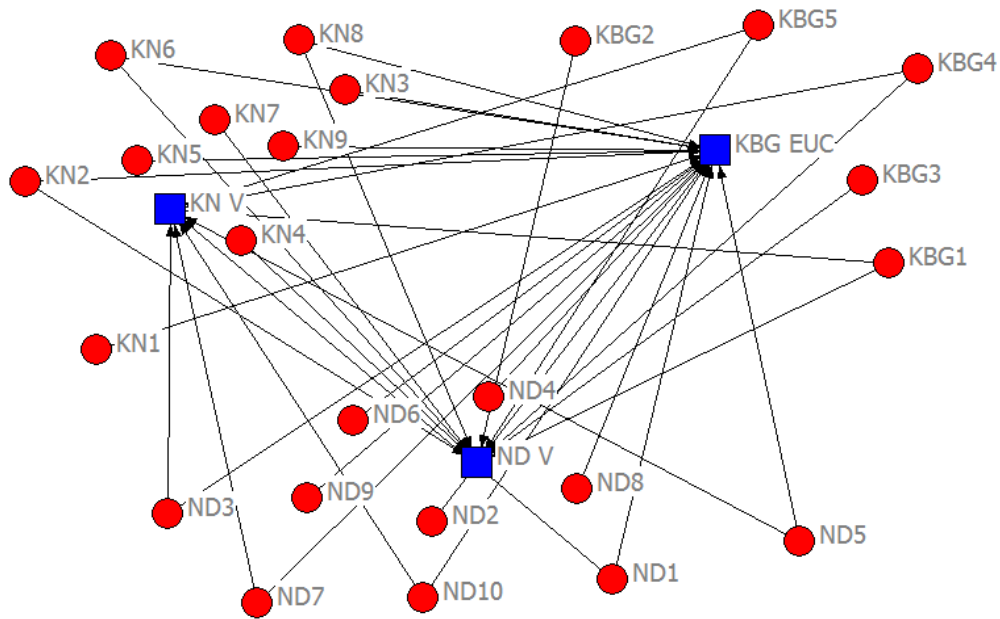


Figure 9: Social service searching networks

Key: KBG EUC=Kibaigwa EUC; KN V-Kinangali village; ND V-Ndurugumi village;

Numbers - represent respondent from specific village.

Weak relational ties were also found between EUC, Kinangali and Ndurugumi village (from EUC to village). Mutual/moderate relational ties were found to exist between Kinangali and Ndurugumi village, while strong relational ties were found between Kibaigwa EUC, Kinangali and Ndurugumi villages (from villages to EUC) (Fig. 9). The findings show further that, there was a high flow of people from rural areas to EUC in search for social services such as health and education. This implies that rural dwellers depend much on EUC to fulfil their social needs. Therefore, according to core-periphery and growth pole theories point of view, Kibaigwa EUC is the services provider to Kinangali and Ndurugumi villages.

Purpose of visiting other village/EUC

Results in Fig. 10 show that 6% of the respondents visited EUC for education, 33% for health and 10% for job seeking in Ndurugumi village (Fig. 10). It was also found that

some of the respondents (13%) from Ndurugumi village visited Kibaigwa Centre for water service. Moreover, the majority of the respondents (70%) in Kinangali village visited EUC for health service whereby only 3% visited for education, job and other services. In Kibaigwa Centre, about 64% of the interviewed residents did not travel to other town in search to the social services (Fig. 10). This is because most of the respondents had access to the social services (education and health) within the place.

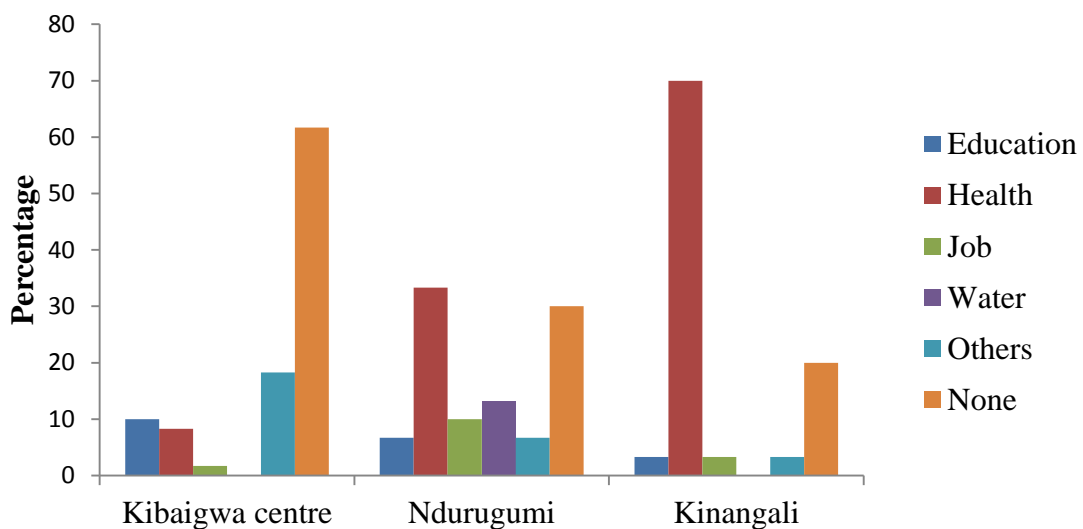


Figure 10: Social purpose of visiting town/EUC

The existing rural-urban linkage in the sampled villages allowed and benefited residents from both areas (Kibaigwa centre and its rural hinterlands areas) for providing services. However, it is believed that, due to the differences in income level, residents with high income were the ones who searched for better social services in urban and EUC. For example parents can decide to shift their children from government school (located within the village) to seminaries believing that seminaries provide better education. Similar perceptions prevail when it comes to health services provision between government and private hospitals.

Information flow

In addition, agricultural information was found to flow among farmers, traders/middlemen and from Kibaigwa market and social media (mobile phone/radios). These market actors (farmers and traders) communicate to each other. The findings show that information flowed from farmers/neighbours to farmers, traders to farmers, traders to traders and from Kibaigwa market to traders and farmers (Fig. 11). It was found that the majority got marketing information through social media (mobile phone) and neighbours and middlemen. These findings concur with those reported by Lwoga *et al.* (2011) who found that neighbours were the main source of agricultural information and knowledge in local communities in Tanzania.

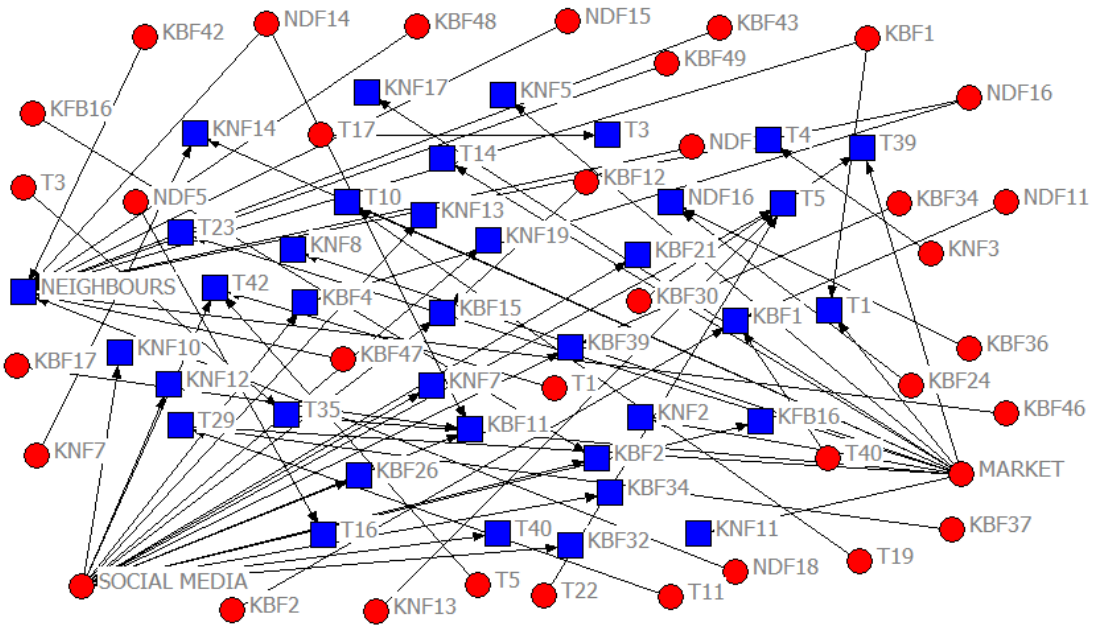


Figure 11: Information flow networks

Key: KBF-Farmer from Kibaigwa; KNF-Farmer form Kinangali; NDF-Farmer from Ndurugumi; T-Trader.

Moreover, market actors from Kibaigwa EUC and other (traders) from urban areas in the country were more informed than rural market actors. As Webster and Morrison (2004)

argue, actors in highly central position are able to control the flow of resources through networks, and have access to more resources than peripheral actors because the latter are dependent on few ties. Information flow is high from Kibaigwa market to farmers and traders, while relational ties are moderate from traders to farmers. The interaction enables actors to have more marketing information that enable to participate more effectively in marketing activities by searching for new markets to other areas, and hence expand market and market networks of their produce.

4.5 Rural-Urban Linkages and Access to Market and Livelihood Strategies/ Resources

4.5.1 Rural-urban linkages and market access

The linkage between hinterland villages (Kinangali and Ndurugumi) and Kibaigwa market enabled small scale farmers from hinterland villages to sell maize at the market place. It was found that most of the respondents (78%) from Kibaigwa Centre sold maize at Kibaigwa market than farmers from hinterland villages (56%) (Table 6). On the other hand, it was found that, 60% of the farmers from Kinangali village sold maize at Kibaigwa market while 53% from Ndurugumi sold maize at Kibaigwa market (Table 6).

Moreover, the hypothesis was tested and the results show that the F value of 4.507 is statistically significant with the mean variances between villages with $p(0.014) < p(0.05)$ (Table 16). Since the p value is less than significance level 0.05, and then at 95% the null hypothesis that states that rural-urban linkages do not contribute to market access in Kibaigwa is rejected. This means that the existing linkages contribute to the accessibility of market by smallholder farmers though not at equal footing between the study villages.

Table 16: One-way ANOVA test of sale of maize in three sampled areas

	N	Mean	Std. deviation	Lower	Upper
Kibaigwa	47	2 790.5745	4 470.5147	1 477.9822	4 103.1668
Kinangali	18	551.6111	420.8829	432.3109	760.9113
Ndurugumi	16	372.3750	321.4046	201.1106	543.6394
Total	81	1 815.3580	3 589.3165	1 021.6950	2 609.0211
Df	2				
F	4.507				
Sig.	0.014				

The results in Table 16 show further that there are differences in the volume of maize sold between Kibaigwa EUC, Kinangali and Ndurugumi. This difference in the mean (27 901, 552 and 372) shows that, the existing rural-urban linkages contribute more to farmers in Kibaigwa Centre than Kinangali and Ndurugumi villages in terms of selling of maize at Kibaigwa market. Access to Kibaigwa market (in terms of maize selling) between farmers from Kibaigwa Centre and those at the hinterland villages (Kinangali and Ndurugumi) differ along the rural-urban linkages. On the other hand, the existing linkage facilitated more to farmers from Kinangali than farmers from Ndurugumi village in terms of engaging in marketing process (maize selling). This was due to the difference in the location from Kibaigwa Centre where the market is located. Since Kinangali farmers are closer to the market place than is the case with Ndurugumi farmers, farmers from Kinangali had more access to the market than farmers from Ndurugumi village. Therefore the rural-urban linkages did not work successfully in enabling rural farmers to access the market as opposed to farmers in Kibaigwa Centre. Moreover, if farmers fail to access market, it is not easy for them to participate in the formal marketing activities (Maponya and Mpandeli, 2014). Therefore, farmers could not sell their produce at the right market (formal market), to the right traders and at the right market price; hence there was a fall in income.

4.5.2 Rural-urban linkage and access to livelihood strategies/resources

In this study, households were ranked to have poor livelihood status if they own low quality house characterized by mud floor, mud wall and roofed with iron sheet or grass, if and if they had no access to clean water and electricity at their homes.

4.5.2.1 Livelihood strategies

Farm and non-farm activities

The results show that about 35% of the respondents were engaged only in farming, 63% engaged in both farming and small businesses while 2% were engaged in farming and animal keeping (chicken and livestock) in Kibaigwa Centre. In Ndurugumi and Kinangali villages the main economic activity carried out by small scale farmer was farming, whereby 70% of the respondents in Ndurugumi and 63% in Kinangali were engaged in farming only (Table 17). This implies that farming was the main occupation to small scale farmers in the hinterland villages. Most of the small scale farmers in the immediate hinterland were not involved in small business (such as kiosks, selling sunflower oil, carpentry and tailoring), instead they depended much on farming activities as opposed to farmers who lived in Kibaigwa Centre. These results are similar to those reported by Magesa *et al.* (2014b), who found that majority of the respondents consider agriculture as the main occupation and few were engaged in other activities such as business in Hai, Kilosa and Mvomero Districts.

Table 17: Economic activity done by the respondent

Variable	Kibaigwa centre		Ndurugumi		Kinangali	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Farming	21	35.0	21	70.0	19	63.3
Farming and business	38	63.3	8	26.7	9	30.0
Farming and animal keeping	1	1.7	1	3.3	2	6.7
Total	60	100.0	30	100.0	30	100.0

The findings revealed further that, only 27% of the respondents in Kibaigwa Centre, 10% in Ndurugumi and 7% in Kinangali villages were involved in maize business. The findings also show that, about 73% of the respondents in Kibaigwa centre, 90% in Ndurugumi and 93% in Kinangali villages were not involved in maize business (Table 18). This was due to low production level of produce, that farmers could not have enough surpluses to sell in order to gain initial capital and most of them were low income earners, thus they could not effectively run businesses. Furthermore, engagement in business increased farmer's income out of farming, and occupation mobility in and out of farming (Vogel, 2012), so as so as to improve their livelihood.

Table 18: Small scale farmers involved in maize business

Variable	Kibaigwa centre		Ndurugumi		Kinangali	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Involved	16	26.7	3	10.0	2	6.7
Not involved	44	73.3	27	90.0	28	93.3
Total	60	100.0	30	100.0	30	100.0

In other study Kim (2015), found that through rural-urban linkage, small and intermediate urban centres facilitate exchange between rural villages and towns by offering employment and engagement in both farming and non-farming sectors. The presence of farm and non-farm employment opportunities in Kibaigwa EUC provides farmers with more opportunities to engage in different economic activities. It was expected that most of the small scale farmers would be involved in both farming and non-farming activities. On the other hand, maize marketing is believed to contribute much to the development of hinterland villages in Kibaigwa. It is also agreed that maize marketing at Kibaigwa cereal market was benefiting small scale farmers in the immediate hinterlands. However, the results show that few small scale farmers were involved in the maize business (buying and selling maize) in all the three villages.

4.5.2.2 Livelihood resources/assets

Clean water resource

The results in Table 19 show that, all respondents (100%) in Ndurugumi village access water outside of their households, whereby 33% walked for about 11 to 30 minutes and 43% walked for 31 to 60 minutes to fetch water. Out of the 30 households in Kinangali 90% accessed water outside their home-land and walked for less than 30 minutes to the source of water. While in Kibaigwa Centre most of the respondents (i.e. 65%) walked for one to 10 minutes to fetch water (Table 19).

These results show that households in Ndurugumi village still faced the problem of accessing water as opposed to Kinangali village and Kibaigwa town centre. It was reported that some of the residents from Ndurugumi village would travel to Kibaigwa EUC to fetch clean water for household use. These findings imply that, in Ndurugumi village most of the respondents did not have enough income to pay for plumbing costs to have the water supplied in their households.

Table 19: Water location and distance from household

Variable	Kibaigwa centre		Ndurugumi		Kinangali	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Location						
Within household	17	28.3	0	0.0	3	10.0
Outside household	43	71.7	30	100.0	27	90.0
Total	60	100.0	30	100.0	30	100.0
Distance (walk time)						
1-10 min.	39	65.0	4	13.3	16	53.3
11-30 min.	4	6.7	10	33.4	11	36.7
31-60 min	0	0.0	16	43.3	0	0.0
Not applicable	17	28.3	0	0.0	3	10.0
Total	60	100.0	30	100.0	30	100.0

Electricity resource

The results in Table 20 show that 73% of the respondents in Ndurugumi and 93% in Kinangali had no electricity in their homes. When compared to Kibaigwa Centre, 48% of the respondents lived in house with no electricity. Thus, according to the National Population and Housing Census report (2012), in Dodoma Region only 12% of households had electricity service. These findings show that, the majority of the households in rural hinterlands lived in houses with no electricity.

These results from the study villages in Kibaigwa ward imply that, rural hinterlands in Kibaigwa ward still had poor livelihood status based on the electricity availability indicator in the household. This may due to the fact that rural dwellers faced different social difficulties (including electricity accessibility) that hinder the development of individual household and rural communities in general. Availability of electricity at the household level enables rural residents to engage in economic activities such as welding as a source of income. Thus the existing linkages between Kibaigwa Centre and rural hinterlands still do not have effect in improving the life standard of the rural dwellers.

Table 20: Electricity service availability in household and its source

Variable	Kibaigwa centre		Ndurugumi		Kinangali	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Available	31	51.7	8	26.7	2	6.7
Not available	29	48.3	22	73.3	28	93.3
Total	60	100.0	30	100.0	30	100.0
Source						
Solar	3	5.0	4	13.3	2	6.7
TanESCO	28	46.7	4	13.3	0	0.0
Generator	0	0.0	0	0.0	0	0.0
Not applicable	29	48.3	22	73.3	28	93.3
Total	60	100.0	30	100.0	30	100.0

House resource/asset

The results as presented in Table 21 show that most of the respondents' houses in hinterland villages were of poor quality whereby in Ndurugumi 87% of the houses were built of mud wall and 53% had mud floor. In Kinangali village, 73% of the houses were built of mud wall and 67% had mud floor. Compared to Kibaigwa Centre, only 22% of the houses were built of mud wall and 17% had mud floor (Table 21). Moreover, iron sheets were the main material used for roofing houses in all the sampled villages. These similar are with those reported in URT (2014) who found that in Tanzania mainland iron sheets were the main roofing material used (i.e. 65%).

These results imply that, the majority of rural dwellers were still poor in spite of the existing interactions with the EUC. Availability of economic opportunities in Kibaigwa EUC does not facilitate rural residents to engage in small business to help to increase their income so as to build high quality and permanent houses. The ability of household to build a permanent and high quality house depends on the level of income of the individual. Most of the houses in the hinterland villages were of poor quality due to low income or poverty level of the owners.

Table 21: Characteristic of house owned by respondents

Variable	Kibaigwa centre		Ndurugumi		Kinangali	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Wall						
Cement bricks	13	21.7	1	3.3	1	3.3
Burnt bricks	10	16.7	0	0.0	1	3.3
Sundried bricks	24	40.0	3	10.0	6	20.0
Mud	13	21.6	26	86.7	22	73.3
Total	60	100.0	30	100.0	30	100.0
Floor						
Tiles	1	1.7	0	0.0	0	0.0
Cement	49	81.7	14	46.7	10	33.3
Mud	10	16.6	16	53.3	20	66.7
Total	60	100.0	30	100.0	30	100.0
Roof						
Tiles	0	0	0	0.0	0	0.0
Iron sheet	60	100.0	30	100.0	30	100.0
Grass	0	0.0	0	0	0	0
Total	60	100.0	30	100.0	30	100.0

The presence of Kibaigwa international market is believed to contribute much to improving the livelihood status of both Kibaigwa Centre and immediate hinterlands dwellers (small scale farmers). However, the existing market linkage between Kibaigwa EUC, Kinangali, Ndurugumi and other places in the country is an opportunity for small scale farmers to be involved and participate fully in marketing activities. This is possible if small scale farmers in the rural hinterlands are well linked to the urban markets networks and get support in agricultural activities (such as during production and marketing stages) in order to increase production and income levels and hence improve in farmer's livelihood.

4.6 Summary of Key Findings

4.6.1 Market characteristics

Kibaigwa market is characterised by low degree of competitiveness as market concentration is high and with unequal distribution of sales share between marketers. This

implies that, the concentration of sales share (67%) was in the hands of few marketers (21% of marketers).

The market has more than 300 maize traders and about 100 transporters who buy and sell maize within the market and other places within and outside the country. However, 9% of the traders were large scale traders, 36% were medium scale traders and 55% were small scale traders. This shows that the market was dominated by small scale traders who came from different areas in the country. The results show further that 78% of the respondents from Kibaigwa Centre, 53% from Ndurugumi village and 60% from Kinangali village were the sellers of produce at Kibaigwa market. Moreover, most of the farmers were found to be selling their maize through middlemen, whereby 53% of the farmers in Kibaigwa Centre, 63% in Ndurugumi and 50% in Kinangali villages sold their maize directly to the middlemen. Also, the market was characterised by arbitrage and asymmetry of information between market actors, whereby there was no transparency on marketing information among sellers as the middlemen were claimed to be distorting market price.

4.6.2 Factors affecting market accessibility

The findings revealed that market accessibility in the study area was statistically significant affected by distance from home to the market, road condition, availability of agricultural information, ownership of means of transport and age of the farmer. This means that there was association between market accessibility and these independent variables (distance from farm to market, road condition, and availability of agricultural information, ownership of the means of transport and age of the farmer).

4.6.3 Rural-urban linkages and expansion of market and market networks

The study found that, four components of rural-urban linkages such as sectorial, economic/marketing activities, social linkages and information flow were found to be the

most important drivers for the expansion of market and market networks in different areas in the country.

Through marketing activities, the study found that about 45% of the traders bought maize from the hinterland villages while 33% of the traders sold maize to other regions in the country. However, it was found that about 68% of the transporters, transported maize from Kibaigwa to different places in the country while 33% of the transporters transported maize from hinterland villages to Kibaigwa market. On the other hand, 80% of the respondents (farmers) in Ndurugumi and 87% in Kinangali travelled to Kibaigwa Centre for buying or selling products. In Kibaigwa Centre it was found that, only 27% of the respondents travelled outside Dodoma region to places such as Gairo and Dumila for marketing purposes. These findings imply that, traders, transporters and farmers play a vital role in marketing activities within and between Kibaigwa Ward and other places in the country. They facilitate the flow of agricultural produce from rural areas to Kibaigwa market and to other areas in the country; and hence they expand the market and market networks.

Also, this study found that, through marketing activities, the flow of maize was expanded from the villages to Kibaigwa market and other places in the country such as Morogoro and Mwanza. The network structure shows existence of strong relational ties of maize flow from Kibaigwa market/EUC to Dar es Salaam region and from rural hinterlands of Kongwa District to Kibaigwa market/EUC. The network structure reveals that the majority of the flow ties are directed to Kibaigwa EUC while other places (villages and urban) such as Mtanana and Morogoro were directed by few ties.

The existing communication between market actors also contributed to the expansion of markets and market networks in Kibaigwa through flow of information from farmers to farmers, traders to farmers, traders to traders and from Kibaigwa market to traders and farmers. However, information flow was high from Kibaigwa market to farmers and traders, while there were moderate relational ties from traders to farmers.

Moreover, based on social linkage, single/weak relational ties were found to exist between Kibaigwa EUC, Kinangali and Ndurugumi villages. Mutual/moderate relational ties were found to exist between Kinangali and Ndurugumi village, while there were single/strong relational ties from Kinangali and Ndurugumi villages to Kibaigwa EUC. However, it was found that 33% of the respondents in Ndurugumi and 70% in Kinangali village would travel to Kibaigwa EUC for health services, while about 19% of the respondents in Kibaigwa Centre travelled to rural hinterlands for other social activities such ceremonies.

4.6.4 Rural-urban linkages and access to market and livelihood strategies/resources

The study found that, there are differences in volume of maize sold between Kibaigwa EUC, Kinangali and Ndurugumi. Also, it was found that, the existing rural-urban linkages contribute more to the welfare of farmers from Kibaigwa Centre than to that of farmers from Kinangali and Ndurugumi villages on accessing Kibaigwa market in terms of sales of maize.

On the other hand, based on livelihood analysis, this study found that, about 35% of the respondents were engaged only in farming, 63% in both farming and small businesses while 2% were engaged in farming and animal keeping (chicken and livestock) in Kibaigwa Centre. In Ndurugumi and Kinangali villages the main economic activity carried

out by small scale farmer was farming, whereby 70% of the respondents in Ndurugumi and 63% in Kinangali were engaged in farming only.

It was also found that, 73% of the respondents in Ndurugumi, 93% in Kinangali and only 48% in Kibaigwa Centre had no access to electricity in their homes. However, all the respondents (100%) in Ndurugumi village, 90% in Kinangali and 72% in Kibaigwa Centre access water outside of their homes. Furthermore, most of the respondents' houses in the hinterland villages were of poor quality whereby 87% of the respondents in Ndurugumi, 73% in Kinangali and only 22% of the respondents in Kibaigwa Centre had houses built of mud wall.

CHAPTER FIVE

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The issue of market access to rural smallholder farmers can be addressed through examining the linkage between rural and urban areas. It is an undeniable reality that improvement of small scale farmers' livelihood status through market accessibility requires a strong linkage between rural and urban areas. Through marketing, consumption and financial linkages individuals from both rural and urban will have the opportunity of trading with each other. Lewis (1954) terms this as the dual sector (industrial and agricultural sector) whereby the produce from agricultural sector flows to the industrial sector in the urban area and manufactured products from industrial sector flows to the rural areas in agricultural sector.

This study assessed the effects of rural-urban linkages in Kibaigwa EUC for inclusive access to market so as to improve accessibility of livelihood strategies and resources by small scale farmers in hinterland villages. Specifically, the study characterized the existing output (maize) market, examined factors affecting smallholder farmers in accessing market, and determines the contribution of rural-urban linkages on the expansion of markets and market networks. It also assessed the contribution of rural-urban linkages in accessing the market and livelihood strategies/resources. About 202 of the respondents were selected within Kibaigwa Ward. The study used SRL framework, network graph, binary logistic regression, descriptive and inferential statistics methods of analysis to analyse specific objectives.

The first objective was to characterize the existing maize market at Kibaigwa ward. The findings revealed that, Kibaigwa market was characterised by low degree of competitiveness among market actors, high market concentration and unequal distribution of sales share between marketers. The market is dominated by small scale traders who came from different areas in the country. Moreover, the study found that, the market is characterised by arbitrage and asymmetry of information between market actors, whereby there was lack of transparency on marketing information among sellers/farmers and the middlemen were claimed to be distorting market price. Moreover, during marketing process at the market place, farmers had no direct contact with buyers making the middlemen act opportunistically and leaving the farmers aside.

The second objective was to examine factors affecting market accessibility by small scale farmers. Accessibility to market in the study area was found to be highly affected by the distance between the home and the market, road condition, availability/accessibility agricultural information, ownership of means of transport and age of the farmer. This means that these variables were the main challenges that led difficulties in accessing the market for smallholder farmers in Kibaigwa Ward.

The third objective was to analyse the contribution of rural-urban linkages on the expansion of markets and market networks. The findings show that Kibaigwa urban Center, Kinangali and Ndurugumi were directly or indirectly linked by agricultural, marketing/economic and social activities. It was found that, rural-urban linkages through agricultural, marketing/economic, social activities, remittance and information flow contribute to the expansion of market and market networks to different places in the country.

The sectorial linkage was found to exist between Kibaigwa EUC and its rural hinterland villages, whereby people from both rural and urban produced maize from other locations apart from their living villages of domicile. It was also, found that farmers from Kibaigwa Centre, Ndurugumi and Kinangali village, cultivated maize in other wards within and outside Dodoma Region.

Moreover, there was high frequency of people flowing from hinterland villages to Kibaigwa Centre for marketing purposes. The results show that, traders who bought maize from hinterland villages sold it at Kibaigwa market, while traders who bought maize from Kibaigwa market normally sold to other regions in the country. As for transportation activity, it was found that, transporters transported maize from Kibaigwa to different places in the country while other transporters transported maize from hinterland villages to Kibaigwa market. The study revealed further that traders and transporters facilitate the flow of maize from hinterlands to Kibaigwa and to other areas in the country, which also led to the expansion of maize market and other market networks.

Social linkage found to be weak from EUC to Kinangali and Ndurugumi village, Mutual/moderate linkage was found to exist between Kinangali and Ndurugumi village, while a single/strong linkage was found to exist between Kinangali and Ndurugumi village and the EUC. There was a high flow of people from rural areas to EUC to search for social services such as health and education. This implies that rural dwellers depend much on EUC so as to fulfil their social needs. However, the findings revealed that, the respondents from Ndurugumi and Kinangali village normally went to Kibaigwa EUC for services such as health services, while respondents from Kibaigwa Centre went to rural hinterlands for other social activities such as ceremonies.

Moreover, in the case of information, the findings show that information flowed from farmers to farmers, traders to farmers, traders to traders and from Kibaigwa market to traders and farmers. Information flow was high from Kibaigwa market to farmers and traders, while there were moderate relational ties from traders to farmers. Moreover, market actors from Kibaigwa EUC were found to be more informed than was the case with rural market actors (farmers).

Fourth specific objective was to assess contribution of rural-urban linkages on access to market and livelihood resources and strategies. Difference in the sales of maize was found between Kibaigwa centre, Kinangali and Ndurugumi villages. The findings revealed that, the existing rural-urban linkages contribute more to the welfare of farmers in Kibaigwa Centre than it did to the welfare of farmers in Kinangali and Ndurugumi villages in terms of sales of maize at Kibaigwa market. This is due to the differences in the volume of maize sold by farmers at Kibaigwa market. Moreover, access to Kibaigwa market between farmers from Kibaigwa Centre and farmers from hinterland villages (Kinangali and Ndurugumi) was found to differ along the rural-urban linkages. Therefore, rural-urban linkages did not work successfully in enhancing rural farmers' access to the market as opposed to farmers in Kibaigwa Centre.

Based on livelihood assessment, the findings show that, there were few small scale farmers involved in the maize business (buying and selling maize) in all the three villages, whereby farming was the main occupation of small scale farmers in the hinterland villages. However, this study found that, most of small scale farmers in the immediate hinterland were not involved in small business; instead they depended much on farming activities as opposed to farmers who live in Kibaigwa Centre. This was due to low

production level, in that farmers cannot have enough surpluses to sell in order to have the initial capital; and most of them were low income earners, thus could not effectively run businesses.

Furthermore, results show that households in Ndurugumi village still faced the problem of accessing water service as opposed to households in Kinangali village and Kibaigwa EUC. It was reported that some of interviewed residents from Ndurugumi village went to Kibaigwa Centre to fetch clean water for household use. These findings imply that, in Ndurugumi village residents did not have enough income to pay for plumbing costs to have the water supplied in their households.

Moreover, it was found that, rural hinterlands in Kibaigwa ward still had poor livelihood status based on the availability of electricity and type of house they own. Most of the respondents' houses in hinterland villages were of poor quality, built of mud wall and had no electricity. This may due to the fact that rural dwellers faced different social difficulties (including electricity accessibility) that hinder the development of individual household and rural communities in general. Therefore, these results imply that, the majority of rural dwellers were still they poor in spite of the existing interactions with the EUC.

5.2 Recommendations

5.2.1 Recommendation to local government

The Government at division, ward, and village level has a role of insuring that low income earners in rural areas benefit from agriculture. The Government should formulate strategies and by-laws on marketing activities which would allow small scale farmers to have direct contact with buyers at the market. This would help farmers to sell the produce to the right buyer and at the right market price. In addition, the Local Government through

agricultural and marketing officers should facilitate the provision of marketing information including information on the quality of produce needed in the competitive market through communication media.

5.2.2 Recommendation to policy makers

Agricultural marketing policies are very important to strengthen rural-urban linkages and in improving small scale farmers' livelihood status. Therefore, in order for rural farmers to benefit more from rural-urban linkages, policy makers in the Central Government of United Republic of Tanzania (URT) should formulate policies which would strengthen the existing rural-urban linkages. The Government should improve and construct high standard infrastructures such as roads (from farm to home and from home to market places) and communication system in order to provide sustainable market access to rural farmers. These policies would provide opportunities that enable smallholder farmers to transport and deliver agricultural produce at the market place in time.

5.2.3 Recommendation to farmers

Through organisations, smallholder farmers are recommended to find current agricultural information about price and the quality of produce needed at the market from correct source of information such as government institutions. Farmers should diversify to other economic activities such as small non-farming business instead of depending only on agriculture. Income earned from sale of produce and the received remittances should be used as a starting capital for investment in small businesses. In this way, the income level of farmers would increase and hence improve in their livelihoods.

5.2.4 Recommendation to traders

Traders are recommended to provide correct marketing information and buy produce from farmers at the right market price as directed by the Government.

5.2.5 Areas for further research

Rural and urban development should be consistent and complimentary to each other, to prove this, more research should be conducted to assess the impact of the emerging urban centres to the development of rural areas; and at what level the existing agricultural markets and rural-urban linkages increase the production level and sales of the produce to small scale farmers.

REFERENCES

- Abakah, J., Al-Hassan, R. and Egyir, I. (2013). Farm household level impacts of information communication technology – based agricultural market information in Ghana. *Journal of Development and Agricultural Economics* 5(4): 161 – 167.
- Abdulai, A., Barrett, C. B. and Hazell, P. (2004). Food Aid for Market Development in Sub-Saharan Africa. [www.barret.dyson.cornell.edu] site visited on 14/7/2016.
- Acheampong, E., Ozioko, R. and Ozor, N. (2015). Rural-urban interdependence in food system in Nsukka Local Government Area of Enugu State, Nigeria. *Journal of Agricultural Extension* 19(2): 157 – 183.
- Adebidi, A. B. (2012). Linking small-scale farmers to markets in Benin: a failure of ICT-based initiatives? Evidence from case studies. *Journal of Research in International Business and Management* 2(11): 261 – 272.
- Adel, G. (1999). Theories and models of the peri-urban interface: a changing conceptual landscape. [http://discovery.ucl.ac.uk/42/1/DPU_PUI_Adel_THEORIES.pdf] site visited on 14/3/2016.
- Agwu, N. M. and Ibeabuchi, J. O. (2011). Socio-economic analysis of wholesale rice marketers in Abia State, Nigeria. *International Journal of Science and Humanity* 1(4): 1 – 4.
- Akkoyunlu, S. (2013). Potential of Rural–urban Linkages for Sustainable Development and Trade. [<https://www.researchgate.net/file.PostFileLoader.html?id...assetkey>] site visited on 24/8/2017.

- Akkoyunlu, S. (2015). Potential of rural–urban linkages for sustainable development and trade. *International Journal of Sustainable Development and World Policy* 4(2): 20 – 40.
- Alhassan, R., Kuwornu, J. and Martey, E. (2012). Commercialization of smallholder agriculture in Ghana. *African Journal of Agricultural Research* 7(14): 2131 – 2141.
- Ali, S. Ghorshi, B. and Rokhsarzadeh, E. (2014). The analysis of effective factors on rural-urban Linkages in Astara City. *International Journal of Management and Humanity Sciences* 3(2): 1334 – 1341.
- Anim, F. D. and Mukweyho, R. (2014). Factors affecting small scale farmers in accessing market in Limpopo, South Africa. *Journal of Human Ecology* 48(2): 219 – 225.
- Avery, L. J., Regmi, M. B., Joshi, G. R. and Choudhury Rudra Charan Mohanty, C. R. (2017). Rural-Urban Connectivity in Achieving Sustainable Regional Development. In: *Intergovernmental Tenth Regional Environmentally Sustainable Transport (EST) Forum*. 14 – 16 March, 2017, Vientiane, Lao People's Democratic Republic. 1 – 22pp.
- Bagwell, K. and Staiger, R. W. (2001). WTO as a mechanism for securing market access property rights: Implications for global labour and environmental issues. *Journal of Economic Perspectives* 15(3): 69 – 88.
- Bah, M., Cisse, S., Diyamett, B., Diallo, G., Lerise, F., Okali, D., Okpara, E., Olawoye, J and Cecilia, T. (2003). Changing rural-urban linkages in Mali, Nigeria and Tanzania. *Environment and Urbanization* 15(1): 13 – 24.

- Bakare, A.S. (2012). Measuring the Income Inequality in Nigeria: the Lorenz Curve and Gini Coefficient Approach. *American Journal of Economics* 2(1): 47 – 52.
- Baker, J. and Wallevik, H. (2003). Poverty and wealth at the rural-urban interface: an actor-centred perspective from Northern Tanzania. *Environment and Urbanization* 15(2): 229 – 248.
- Bari, R. and Munir, A. (2014). Spatial analysis of Rural-Urban Linkages in Basti District. *Journal of Humanities and Social Science* 19(4): 127 – 133.
- Barrett, C. and Stephens, E. (2011). Incomplete credit markets and commodity marketing behaviour, *Journal of Agricultural Economics* 62(1): 1 – 24.
- Barrett, C. B. (2008). Smallholder market participation: Concept and evidence from Eastern and Southern Africa. *Food Policy* 33(4): 299 – 317.
- Bee, F. (2009). Analysis of agricultural marketing constraints and strategies for developing domestic agricultural markets in Tanzania. *Journal of Co-operative and Business Studies* 1(1): 1 – 27
- Belete, A., Hlongwane, J. J. and Ledwaba, L. J. (2014). Analysing the factors affecting the market participation of maize farmers: A case study of small scale farmers in Moponi District, Limpopo province. *African Journal of Agricultural Research* 9(10): 895 – 899.
- Bethlehem, J. (1999). Cross-sectional research. In: *Research Methodology in the Life, Behavioural and Social Sciences*. (Edited by Ader, H. J. and Mellenbergh, G. J.) Sage, London. pp. 110 – 142.

- Bevan, D., Adam, C. and Gollin, D. (2016). Rural-Urban Linkages, Public Investment and Transport Costs: The case of Tanzania. [<https://www.csae.ox.ac.uk/workingpapers>] site visited on 7/8/2017.
- Bhagat, D. and Dhar, U. R. (2011). Factors affecting market accessibility of small farmers: a supply chain perspective. [<http://www.iimb.ernet.in/docs/scmcpaper/Deepak>] site visited on 28/10/2016.
- Borgatti, S. P., Brass, D. J. and Halgin, D. S. (In press). Social network research: confusions, criticism and controversies. In: *Research in the Sociology of Organisation*. (Edited by Brass, D. J., Labianca, G., Mehra, A., Halgin, D. S. and Borgatti, S. P.), Emerald Publishing, Bradford.
- Bradbury, A., Hine, J., Njenga, P. and Otto, A. (2017). Evaluation of the Effect of Road Condition on the Quality of Agricultural Produce. [<https://www.research4cap.org/library/TRL-2017>] site visited on 13/8/2017.
- Braun, J. V. (2007). Rural-Urban Linkages for Growth, Employment, and Poverty Reduction. In: *Fifth International Conference on the Ethiopian Economy*. 7 – 9 June, 2007, Adiss Ababa, Ethiopia. 1 – 21pp.
- Braun, J., Denich, M., Gerke, S., Hornidge, A. and Schetter, C. (Eds.) (2012). Facilitating Agricultural Technology Adoption among the Poor: The Role of Service Delivery through Mobile Phones. Working paper 93. [<https://www.zef.de/uploads>] site visited on 7/8/2017.
- Bukar, U., Mohammed, D., Wakawa, R., Shettima, B. G. and Muhammad, S T. (2015). Analysis of market structure, conduct and performance for pepper in Borno State,

Nigeria: A Review. *Journal of Agricultural Economics, Environment and Social Sciences* 1(1): 181 – 190.

Bwalya, R., Hyuha, J. and Mugisha, J. (2013). Transaction cost and smallholder household access to maize markets in Zambia. *Journal of Development and Agricultural Economics* 8(9): 328 – 336.

Calcaterra, E. (2013). Defining Smallholders: Suggestion for a RSB smallholder definitions. [<https://www.energycenter.epfl.ch/files/content/sites/energy-center>] site visited on 19/8/2017.

Chambers, R. and Conway, G. (1991): Sustainable rural livelihoods: Practical concepts for the 21st century. IDS Discussion Paper 296. [http://publications.iwmi.org/pdf/H_32821.pdf] site visited on 25/10/2017.

Chan-Kang, C., Fan, S. and Mukherjee, A. (2005). Rural and Urban Dynamics and Poverty. Discussion Paper 23. [<http://www.ideas.repec.org/p/fpr/fcnddp>] site visited on 6/4/2016.

Chirwa, E., Kadzandira, J. and Mvula, P. (2005). Agricultural Marketing Liberalisation and the Plight of Poor in Malawi. Working Paper 8. [<http://www.eldis.org/ufile/upload/1/document/1106>] site visited on 13/8/2017.

Christaller, W. (1966). *Central Places in Southern Germany*. Englewood Cliffs, Germany. 230pp.

Christiaensen, L., De Weerd, J. and Kanbur, R. (2017). Secondary towns and poverty reduction in Tanzania. [<https://www.theigc.org/wp-content/uploads/2017>] site visited on 10/9/2017.

- Daisy, A., Karthi, R. and Kiruthiga, K. (2015). Agricultural Marketing – an overview. *International Journal of Scientific and Research Publications* 5(4): 1 – 2.
- Daniel, E. (2013). Assessment of agricultural extension services in Tanzania. A case study of Kyela, Songea and Morogoro rural District. [<http://www.parasite-project.org>] site visited on 28/10/2016.
- Delgado, C., Gabre-Madhin, E., Johnson, M. Kherallah, M. and Minot, N. (2002). *Reforming Agricultural Markets: Achievements and Challenges*. John Hopkins University Press, Baltimore. 201pp.
- Devaux, A., Horton, D. and Velasco, C. (2009). Collective Action for Market Chain Innovation in the Andes. *Food Policy* 34(1): 31 – 38.
- DFID (1999). Sustainable livelihoods guidance sheets. [<http://www.livelihoodscentre.org/documents/20720/100145>] site visited on 25/10/2017.
- Dhanai, R. and Negi, R. S. (2015). Rural-urban Linkages and Socio-economic Development. *Journal on Rural Development* 63(4): 3 – 6.
- Diao, X. B., Fekadu, A. S., Taffesse, S., Wamisho, K. and Yu, B. (2007). Agricultural Growth Linkages in Ethiopia: Estimates using fixed and flexible price models. IFPRI Discussion Paper 00695. [<http://www.fsg.afre.msu.edu/responses/ifpri>] site visited on 16/2/2016.
- Dodoma Region (2014). Dodoma Regional Report. 114pp. [<http://www.dodoma.go.tz/assets/files/publication>] site visited on 6/11/2016.

- Dorosh, P., Shiferaw, A. and Schmidt, E. (2012). Economic Growth without Structural Transformation. *Journal of African Development* 14(2): 7 – 40.
- Dorward, A., Kydd, J. and Morrison, J. (2004). A Policy Agenda for Pro-poor Agricultural Growth. *World Development* 32(1): 73 – 89.
- Dorward, A., Kydd, J. and Poulton, C. (2006). Overcoming Market Constraints on Pro-poor Agricultural Growth in Sub-Saharan Africa. *Development Policy Review* 24(3): 243 – 277.
- Douglass, M. (1998). A Regional Network Strategy for Reciprocal Rural-urban Linkages. [<http://www.lkyspp.nus.edu.sg/wp-content/uploads>] site visited on 12/3/2016.
- Economic and Social Research Foundation (ESRF) (2013). Agricultural Trade Policy Tanzania. [<http://www.fao.org/docrep/013/a1668e/a1668e03.pdf>] site visited on 7/11/2016.
- Egbetokun, O. A. and Omonona, B. T. (2012). Determinants of Farmers' Participation in Food Market in Ogun State. *Global Journal of Science Frontier Research Agriculture and Veterinary Science* 12(9): 25 – 30.
- Egbon, P. C. and Okoh, R. (2005). The integration of Nigeria's rural and urban foodstuffs markets. [<https://opendocs.ids.ac.uk/opendocs/bitstream/handle>] site visited on 15/8/2017.
- Egizabher, T. G. (2001). Rural-Urban Linkages under Different Farming Systems: Cases of Coffee and Non-Coffee Growing Regions in Ethiopia. [<http://www.ossres.net/publications/image>] site visited on 12/3/2016.

- Ellis, F. (1998). Household strategies and rural livelihood diversification. *Journal of Development Studies* 35(1):1 – 38.
- Emirbayer, M. and Goodwin, J. (1994). Network analysis, culture and the problem of agency. *American Journal of Sociology* 99(6): 1411 – 1454.
- Eppler, U., Fritsche, U. and Laaks, S. (2015). Urban-Rural Linkages and Global Sustainable Land Use. Globalands Issue Paper. [<https://www.iinas.org/tl-files/iinas/downloads/land>] site visited on 19/8/2017.
- Eskola, E. (2005). Agricultural Marketing and Supply Chain Management in Tanzania. Working Paper Series16. [<http://tanzaniagateway.org/docs/agriculturalmarket>] site visited on 12/7/2016.
- FAO (2012). Smallholders and family farmers. [http://www.fao.org/fileadmin/templates/nr/sustainability_pathways/docs/Factsheet] site visited on 20/8/2012.
- FAO (2014). Understanding smallholder farmer attitudes to commercialization: A case of maize in Kenya. [<http://www.fao.org/3/9-i3717e.pdf>] site visited on 28/10/2016.
- FAO (2015). Maize value chain in Tanzania. Report from the Southern Highlands Food Systems Programme. [<http://www.tanzania.go.tz/agriculture.html>] site visited on 17/3/2015.
- Farrington, J., Ramasut, T. and Walker, J. (2002). Sustainable livelihoods approaches in urban areas. [<http://www.sida.se/---/54>] site visited on 31/10/2016.

- Freeman, L. C. (1984). Turning of profit from mathematics: The case of social networks. *Journal of Mathematical Sociology* 10: 343 – 360.
- Furuholt, B. and Matotay, E. (2011). Developmental contribution from mobile phones across the agricultural value chain in rural Africa. *Electronic Journal of Information Systems in Developing Countries* 48(7): 1 – 16.
- Futakuchi, K., Kijima, Y. and Otsuka, K. (2013). The development of agricultural markets in sub-Saharan Africa: the case of rice in Uganda. *African Journal of Agricultural and Resource Economics* 8(4): 253 – 264.
- Gabagambi, D. M. (2013). Barriers to trade for smallholder farmers in Tanzania. [<http://www.pelumtanzania.org>] site visited on 28/10/2016.
- Garrett, J. and Chowdhury, S. (2004). Urban-Rural Links and Transformation In Bangladesh: A Review of the Issues. [http://www.carebangladesh.org/publication/Publication_8999853.pdf] site visited on 24/10/2017.
- Gatare, E., Oduor, J. and Zenon, M. (2015). Factors affecting market access in agricultural based projects in Rwanda. A case of home grown school feeding project in Nyaruguru District. *International Journal of Civil Engineering, Construction and Estate Management* 3(4): 20 – 30.
- Girei, A. A., Salihu, M. and Salamatu, U. (2015). Determinant of Conduct, Performance and Structure of Cowpea Marketing in Yola North and South Local Government Areas of Adamawa State, Nigeria. *American Research Journal of Agriculture* 1(2): 23 – 31.

- Giuliani, A., Keizer, M. and Kruijssen, F. (2009). Collective action for small-scale producers of agricultural biodiversity products. *Food Policy* 34(1): 46 – 52.
- Gore, C. (1984). *Regions in Questions: Space, Development Theory and Regional Policy*. Methuen, London. 290pp.
- Haan, L. and Ufford, P. Q. (2001). Livelihood, Social Capital and Market Organisation in Shaping Rural-Urban Interactions. [<https://repub.eur.nl/pub/22944/ASC-1241540-021.pdf>] site visited on 16/8/2017.
- Haggblade, S., Hazell, P. and Reardon, T. (2010). The rural non-farm economy: Prospects for growth and poverty reduction. *World Development* 38(10): 1429 – 1441.
- Haliru, Y. U. and Ibitoye, S. J. (2014). Evaluation of market structure and efficiency of gum Arabic marketers in North-Eastern Nigeria. *Asian Journal of Management Sciences and Economics* 1(1): 1 – 11.
- Haug, R. and Hella, J. P. (2013). Art of balancing food Security: Securing availability and affordability of Food in Tanzania. [<http://www.link.springer.com/article/10.1007>] site visited on 12/3/2016.
- Hayami, Y. and Kikuchi, M. (1982). *Asian Village Economy at the Crossroads*. Baltimore, Johns Hopkins University Press. 217pp.
- Heltberg, R. and Tarp, F. (2001). Agricultural supply response and poverty in Mozambique. In: *Conference on growth and poverty at WIDER*, 25 – 26 May, 2001, Copenhagen. 1 – 28pp.

- Hinderink, J. and Titus, M. J. (1988). Paradigms of regional development and the role of small centres. *Development and Change* 19(3): 401 – 423.
- Horst, A. (2014). Binary Logistic Regression: Background, Examples, Binary Logistic Regression in R and Communicating Results. [<http://www.statsthe-way-i-like-it.files.wordpress.com>] site visited on 5/11/2016.
- Hosseini, H. (2012). Arthur Lewis' Dualism, the Literature of Development Economics and the Less Developed Economics. *Review of European Studies* 4(4): 132 – 140.
- Houston, M., Hutt, M., Moorman, C., Reingen, P. H., Rindfleisch, A., Swaminathan, V. and Walker, B. (2004). A Network Perspective on Marketing Strategy Performance. In: *Assessing Marketing Strategy Performance*. (Edited by Moorman, C. and Lehmann, D.), Marketing Science Institute, Cambridge. pp. 247 – 268.
- Hughes, D. W and Litz, V. N. (1996). Rural-urban economic linkages agriculture and food processing Monroe, Louisiana, Functional Economic Area. *Journal of Agricultural and Applied Economics* 28(2): 337 – 355.
- Hugo, S., Squalli, J. and Wilson, K. (2006). What Explains Market Access. Working Paper 06-08. [<http://www.zu.ac.ae>] site visited on 20/7/2016.
- Idowu, E. O, Oluwasola, O. and Osuntogun, D. A. (2008). Increasing agricultural household incomes through rural-urban linkages in Nigeria. *African Journal of Agricultural Research* 3(8): 566 – 573.
- IFAD (2001). Enabling the Rural Poor to Overcome their Poverty. Strategic Framework for IFAD 2002-2006. [<http://www.ifad.org/events/op/2001/g8.htm>] site visited on 12/3/2016.

- IFAD (2003). Promoting Market Access for the Rural Poor in Order to Achieve Millennium Development Goal. [<http://www.ifad.org/events/op/2003/g8.htm>] site visited on 12/3/2016.
- IFAD (2008). Supporting Smallholders is Crucial to Food Security. [<http://www.ifad.org/events/op/2008/g8.htm>] site visited on 20/7/2016.
- IFAD (2011). Markets for the Rural Poor. [<http://www.ifad.org/documents>] site visited on 31/10/2016.
- IIED (2012) (a). Rural-Urban Linkages. [<http://www.iied.org/rural-urban-linkages>] site visited on 22/8/2017.
- Ismail, I. (2014). Influence of market facilities on market participation of maize stallholder farmers in farmer organisation's market services in Tanzania: Evidence from Kibaigwa international grain market. *Global Journal of Biology, Agriculture and Health Sciences* 3(3): 181 – 189.
- Jackson, M. (2010). An Overview of Social Networks and Economic Application. [<https://web.stanford.edu/~jacksonm/socialnetecon-chapter.pdf>] site visited on 24/10/2017.
- Jones, C., Hesterly, W. S. and Borgatti, S. P. (1997). A general theory of network governance: Exchange conditions and social mechanisms. *Academy of Management Journal* 22(4): 911 – 945.
- Kalkoti, K. (2015). Need to Strengthen Rural-Urban Linkage. *Journal on Rural Development* 63(4): 7 – 10.

- Katega, B. and Lifuliro, C. S. (2014). Rural Non-Farm Activities and Poverty Alleviation in Tanzania: A case of two villages in Chamwino and Bahi Districts of Dodoma Region. [www.repoa.or.tz/documents/REPOA_RR_14_7.pdf] site visited on 10/9/2017.
- Keats, S. and Wiggins, S. (2013). Linking smallholders to markets. [<http://www.odi.org>] site visited on 20/7/2016.
- Kessides, C. (2005). The Urban Transition in Sub-Saharan Africa: Implications for Economic Growth and Poverty Reduction. World Bank African Region Working. [citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.406.6581&rep=rep1&type] site visited on 22/8/2017.
- Kim, S. M. (2015). An Analysis on Urban-Rural Linkage in Mumbai Metropolitan Area. *Journal of Development Practice* 2: 20 – 25.
- Kiondo, E., Macha, J. and Sife, A. (2010). Contribution of mobile phones to rural livelihoods and poverty reduction in Morogoro. *Electronic Journal of Information Systems in Developing Countries* 42(3): 1 – 15.
- Kirsten, J. F. and Zyl, J. (1998). Defining small-scale farmers in South African content. *Agrekon* 37(4): 551 – 562.
- Kweka, J. (2006). Trade Policy and Transport Costs in Tanzania. Center for Research in Economic Development and International Trade. Research Paper 6(10). [<http://www.nottingham.ac.uk/credit/documenys/papers/6-10.pdf>] site visited on 5/8/2017.

- Kwon, W. Y. (1979). An appraisal of growth centre theory in relation to information need. [<http://www.s-space.snu.ac.kr/.../8>] site visited on 2/2/2017.
- Lazaro, E. and Birch-Thomsen, T. (2013). Rural-urban complementarities for the reduction of poverty: Identifying the contribution of savings and credit facilities. In: *proceedings of the RUCROP Stakeholders' Workshop*. 20 August, 2012, Morogoro, Tanzania. 1 – 64pp.
- Lerise, F., Kibadu, A., Mbutolwe, E. and Mushi, N. (2001). Rural-urban Interactions and Livelihood Strategies. The case of Lindi and its Region, Southern Tanzania. [<http://pubs.iied.org/pdfs/9115IIED.pdf>] site visited on 12/8/2017.
- Lesetedi, G. N. (2003). Urban-rural linkages as an urban survival strategy among urban dwellers in Bostwana. *Journal of Political Ecology* 10(1): 37 – 46.
- Lewis, W. A. (1954). Economic Development with Unlimited Supplies of Labour. *Manchester School of Economic and Social Studies* 22(2): 139 – 191.
- Lindert, P. and Steel, G. (2017). Rural livelihood transformations and local development in Cameroon, Ghana and Tanzania. Working Paper. [<http://www.pubs.iied.org/pdfs/10811IIED.pdf>] site visited on 15/8/2017.
- Lipczynski, J., Wilson, J. and Goddard, J. (2009). *Industrial Organisation: Competition, Strategy, Policy*. Prentice Hall, Harlow. 784pp.
- Losch. B., Magrin, G. and Imbernon, J. (Eds.) (2013). A new emerging rural world. An overview of rural change in Africa. [<http://www.nepad.org/sites/default/files/documents/files/A%20new>] site visited on 15/8/2017.

- Lundy, M., Becx, G., Zamierowski, N., Amrein, A., Hurtado, J., Mosquera, E. and Rodriguez, F. (2012). Link Methodology: Participatory guide to business models that link smallholder to markets. [<http://www.valuchain.org/dyn/bds/doc>] site visited on 7/8/2017.
- Lundy, M., MacGregor, J. and Vorley, B. (2008). Business model that is inclusive of small farmers. In: *Global Agro-industry Forum*, 8 – 11 April, 2008, New Delhi, India. 1 – 34pp.
- Lwoga, E. T., Ngulube, P. and Stilwell, C. (2011). Access and use of agricultural information and knowledge in Tanzania. *Library Review* 60(5): 383 – 395.
- Magembe, K. (2017). Assessment of maize and groundnuts spoilage loss due to mycotoxins and its effect on household food security in Kilosa District. *International Journal of Information Research and Review* 4(3): 3828 – 3833.
- Magesa, M., Michael, K. and Ko, J. (2014a). Agricultural market information services in developing countries. *Advances in Computer Science International Journal*. 3(9): 38 – 47.
- Magesa, M., Michael, K. and Ko, J. (2014b). Access to agricultural information by rural farmers in Tanzania. *International Journal of Information and Communication Technology Research* 4(7): 2223 – 4985.
- Magesa, M., Michael, K. and Ko, J. (2015). Towards a framework for accessing agricultural market information. *Electronic Journal of Information Systems in Developing Countries* 66(3): 1 – 16.

- Mahdi, S. (2012). Distance to Market and Search Costs in an African Maize Market. World Bank Policy Research Working Paper 6172. [<http://www.documents.worldbank.org/curated>] site visited on 6/8/2017.
- Mahdi, S. and Zorya, S. (2009). High market costs and inefficient policies in Tanzania's maize market. [<http://www.tzdp.org.tz>] site visited on 5/8/2017.
- Makorere, R. (2014). An exploration of factors affecting development of citrus industry in Tanzania: Empirical evidence from Muheza District, Tanga Region. *International Journal of Food and Agricultural Economics* 2(2): 135 – 154.
- Maponya, P. and Mpandeli, S. (2014). Constraints and challenges facing small scale farmers in Limpopo Province. *Journal of Agricultural Science* 6(4): 135 – 143.
- Martey, E. (2014). Market Information and Extent of Agricultural Commercialization: Empirical Evidence from Smallholder Farmers in Effutu Ghana. *American Journal of Experimental Agriculture* 4(12): 1680 – 1696.
- Mathenge, M. and Olwande, J. (2010). Marketing Participation among Poor Rural Households in Kenya. [<http://www.tegemeo.org/documents/work/WP42>] site visited on 1/11/2016.
- Maziku, P. (2015). Market access for maize smallholder farmers in Tanzania. In: *Proceedings of the Second European Academic Research Conference on Global Business, Economics, Finance and Banking*. 3 – 5 July, 2015, Zurich, Switzerland. 1 – 16pp.

- Mdoe, N. and Mwangike, L. (2015). The role of middlemen in fresh tomato supply chain in Kilolo District, Tanzania. *International Journal of Agricultural Marketing* 2(3): 45 – 56.
- Meridian Institute (2010). Science and Innovation for African Agricultural Value Chains. [<http://www.merid.org/~media/files/projects>] site visited on 5/8/2017.
- Mgeni, C. P. and Temu, A. E. (2010). Economic Analysis of Fresh Fruit and Vegetable Export Marketing Channels by Small-Scale Farmers in Tanzania: The case of Meru District. *Tanzania Journal of Agricultural Science* 10(1): 46 – 54.
- Mhlanga, N., Anaadumba, P. and Ngaiza, R. (2014). Institutional procurement of staples from smallholders; the case of purchase for progress in Tanzania. [<http://www.tanzania.go.tz/agriculture.html>] site visited on 11/6/2015.
- Minten, B. (1999). Infrastructure, Market Access and Agricultural Prices: Evidence from Madagascar. Discussion paper no. 26. [<http://www.ageconsearch.umn.edu>] site visited on 28/10/2016.
- Mitchell, T. (2011). Middlemen, Bargaining and Price Information: is Knowledge Power? [<https://www.tcd.ie/Economics/assets/pdf>] site visited on 6/8/2017.
- Mitchell-Weaver, C. (1991). Urban Systems Theory and Third World Development: A Review. *Journal of Urban Affairs* 13(4): 419 – 441.
- Mmasa, J. (2013). Value Addition Practices to Agricultural Commodities in Tanzania. [<http://www.clknet.or.tz>] site visited on 13/8/2017.

- Motiee, S., Nia, E and Rezvani, M. (2014). Impact of rural-urban linkages on diversification of the rural economy with emphasis on woodcraft. *Indian Journal of Fundamental and Applied Life Sciences* 4(54): 1463 – 1473.
- Mulinge, W., Mwangi, M. and Ngigi, M. (2015). Gender and age analysis on factors influencing output market access by smallholder farmers in Machakos, Kenya. *African Journal of Agricultural Research* 10(40): 3840 – 3850.
- Mulongo, L. S., Erute, B. and Kerute, P. M. (2010). Rural Urban Interlink and Sustainability of Urban Centres. In: *ISOCARP Congress*. 19 – 23 September, 2010, Nairobi, Kenya. 1 – 16pp.
- Murphy, S. (2012). Changing perspective: small scale farmers, markets and globalization. [<http://www.pubs.iied.org>] site visited on 20/7/2016.
- Musumba, M. and Costa, R. (2015). Impact of Marketing Costs on Supply Chains in Tanzania. In: *Agricultural and Applied Economics Association's Joint Annual Meeting*. 26 – 28 July, 2015, San Francisco. 1 – 7pp.
- Mutayoba, V. (2015). Market performance and farmers' choice of marketing channels of high value crops in Tanzania. *International Journal of Economics, Commerce and Management* 3(8): 276 – 289.
- Mwakaje, A. (2010). Information and communication technology for rural farmers market access in Tanzania. *Journal of Information Technology Impact* 10(2): 111 – 128.
- Mylott, E. (2009). "Urban-Rural Connections: A Review of Literature. [<http://hdl.handle.net/1957/10574>] site visited on 24/10/2017.

- NBS (2014). *Tanzania National Panel Survey Report*. Government Printer, Dar es Salaam, Tanzania. 108pp.
- Ndaben, L. L. (2013). An analysis of Rural-Urban Linkages And Their Implications For Policies That Sustain Development In A Space Continuum. [http://www.cogta.gov.za/cggta_2016/wp-content/uploads/2016/05/] site visited on 22/8/2017.
- Ndembwike, J. (2006). *Tanzania, the land and its people*. Tanzania New Africa Press, Dar es Salaam. 49pp.
- OECD (2013). Rural-urban Partnerships: An Integrated Approach to Economic Development. [<http://www.oecd-ilibrary.org/urban-rural-and-regional-development/rural-urban-partnership>] site visited on 20/7/2016.
- Okali, D., Okpara, E. and Olawoye, J. (2001). Rural-urban Interactions and Livelihood Strategies Series. [<http://www.pubs.iied.org/pdfs/9117IIED.pdf>] site visited on 12/3/2016.
- Olofsson, A. (2011). Overcoming obstacles to rural and agricultural finance. [<https://5372278-277162665377099162>] site visited on 7/8/2017.
- Otsuka, K. (2001). Growth and development from an evolutionary perspective. *Journal of Development Economics* 65(1): 137 – 239.
- Parkhe, A., Wasserman, S. and Ralston, D. A. (2006). Introduction to special topic forum: New Frontiers in Network Theory Development. *Academy of Management Review* 31(3): 560 – 568.

- Parr, J. B. (1999). Growth-pole strategies in regional economic planning: A retrospective View. *Urban Studies* 36(7): 1195 – 1216.
- Pisanie, J. (2013). Concentration measures as an element in testing the structural-conduct-performance paradigm. Economic Research Southern Africa working paper 345. [<https://econrsa.org/system/files>] site visited no 25/10/2017.
- Ranganath, G., Mandanna, P. K. and Kumar, S. (2013). Structure and competitiveness of the maize market in Davanagere. *International Journal of Commerce and Business Management* 6(1): 111 – 113.
- Ranis, G. (3003). Is Dualism Worth Revisiting? Economic Growth Center Discussion Paper no. 870. [<http://www.econ.yale.edu/~egcenter/>] site visited on 18/1/2016.
- Renzulli, L. A., Aldrich, H. E. and Moody, J. (2000). Family matter: Gender, networks and entrepreneurial outcomes. *Social Forces* 79(2): 523 – 546.
- REPOA (2000). Survival and Accumulation Strategies at the Rural-Urban Interface: a Study of Ifakara Town, Tanzania. [[http://www.repoa.or.tz/documents/ Research_Report_003_\(3\).pdf](http://www.repoa.or.tz/documents/Research_Report_003_(3).pdf)] site visited on 12/9/2017.
- Republic of South Africa (RSA) (2012). Linking producers in markets Programme. [<http://www.nda.agric.za>] site visited on 20/7/2016.
- Romanik, C. T. (2008). An Urban-Rural Focus on Food Markets in Africa. [<http://www.urban.org/...pdfs/411604>] site visited on 20/7/2016.
- Rowley, T. J. (1997). Moving beyond dyadic ties: A network of stakeholder influences. *Academy of Management Review* 22(4): 887 – 910

- RUCROP (2014). Rural-urban linkages and financial services: Opportunity for rural poverty reduction. [https://www.researchgate.net/.../283500820_Rural-urban_linkages_and_financial_service] site visited on 12/3/2016.
- SAGCOT (2015). Value Chain and Market Analysis. [<http://www.sagcot.com/uploads/media>] site visited on 28/10/2016.
- Sar, M. and Sivaramakrishnan, L. (2014). Rural urban linkages: A study around Nalhati municipality. *International Journal of Development Research* 4(3): 721 – 726.
- Schultz, T. (1964). *Transforming Traditional Agricultural*. New Haven, Yale University Press. 212pp.
- Sebatta, C., Mugisha, J., Katungi, E., Kashaaru, A. and Kyomugisha, H. (2014). Smallholder Farmers' Decision and Level of Participation in the Potato Market in Uganda. *Modern Economy* 5: 895 – 906.
- Seraje, M. (2007). Livelihood strategies and their implications for rural-urban linkages. [<http://www.svt.ntnu.no/geo/Doklager>] site visited on 12/3/2016.
- Shaw, A. and Kristjanson, P. (2014). A catalyst toward Sustainability? Exploring Social Learning and Social Differentiation Approaches with the Agricultural Poor. *Sustainability* 6(5): 2685 – 2717.
- Simon, W. O. (2011). Centre-periphery relationship in the understanding of development of internal colonies. *International Journal of Economic Development Research and Investment* 2(1): 147 – 156.

- Smale, M., Byerlee, D. and Jayne, T. (2011). Maize Revolution in Sub-Saharan Africa. [<http://ageconsearch.umn.edu/bitstream/202592/2/Wp40-maize-Revolution-in-sub-saharan-Africa.pdf>] site visited on 20/3/2016.
- SUA GIS (2010). General Information System. [acmgis2010.cs.ucsb.edu] site visited on 12/08/2016.
- Sullivan, A. (2005). Market Areas and Central Place Theory. [www.vwl.tuwien.ac.at/hanappi/AgeSo/rp/UrbEco5eCh5.pdf] site visited on 8/2/2016.
- Swanson, B. E. and Rajalahti, R. (2010). Strengthening Agricultural Extension and Advisory System: Procedures for Assessing, Transforming and Evaluating Extension System. Agriculture and Rural Development Discussion Paper 45. [http://www.siteresources.worldbank.org/INTARD/Resources/Stren_combined_web.pdf] site visited on 16/8/2017.
- Tacoli, C. (1998). Rural-urban interactions; A guide to the literature. *Environment and Urbanization* 10(1): 147 – 166.
- Tacoli, C. (2002). Changing Rural-urban Interactions in Sub-Saharan Africa and their impact on livelihoods: A summary. [<http://www.pubs.iied.org/pdfs/9153IIED.pdf>] site visited on 12/3/2016.
- Tacoli, C. (2003). The Links between Urban and Rural Development. Available at [<http://www.pubs.iied.org/pdfs/G00486.pdf>] site visited on 20/7/2016.
- Tacoli, C. (2004). Rural-Urban Linkages and Pro-Poor Agricultural Growth: An Overview. In: *OECD DAC POVNET Agriculture and Pro-Poor Growth Task Team Workshop*, 17 – 18 June, 2004, Helsinki, Finland. 1 – 17pp.

- Tacoli, C. (2006). *The Earth scans Reader in Rural-Urban Linkages*. London Sterling, U K. 329pp.
- Thanh, H. X., Anh, D. N. and Tacoli, C. (2005). Livelihood Diversification and Rural-Urban Linkages in Vietnams's Red River Delta. FCND discussion paper 193. [<https://ageconsearch.umn.edu/bitstream/59595/2/fcndp193.pdf>] site visited on 25/10/2017.
- Tilahun, M. (2012). Sustainable Livelihood of Rural Households through Rural-Urban Linkage: Case Study of Guba Lafito Woreda, South Wollo Zone, Ethiopia. Thesis for Award of MSc Degree at Addis Ababa University, Addis Ababa, Ethiopia, 89pp.
- Tshuma, M. C. (2014). Understanding the small-scale agricultural sector as a precondition for promoting rural development in South Africa. *African Journal of Agricultural Research* 9(31): 2409 – 2418.
- URT (2001). Rural Development Strategy Main Final Report. [www.tzonlin.org/pdf/ruraldevelopmentstrategy1.pdf] site visited on 10/9/2017.
- URT (2004). *Basic Statistic in Education 1995- 2004*. Government Printer, Dar es Salaam. 178pp.
- URT (2008). Agricultural Marketing Policy. [[http://www.mit.go.tz/uploads/documents.sw](http://www.mit.go.tz/uploads/documents/sw)] site visited on 7/11/2016.
- URT (2013). Population Distribution by Age and Sex. [http://www.ih.eprints.org/2169/1/Age_Sex_Distribution.pdf] site visited on 6/11/2016.

- URT (2014). Basic Demographic and Socio-economic Profile. [<http://www.nbs.go.tz/nbs/takwimu/census2012>] site visited on 31/10/2016.
- USAID (2005). Ending Hunger in Africa: Global Partnerships in Agriculture. [http://pdf.usaid.gov/pdf_docs/pdacf612.pdf] site visited on 23/6/2016.
- USAID (2005). Livelihoods and Conflict. [http://pdf.usaid.gov/pdf_docs/Pnade291.pdf] site visited on 25/10/2017.
- USAID (2008). Structure-Conduct-Performance and Food Security. [http://pdf.usaid.gov/pdf_docs/Pnadi965.pdf] site visited on 24/10/2017.
- Vogel, S. (2012). Multi-Enterprising Farm Households: The Importance of Their Alternative Business Ventures in the Rural Economy. [<https://ageconesearch.umn.edu/bitstream/138015/2/EIB101.pdf>] site visited on 12/10/2016.
- WABS Consulting Ltd. (2008). Maize Value Chain Study in Ghana: Enhancing Efficiency and Competitiveness. [www.danangtimes.vn/Portals/.../39151152-Maize_Value%20Chain_WAB] site visited on 1/9/2017.
- Wagayehu, B. (2004). Analysis of Farmers' Preferences for Development Intervention Programs: A Case Study of Subsistence Farmers from Eastern Ethiopian Highlands. [https://www.researchgate.net/publication/228925293_Analysis_of_Farmers%27_Preferences_for_Development_Intervention_Programs] site visited on 23/10/2017.
- Watts, D. (2003). *Six Degrees: The Science of a Connected Age*. Norton, New York. 384pp.

- Webster, C. M. and Morrison, P. D. (2004). Network Analysis in Marketing. *Australasian Marketing Journal* 12(2): 8 – 18.
- Wellman, B. (1988). Structural analysis: From method and metaphor to theory and substance. In: *Social Structural: A Network Approach*. (Edited by Wellman, B and Berkowitz, S. D.), Cambridge University Press, New York. pp. 19 – 61.
- WFP (2016). Market Assessment. [<http://www.documents.wfp.org/stellent/groups>] site visited on 5/8/2017.
- Wolfer, R., Faber, N. S. and Hewstone, M. (2015). Social Network Analysis in the Science of Groups: Cross-Sectional and Longitudinal Applications for Studying Intra and Intergroup Behaviour. *Group Dynamics: Theory, Research and Practice* 19(1): 45 – 61.
- Yamane, T. (1967). *Statistics; an Introductory Analysis*. (2nd Ed). Harper and Row. New York. 915pp.
- Yizengaw, Y. S., Okoyo, E. N. and Beyene, F. (2015). Determinants of livelihood diversification strategies: The case of smallholder rural farm households in Debre Elias Woreda, Ethiopia. *African Journal of Agricultural Research* 10(19): 1998 – 2013.

APPENDICES

Appendix 1: Survey Questionnaire for farmers

Section A: General Characteristics of the Respondents

NAME	AGE	SEX	PLACE	EDUCATION LEVEL
Phone no:.....		1. Male 2. Female	1. Kibaigwa 2. Kinangali 3. Ndurugumi	1. None 2. Standard seven 3. Form four 4. Form six 5. Others

Section B: Migration and economic activities

1. Where you born in this village/ Emerging Urban Center (EUC)? 1. YES [] 2. NO []
2. If no where were you born
3. If you are migrant what was the reason for you to come here
 1. Employment 2. Family issues 3. Seeking for job 4. Marriage
 5. Others
4. What type of economic activity are you involved in?
 1. Farming [] 2. Business [] 3. Both []
5. If it is faming which type of crop do you produce?
 1. Maize [] 2. Sunflower [] 3. Pigeon peas []
6. What is the quality of your produce? 1. High [] 2. Low []
7. If it is a business which business are you involved in? Specify
8. Are you involved in maize business? 1. Yes [] 2. No []
9. Where do you do your economic activity?
 1. Within the village/EUC [] 2. Outside of the village/EUC [] 3. Both []

Section C: Rural-Urban linkage

10. If it is outside of your village/EUC, name the place
11. If it is outside of this village/EUC, what is the distance in km/ walked time.....hrs
12. Do you own land outside your village/ EUC? 1. YES [] 2. NO []

13. If yes where
14. Do you own house/shop outside your village/EUC? 1. YES [] 2. NO []
15. If yes where
16. Do you buy different products/goods from outside your village/EUC?
1. YES [] 2. NO []
17. If yes what kind of those products/goods
18. If yes (for no. 15) where do you buy those goods from
19. How many often do you go to buy those goods.
1. weekly [] 2. Monthly [] 3. Regular [] 4. Irregular [] 5. Once []
20. Apart from buying and selling purposes, what is the other purpose to visit town/other place?
1. Education [] 2. Health [] 3. Jobs [] 4. Others []
21. How often do you visit town?
1. weekly [] 2. Monthly [] 3. Regular [] 4. Irregular [] 5. Once []
22. Do you normally receive money/material support from your relatives/friends outside of this village/EUC? 1. YES [] 2. NO []
23. Do you send money/material support to other people outside of this village/EUC?
1. YES [] 2. NO []

Section D: Market System and characteristics

24. What agricultural produce do you sell?
1. Maize [] 2. Sunflower [] 3. Pigeon peas []
25. How much did you get each season in the last five years
1. Maize.....2. Sunflower 3. Cowpeas.....
26. Did prices vary in each season? 1. Yes [] 2. No []
27. What are the mechanisms involved when you sell your produce?
1. Sell to middlemen [] 2. Direct sell to consumer []
28. Do you have direct contact with consumers/middlemen? 1. Yes [] 2. No []
29. Do you get price information of your produce before you sell them?
1. Yes [] 2. No []
30. Do you get information on quality of produce needed in the market?
1. Yes [] 2. No []

31. If yes (for question no. 26 and 27) what means of communication used to have information?
 1. Mobile phone [] 2. Radios [] 3. Television [] 4. Others []
32. Do you sell your produce at Kibaigwa market? 1. Yes [] 2. No []
 If no why.....
33. If yes, can you easily access the market? 1. Yes [] 2. No []
34. If no, what is the problem.
 1. Bad road condition [] 2. Produce quality [] 3. Distance []
 4. Transportation [] 5. Information [] 6. Others [] (More than one answer is possible)
35. How long is far from farm to the market place?
 1.km 2.hrs (walked time/by transport)
36. What means of transport normally do you use to transport your produce?
 1. Car [] 2. Tractors [] 3. Motorcycle [] 4. Bicycle []
 5. Others [].....
37. What type of road you have access to? 1. Weather road [] 2. Feeder road []
38. How do you see road condition you use? 1. Good [] 2. Bad []
39. Are you satisfied with the present agricultural produce market system?
 1. Yes [] 2. No []
40. Do you have access to agricultural inputs? 1. Yes [] 2.No []
41. If no why?
42. Are your produce bought on a time? 1. Yes [] 2. No []
43. If no what do you think are the reasons behind
44. Do you receive payment immediately after selling you produce?
 1. Yes [] 2. No []

Section E: Household livelihood status

45. What are the sources of water for household use?
 1. Pipe water [] 2. Well [] 3. Surface water [] 4. Rain water []
46. Where do water service available?
 1. Within household [] 2. Outside of the household []
47. If it is outside how far is it? Time walked/km
48. Does your household have electricity service? 1. Yes [] 2. No []

49. If yes, what is source?

1. Generator [] 2. Solar [] 3. Tanesco []

50. What is the ownership of the house you live in?

1. Own house [] 2. Rented house [] 3. Without payment []
4. Others []

51. What are the materials used to build your house?

Walls	Floor	Roof	Toilet
1.Blocks	1.Tiles	1.Tiles	1.Wate use toilet
2.Burnt bricks	2.Cement	2.Iron sheet	2. Hole toilet
3. Sun dried bricks	3.Mud	3.Grass	3. Others
4.Mud			

52. Do you own the following transport equipments?

- 1.Motorcycle [] 2. Bicycle [] 3. Car [] 4. Tractor [] 5. Others

.....

THANK YOU

Appendix 2: Survey Questionnaire for Traders and Transporters

Section A: General Characteristics of the Respondent

i. Name Mobile no.

ii. Age

iii. Sex: 1. Male [] 2. Female [] (tick √ in one box)

iv. Education level (tick √ in one box in table below).

Non	Standard vii	Form iv	Form vi	Others (specify)

v. Living place: 1.Kibaigwa center [] 2.Kinangali [] 3.Ndurugumi []
 4. Other place (specify).....

Section B: Marketing and transportation activities

(A) Trader

1. What is your initial capital?
2. Are you: A) Retailer[] B) wholesaler[] C) Local collector[]
3. What is your trading scale/level?
 A) Large scale trader [] B) Medium scale trader[] C) Small scale trader[]
4. Where do you buy maize from?
 (more than one place is possible, specify)
5. Where do you sell your maize? (more than one place is possible, specify)
6. From whom (maize seller) do you buy maize? A) Direct from farmer/producer[]
 B) wholesaler[] C) Retailer[] D) local collectors[]
 E) Other (specify)
7. What is the frequency of time normally you use to buy maize?
 A) Daily[] B) weekly[] C) Monthly[]
8. Who are your main buyers?
 A) Processors[] B) wholesalers[]
 C) Retailers[] D) local collectors[] E) Consumers[]
 F) Other (specify)
9. What is the volume of maize do you buy in a day/week/month?
 A) 1 – 50kgs/bags[] B) 51 – 100kgs/bags[] C) 101kgs/bags and above[]

10. What is the volume of maize do you sell in a day/week/month?
 A) 1 – 50kgs/bags [] B) 51 – 100kgs/bags [] C) 101kgs/bags and above []
11. Which mode of trade do you use?
 A) Direct Contact with buyers and sellers[] B) The use of middlemen
12. Who sets the price of maize? A) Buyer[] B) Seller[] C) Both[]
 D) Other (specify)
13. What are the criteria used in setting selling and buying price of maize?
 A) Moisture content [] B) Demand force[] C) Supply force[]
 D) Quantity [] E) Weight[]
14. What are the criteria used to buy maize?
 B) Moisture content[] B) Grain size[] C) Both[]
 C) Other (specify)
15. What is your source of getting marketing information? A) Traders[]
 B) Mobile phone[] C) Radios/ Television[] D) At market place[]
16. Do you normally receive money/material support from your relatives/friends outside of this village/EUC? A) Yes [] B) No []
17. Do you send money/material support to other people outside this village/EUC?
 A) Yes [] B) No []
18. Is the means of transport you use to transport maize yours (you own it) or you hire?
 A) Own [] B) Hired []
19. If the answer is A in question number 18 above, which means of transport do you own?
 A) Bicycle [] B) Motorcycle [] C) Cars (truck/pick-up) [] D) Cart (driven by man/cow) []

B) Transporter

- 1 Who is the owner of the maize you transport?
 A) Farmer [] B) Trader [] C) Processor [] D) Local collector []
- 2 From where do you transport maize? (more than one place is possible, specify)
- 3 To where do you transport maize? (more than one place is possible, specify)

- 4 What are the means of transport used to transport maize? A) Bicycle[]
 B) Motorcycle [] C) Cars (truck/pick-up) [] D) Cart (driven by man/cow)[]
- 5 What is the frequency of time normally you use to transport maize?
 A) Daily [] B) weekly [] C) Monthly[]
- 6 What is the volume of maize do you transport per trip (daily/week/monthly)?
 A) 1 – 50kgs/bags [] B) 51 – 100kgs/bags [] C) 101kgs/bags and above []
- 7 How is transport cost determined?
 A) Per weight [] B) Per distance [] C) Per trip []
- 8 Is the means of transport you use yours (you own it) or hired?
 A) Own [] B) Hired []
- 9 If you do not own means of transport who is the owner?
 A) Farmer [] B) Trader [] C) local collector [] D) Other (specify).....
- 10 What is the type of road do you use? A) Tarmac roads B) Dust roads C) Feeder roads
- 11 How is the condition of roads you use? A) Good[] B) Bad[]
- 12 Do you normally receive money/material support from your relatives/friends outside this village/EUC? A) Yes [] B) No []
- 13 Do you send money/material support to other people outside this village/EUC?
 A) Yes [] B) No []

THANK YOU

Appendix 3: Interview guide for Key Informant (KI) interviews and Focus Group Discussion (FGD)

1. Who are the most sellers of the produce in this market?
 1. Small scale farmers [] 2. Middle scale farmers [] 3. Large scale farmers []
 4. Businessman [] 5. Others [].....
2. Where do the main/most of the sellers come from?
 1. Within the village/Kibaigwa EUC []
 2. Outside this place [] specify
3. Where do the main/most of the buyers come from?
 1. Within the village/Kibaigwa EUC []
 2. Outside this place [] specify
4. How is the trend on buying and selling?
5. How the situation is on small scale farmers' connection to marketing activities?
6. How does the accessibility of market to small scale farmers is in your area?
7. How the situation is on infrastructures of the area?
8. Do small scale farmers connected to district, regional and other countries markets?
9. Are you satisfied with the present agriculture market system? 1. Yes [] 2. No []
10. What do you think needs to be done to make it better?
11. What are the existing linkages between Kibaigwa EUC and other rural hinterlands?
12. How do these linkages contribute much on expanding markets and market networks?
13. What are the social and economic services are coming from other areas (villages/ town)?

THANK YOU