

**LIVELIHOOD STRATEGIES AND HOUSEHOLD FOOD SECURITY OF
VEGETABLE STREET VENDORS IN MOROGORO TOWN, TANZANIA:
AN EMPIRICAL ANALYSIS**

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ABSTRACT

The study attempts to examine the livelihood strategies and household food security of vegetable street vendors in Morogoro town, Tanzania. Specifically, the study sought to: (1) To document the nature of the institutional environment in which vegetable street vending business is taking place, (2) To identify the type and extent of livelihood assets owned by individuals working as vegetable street vendors, (3) To measure household food security and dietary diversity of vegetable street vendors and (4) To identify strategies employed by vegetable street vendors to cope with food shortage. A cross sectional study design with mixed methods of sampling was employed whereby data were collected from a total of 234 respondents between February and May, 2018. The study used both quantitative and qualitative data. Semi structured questionnaire, in-depth interviews and focus group discussions were used to obtain the data. Descriptive, inferential, and content analysis methods were used for data analysis. The results showed that respondents own various livelihood assets categorized as human, natural, physical, social and financial capitals. On the other hand, the prevalence of household food insecurity was high (55.5%) among respondents and most of them consumed between 5-9 different food groups (moderate 50.5%) diverse diet. Several factors were identified to influence household food security. These include land size ($p < 0.000$), type of ownership of land ($p < 0.005$), house ownership ($p < 0.019$), motorcycles ownership ($p < 0.005$), bicycles ownership ($p < 0.005$), relative distance to selling point ($p < 0.011$), membership in community Organisation ($p < 0.000$) and type of social Organisation ($p < 0.035$). Others were access to credit ($p < 0.003$), receiving remittances ($p < 0.000$) and training received ($p < 0.014$). Using binary regression model it was found that ownership of the house ($p < 0.038$), membership of community Organisation ($p < 0.032$), and type of transport used ($p < 0.000$) were determinant of food security. It was noted that respondents employ a number of coping strategies during food shortages, which include selling labour, borrowing from relatives, diet change and getting support from relatives were common in the study area. The study concludes that food insecurity is still a problem in the study respondents. It is

recommended that LGAs and NGOs support the sector through provision of training on business skills or entrepreneur, low interest credits, formulation of favourable policies to support vegetable vendors and empowering them by forming an association.

DECLARATION

I, Alexander Sagaya, do hereby declare to the Senate of the Sokoine University of Agriculture that this dissertation is my original work, done within the period of registration and that it has neither been submitted nor been concurrently submitted for a higher degree award in any other Institution.

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Date

The above declaration confirmed by;

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Prof. John Msuya
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Date

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DEDICATION

This study is dedicated to my lovely mother, the late Modesta Simon Mweha.

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LIST OF ABBREVIATIONS AND ACRONYMS

DDS	Dietary Diversity Score
DFID	Department for International Development
FANTA	Food and Nutrition Technical Assistance
FAO	Food and Agriculture Organisation
FDG	Focus Group Discussion
HDDS	Household Dietary Diversity Score
HFIAS	Household Food Insecurity Access Scale
HFS	Household Food Security
ILO	International Labour Organisation
LGA	Local Government Authority
MoH	Ministry of Health
MOHCDGEC	Ministry of Health and Community Development Elderly
and	Children
NBS	National Bureau of Statistics
NGO	Non-Governmental Organisation
OCGS	Office of the Chief Government Statistician
OECD	Organisation for Economic Cooperative and Development
P Value	Probability Value
PRIDE	Promotion of Rural Initiative and Development
SACCOS	Savings and Credit Cooperative Society
SD	Standard Deviation
SLF	Sustainable Livelihood Framework
SPSS	Statistical Package for Social Science
TFNC	Tanzania Food and Nutrition Centre
TZS	Tanzanian Shillings

UNICEF	United Nations Children Fund
URT	United Republic of Tanzania
VICOBA	Village Community Banks
WFP	World Food Program

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background Information

Urban poverty is a multidimensional phenomenon and urban poor are living with many deprivations. Whose daily challenges may include limited access to employment opportunities and income, inadequate and insecure housing, violent and unhealthy environments, little or no social protection mechanisms, and limited access to health and education services (Baker, 2016). The economy has not been able to provide sufficient employment and income for the vast majority of the urban poor (Chauhuri, 2015). Such vulnerable groups have developed survival strategies which include migration, street vending, social networking, sending or receiving remittances, saving and borrowing, undertaking casual labours and home food production through urban agriculture (Kikech, 2004).

Street vending business is claimed to be important for surviving or escaping poverty in cities of developing countries (Lyons, 2013). However street vendors are faced with constant harassment by local government authorities, other users of urban space, and are challenged by limited access to working capital, unfavourable policies on urban development and low business skills (Uwitije, 2016). In that respect, they lack basic freedom, self confidence and dignity (Mramba, 2015).

According to Food and Agriculture Organisation (FAO) (1996), the concept of household food security (HFS) refers to the ability of a household to assure all its members sustained access to sufficient quantity and quality of food to live active and healthy lives. This relies on food availability which is measured in terms of the amount of grains produced, bought,

or received freely. According to Kayunze and Mwageni (2013), access to food is measured in terms of possession of resources like land for producing food, agricultural inputs, enough rainfall, labour supply, good infrastructure, political stability and cash to buy food. It can also be measured by having valued assets such as livestock and farms which can easily be sold to get cash to buy food (Myeya and Kamangu, 2016). Therefore, households with access to the mentioned resources and assets are more likely to be food secure than their counterparts with poorer access. Generally, households faced with food shortages, be it chronic or temporary, tend to adapt to a number of coping strategies among which include reduction of food intake, dietary change, sending of family members to relatives, use of famine foods, seeking loans of grain from the king and selling of labour, animals and other assets (Tumaini and Msuya, 2017; Endalew, 2015).

The way a household copes with and withstands economic shocks depends on the options (livelihoods) available in terms of capabilities, assets (including both material and social resources) and activities, i.e. on the household livelihood strategy (FAO, 2016; Ellis, 2007; Dercon and Krishnan, 1996). Households belonging to different socio-economic groups have different strategies to earn their living, which in turn may provide different capabilities of resilience to food insecurity (Alinovi *et al.*, 2010). Understanding the driving factors of each livelihood strategy is therefore crucial for determining appropriate measures to fight food insecurity and poverty among various vulnerable groups such as the vegetable street vendors.

1.2 Problem Statement and Justification

A growing body of research shows acute levels of food insecurity in urban informal settlements and simultaneous reliance on the informal economy to satisfy daily/weekly food needs of the urban poor (Naicker *et al.*, 2015; Frayne, 2010). Despite this, the food

security contribution of the informal economy in such areas, particularly of street vendors is poorly conceived and supported, warranting direct research attention (Zahav, 2016).

Unemployment, low productivity in agriculture and need to migrate to the urban to search for employment has forced millions of the youth in developing countries to engage in informal trade (Mramba, 2015). In most developing countries, jobs are found in the cities; therefore the urban dwellers are expected to have a better chance to get hold of jobs than those in the rural areas who mostly perform agricultural activities (Setebe, 2011). Example of informal businesses includes domestic workers, casual or day labourers, sex workers and street vendors (including vegetable vendors). Mramba (2015) estimated that in 2000s, the informal sector constituted 18% of economy in Organisation for Economic Cooperative and Development (OECD) countries, 38% of the economy in transition countries and 41% in developing countries. It is now estimated that 48% of the Tanzanian economy is in the informal sector (Maliyamkono *et al.*, 2012). Mugoya (2013) estimated that in the year 2011 there were about 1.2 million persons working in informal retailing businesses in Tanzania. A popular form of informal retail trade in Tanzania is street vending business (Mramba, 2015), which is the focus of this study.

Statistics about street vendors are scarce at sub-national, national and international level due to the nature of vending business e.g. mobile, part time and informality (Skinner, 2008). However, as a share of total informal employment, street traders generally account for 15-25% in African cities, 10-15% in Asian cities, and 5-10% in Latin American cities for the year 2001/03 (Esquivel, 2010).

Despite of large numbers of research about food security at household level both in rural and urban areas, there is inadequate research published on food security of vegetable street

vendors, as one of vulnerable population groups found in urban areas. This study will provide a broad framework for understanding the operation of vegetable street vendors in towns in Tanzania and the resulting important livelihood outcome i.e. food security.

By understanding the factors that make households vulnerable to food insecurity, such as shocks, trends and seasonality, government and other stakeholders can develop more effective strategies for delivering households out of poverty and hunger. Moreover, government and development partners will be informed on how this vulnerable population group can be intervened in the form of policies, programmes or projects. Also findings from this study will be used by policy makers to initiate ways of empowering this group to improve their income generating activities.

1.3 Objectives

1.3.1 Overall objective

The aim of this study was to examine the food security situation of vegetable street vendors, as one special group of urban vulnerable poor population, and describe the environment in which this important livelihood strategy is occurring.

1.3.2 Specific objectives

The above overall objective was achieved by undertaking the following specific objectives:

- (i) To document the nature of the institutional environment in which vegetable street vending business is taking place,
- (ii) To identify the type of livelihood assets owned by individuals working as vegetable street vendors,
- (iii) To measure household food security of vegetable street vendors,

- (iv) To identify strategies employed by vegetable street vendors to cope with food shortage.

1.4 Research Questions

This research was guided by the following research questions:

- (i) How conducive is the institutional environment in which vegetable street vending business is operating?
- (ii) What is the extent of poverty in terms of assets owned by the vegetable street vendors?
- (iii) What is the food security and dietary diversity situation of vegetable street vendors?
- (iv) How do the vegetable street vendors cope with food shortage? Do they have short and long term strategies?

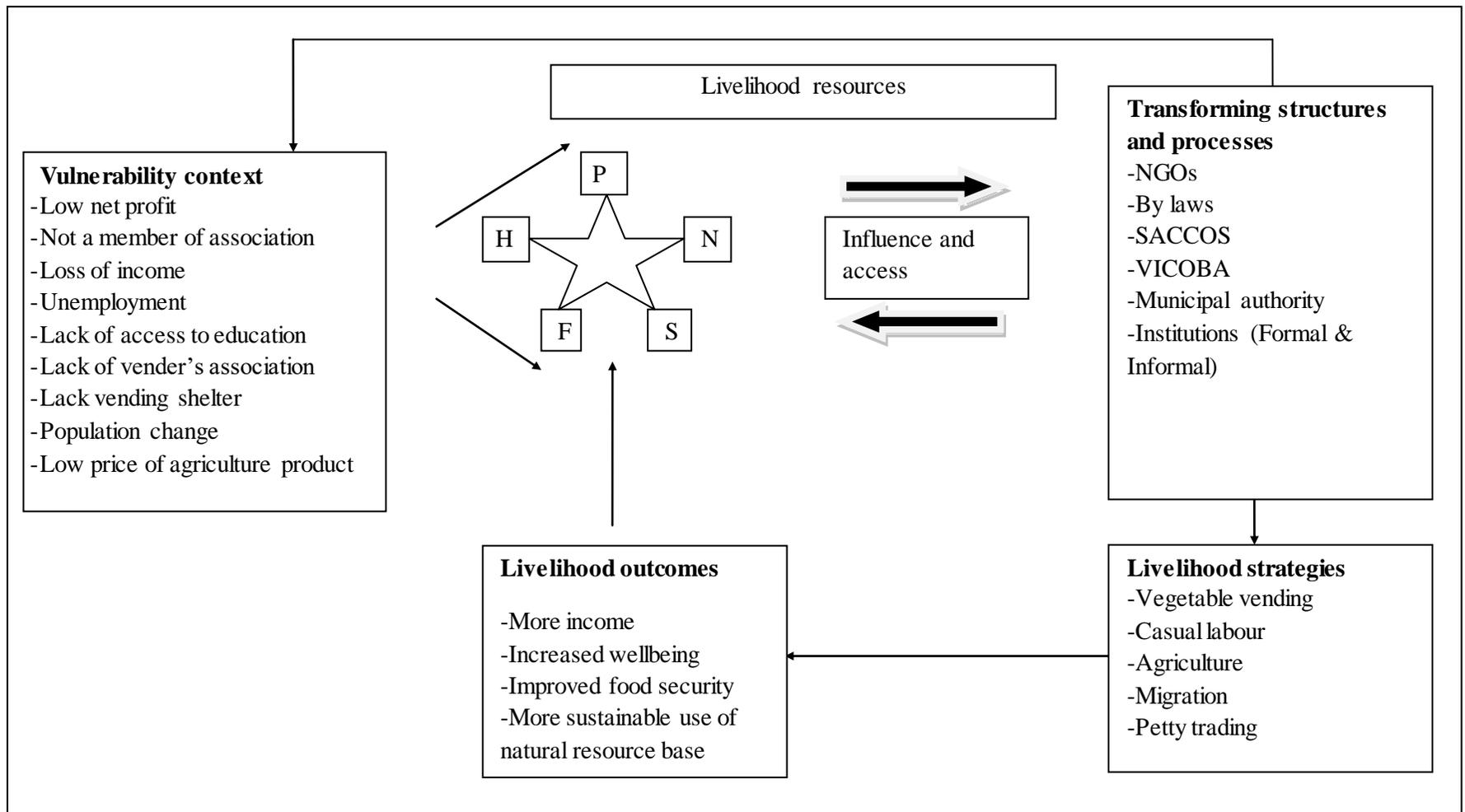
1.5 Conceptual Framework

This study used the conceptual model of Sustainable Livelihood Framework (SLF) as modified from DFID (2000) Figure 1. The model was used because it incorporates important aspects of food security, livelihood assets, vulnerability context, coping strategies and livelihood outcome of which are the subjects of the study.

The starting point is the vulnerability context within which people operates including migration, population change, low net profit, price fluctuation, climate change (floods and drought), unemployment, lack of membership in associations, lack of education, inability to own house and lack of vending shelter (Nakibuuka, 2015). An attention is given to the next assets that people can draw upon for their livelihoods in form of various capitals (social, human, financial, physical and natural). The chosen assets interact with policies, institutions and processes (external agents) to shape the choice of livelihood strategies.

The relevant transforming structures include community groups, SACCOS, VICOBA, institutions (formal and informal), and bylaws from the Municipal authority (Figure 1). These mediate or influence the strategies of individuals and households in accessing and converting assets into livelihood outcomes (positive or negative), which is the type of impact we are interested in (improved food security, more income, increased wellbeing and sustainable use of natural resources).

The transforming structures and processes have a role on elements of vulnerability context such as policies, and bylaws as enforced by the Municipal authority, SACCOS and VICOBA which can enhance vending activities and in turn reduce vulnerability. On the other hand, cultural values may influence fertility rate and therefore dependence ratio, which can affect the vulnerability. This relationship is indicated in Figure 1 by back arrow connecting the transforming structures and processes box and the vulnerability context. Likewise, attainment of livelihood outcome may have impact on the asset base of the people or community. The feedback arrow joining livelihood outcome and livelihood assets suggests this relationship. In the above case, it is obvious that food insecurity in the household or community will trigger coping strategies or survival strategies which can erode the assets base. Food secure households will have most of their incomes spared for accumulation, which increases assets.

**Key;**

H= Human F= Financial S= Social N=Natural P= Physical

Figure 1: Sustainable livelihood model for vegetable vendors

Source: Modified from DFID (1999)

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Definitions of Key Terms

2.1.1 Food security

Food security is a term widely used on different scales as well as in different associations (Zelege, 2017). The World Food Summit of 1996, defined food security as the situation which exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life (FAO, 1996). Accordingly, the concept of food security is built on four pillars, namely: (i) Food availability, which implies physical presence of sufficient quantities of food at a household level, whether from production or markets, food aid or stock; (ii) Food access: sufficient resources to obtain appropriate food for a nutritious diet, (iii) Food utilization: having sufficient knowledge of nutrition and care practices, and access to adequate safe water and sanitation; and (vi) Food stability: need to assess food in both short and long term (Ngongi, 2015; Dagno, 2011).

2.1.2 Food insecurity

Food insecurity is the opposite of food security. Therefore, it may be defined as a situation where people, or individuals, at times, lack physical and economic access to sufficient, safe and nutritious food needed to maintain a healthy and active life (Zelege, 2017). According to Ilaboya *et al.* (2011), household food insecurity results when food is not available, cannot be accessed with certainty in socially acceptable ways, or is not physiologically utilized fully. Generally, food insecurity results from insufficient food production, lack of storage facilities, inadequate food processing, unfavourable climatic

conditions, natural disasters and uncontrolled population growth (Ilaboya *et al.*, 2011; FAO, 2006).

2.1.3 Types of food insecurity

Food insecurity may be chronic or transitory (Faustine, 2016). In chronic food insecurity, there is continuous inadequate nutrition caused by the household's inability to acquire sufficient food. Chronic food insecurity, therefore, afflicts households that persistently lack the ability to either buy food or produce their own food. Chronic food insecurity is rooted in poverty. A situation of chronic food insecurity is a reflection of a household to make a livelihood for some reason (Faustine, 2016). Transitory food insecurity, on the other hand, is a temporal decline in household's food access. It can be caused by many different factors. The most common causes of this situation may include drought conditions, disease outbreaks, market failures, agricultural seasonality and civilian conflicts (Bikombo, 2014). The key issue in these two types of food insecurity is that they differ in their nature and extent and hence the measures, strategies and interventions used to overcome the problems associated with them will also differ (Faustine, 2016; Devereux, 2006).

2.1.4 Street vending

Street vending can be defined as the selling of goods and services in the street without using a permanent built-up structure (Anetor, 2015). It can also serve as a supplementary activity for individuals in the formal sector employed as a coping strategy to address adverse effects of inflation or for raising extra income (Msoka, 2007). Street vending has grown tremendously in urban areas in most of developing countries and it is one of the leading employers in the informal sector (Bromley, 2000). This is because street vending appeals as a quick measure to address immediate financial needs of those who do not have access to formal employment and/or are waiting for opportunities to earn income (Njaya,

2014). Street vendors own various assets (both physical and non-physical); such assets may include a house, television, livestock, land, motor vehicle and skills. Such assets are broadly categorized as human capital, physical capital, natural capital, financial capital and social capital (Njaya, 2015).

2.1.5 Livelihood assets

In the process of pursuing their livelihood, people can have numerous assets from which they can rely upon to make a living. These include: social capital, human capital, natural capital, financial capital and physical capital (DFID, 1999). These assets can influence the status of the people in different ways. These assets are put together to form an “asset pentagon” which is used to assess people overall asset base.

2.1.5.1 Human capital

Human capital in the context of the Sustainable Livelihood Framework (SLF) represents the skills, knowledge, ability to labour and good health that together enable a person to pursue a certain livelihood strategy and achieve his/her livelihood objectives (DFID, 2000). Human capital is broadly substantiated as a key to successful livelihood diversification (Kedir, 2015). At household level human capital is a factor of the amount and quality of labour available; this varies according to household size, skill levels, leadership potential and health status (Benette, 2010; DFID, 1990). Gowele (2011) and Alhassan (2010) argued that human capital is required in order to make use of the other four types of capital (social, physical, financial and natural capital). Hence, good human capital is seen as a helpful factor for the other assets.

2.1.5.2 Natural capital

Natural capital is the term used for the natural resource stocks from which useful resources and services (e.g. nutrient cycling, erosion protection) for livelihoods are derived. There is

a wide variation in the resources that make up natural capital, from intangible public goods such as the atmosphere and biodiversity to tangible assets used directly for production such as trees and land (DFID, 2000).

Clearly, natural capital is very important for those who derive all or part of their livelihoods from natural resource-based activities (farming, fishing, gathering in forests, mineral extraction, etc.). However, its importance goes way beyond this. None of us would survive without the help of key environmental services and food produced from natural capital. Access to land is often considered a determinant of people's involvement in agricultural activities (Altman *et al.*, 2009). There cannot be enough smallholder production and household food security if households do not have access to land of enough quantity and quality to make a difference in either the quantity produced or the amount of income generated from the output (Matshe, 2009). Households owning plots of land can either use them for production or to gain income through land rentals. For this reason, land entitlement is an important factor (WFP, 2010).

2.1.5.3 Physical capital

Physical capital comprises the basic infrastructure and producer goods needed to support livelihoods such as affordable transport, secure shelter and building, adequate water supply and sanitation, clean, affordable energy and access to information (Kamaghe, 2014). Without adequate access to services such as water and energy, human health deteriorates and long periods are spent in non-productive activities such as the collection of water and fuel wood. The opportunity costs associated with poor infrastructure can prevent education, access to health services and income generation (DFID, 1999).

2.1.5.4 Financial capital

Financial capital denotes the financial resources that people use to achieve their livelihood objectives. However, it has been adopted to try to capture an important livelihood building

block, namely the availability of cash or equivalent that enables people to adopt different livelihood strategies. According to Ellis (2000) and DFID (1999) there are two bases of financial capital, namely; (i) available stocks, including cash, bank deposit or liquid assets such as jewelry and livestock, (ii) regular inflows of money encompassing wage from labour, pensions or other transfers from the government and remittances that are dependent on others. Financial capital is probably the most versatile of the five categories of assets (DFID, 2000).

2.1.5.5 Social capital

In the context of the SLF, social capital is taken to mean the social resources upon which people draw in pursuit of their livelihood objectives. These are developed through networks and connectedness, membership of more formalized groups which often entails adherence to mutually-agreed or commonly accepted rules, norms and sanctions, and relationships of trust, reciprocity and exchanges that facilitate co-operation, reduce transaction costs and may provide the basis for informal safety nets amongst the poor (DFID, 2000). Social capital is very important as mutual trust and reciprocity lower the costs of working together. This means that social capital is a vital community asset which can contribute to the management of other forms of capital (Kassa and Eshetu, 2014).

2.2 Institutional Environment of Livelihoods

Institutions are structures and mechanisms of social order and cooperation governing the behaviour of a set of individuals within a given human society collectively (DFID, 2000). They are identified with a social purpose and permanence, transcending individual human lives and intentions and with the making and enforcing rules governing diverse human behaviour. They are essential for sustainable and equitable development. When they function well they enable people to work with each other to plan a future for themselves,

their families and their larger communities, but when they are weak or unfair, the result is mistrust and uncertainty (World Bank, 2000). This implies that for the achievements of good livelihood outcome, institutions should function well in such a way that particular goals, including the food security, are realized. However, it is quite evident that human behaviours are complex entities and hence need very strong and well spelt institutional rules and norms to counteract any negative efforts which may deter the pattern of development (Kingu, 2015).

Livelihood strategies and outcomes are not just dependent on access to capital assets, or constrained by the vulnerability context, but they are also mediated by the external environment/structures. Structures are the public and private sector Organisations that set and implement policy and legislation, deliver services, facilitate purchase and trade, and perform all manner of other functions that affect livelihoods (Nyangile, 2013). An enabling institutional environment and policy makes it easier for people to gain access to the assets they need for their livelihoods. Efficient institutional and legal framework is important for ensuring the smooth operations of the business (World Bank, 2009). Inappropriate regulations raise the cost of business entry, growth and distort markets. The institutional framework for informal activities including street trade has generally been hostile in most African countries (Mitullah, 2003). The policies, by-laws, regulations, registration, licensing, organizing, relations with government and other partners are major issues of concern through which the business can operate.

2.3 Measuring Food Security

Food security is a multidimensional phenomenon. There are no unique, good standard means of measuring food security. Each analytical method and tool has different strengths and weaknesses and a varying ability to comprehensively embrace the multiple

dimensions of food insecurity and livelihoods (Faustine, 2016). According to Qureshi (2000), there are various reasons for measuring food security, including (i) for the sake of standardization and accuracy; (ii) to find out prevalence of food insecurity; (iii) to facilitate more cost-effective targeting of aid and development resources; (iv) to prevent the food security situation of the insecure and vulnerable from deteriorating after a crisis and; (v) to design food security and nutrition enhancement or protection programmes suited to the requirements and needs of the target population.

A wide variety of methodological approaches have been applied to food insecurity studies, depending on the purpose of analysis, availability of data, and the preference of analysts (Regassa and Stoecker, 2011). According to Frankenberger (1992), household food insecurity can be assessed using direct and indirect measurements, including Nutrition status, Household Food Insecurity Access Scale (HFIAS) and Household Dietary Diversity Score (DDS). Each of these measurements is reviewed below.

2.3.1 Households Food Insecurity Access Scale

The Household Food Insecurity Access Scale (HFIAS) is based on the idea that the experience of food insecurity (access) causes predictable reactions and responses that can be captured and quantified through survey and summarized in a scale (Tawodzera, 2010). The HFIAS has been developed to address the need of having simpler tools as proxy measures of food access. The scale lists 9 standard questions asking respondents to describe behaviours and attitudes that relate to these various aspects, also called “domains”, of food insecurity experience (Coates *et al.*, 2007). The HFIAS score is a continuous measure of the degree of food insecurity (in terms of access) in the household for the past four weeks (30 days). The maximum score for a household is 27 (for a household that has scored maximum points to all nine questions). The minimum score is

zero (household that scored minimum in all the nine questions. The higher the score, the more food insecurity (access) the household experienced; and vice versa (Frayne, 2010). The HFIAS categorizes households into four levels of household food insecurity (access): food secure, mild food insecure, moderately food insecure and severely food insecure. Households are categorized as increasingly food insecure as they respond affirmatively to more severe conditions and/or experience those conditions more frequently (Coates *et al.*, 2007).

According to FANTA (2005), a food secure household experiences none of the food insecurity (access) conditions, or just experiences an anxious, but rarely with a score of less or equal to ten. A mild food insecure (access) household worries about not having enough food sometimes or often, and/or is unable to eat preferred foods, and/or eats a more monotonous diet than desired and/or some foods considered undesirable, but only rarely. However, such a household does not cut back on quantity nor experience any of the three most severe conditions (running out of food, going to bed hungry, or going a whole day and night without eating) with a score of between 11 and 16.

A moderately food insecure household sacrifices quality more frequently by eating a monotonous diet or cutting size of meals or number of meals, rarely or sometimes. Nonetheless, it does not experience any of the three most severe conditions; the score is between 17 and 22. A severely food insecure household has graduated to cutting back on meal size or number of meals often, and/or experiences any of the three most severe conditions (running out of food, going to bed hungry, or going a whole day and night without eating), even as infrequently as rarely. In other words, any household that experiences one of these three conditions, even once in the last seven days is considered severely food insecure; its score is between 23 and 27 (FANTA, 2005).

2.3.2 Household Dietary Diversity Score

Household dietary diversity score (HDDS), defined as the number of different foods or food groups consumed by household members over a given period, has been validated to be a useful approach for measuring household food access (Coates, et al., 2006). Data for the HDDS indicator are collected by asking the respondent a series of “yes” or “no” questions. These questions should be asked to the person who is responsible for food preparation, or if that person is unavailable, of another adult who was present and ate in the household the previous day. The questions refer to the household as a whole, though some times may be changed to an individual case. The respondent should be instructed to include the food groups consumed by household members in the home, or prepared in the home for consumption by household members outside the home (e.g. at lunchtime in the fields.) As a general rule, foods consumed outside the home that were not prepared in the home should not be included.

The HDDS is meant to reflect, in a snapshot form, the economic ability of a household to access a variety of foods. Studies have shown that an increase in dietary diversity is associated with socio-economic status and household food security (Muzah, 2015; FAO, 2013 and Kennedy *et al.*, 2011).

Dietary diversity is usually measured by summing the number of different foods or more often by counting the number of food groups consumed over a reference period (Table 1). At household level, Vakili *et al.* (2013) suggested that dietary diversity can be used as a proxy measure of food access while at individual level as a reflection of dietary quality. The reference period, usually ranges from one to three days, but seven days are also often used (FAO, 2011), and periods of up to 15 days have been reported. Taruvinga (2013) and

Muzah (2015) categorized dietary diversity scores as low dietary diversity score (0-4), medium dietary diversity score (5-9) and high dietary diversity score (10-12).

According to Muzah (2015) a healthy growth and development essentially need a balanced diet of nutrients and vitamins, which include a variety of foods from different food groups (vegetables, fruits, grains and animal source foods). Findings of the Nutrition Survey of 2018 in Tanzania for Children aged 6-59 months showed that, while the frequency of meals seemed adequate (57.4%), dietary diversity remained a challenge as only 30.3 % of children aged six to 59 months received minimum acceptable diet (MOHCDGEC, 2018). Also, a study by Muzah (2015) noted that in order to cope with food insecurity, the majority of poor Zimbabweans reduced the number of meals from three meals a day down to one, which led to limited dietary diversity.

Table 1: Categorization of food groups

No	Food group	Score
1	Any bread, rice, noodles, biscuits, or any other foods made from millet, sorghum, maize, rice, wheat or any other locally available grain	1
2	Any potatoes, yams, manioc, cassava or any other foods made from roots or tubers	1
3	Any vegetables	1
4	Any fruits	1
5	Any beef, pork, lamb, goat, rabbit, wild game, chicken, duck, other birds, liver kidney, heart or other organ meats	1
6	Any eggs	1
7	Any fresh, dried fish or shellfish	1
8	Any foods made from beans, peas, lentils or nuts	1
9	Any cheese, yoghurt, milk or other milk products	1
10	Any foods made with oil, fat or butter	1
11	Any sugar or honey	1
12	Any other foods such as condiments, coffee or tea	1
	Total points	12

Source: Coates, Swindale and Bilinsky (2006).

Low dietary diversity indicates a lack of access to sufficient and/or quality food to meet the requirements of a healthy and active lifestyle. As low dietary diversity has indicated poorer nutrition adequacy, which can result from a poor quality diet, it can be hypothesized that decreased dietary diversity is a result of food insecurity, or vice versa (Muzah, 2015).

Drawing data from 10 countries, Hoddinott and Yohannes (2002) explored the relationship between dietary diversity and household food security as a measure of household food access. The ten countries included India, the Philippines, Mozambique, Mexico, Bangladesh, Egypt, Mali, Malawi, Ghana and Kenya. The study showed that the association between dietary diversity and household per capita caloric availability increases with the mean level of household per capita caloric availability. In other words, increased food access, which is a component of improved food security, is significantly associated with a higher diversity of the diet. Hoddinott and Yohannes (2002) suggested using the measure of dietary diversity as an indicator for food security, associating it with a number of improved health outcomes including birth weight, child anthropometric status and reduced risk of mortality. The study concluded that when resources and time are limited, dietary diversity measurements are a promising means of measuring food security.

2.4 Household Socio-Economic Characteristics and Food Security

Socio-economic status can be defined as the economic and social status of components that distinguish and characterize people (Dauda, 2010). But Faustine (2006) argued that household characteristics are crucial and that food insecurity must be treated as a multi-objective phenomenon that is best explained by the food insecure people themselves. Previous studies have identified social and demographic characteristics such as sex, age, marital status, education, household head literacy status, livestock ownership, household

size and land size to be associated with household food insecurity and have distinguished between household food insecurity, categories in a society (Ngongi, 2013; Zeleke, 2017; Mjonono, 2008).

2.4.1 Age of household head

The age of the head of household might affect the food security status of the household through asset accumulation, technology adoption or risk aversion (Faustine, 2016). Yet it can also be positively correlated with food insecurity in that as the age of household head increases, his/her efficiency in carrying out labour demanding farm operations and other livelihood strategies diminishes, resulting in low farm production and productivity (Kingu, 2013; Ngongi, 2013).

2.4.2 Sex of household head

Sex of the household head plays an important role in providing the household with basic needs, including food, shelter and clothing (Kuwornu *et al.*, 2012). Female-headed households are expected to have a higher food insecurity status than their male-headed counterparts since most female-headed households in the Tanzanian society are formed as a result of the death of a husband or divorce, a situation which leaves the female with insufficient resources such as land, livestock and other productive assets (Dagno, 2011; Liwenga, 2003). In addition, the female head, who is the main income earner, faces various disadvantages in the labour market and productive activities. She is also responsible for maintaining the household, including household child care in addition to working outside the household, and can also be facing a higher dependency ratio for being a single income earner (Fuwa, 2000). On the contrary, studies by Ngongi (2013) and Dagno (2011) revealed that women headed households were more food secured as compared to male headed households because women take actively in farming activities and in processing farm products and selling their labour.

2.4.3 Literacy status of household head

Literacy status has serious consequences on the level of livelihood strategies and hence food insecurity at a household level. Idrisa *et al.* (2006) and Bzugu *et al.* (2005) had earlier recognized that low level of formal education among farmers make the introduction of improved agricultural technologies by extension agents difficult. Also Bogale and Shimelis (2009) argued that education equips individuals with the necessary knowledge of how to make a living. Literate individuals are keen to get information and use it. Hence, it is supposed that households who have had at least primary education or informal education are the ones to be more likely to benefit from agricultural technologies and thus become food secure.

2.4.4 Size of land owned

Land is one of the most important factor and means of agricultural production. Access of land enables production of both food and cash crops for individuals as well as households (Matunga, 2008). The size of land owned and cultivated by household is also important indicator of household food security status. More land holding means more cultivation and more possibility of production and improve food security (Tesfaye, 2003). According to Bogale and Shimelis (2009) the size of land owned by household had a positive impact on food availability in Ethiopia. Also Faustine (2016) in her study in Chamwino and Monyoni Tanzania had similar findings.

2.4.5 Receiving remittances

Receiving remittance refers to economic support in the form of money or food to the household mainly from urban to rural dwellers (Faustine, 2016). Evidence from few studies (FAO, 2013; Bane and Sahau, 2010) suggests that remittances sent back to family members help to improve the livelihoods in many low income countries. Although,

remittances contribute a small part of total household's income it is expected to have positive contributions to food security (Abdisaa, 2017). Most researchers agree that remittances have potential to alleviate poverty, increase food security and eventually promote development, especially for the poor who are isolated, under-educated and lack the means to gain greater access to local resources (Yang, 2011; Frost *et al.*, 2007; Adams *et al.*, 2005; Thieme *et al.*, 2005).

2.4.6 Type of means of transportation used for vending activities

In ensuring easy delivery of goods for their customers, street vendors use different types of transport including walking, bicycles, motorcycles and shuttles (Mittulah, 2013). It is expected that street vendors using better means of transportation in doing their vending activities will earn more income as it will be easier to transport their products to consumers than those who walk around on foot. Such income will improve the wellbeing of the family, including household food security.

2.4.7 Experience in business

Experience in terms of years doing business significantly affects the sales revenue of street vendors. Muzaffar (2009) in his studies in Dhaka city suggests that experience enables vendors to gather insight and knowledge that holds more purpose for them in doing vending business. Thus, more income would be gained by vendors with more experience than those with less experience.

2.4.8 Size of working capital

Experience has shown that most of street vendors usually start their business with very low capitals and sources of capital depend on own savings (Muhanga, 2017). Also, vendors come from different family backgrounds, most of them being poor, have no

enough assets, including land or houses to meet the requirement for credit from financial institutions and hence they start their businesses with low working capital (Msoka, 2015 and Milanzi, 2011). A study by Muzaffar (2009) concluded that amount of working capital plays a significant role in raising the sales revenue of street vendors, i.e higher working capital is expected to have high profit and vice versa. Oludimu (1991) noted that adequate financing is necessary to properly organize production, purchasing materials and capital for investing in any livelihood activity. Therefore, it is expected that street vendors with higher working capitals will earn higher business returns, which can improve household wellbeing including food security.

2.5 Livelihood Strategies

Livelihood strategies are the blend of activities that people choose to undertake in order to achieve their livelihood goals like food security (Abdiassa, 2017). They include productive activities, investment strategies and reproductive choices (Faustine, 2016; Regassa, 2016; Gowele, 2011; FAO, 2007). How people access and use these assets, within the social, economic, political and environmental contexts, form a livelihood strategy (Nyangile, 2013; DFID, 1990). According to Tetteh (2011) household livelihood strategies are broadly categorized under primary, secondary/informal and service sectors. Those within the primary sector are farmers whereas the secondary sector comprise of tradesmen (carpenters, masons, auto mechanics and welders) and petty-traders (vendors and stall traders). In addition, the service sector component was made up of salaried workers (teachers and office clerks). The choice of strategies is a dynamic process in which people combine activities to meet their changing needs. The range and diversity of livelihood strategies are enormous (Abdiassa, 2017). An individual may take on several activities to meet his/her needs. One or many individuals may engage in activities that contribute to a collective livelihood strategy. For example, urban poor do undertake a variety of activities

in order to diversify income and meet household needs including food security. Such activities may include street vending and selling labour (Kedor, 2015).

2.6 Food Security and Coping Strategies

Coping strategies are activities, which maintain food security or combat food insecurity that has occurred at the household level (Mjonono, 2013; Adekoya, 2009). According to Tumaini and Msuya (2017), households tend to adopt a range of coping strategies in the face of food shortage such as eating less preferred foods, limiting portion size, reducing the number of meals, having a strict budget on food items, working for food or cash, making and selling charcoal, firewood, local beer and livestock. These coping strategies are broadly grouped into four categories, namely, consumption, expenditure, income, and migration (Ngongi, 2013).

Accordingly, consumption strategies include buying food on credit, relying on less-preferred food substitutes, reducing the number of meals eaten per day, regularly skipping food for an entire day, eating meals comprised solely of vegetables, eating unusual wild foods, restricting consumption of adults so that children can eat and giving priorities to productive members at the expense of non-productive members.

Expenditure strategies include the use of savings and avoiding investments in health care or education costs in order to buy food. Income strategies include, the use of pension, small businesses and selling household and livelihood assets such as livestock. The strategy aimed at increasing income to purchase food and livelihood resources (Abdulla, 2008). Migration strategies include sending children to relatives or friends or migrating to find work (Maxwell *et al.*, 2008).

2.7 Relationship between Dietary Diversity and Food Security

Food insecurity indicates a lack of access to sufficient and/or quality food to meet the requirements of a healthy and active life. Low dietary diversity is an indication of poor dietary adequacy, which in turn results in poor nutrition (Parent, 2014). It can therefore be hypothesized that decreased dietary diversity is a result of food insecurity, or vice versa.

Hatloy *et al.* (2000) showed that diversity increased with social economic status i.e. dietary diversity was lowest in households with high poverty levels. Similarly, Mkemwa (2015) and Kenedy *et al.* (2011) indicated that dietary diversity is considered an outcome measure of food security, mainly at the level of an individual or household food access but can also provide information about availability in the community and reflect seasonal changes in dietary patterns as an aspect of sustainability of food supply. In South Africa, low dietary diversity is associated with stunted growth in children and a higher probability of metabolic syndrome and cardiovascular risk factors in adults (Drimie *et al.*, 2013).

CHAPTER THREE

3.0 METHODOLOGY

This chapter describes the methodology that was used in the study. It includes description of the study area and research design, covering the sampling techniques and procedures used for data collection and analysis.

3.1 Description of the Study Area

3.1.1 Location

This study was carried out within the Morogoro Municipality (Figure 2) because it was area under Africity project that supported my study. According to the 2012 Population Census, the Municipality had a population of 315 866 people among them 151 700 were males and 164, 166 were females, while the average household size was 4.1 (URT, 2012). Morogoro Municipality is located in the Eastern part of Tanzania about 190 kilometres west of Dar es Salaam. It is situated at the bottom of the Uluguru Mountains and covers 260 square kilometres (100 miles). The Municipal lies between longitude 37°34'52" east of the Greenwich Meridian and 37°45'25" and between latitude 6°38'56"S and 6°55'8" south of the equator (Mutiba, 2009). It is bordered to the East and South by Morogoro Rural District and to the North and West by Mvomero District. Administratively it is divided into 29 wards and 295 sub-wards (Muhanga, 2017).

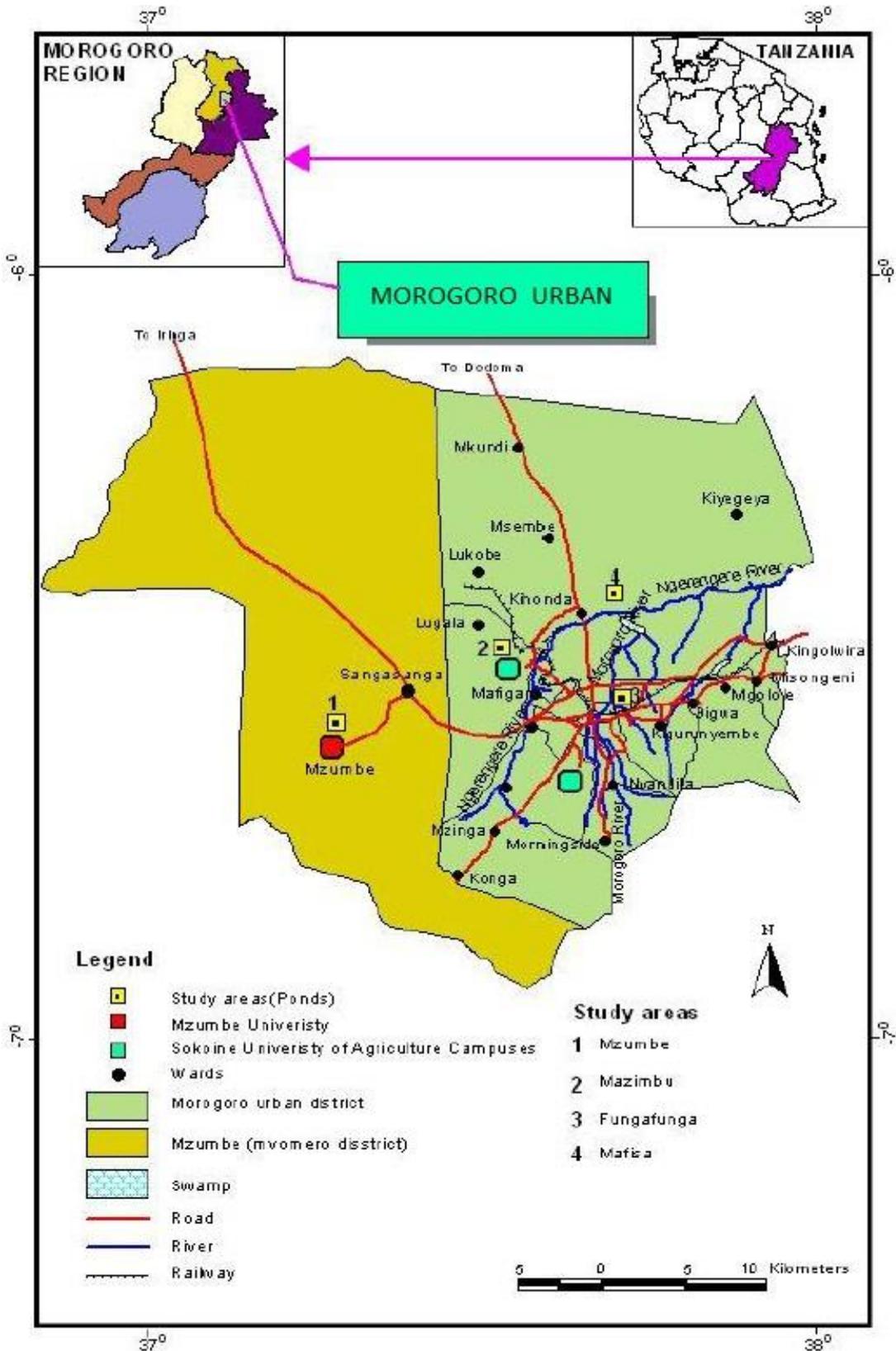


Figure 2: Map showing Location of Morogoro Municipality

Source: Luzangi (2017)

3.1.2 Climate

Morogoro Municipality experiences a sub-humid tropical climate with a bimodal rainfall pattern characterized by two rainfall seasons in a year, with a dry season separating the short rains (October to December) and long rains (which fall from March to May/June). There are about 6 months of dryness, the peak being in September. The mean annual rainfall varies between 600 mm and 1 800 mm and total annual evapotranspiration is about 1300mm (Mdegela, 2014).

The Municipality has a mixture of warm and cool temperature ranging between 27°C to 33.7°C in the dry/warm season and 14.2°C to 21.7°C in cold/wet season. The Uluguru Mountains, which rise to 3 000 metres above sea level, have a major temperature moderation effect (Shimbe, 2008).

3.1.3 Ethnicity

To a large extent, Morogoro urban is culturally coastal (URT, 2002). Despite this ethnicity, the municipality is mixed and urbanized, dominated by the Waluguru. Other groups include Wapogolo, Wandamba, Wabena, Chaga, Wakwere and others from all over the country

3.1.4 Socio- economic activities

The economy of the Morogoro Municipality rests on two pillars. The first is administrative services offered by the government offices and non-government offices, schools, hospitals and other institutions. The second is the industrial and trading sector. The industrial sector comprises large and small scale industries and the trading sector include, among others, agro-based commerce and freight distribution and related transportation services. There are other businesses in the town which provide goods and services. They include shop

owners, hoteliers, small fabrication workshops, professionals, vegetable sellers/vendors, *daladala* (minibus) operators, taxi drivers, private hospital owners, carpenters, masons, secretarial bureau owners, advocates, accountants, academicians, and building and civil contractors (Shimbe, 2008). Morogoro town serves as a hub for two major roads and railway networks to the country's hinterlands (southern highlands, central and western parts of the country) and other nearby countries to metropolis Dar es Salaam.

Agricultural activities are conducted in which most of poor households grow food crops, including maize, banana, cassava and vegetables. Animals kept include cattle, pigs, goats and chickens. The major vegetables that are grown in Morogoro Urban include amaranth, Chinese cabbage, sweet potato leaves, okra, pumpkin leaves, egg plants, cowpeas, nightshade, and cassava leaves.

3.2 Study Design

A cross sectional research design was used in this study. Data was collected from the field at a single point in time from a sample to represent a large population. This design according to Bailey (1998) and Babbie (1990) is useful for descriptive purposes as well as for determination of the relationship between and among variables at a particular point in time. It is also economical in terms of time and financial resources (Babbie and Mouton, 2005; Kothari, 2004).

3.2.1 Sample size

According to Bailey (1998), a sample or sub-sample of 30 respondents is a bare minimum for a study in which statistical data analysis can be done regardless of the population size. According to Matata *et al.* (2001), 120 respondents are an adequate number for most

socioeconomic studies in Sub-Saharan Africa. For this reason a sample of 200 respondents was appropriate for this study.

3.2.2 Study population

The study population included individuals both men and women aged above 18 years engaged in vegetable street vending activities in Morogoro Municipal. Others were local government officers such as Municipal Community Development Officer, Municipal Trade Officer, Municipal Agriculture Officer and Municipal Planning Officer, who were included in the study as key informants.

3.2.3 Sampling procedure

Mixed sampling techniques including simple random sampling, purposive sampling and snowball sampling were used in this study to get respondents who were categorized into two groups namely street vegetable vendors and key informants from the Municipality office.

3.2.3.1 Purposive sampling

Purposive sampling was employed to select the study area (Morogoro Municipal), Key informants (Municipal officials), and respondents for Focus group discussions (FGDs) and to target respondents in the streets. A total of 34 respondents were obtained using this method in which four were key informants and 30 were street vendors. Three groups of FGDs from Kichangani, Mazimbu and Chamwino Wards were conducted in which each group composed of 10 respondents. Respondents for FGDs were selected based on age, sex and their residence. According to Matthews and Ross (2010), purposive sampling is generally associated with small, in depth studies with research designs that are based on

the gathering of qualitative data and focus on the exploration and interpretation of experience and perception.

3.2.3.2 Snowball sampling

Snowballing was used in identifying the vegetable street vendors in which the first respondent who was selected purposively in the street was requested to identify the next respondent and then this was also requested to identify another until the required sample was reached (64 respondents). This technique was used because of the nature of business, i.e. it is not possible to meet with respondents at the certain selling point as they keep on moving in searching of their customers.

3.2.3.3 Simple random sampling

Simple random sampling was employed to select the respondents to represent others from a group of vegetable vendors met at a selling point where they buy the vegetables in whole sale. A sampling frame was prepared and then respondents were selected using the Table of Random Numbers. A total of 102 respondents were randomly selected using this method. The technique was used because at selling point there were a big number of vegetable street vendors and it was not possible to include all respondents in the study. Also other vendors were not involved in selling vegetables in streets; they just selling the vegetables to other street vendors therefore it was good to capture them while they at selling point.

3.3 Data Collection Procedures

3.3.1 Pre-testing of data collection tools

Pre- testing of data collection tools was done under field conditions in Kingolwila Ward, which was not involved in the actual study. Twelve vegetable street vendors were

purposively selected. Pre testing was done to check for any ambiguities in the wording of items (that is, check for clarity, meaningfulness and comprehensiveness). This also ensured that the amount of time required for completing the interview was not excessive and to allow for respondents to continue with their businesses.

During the pre-testing of this questionnaire schedule, the time taken to interview one person was thirty minutes. After pre-testing, it was found that no major changes in the content were necessary, except that there were certain items that were not clear and some were found to be missing. Some of these were modified and others were added. After modification and omission of some of the items, the time for interviewing one person was reduced to twenty minutes. The interview schedule was revised (Appendix 1) and later used for actual data collection. Checklists for the Key Informant interviews and discussion guides for FGDs were also modified accordingly.

3.3.2 Data collection

Three research assistants were recruited and trained for two days to understand what they were supposed to do in the field. Data were collected by face to face interviews using a semi-structured questionnaire, interview with key informants and focused group discussion with selected street vegetable vendors. Semi-structured questionnaire was prepared to capture social demographic information, household food security situation, assets owned and coping strategies employed by respondents during lean period. Key informant interviews with Municipal officials and focus group discussion with vegetable street vendors was used to generate data that complement the semi-structured questionnaire by providing the explanations and issues behind qualitative data. Details of the type of data that was collected are shown in Table 2. Data was collected between February and May 2018.

Table 2: Summary of the study objectives, data collected and analysis conducted

Study objective	Data collected and their source	Analysis conducted
To document the nature of the institutional environment in which vegetable street vendors are operating	-Types of support (formal or informal) -Gaps (what institution are not doing) -Adopting strategies to overcome the gaps Source: Groups of vegetable vendors and Municipal officials	Descriptive statistics (Frequency and percentages)
To determine the type and extent of livelihood assets owned by individuals working as vegetable street vendors	Households' social, economic and livelihood situation (Human, Natural, Social, Financial, Physical, capital) obtained from respondents Source: Individual vegetable vendors	Descriptive statistics and Chi-square statistics
To assess household food security and dietary diversity of vegetable street vendors	Household food insecurity indicators (HFIAS) and Dietary diversity score (DDS) responses obtained from the respondents Source: Individual vegetable vendors	-Descriptive Statistics (frequencies and percentage) -Chi-square statistics and correlation, Binary logistic regression model
To identify strategies employed by vegetable street vendors to cope with food shortage	Households' coping strategies Source: -Individual vegetable vendors -Group of vegetable vendors (FDG)	-Descriptive statistics -Chi-square statistics -Qualitative data analysis

3.4 Ethical Considerations

The permission to conduct the study was obtained from Sokoine University of Agriculture and the office of Morogoro Municipal Director. Respondents were made aware of their rights, confidentiality, extent of withdrawing from the study and verbal consent to participate in the study.

3.6 Analysis of Data

Quantitative data was analyzed after cleaning and coding using IBM Statistical Package for Social Science (SPSS version 20). The data set was used to generate descriptive statistics (means, standard deviation, frequencies and range), while inferential statistics such as chi square and binary logistic regression was used to test association and relationship between and among variables. Qualitative data from the Focus Group Discussions and Key Informants interviews was analyzed by considering the themes, contents and concepts acquired from the topics and questions discussed as supporting information about the study. Table 2 shows the summary on how data were analyzed.

Binary Logistic Regression Model

This study employed binary logistic model because the dependent variable (i.e food security) is a binary variable which took a value of 1 if the household was food secured and 0 if otherwise. Logistic regression is used to describe data and to explain the relationship between one dependent binary variable and one or more nominal, ordinal, interval or ratio-level independent variables.

The logistic model of the relationship between the household food security (HFS) variable and its explanatory variables is specified as follows:

$$\ln [P_i/(1-P_i)] = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \dots + \beta_{12} X_{12i} \dots \dots \dots (1)$$

Where subscript i denotes the i -th observation in the sample, P is the probability of the outcome, β_0 is the intercept term and $\beta_1, \beta_2, \dots, \beta_{12}$ are the coefficients associated with each explanatory variable, X_1, X_2, \dots, X_{12} . $P/1-P$ is odds ratio and $\ln (P/1-P)$ is the log odds ratio or logit. Definition of each variable in the model is given in Table 3.

Table 3: Definition of variables used in the logistic regression model

Variable	Definition
(i)Dependent variable	
Food security status (Y)	1 if the household is food secured, 0 if otherwise
(ii) Independent variables	
Sex	1 if the respondent is male, 0 otherwise
Age	Number of years
Marital status	1 if respondent is married, 0 otherwise
Education	1 if a respondent had a primary school education, 0 otherwise
Size of land (Acres)	Size of land in Acre (s)
House	1 if a respondent possesses a house, 0 otherwise
Credit	1 if a respondent has access to credit, 0 otherwise
Remittance	1 if a respondent receives remittance, 0 otherwise
Experience in business (Years)	Number of years in business
Health status	1 if frequently sick, 2 moderate and 3 rarely sick
Membership in Community Organisation	1 if a respondent is a member, 0 otherwise
Working capital (TZS)	Amount of working capital for the business in (TZS)

Based on the Sustainable Livelihood Framework (Figure 1), the present study relates the explanatory variables in the regression model to households' endowment with different forms of capital. Again, the selection of indicators for this study was driven by experience from livelihood and household food security literatures particularly from Duressa (2016), Faustine (2016), Bogale and Shimelis (2015) as well as data availability.

CHAPTER FOUR

4.0 RESULTS

This chapter presents the results whereby it is organized in five sections. The first section presents demographic and socio-economic characteristics of the respondents; while the second section shows the institutional environment in which vegetable street vending is operating. The third section portrays the livelihood assets owned by vegetable street vendors while the fourth section shows the situation of household food and dietary diversity of respondents. The last section looks at the coping strategies employed by respondents to cope with food shortage in households.

4.1 Demographic and Sociol-economic Characteristics of the Respondents

The demographic and socio-economic characteristics of the respondents included six aspects, namely age, sex, marital status, level of education, source of income and household size.

4.1.1 Sex and age

Results in Table 4 show that female respondents were more than half (55%) while men were only 45%. The age of respondents ranged from 18 and 61 years with mean and standard deviation of 30.50 and 6.62 years, respectively. The majority of respondents (89%) were in the 30-39 years age group while other age groups were fewer, (for example, 4.5% were in age group of 18-29 years while 40 years and above were only 6.5%). Generally, most of the respondents (93.5%) were found to fall between 18 and 40 years range. This is generally considered to be the active and reproductive age (Telteh, 2011).

Table 4: Distribution of respondents according to sex and age

Variable	Frequency	Percentage
Sex		
Male	91	45.5
Female	109	54.5
Total	200	100
Age in years		
Between 18 and 29	9	4.5
Between 30 and 39	178	89
40 and above	13	6.5
Total	200	100

4.1.2 Marital status and education levels

The results in Table 5 indicate that about two thirds (67.5%) of respondents were married and nineteen percent were single. Only a few were either widowed (9.5%) or divorced (4%). The results on levels of education show that 54% of respondents had attained only primary school education while 45% of respondents had attained secondary school education. Only 1% of respondents did attain post-secondary school education.

Table 5: Distribution of respondents based on marital status and education level

Variable	Frequency	Percentage
(i)Marital status		
Never married	38	19.0
Married	135	67.5
Divorced	8	4.0
Widowed	19	9.5
Total	200	100
(ii)Education level		
Primary school	108	54.0
Secondary school	90	45.0
Post-Secondary school education	2	1.0
Total	200	100

4.1.3 Source of income and number of family dependants

Almost all respondents reported that vegetable vending (81%) was their main source of income followed by farming (14%) and employment (5%) as shown in Table 6. A total of 84.5% (169 out of 200) respondents had family dependents. The number of family

dependants in the households of respondents ranged from 1 and 9. The mean and standard deviation were 3.34 and 2.07 respectively. Results in Table 8 indicate that 53.9% of households have between 4 and 6 dependants. Other categories were between 1 and 3 (41.4%) and between 7 and 9 (4.7%).

Table 6: Distribution of respondents according to source of income and number of family dependants

Variable	Frequency	Percentage
(i)Source of income		
Farming and vegetable vending	29	14
Vegetable vending only	161	81
Employment and vegetable vending	10	5
Total	200	100
(ii)Number of family dependants		
Between 1 and 3	70	41.4
Between 4 and 6	91	53.9
Between 7 and 9	8	4.7
Total	169	100

4.1.4 Domicile and reasons for migrations from other places to Morogoro town

The results in Table 7 show that immigrants dominate the street vegetable vending business (59.5%) whereas native respondents were only 40.5%. Reasons for migrating to Morogoro town include casual labour (43.7%), street vending activities (29.4%) and following the relatives (26.9%).

Table 7: Respondents domicile, and reported reasons for migration to Morogoro town

Variable	Frequency	Percentage
(i)Domicile		
Native	81	40.5
Immigrants	119	59.5
Total	200	100
(ii)Reason for migration		
Follow my relatives	32	26.9
For casual labour	52	43.7
Street vending	35	29.4
Total	119	100

Also, the results of locations where street vegetable vendors were living revealed that most of them came from Boma, Kihonda, Kichangani, Bigwa, Mafisa and Kilakala wards. The summary of the number of respondents selected and their locations (Wards) are shown in Table 8.

Table 8: Distributions of respondents and their locations

Name of Ward	Frequency	Percent
Boma	30	15.0
Mafiga	9	4.5
Mji Mpya	9	4.5
Kichangani	18	9.0
Mazimbu	9	4.5
Kihonda	23	11.5
Maghorofani	1	0.5
Kiwanja cha Ndege	2	1.0
Magadu	9	4.5
Bigwa	16	8.0
Tungi	1	0.5
Mafisa	16	8.0
Sultani Area	2	1.0
Mlimani	5	2.5
Saba saba	1	0.5
Kingo	3	1.5
Mwembesongo	5	2.5
Nane Nane	5	2.5
Chamwino	9	4.5
Lukobe	2	1.0
Kilakala	22	11.0
Mindu	2	1.0
Msamvu	1	0.5
Total	200	100

4.2 Institutional Environment in which Street Vegetable Vending Business is carried out

Supportive institutional and legal framework is important for ensuring smooth operations of the vegetable vending business. Inappropriate regulations raise the cost of business

entry, growth and distort markets. The institutional environment for informal business activities, including street trade has generally been unfriendly in most African countries (Mitullar, 2003). Five issues were considered to reflect the institutional environment in vegetable street vending activities. The five issues were namely, the duration in the business, working capital, sources of income, business skills and Organisation.

4.2.1 Duration in business, size of working capital and source of capital

Results in Table 9 indicates that the majority of respondents (73.5%) have been in this business for less than five years, while 21.5% have been in this business for between 5 and 10 years. Only 5% were in this business for more than 10 years. The lowest and highest reported working capital were 3800 TZS and 50 000 TZS respectively, with mean and standard deviation of 14 711 and 8 454.52TZS (Table 10). Working capital of between 3800 TZS and 29 000 TZS included the majority (90%) of respondents. Other categories were very few including 9% of 30 000 TZS to 49 000 TZS and only 1% were above 49 000 TZS.

The results also reveal that almost half of the respondents (46.5%) were financed by borrowing from relatives or friends; whereas 40 % obtained capital from own savings. Only, 9.5 % obtained capital through loan(s) from micro-finance institutions or private money lenders and 4% was grants from relatives or friends.

Table 9: Duration in business, size of working capital and source of capital

Variable	Frequency	Percentage
(i) Source of income		
Borrowed from micro-finance	19	9.5
Borrowed from relatives or friends	93	46.5
Own saving	80	40.0
Facilitated (grant)	8	4.0
Total	200	100
(ii) Size of working capital (TZS)		
Less than 10 000	90	45.0
Between 10 000 and 29 000	90	45.0
Between 30 000 and 49 000	18	9.0
Above 49 000	2	1.0
Total	200	100
(ii) Duration of operating business (Years)		
Less than 5	147	73.5
Between 5 and 10	43	21.5
Between 10 and 15	5	2.5
Above	5	2.5
Total	200	100

During FDGs, participants reported that informal rotating savings and credit schemes are common sources of working capital which they consider as borrowing from friends. For example, in Kichangani Ward, each member contributes 1 000 TZS every day to the rotating savings scheme which is given to one of the vendors on that particular day.

Table 10: Minimum and maximum of working capital and duration in business

	N	Minimum	Maximum	Mean	Std. Deviation
Working Capital for the business (TZS)	200	3 800	50 000	14711.00	8454.518
Number of years in Business	200	1	18	4.57	3.491

4.2.2 Other income generating activities and contribution

More than half (54.5%) of the surveyed respondents reported to have engaged in other income generating activities apart from vending activities as compared to 45.5% who solely rely on vegetable vending activities (Table 11). On other hand, 63% of those with

other activities reported that vegetable vending business contributes more as compared to 37% who reported to earn more from other income generating activities.

Table 11: Other income generating activities and contribution

Variable	Frequency	Percentage
(i) Other source of income (apart from vegetable vending)		
Have other source	109	54.5
Have no other sources	91	45.5
Total	200	100
(ii)Contribution to the total income		
Vegetable vending contribute more	69	63.3
Other income generating contributes more	40	36.7
Total	109	100

4.2.3 Business skills, organisation of business and restriction in doing the business

Results in Table 12 indicate that about three quarters (76.5%) of the respondents did not receive any training or business skills, while about quarters (23.5%) have received training. The training received included entrepreneurship development, good agricultural practices, group or association formation skills, and food processing and/or value addition. However, responses from focused group discussion indicated that no training was conducted specifically for vegetable street vendors as a group. One of the participants of FDG narrated; *“I have been in this business for six years now, but I haven’t received any training related to our business. Our business skills came through accompanying our friends or parents. Our sector is dominated by just learning from others through practicing”*.

Business ownership was another aspect considered important by this study. The findings show that more than eighty percent (83.5%) owned the business while 10% operates as family business and 6% were working for someone else (Table 12). One respondent (0.5%) reported a group business. Also Table 12 indicates that all respondents (100%) reported to have not faced any restriction in conducting their vending activities in the streets. However in the key informant interviews one of Municipal officials explained that

the Municipality has a bylaw which stipulates that all vegetable vending business should be conducted in markets. Accordingly, vegetable sellers should not move with their goods in the streets. However, it was noted that although bylaws stipulate that any one going against the regulations of conducting marketing business should be penalized by paying 50 000/= TZS, very often this is not implemented because of humanitarian and political considerations.

Table 12: Reported Organisation of business and perception on restrictions

Variable	Frequency	Percentage
(i) Organisation of business		
Family business	20	10.0
Working for someone else	12	6.0
Own business	167	83.5
Group business	1	0.5
Total	200	100
(ii) Perception on restriction in doing business		
No restriction	200	100
There are restrictions	0	0
Total	200	100

4.2.4 Informal and formal supports to vegetable street vendors

During FGDs and key informants showed that there are different supports provided to vegetable street vendors. Some key informants indicated that Municipal Council and some Non-Governmental Organisations (NGOs) do support some groups in the community, including vegetable vendors by providing loans/credit or training. Moreover, it was noted that most of groups fail to repay the loans, example in the financial year 2014/2015 only 30% of the loan was repaid. However, during FGDs participants complained that no support is provided by the Municipal Council. They indicated that they usually receive funds from financial institutions or local money lenders usually as loans or credits. For example PRIDE Tanzania was mentioned to provide 300 000/=TZS loans which the beneficiary has to pay 400 000/=TZS in six months.

4.2.5 Challenges facing vegetable street vendors

Some key informants pointed some challenges facing this sector to include lack of areas/market places for doing their business, which lead to movement all day without selling their goods. Others were community perceptions that the business is done by the very poor and low class people, high rainfalls and sunny, low working capital, and customers not paying on time when they take the commodities on credit.

During FGDs participants mentioned some challenges to include, irregular supplies of vegetables, lack of credit services or high interest rates for the loans from financial institutions and high competition from other whole sale buyers coming from Dar es Salaam or Dodoma. Other concern was that they are not respected in the society. For example, in some of customer houses when they knock the doors, people don't open or they speak bad words. The other challenge is that vegetable vendors are not organized as an association that can help them air their problems and to have a voice. They pointed some strategies in surviving in this business including formation of association and formulation of their own saving and credit groups (VICOBA) for obtaining credit/loans among themselves.

4.3 Livelihood Assets Owned by Vegetable Street Vendors

In the process of pursuing their livelihood, people can have numerous assets from which they can rely upon to make a living (Gowele, 2011). Based on the Sustainable Livelihood Framework (SLF) shown in Figure 1 the assets owned by respondents were assessed. According to SLF, assets can be categorized in five groups namely Human capital, Natural capital, Physical capital, Social capital and Financial capital.

4.3.1 Human capital

Human capital include the skills, knowledge, ability to labour and good health that together enable an individual to pursue different livelihood strategies and achieve their

livelihood objectives (DFID, 1990). Four aspects of human capital were considered which include age, education level, training and health status.

The results in Table 5 show that fifty four percent of the respondents had attained only primary school education while 45% of respondents had attained secondary school education. Only 1% of respondents did attain post-secondary school education.

Results from Table 13 show that more than three quarters (76.5%) of the respondents did not receive any training on business skills, while only about a quarter (23.5%) received a training. Further analysis indicates that more than 86% of respondents were rarely sick (once or twice in past 30 days).

Table 13: Training received and health status of respondents

Variable	Frequency	Percentage
(i) Training received		
Have received training	47	23.5
Have not received training	153	76.5
Total	200	100
(ii) Health status		
Rarely sick (once or twice in the past month)	172	86.0
Sometimes sick (three to ten times in the past month)	25	12.5
Frequently sick (More than 10 days in the past month)	3	1.5
Total	200	100

4.3.2 Natural capital

The natural capital considered by this study is access to land. Results in Table 14 show that 54% of respondents have no access to land while 46% reported to have access to land. Analysis of land size indicated that 63% were having between 1 and 2 acres, while 23% were having between 3 and 4 acres and a small proportion (14.13%) were having more than 4 acres. Moreover, further analysis on ownership of land indicates that more than two

thirds (66.3%) of respondents rented the land, 25% owned the land and 8.7% of respondents shared land with other family members.

Table 14: Possession of Natural capital (access to land)

Variable	Frequency	Percentage
(i)Access to land		
Have access to pieces of land	92	46.0
Have no access to piece of land	108	54.0
Total	200	100
(ii)Land size (Acres)		
Between 1 and 2	58	63.0
Between 3 and 4	21	23.0
More than 4	13	14.0
Total	92	100
(iii)Land ownership		
Own	23	25.0
Shared with family members	8	9.0
Rented from others	61	66.0
Total	92	100

4.3.3 Physical capital

Physical assets comprise assets that can be created by economic production processes. For this study, physical assets included ownership of house, bicycle, motorcycle and cell phone. Others were relative distance to the nearest vegetable selling point. The results in Table 15 indicate that 52% of respondents owned houses, while 45% rented and 3% of respondents shared a family house.

Motorcycles, bicycles and cell phones are one of the most important and crucial assets that street vegetable vendors can use to reach and communicate with their customers and producers of vegetables. Finding study revealed that most of the respondents (91.5%) do not use motorcycles while 5% owned motorcycles and 3% were hiring them. Only 0.5% shared motorcycles with other members of family. On the other hand, about half (47%) of

respondents reported to possess bicycles, 1.5% rent bicycles, and only 0.5% shared bicycles. Most of the respondents (95.5%) have cell phones and only 4.5% do not have a cell phone.

A relative distance to the nearest selling point of vegetable was also assessed in this study. Results in Table 15 indicate that more than half (52.5%) of respondents use between 30 to 60 minutes to reach the nearest selling point, while 45% were using less than 30 minutes and only 2.5% spend more than 60 minutes.

Table 15: Possession of Physical capital

Physical Assets	Frequency	Percentage
(i)House ownership		
Owned	104	52.0
Shared (hosted by others)	6	3.0
Rented	90	45
Total	200	100
(ii)Ownership of motorcycle		
Owned	10	5.0
Shared	1	0.5
Rented	6	3.0
Don't use a motorcycle	183	91.5
Total	200	100
(iii)Ownership of bicycle		
Owned	94	47.0
Shared	1	0.5
Rented	3	1.5
Don't use bicycles	102	51
Total	200	100
(iv)Possession of cell phone		
Has cell phone	191	95.5
Don't have	9	4.5
Total	200	100
(v)Relative distance to the vegetable selling point		
Less than 30 minutes	90	45
Between 30 and 60 minutes	105	52.5
More than 60 minutes	5	2.5
Total	200	100

4.3.4 Social capital

Putnam (1995) defines social capital as membership in social Organisations such as social networks, and being associated with norms and social trust, which foster coordination and cooperation among community members, enabling them to act collectively for mutual benefits. Social capital considered in this study included membership of the respondents in various types of Organisations.

The results in Table 16 show that more than half of respondents (59.5%) were enrolled in different community Organisations while, 40.5% were not enrolled. Village Community Banks (VICOBA) dominated by 53.8%, Savings and Credit Cooperative Society Organisations (SACCOS) were 14.3% and local grouping were 12.5%. Associations of men accounted for 12.5%, while women's associations accounted for 11.8% and only 4.2% were religious organisations.

Table 16: Distribution of respondents according to type of community organisations

Variable	Frequency	Percentage
(i)Membership in organisation		
Member in a community organisation	119	59.5
Not a member in a community organisation	81	40.5
Total	200	100
(ii)Type of community organisation		
VICOBA	64	53.8
SACCOS	17	14.3
Religious associations	5	4.2
Women associations	14	11.8
Men associations	4	3.4
Other local grouping	15	12.5
Total	119	100

4.3.5 Financial capital

Financial capital refers to stocks of money to which an individual or household has access to. This includes access to credit services, involvements in economic activities and receiving remittance (DFID, 2000). This study included access to credit services and access to remittances.

Results in Table 17 indicate that 48% of respondents had access to credit services and 52% didn't access any credit services. Various credit services were available to be accessed by respondents. VICOBA was found to be the most used source of credit as it involved about half (49%) of all those receiving credits. Friends and relatives was another source by 29% of respondents followed by local money lenders (11%). Others were Non-governmental Organisations and micro-financial institutions, as shown in Table 17. Almost two thirds (63.4%) of respondents accessed the credit for vegetable vending activities. Other purposes included purchasing agricultural inputs, buying foods and for other family issues (such as house rent, water and electricity bills and clothes). Reasons given for not accessing credits included high interest rates (60.6%), lack of awareness (16.34%), fear to be indebted, lack of credit services and lacking need for credit.

Table 17: Distribution of respondents according to financial capital

Variable	Frequency	Percentage
(i)Access to credit		
Have access to credit	96	48
Have no access to credit	104	52
Total	200	100
(ii)Where credit was obtained		
Local money lenders	11	11.46
Friends and relatives	28	29.17
NGOs	7	7.29
Micro finance bank	3	3.13
VICOBA	47	48.95
Total	96	100
(iii)Purpose of credit taken		
Purchase Agriculture inputs	21	21.88
To purchase food	12	12.5
For vegetable vending	61	63.54
Others	2	2.08
Total	96	100
(iv)Reported reasons for not accessing credit services		
No credit service	5	4.81
High interest rates	63	60.58
Fear for indebtedness	16	15.38
Lack of awareness	17	16.35
Don't need	3	2.88
Total	104	100

The results in Table 18 indicate that more than three quarters (78%) of respondents reported to have received remittance during the survey period. More than two thirds (67.31%) of respondents who received remittances from other relatives or friends while 18% received remittances from parents and 7.7% from NGOs and 7% from a son or daughter.

Table 18: Distribution of respondents according to remittances

Variable	Frequency	Percentage
(i)Receiving of remittances		
Have received remittances	156	78
Have not received remittances	44	22
Total	200	100
(ii)Source of remittances		
Son/daughter	11	7.0
Parents	28	18.0
Other relatives	105	67.3
Organisation (NGOs)	12	7.7
Total	156	100

4.4 Household Food Security

Results of the analysis of HFIAS in Table 19 show that 44.5% of the households were categorized as food secure, 34.5% were moderately food insecure and 16.5% were of mild food insecure while 4.5% were categorized as severely food insecure.

Table 19: Household food security categories according to HFIAS

Response	Frequency	Percent
Food secured	89	44.5
Mild food insecure	33	16.5
Moderate food insecure	69	34.5
Severe food insecure	9	4.5
Total	200	100

The HFIAS allows a researcher to make a basic distinction between food secure and food insecure households. Based on this, 44.5% of the households were food secure and 55.5%

were food insecure. Further analysis shows that the lowest and highest HFIAS scores were 0 and 26, respectively, while the mean and standard deviation was 12.415 ± 6.79 .

4.5 Household Dietary Diversity Score

The study revealed that (Table 20) show that the lowest and highest number of food groups consumed was 2 and 12 respectively, with the mean score and standard deviation of 7.37 and 2.81, respectively. Results in Table 24 indicate that majority of surveyed respondents (50.5%) had medium dietary diversity, 29.5% had high dietary diversity and only 20% had low dietary diversity.

Table 20: Results of Dietary diversity scores of respondents

DDS category	Frequency (n)	Percentage
Low dietary diversity (0-4)	40	20.0
Medium dietary diversity (5-9)	101	50.5
High dietary diversity (10-12)	59	29.5
Total	200	100

4.6 Coping Strategies Employed to Cope with Food Shortage

Results in Table 21 show that the most used types of coping strategy were selling whose labour when faced with food shortage. Participants of FGDs indicated that most of the vegetable vendors work as casual labourers in Tobacco factory or hired as watch guards during night. The second type of coping strategy was borrowing food from relatives and friends (15%).

The response from FGDs showed that informal arrangements were common. For example, if one borrowed 5kg of maize flour from a shop then he/she should pay back the money within a week with an interest. About 13.5% reported to have changed their diet, while 11% get support from relatives, especially who are living in rural areas. About 10% have reported to sell their assets to buy food. Other strategies reported by only few respondents

include buying food in bulk when food is available (harvesting time), skipping meals, eating inferior foods, moving some family members and getting support from government or NGOs.

Table 21: Coping strategies employed by respondents to cope with food shortage

Variable	Frequency	Percent
(Borrowing from relatives and friends	30	15.0
Selling assets and buy foods	19	9.5
Selling Labour	61	30.5
Get support from government and NGOs	1	0.5
Get support from relatives	22	11.0
Diet change	27	13.5
Eat inferior foods	8	4.0
Skipping meals	10	5.0
Migration of some household members	7	3.5
Selling of livestock	4	2.0
Buying foods in bulky when food are available	11	5.5
Total	200	100.0

4.7 Relationship Between Livelihood Assets and Household Food Security

4.7.1 Natural capital

Aspect of natural capital considered in relation to household food security included size of land, type of land ownership and access to land. Results in Table 22 shows that land size ($p=0.000$) and land ownership ($p=0.005$) have a strong relationship with household food security.

Table 22: Relationship between natural capitals and household food security

	Food secure (Percentage)	Food insecure (Percentage)	Total	χ^2 Value	P-value
(i) Access to land					
Have access to pieces of land (n=92)	41.3	58.7	100	0.1	0.752
Have no access (n=108)	43.5	56.5	100		
(ii) Land size					
Between 1 and 2 acres (n=58)	58.6	41.4	100		
Between 3 and 4 acres (n=21)	19	81	100	20.61	0.000***
Above 4 acres(n=13)	0	100	100		
(iii)Type of ownership					
I don't own land (n=108)	42.6	57.4	100		
Owned(n=23)	73.9	26.1	100	12.65	0.005**
Shared(n=8)	25	75	100		
Rented(n=61)	32.8	67.2	100		

*** Significance at 0.001 and ** (0.01) probability level

Also t-test for comparison between the mean size of land owned by food secure and food insecure households (Table 23) show that food insecure households have large size of land than food secured households (p=0.003).

Table 23: Comparison of mean size of land owned by food secure and food insecure respondents

	n	Mean land size in acres	Standard error	t value	P value
Food secure respondents	85	0.9465	0.10266	3.025	0.003**
Food insecure respondents	115	2.00823	0.18727		

** Significant at 0.001

4.7.2 Physical capital

Ownership of a house, motorcycle, bicycle, cell phone and relative distance to the nearest vegetable selling point were among the important physical capital that were considered. Results in Table 24 show that there is a significant relationship between household food security with ownership of bicycle (p<0.000), motorcycle (p<0.008), house (p<0.034) and

relative distance to the nearest vegetable selling points ($p < 0.05$). However ownership of cell phone did not show a significant relationship with household food security.

Table 24: Relationship between physical capital ownership and household food security

	Food secure (Percentage)	Food insecure (Percentage)	Total	χ^2 Value	P value
(i) House ownership					
I don't own (n=4)	25	75	100		
Owned (n=104)	32.7	67.3	100	9.89	0.019*
Shared (n=2)	50	50	100		
Rented (n=90)	54.4	45.6	100		
(ii) Motorcycle ownership					
I don't use motorcycle (n=183)	38.8	61.2	100		
Owned (n=10)	90	10	100	13.05	0.005**
Shared (n=1)	100	0	100		
Rented (n=6)	66.7	33.3	100		
(iii) Bicycles ownership					
I don't use bicycles (n=183)	38.8	61.2	100		
Owned (n=10)	90	10	100	13.05	0.005**
Shared (n=1)	0	100	100		
Rented (n=6)	66.7	33.3	100		
(iv) Cell phone ownership					
I don't use cell phones (n=9)	66.7	33.3	100		
Owned (n=190)	41.6	58.4	100	2.95	0.228
Shared (n=1)	0	100	100		
(v) Relative distance to nearest vegetable selling point					
Less than 30 minutes (n=90)	31.1	68.9	100		
Between 30 and 60 minutes (n=105)	52.4	47.6	100	8.99	0.011*
Above 60 minutes (n=5)	42.5	57.5	100		

** and *Significance at 0.01 and 0.05 probability level, respectively

4.7.3 Social capital

Social capital may be defined as the ability of an actor to gain benefits by virtue of membership in social network or social structures (Krishna and Shrader, 2000). The variable included the membership of the social group and the type of membership in a specific social group. Results in Table 25 show that there is a significant relationship between household food security and respondent's membership in community

Organisation ($p = 0.000$) and type of membership in social Organisation. Respondents who are members of community Organisation were more likely to be food secured than non-members ($p = 0.035$).

Table 25: Relationship between social capital ownership and household food security

	Food secure (Percentage)	Food insecure (Percentage)	Total	χ^2 Value	P value
(i) Community membership					
A member of a comm.org.(n=119)	43.8	56.2	100		
Not a member of a com. Org.(n=81)	22.2	77.8	100	22.91	0.000***
(ii) Type of social Organisation					
VICOBA (n=64)	43.8	56.2	100		
SACCOS (n=17)	76.5	23.5	100		
Religious association (n=5)	60	40	100	12.01	0.035*
Women association (n=14)	85.7	14.3	100		
Men association (n=4)	50	50	100		
Local grouping (n=15)	60	40	100		

*** and *Significance at 0.000 and 0.05 probability levels, respectively

4.7.4 Financial capital

According to Ellis (2000) financial capital defined as assets in terms of cash that can be drawn from employment, savings, pension, reimbursement and credits. The variables included in this study were, access to credit and receiving remittance. Results Table 26 shows that there is a significant relationship between household food security and access to credit ($p < 0.01$) and receiving remittance ($p < 0.000$). Respondents who have access to credit were more likely to be food secured than the ones without access.

Table 26: Relationship between financial capital and household food security

	Food secure (Percentage)	Food insecure (Percentage)	Total	χ^2 Value	P value
(i) Access to credit					
Have access to credit (n=96)	53.1	46.9	100		
Have no access to credit (104)	32.7	67.3	100	8.528	0.003**
(ii) Do you receive remittance					
Have received to remittance (n=156)	34	66	100		
Have not received to remittance (n=44)	72.7	27.3	100	21.091	0.000***

***, ** Significance at 0.00 and 0.01 probability levels, respectively

4.7.5 Human capital

The human capitals tested for relationship with household food security include four aspects, namely age, education level, training received and health status. The results in Table 27 indicates that there is a significant relationship between household food security and training received ($p < 0.017$), where by those who received training were more likely to be food secured than others.

Table 27: Distribution of respondents by various human assets by food security

	Food secure (Percentage)	Food insecure (Percentage)	Total	χ^2 Value	P Value
(i) Age of respondent					
Less than 25 years (n=37)	43.2	56.8	100		
Between 25 and 29 years (n=153)	37.9	62.1	100	3.46	0.177
Above 30 years (n=10)					
(ii) Education level of respondent					
Primary (n=108)	47.2	52.8	100		
Secondary (n=90)	36.7	63.3	100	2.29	0.319
Post-secondary (n=2)	50	50	100		
(iii) Training received					
Have received training (n=47)	57.4	42.6	100		
Have not received training (n=153)	37.9	62.1	100	5.62	0.014*
(iv) Description of health status					
Frequently >10 days in a month (n=3)	33.3	66.7	100		
Sick for 5-10 days in a past month (n=25)	56	44	100	2.19	0.333
Rarely sick (<5 days) in past month (n=172)	42.5	57.5	100		

* is significant at 0.05

4.8 Determinants of Household Food Security

Logistic regression technique was used to model the relationship between a dichotomous dependent variable namely food secure and a set of independent variables (Table 28). The food security status was modeled as binary variable, whereby the responses were 1=food secure and 0=food insecure. The overall predictive power of the model was high (78%) indicating that the independent variables had significant influence in explaining the food security status. The significant LR Chi-Square statistic of $87.116 < 0.000$ with 11 degrees of freedom means that at least one of the regression coefficients in the model was not equal to zero implying that the model was able to predict a household's food security status. The independent variables which were found significant includes type of transport used ($p < 0.000$), membership in community Organisation ($p < 0.032$) and house ownership ($p < 0.038$), while the rest such as age, sex, marital status, education, size of land, access to credit, access to remittance, health status of respondent, experience in business and working capital were not significant determinants of food security status (Table 28).

Table 28: Results of estimating a model for determinants of household food security

Variable	B	S.E.	Wald	df	Sig.	Exp(B)
Sex of respondents	0.698	.408	2.925	1	.087	2.011
Age in years	0.159	.308	.267	1	.606	1.172
Marital status	0-.315	.337	.872	1	.350	.730
Education level	0-.282	.359	.616	1	.433	.754
Size of working capital (TZS)	0.000	.000	2.041	1	.153	1.000
House ownership	0.410	.198	4.300	1	.038**	1.507
Type of transportation used	1.162	.255	20.810	1	.000***	3.196
Health status	-0.268	.473	.322	1	.571	.765
Having access to credit	0.089	.485	.033	1	.855	1.093
Receiving remittance	0.386	.498	.602	1	.438	1.471
Membership in community Organisation	-1.026	.479	4.596	1	.032**	.358
Experience in business (Years)	-0.356	.419	.721	1	.396	.700
Constant	-1.450	2.133	.462	1	.497	.235

***, ** Significance at 0.00, 0.01 probability level respectively

CHAPTER FIVE

5.0 DISCUSSION

This section presents a discussion of the findings of this study. The discussion is organized according to the research objectives focusing on documenting the nature of the institutional environment in which vegetable street vending business is working, to identifying the type and extent of livelihood assets owned by individuals working as vegetable street vendors, assessing household food security and dietary diversity of vegetable street vendors, and identifying strategies employed by vegetable street vendors to cope with food shortage.

5.1 Nature of the Institutional Environment in which Vegetable Street Vending

Business is Operating

Street vegetable vendors can be observed in most of public places, including commercial centers, bus stations, residential areas and high density suburbs. Street vegetable vendors are also found in low density suburbs. The business environment setting for most of the informal activities including street vending business has generally been challenging in most African countries (Mitullah, 2003). Five issues were considered to reflect the extent to which participants were taking part in vending activities. The five issues were namely, duration in business, size and sources of the working capital, other sources of income, business skills and Organisation of the business

5.1.1 Duration of operating the business

The findings of the study indicated that the majority of respondents have been in business for less than five years. Also the results are supported by FGDs where one of participant explained that *“I am now working in this business for about four years, this business pays*

more’. This implies that most of them had been vending for a relatively long period such that they have good understanding of the contribution of street vending to their lives in town. This can be attributed to street vegetable vending being a reliable source of income and means of surviving in harsh economic conditions (Mazhambe, 2017). The findings are similar to the study conducted in South Africa by Hlengwa (2016) who reported that 50% of street vendors have been in this business industry for about 5 years. It can therefore be said that street vending is not a temporary business, but is here to stay and most of the vendors are dependent on this economic activity for a living.

5.1.2 Working capital

Opening up any business activity requires capital. According to the findings (Table 9), vegetable street vending business is operated by poor urban dwellers with a mean capital of 14 711 TZS and ranging from 3 800 TZS to 50 000 TZS. Njaya (2014) reported that due to capital constrains most of the urban poor are engaged in small businesses and usually they start the businesses with low initial capitals. He further explained that vending activities are undertaken as coping strategy to supplement low wages.

Also a study by Milanzi (2011) indicated that women food vendors operate with minimum initial capital ranging from 10 000 TZS to 49 000 TZS. During FGDs it was noted that most of street vegetable vendors use their income to meet household requirements such as paying house rent, water bills, school fees and buying food stuffs and clothing. It was therefore difficult to accumulate the obtained revenue in order to expand the business. It appears that the venture is hand -to-mouth for most of them.

5.1.3 Source of capital

The results of this study conform to the findings made by Husain *et al.* (2015), Lapah (2013) and Saha (2004) that the operators in the street vending mainly obtain capital

from their own savings, while others get loans from local money lenders or friends to start their street vending businesses. The findings emphasize the significant role played by social capital/networking as more than 80% of the vendors got their start up capital from borrowing and own sources (Table 9).

In terms of other sources of income, it was noted (Table 11) that 53% of street vendors have other sources apart from vending activities; however vegetable vending contributed more compared to other sources (about 60% on average). During FDGs it was reported that vegetable vendors also do other economic activities like gardening, doing casual labour and temporal jobs in manufacturing industries. This confirms that urban poor resort to these activities as a means of coping or survival strategy in the face of high unemployment rate coupled with low wages in the informal sector. One of respondent during FDGs explained that *“I have been working in one of manufacturing industry for six months before starting vending, but I left the job because of low salary which was not proportional to the working hours. At the moment I’m earning more from vegetable vending”*.

5.1.4 Business skills

Effective production in any activity depends on skills, knowledge and experience of those who are involved in that particular activity. The development of relevant skills and knowledge is a major instrument for improved productivity, better working conditions, and the promotion of decent work in the informal economy (ILO, 2002). Also, the possession of relevant business skills is important for a trader to perform core business activities like marketing research, sales, business strategy, book keeping and general business management. However, the petty trading such as street vendors in Sub-Saharan Africa possesses low levels of skills (Mramba, 2015, and Msoka, 2013). This study found

it worthwhile to elicit information on the kind of formal business skills possessed by those involved in the street vegetable vending in Morogoro Municipality.

Majority of the respondents stressed that, they did not receive any training and had little business experience. However, it was indicated that there were training programs offered by the Municipality and NGOs, but very few respondents attended these programs, mainly due to time constraint, training costs and some explained that they were not invited. Such trainings included entrepreneurship development, business skills and formation of associations.

However, discussions during the FGDs indicated that no training was conducted in the area by the Municipality or NGOs. Most of them just got trained when assisting their friends or parents. Others explained that when searching for possible livelihood opportunities, circumstances forced them to take up vegetable vending. For example, they have big families who depend on them for food, shelter and other needs. Therefore it is not possible to save enough money for a good working capital or bigger business, which they would wish to own. Others were initially running business in central market, but because of reconstruction, they lost the stalls, and that is why they have started vending on the streets.

These findings are similar to study conducted in informal sectors in urban areas in Tanzania by Muhanga (2017) who noted that 75% of street vendors didn't receive any training or business skills. Moreover, qualitative research on street trading in South Africa indicated that respondents didn't receive any training, and they had little business experience (Abebrese and Schachtebeck, 2017). Also, a review by Msoka (2013) indicates

that street vendors in sub-Saharan Africa possesses low levels of skills, hence there is a need to intervene in order to make street vending business to work efficiently.

5.1.5 Organisation of business

Business ownership was another aspect considered important in this study. According to Muhanga (2017), the vending business is considered as a subset of household enterprises or unincorporated enterprises owned by households. The findings revealed that street vegetable vendors own their business by 83.5% (initiated by the current owners and being managed by them) and others by either family or working for someone else. It was also noted women have good access to this business (54.5%). This is due to a number of social-economic factors such as failure to secure formal employment and lack of professional skills.

5.1.6 Informal and formal supports to vegetable street vendors

Different informal and formal supports to vegetable street vendors were reported. According to FGDs and Key Informants, a range of supports were provided by the Municipal authority, different NGOs and other social networks found in the area. Participants reported that such supports received included financial supports (loans and grants), training for business skills and building of the market for selling their vegetables. However, it was also noted that such supports were still very little to satisfy the actual needs. Similar findings were reported in the study by Magehema (2014) in Songea rural and Urban, Tanzania in which 29.2% of street vendors received loans from LGAs and 28% received support in terms of training.

Also, synthesis findings from African counties show similar trends that training and accessing credit was provided to street vendors but, largely done by civil society's Organisations that provide financial support and those working in human rights (Mitullah, 2005).

5.1.7 Challenges faced by vegetable street vendors

Although, vegetable vendors earn incomes for their families and provide important service to their customers, they are faced with many challenges. Challenges faced by street vendors may vary from one area to another, but there is a common pattern. Several studies in developing countries discussed challenges faced by street vendors. A study by Panwar and Garg (2015) in India pointed out some of challenges including; harassment by police or Municipal officials, long hours of work without rest and lack of urban amenities. Also, studies in Dhaka, Bangladesh by (Husain *et al.*, 2015) and Harare Zimbabwe by (Njaya, 2015) on challenges that face vegetable vendors, they reported lack of business skills, harassment and exploitation by their employers, harassment by police and Municipal authorities, absence of adequate source of fund for collateral and transport problems. Moreover, Uwitije, (2016) revealed that street vendors face challenges such as conflict with local authorities, lack of capital, lack of business skills, lack of trading sites and access to basic infrastructure.

5.2 Livelihood Assets Owned by Vegetable Street Vendors and their Influence on

Food Security Situation

The study considered five main categories of livelihood assets or resources on which street vendors relied on to formulate their livelihood strategies in Morogoro town. As suggested by the Sustainable Livelihood Framework (SLF) ownership of assets determines the ability to survive in the face of various aspects of vulnerability (Regassa, 2016). These forms of capital or assets include Human capital, Physical capital, Natural capital, Social capital and financial capital.

5.2.1 Human capital

Human capital included mainly demographic and social economic factors such as age, level of education and health status. The aim was to determine how these aspects influence the livelihood outcome and for this case was food security situation (Telteh, 2011).

5.2.1.1 Age

Social scientists have a special interest in the age structures of a population because several social relationships within the community depend on age. A study by Kingu (2015) reveals that age determines how active and productive an individual would be. In analyzing households, age become an important factor since it determines whether the respondent will be engaging in economic activity or otherwise. For this study, more than 90% (Table 4) of respondents were within productive age of 18-49 years (Hammer *et al.*, 2015). This is economically active age group and their participation in the vegetable street industry reflects high unemployment rates in the country. The findings are comparable with the studies conducted in Kilimanjaro and Morogoro, which show that many people in the informal sector in urban areas in Tanzania were between the age of 19 and 40 years (Muhanga, 2017 and Kumburu *et al.*, 2013).

Also Njaya (2014) in his study of street food vendor in Harare, Zimbabwe reported that more than ninety percent were between 19 and 50 years old. The statistical analysis revealed that there was no significant relationship ($p < 0.208$) between the age of respondent and food security in this study. It appears that other factors were probably more important than the age of respondent. The findings are similar with those of Damtew (2017) who reported no significant difference between age of food secure and food insecure households.

5.2.1.2 Sex

In the current study women are equally active in street vegetable vending business as compared to men whereby 54.5% of the respondents were women. This may be probably due to a number of social and economic factors such as migration from rural areas to urban. Also street vending business requires relatively small capital base, hence easy for

women to access. Focus group discussions revealed that majority of the women engage in street vegetable vending in order to supplement their husbands' low wages. It was noted that traditionally vegetable vending was a women's business, but as the economic hardship deepens, an increasing number of men have turned to this business as their sole source of livelihood (Njaya, 2014).

As presented in Table 38 the results show that sex has no relationship ($p < 0.888$) in enhancing household food security. This means that both male and female had access to vegetable Street vending as a livelihood strategy that resulted in improvement of household food security. The results are consistent with similar studies by Timothy (2017) and Wright *et al.* (2012) who concluded that there were no significant relationship between sex and household food security.

5.2.1.3 Marital status

It is believed that married couples are likely to be more productive than single parent families due to labour supply in livelihood strategies and access to productive resources (Ndobo and Sekhampu, 2013). The study indicated that about two thirds (67.5%) of respondents were married. Similar findings are reported in a study by Muhanga (2017) who found that 60% of married individuals were involved in street vending.

The research findings show that there is a strong relationship ($p < 0.05$) between marital status and household food security. This shows that marital status is an important factor of household food security as pointed out by Cancian and Reed (2009), where households with married couples were likely to rely on the earnings of both, thus increasing their likelihood of food security.

5.2.1.4 Education level

Education is regarded as a major determinant factor towards formal employment in Tanzania (Muhanga, 2017). The results presented in the Table 5 show that more than half (54%) of respondents had only attained primary school education. The results are similar to report by Mulungu and Myeya (2018). It is likely that due to low levels of education, which cannot offer them good opportunities to be employed in the formal sector, vegetable vending activities is an option to engage which does not need skills from education. Findings of this study are similar to those by Uwitije (2016) who reported that more than 70% of individuals with low levels of education in Kigali, Rwanda were engaged in small businesses because it was difficult for them to find alternative formal jobs. This implies that low levels of education force people to the street vending activities in urban areas.

Also level of education of respondent is expected to be related with the food security status whereby more educated heads of household are likely to have food secured households and vice versa (Mortazavi, 2017; Hammer *et al.*, 2015). However, results in Table 28 show that education level was not a determinant ($p < 0.433$) of food security. This is not surprising because all the respondents were vegetable street vendors, and therefore were all earning from vending activities which has little returns.

5.2.1.5 Health status

Health is also a core component of human capital (DFID, 2000). Good physical and mental health is essential for participation in productive activities including vending activities bearing in mind that most of urban poor rely on physical labour. Health impairment or illness can lead to a severe drain on household resources and thus affecting household's economic stability (Mtshall, 2002 cited in Gowele, 2011).

The majority of respondents reported to be in good health condition. The findings agree with the study by Owusu (2013) who found that 73.2% of street vendors in Accra Ghana have good health. However, a review by Lund in South Africa was contrary to these findings as he noted that only about 48% of street vendors had good health. He further explained that street vendors are prone to illnesses because they are living in congested areas and exposed to poor environmental hygiene. The current findings show that there was no relationship between health status and food security ($p < 0.333$). This may be because much of the business is organized through family labour and therefore even when the respondent was sick someone else in the family could replace him or her.

5.2.2 Natural capital

The findings revealed that less than half of respondents (46%) have access to land for agricultural production and gardening. However, about two thirds of plots of land that were cultivated were between 1 and 2 acres. The finding is supported by a study conducted in KwaZulu Natal province by Mtshali (2002) who reported that 62.7 percent had one hectare or less of land for gardening or farming activities. On the other hand, findings show that most of the respondents rented the land and few owned the land. Land size and type of ownership may have significant influence to household food security status. During FGDs participants reported that they pay a rent for the piece of land on an annual basis for growing maize crops or on a seasonal basis for practicing gardening. This implies that access to land enables production of both food and cash crops for individuals as well as for households (Sikwela, 2008).

Findings indicate that there is no significant relationship ($p < 0.752$) between access to land and household food security. The probable explanation is that access to pieces of land may not mean that you're involved in doing farming activities which in turn may improve

household food security. Again household food security is multidimensional phenomenon which depends on various factors, including access of land. The findings coincide with the results by Wright *et al.* (2012) who reported that there was no relationship between access of land ($p < 0.289$) and household food security. The size of land owned by household also an important factor for household food security status. Results show that there is a strong relationship ($p < 0.000$) between land size and household food security. This implies that households with more land are likely to be food secure because the situation allows them to produce both food and vegetables for sale for individuals as well as for households use. This finding is similar to the studies by Sikwela (2008) and Haile *et al.* (2005) who reported that land size is significantly related to the probability of a household being food secured.

Food production can be increased extensively through expansion of areas under cultivation Najafi (2003). Therefore land size has positively and significantly related to the probability of a household being food secured. The findings are similar to study conducted in Wolaita Zone, Ethiopia, which show a significant relationship of the land and household food security (Wright *et al.*, 2012).

5.2.3 Physical capital

More than half of the respondents owned the houses followed by respondents who rented houses and small proportion shared with other family members (Table 15). Participants of FDGs indicate that owing a house is important to save the income having to pay for house rent, and therefore improve livelihood outcome and food security. It is expected that vegetable vendors who owned houses can be in a better position in terms of food security compared to a one who rents the house as a certain amount of earning could be used to pay

housing rents. The results in Table 24 show that there is a significant relationship ($p < 0.019$) between house ownership and food security.

Ownership of a motorcycle can be used as a household characteristics and an indicator of income or wellbeing. Generally, results show that a few of respondents were using motorcycles, of which fewer of motorcycles were owned by respondents for vending activities. This has an indication that most of the respondents are from low economic status that could be deny them from owing this asset. The study findings are similar to studies conducted in Kahama, Tanzania which showed that only 5.1% of respondents owned motorcycles (Ngongi, 2013). Motorcycle facilitates transportation of vegetables to consumers or from selling point. The analysis of the results (Table 24) shows that there is a significant relationship ($p < 0.005$) between motorcycle ownership and household food security. A Similar study was reported by Kimaiyo *et al.* (2017) in Uganda specifically in Kapchorwa and Manafwa District, where ownership of motorcycle had a strong relationship ($p < 0.000$) to household wellbeing hence improved household food security.

The number of bicycles owned by household is one of the potential determinants of livelihood assets. A bicycle is regarded as a solution to transport problems example going to market or collecting vegetable from selling points. Results show that about half of respondents do not use bicycles and less than half owned bicycles and others rented or shared with other family members. The findings are similar to the study by Nguyen *et al.* (2013) who reported that 46.26% uses bicycles as a means of transport in conducting street vending activities in Hanoi, Vietnam. The findings from the current study revealed that there is a significant relationship ($p < 0.005$) between ownership of bicycles and household food security. The results probably indicate that bicycles help the transportation of

vegetables and reach their customers easily and there is a possibility of selling more vegetables as compared to those who walk on feet all the way.

5.2.4 Social capital

Social capital entail meaningful membership in formal and informal groups, relationships of trust and access to wider institutions of society that people draw upon in pursuit of livelihood (Tumaini and Msuya, 2017). More precisely, social capital pays more attention to family networks, kinship, and close friends that the household will depend on in time of crisis (DFID, 1999).

Involvement of respondents in different community Organisations is expected to benefit vegetable vendors to access to various livelihood assets. Thus, respondents who are members of community Organisations are more likely to be economically well off as compared to their counterparts. The findings revealed that more than half of respondents were enrolled in different community Organisations whereby, most of them were in VICOBA. The possible explanation is that access of credit from VICOBA is easy as compared to the micro financial institutions as VICOBA gave their beneficiaries a low credit of which most of vegetable street vendors are capable to meet the requirements. Njaya (2015) showed that participation in community groups is an important measure of social capital. Findings from this study show that there is a strong relationship ($p < 0.000$) between membership in community Organisation and household food security. The findings confirm the study by Gecho *et al.* (2009) that there is relationship between participation in community Organisations and household food security.

Furthermore results of this study confirm the findings conducted in Dowa and Lilongwe Districts in Malawi which showed membership in community Organisation and informal networks improved food security of households (Dzanja *et al.*, 2013).

5.2.5 Financial capital

Financial capital included cash and bank deposits, cash that was kept at home, money borrowed from various sources and remittances. Access of credit and receiving remittances was included in this study as financial capital.

5.2.5.1 Access to credit

Credit provision is an important tool to improve the wellbeing of vegetable vendors because it can serve as source of capital for vending business. The majority of respondents had no access to credit. Reasons given were lack of collateral or high interest rates, fear of indebtedness and lack of awareness. Responses from FGDs indicated that access to credit for vending activities was very low among participants. Almost all participants reported not to have received credits from micro finance institutions in the area. They reported that the collateral demands from the microfinance's are high for them. These findings are similar to the study by Kedir (2015) who reported that majority of respondents had never borrowed money because of absence of lending institutions, lack of collateral and high interest rates. The finding also agrees a study conducted in Ethiopia by Duressa and Lemma (2016) that more than half of respondents did not access credit services. The reasons explained included no need for credit, lack of assets for collateral, fear of ability to pay back and high interest rates.

Close to half of respondents had access to credit from various sources. VICOBA and borrowing from friends or relative was common in the study area. Information from the FDGs indicates that informal rotating and credit schemes were ways of coping with financial exclusion. These informal rotating saving and credit schemes provided alternative sources of working capital to vegetable street vendors as most of them reported that they accessed credit for the purposes of vegetable vending. This finding is in line with

the study conducted by Bhowmik and Saha (2011) in India who reported that about three quarters (74.9%) of street vendors relies on informal credit sources such as money lenders, friends, relatives and to obtain cash to run their businesses. Findings from the current study show a significant relationship ($p < 0.003$) between access to credit and household food security. The result is fully in conformity with the prior expectations. This is due to the fact that credit gives a household opportunity to be involved in income generating activities, so which increases purchasing power of the household. These findings are consistent with studies by Montgomery and Weiss (2005) and Amin *et al.* (2003) who reported that credit reduces vulnerability by strengthening crisis coping mechanism, building assets and providing emergency assistance during lean periods. Moreover, studies in Ethiopia (Leza and Berhamu, 2015 and Gecho *et al.*, 2014) show positive relationship between access to credit and household food security.

5.2.5.2 Receiving remittances

Receiving remittances refer to economic support in form of money or food to a household from relatives living abroad or within the country. Remittances play an increasingly big role in the economies of many countries, contributing to economic growth and to the livelihoods of the needy people (Ellis, 2000). In the current study getting relatives' economic support from abroad and within the country was expected to positively relate to the household food security as the money could be used as a source of capital for vegetable vending activities.

The results indicate that more than three quarters of respondents reported that they received remittances mostly from other relatives and parents. The possible explanations could be most of the respondents were migrants; therefore it is possible to link from their relatives who are living in other areas. Also the findings show that respondent, who have

access to remittances have strong relationship ($p < 0.000$) with their food security (Table 26). The probable reason is that household receiving remittances have a better position to increase the sources of income which can be used for household expenditure including buying foods. These findings are in line with study conducted in Malawi and Nigeria by Dzanja *et al.* (2013) and Uma (2016) who reported that receiving remittance makes a difference in households' living standards. Household receive remittances fare much better in terms of that household not receiving any remittance. Furthermore, it increases household's income significantly and raises the probability of a household being food secure.

Moreover, it has been reported in other studies in Ethiopia (Abadi *et al.* 2013) that remittances lower the frequency and severity of coping strategies. It is obviously households with remittances have lower anxiety about not being able to procure sufficient food, higher ability to secure adequate quality food and lower experience of insufficient quality of food intake than those without remittances. Also, Mendola (2008) reported that other studies in developing countries, which reported that remittances are a significant component of household income and enable recipient families to smoothen their consumption and increase resilience to food security

5.3 Household Food Security and Dietary Diversity Score

5.3.1 Household food security status

Based on the HFIAS household's food security status was assessed. Higher score values indicate more food insecurity the household experienced and vice versa. Results for the classification are as shown in Table 19. Analysis of HFIAS revealed that more than half of households were food insecure during the study period. The possible explanation for this is that most of vegetable street vendors are low economic status, they have a relatively low

capital base thus their business returns are also low. It is therefore difficult to meet all the household's needs including food. A similar observation was reported in a study done in Durban, South Africa in which 56.5% of street vendors were found to be food insecure (Bikombo, 2014).

5.3.2 Household dietary diversity

FAO (2006) classifies dietary diversity scores as consumption of less than 4 food groups as poor dietary diversity, 5-9 as medium dietary diversity and greater than 9 food groups as high dietary diversity. The results of the assessment indicate that about fifty percent of respondents had medium household dietary diversity and a mean score of 7.37. Taruvinga *et al.* (2013) reported that dietary diversity of greater than five groups is important for healthy growth and development. Also, studies by Vakili *et al.* (2013) and Hatloy *et al.* (2000) established that an increase in dietary diversity is associated with social and economic status and household food security.

5.3.3 Strategies employed by respondents during to food shortage

It was noted that the surveyed vegetable street vendors use a number of coping strategies most of which differ from one household to the other. Major coping strategies employed by respondents in the study area included doing casual labour, borrowing foods from relatives and friends, diet change, get support from relatives and selling assets to buy foods. Other coping strategies which were not commonly used in the study area included; buying of food in bulk when food is available, skipping meals, eat inferior foods such as wide fruits, migration of some of family members, selling of livestock and get support from government and NGOs.

A study in Navrongo, Ghana (Amakye, 2017) reported that smallholder farmers faced with food shortage employed a number of coping strategies which are broadly categorized into food-based strategies and non-food based strategies. Food-based strategies included; reducing the size of food intake, eating less preferred foods and skipping meals while non-food based strategies included; sale of livestock, selling labour, hiring out household assets, petty trading and artisanal activities and migration of some family members. However, according to Ngongi (2013) categorized the coping strategies as short and long term coping strategies. These short term included relying on less preferred foods, borrow from friends or relatives, purchase food on credit, consume seed stock for next season, limit portion size of meal and reduce the number of meals eaten. The long term coping strategies included; petty trade, gardening, casual work and selling of livestock, charcoal and carpentry.

In the current study, large proportion of households opted for selling labour as a coping strategy as compared to other available coping strategies. The possible explanation for this is that in urban areas there are many opportunities for informal jobs. Generally, according to various literatures coping strategies to food insecurity varies from one area to another, but there is a common pattern in response depending on the available options.

5.4 Determinants of Household Food Security

A variety of statistical models can be used to establish the relationship between livelihood assets and food security (Faustine, 2016; Gecho *et al.*, 2014; Bogale and Shimelis, 2009). Conventionally, linear regression model is widely used in most social economic research because of availability of simple computer packages as well ease of interpreting of results (Bogale and Shimelis, 2009). However, results derived from linear regression analysis may lead to fairly unreasonable estimates when the dependant variable is dichotomous

(Faustine, 2016). Therefore the use of logit or probit models is recommended as a panacea of the drawback of the linear regression model (Gujarati, 2003). The results show that the food security status of vegetable street vendors was positively influenced by house ownership, type of transport used and membership in community Organisations (Table 30). Sex of a respondent was not significant in influencing household food security. This is probably because men and women were equally involved in vegetable street vending (Table 6) which is also likely that they also earned similar levels of incomes. The results are similar to the findings of several studies in developing countries on sex of respondents and household food security (Duressa and Lemma, 2016; Ifeoma and Agwu, 2014; Zakari *et al.*, 2014 and Abdulla, 2008). Other factors such as age of respondents, marital status, level of education, size of working capital, health status, access to credit, receiving of remittances and experience in business in years were not significant associated with food security.

House ownership was found to have a positive and significant relationship ($\beta=0.410$ $p<0.038$) with household food security. This implies that house ownership increases the chance of food security as the income from vegetable vending is not used for paying house rent for those having houses compared to those without houses. This result fully agrees with prior expectation. The findings confirm the study in Adiss Ababa, Ethiopia which shows that ownership of assets like houses and other productive assets increases household food security status (Gebre, 2012).

The type of transport used was statistically significant ($\beta=1.162$ $p<0.000$) and exhibited a positive relationship with household food security similar to the hypothesized effect. This implying that chance of being food secured increases with the use of motorcycle or

bicycles instead of walking on feet. This is because the use of motorcycle allows to transport and selling large volumes of vegetable per day.

The findings also show that membership in community Organisations was negative but statistically significant associated ($\beta=-1.026$ $p<0.032$) with household food security. During interview respondents reported that the common community groups include VICOBA, women's association, religious association and other local grouping in which respondents were members. They mentioned some of the benefits of such Organisations to include access to credit, support during marriage and burial ceremonies, networking within the community and to engage in community activities. The findings are similar to the study in Nigeria by Adedapo *et al.* (2014) which showed that cooperative Organisations have negative influence to household food security. This negative influence of participating in community Organisations on food security was unclear. Vegetable street vendors who are involved in community organisations (example VICOBA) are more likely to be food insecure compared to those who are not. However, this study did not go further to investigate the relationship between vegetable street vendor's participation in community organizations and their household food security.

CHAPTER SIX

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

The study showed that street vegetable vending is a vital livelihood strategy in today's Morogoro town. It is definitely that street vegetable vendors cannot be separated from the urban setting where majority of urban poor dwellers find their livelihood much as the economic hardship deepens. On the basis of the findings meeting the objectives of the research, the following conclusions are drawn:

- i. The results indicate that street vegetable vendors have low business skills, low working capital, inadequate formal support and they are faced with different challenges.
- ii. The results indicate further that, vegetable street vendors own different types of assets which are categorized as human, physical, natural, social and financial. The most important assets were land, motorcycles, bicycles and membership in community Organisation. Others were access to credits, receiving remittances and training received.
- iii. From the findings, food access insecurity is still a serious problem for vegetable street vendors in the study area. It was observed that more than half of households in the study area were food insecure based on the HFIAS. Also results indicate that the mean household dietary diversity was above average.
- iv. Some factors have shown to influence household food security. Such factors include ownership of houses, type of transport used, and membership in various community Organisations.
- v. It is noted that respondents employed different strategies to cope with food shortage. The strategies included selling labour, borrowing from friends or relatives, dietary change, selling assets getting support from relatives.

6.2 Recommendations

In light of the findings of this research, the following specific recommendations can be drawn with a view of improving the sector and sustaining it:

- i. It is recommended that the local government authorities (LGAs) and micro finance institutions work together to improve the environment of vending activities operated in Morogoro including provision of soft loans.
- ii. For LGAs to formulate policy in which all vending activities operate within the legal framework (licensing, association and taxes) to enable its efficiency.
- iii. LGAs and development partners should design training for vegetable vendors on issues of capacity building, marketing, business development and banking.
- iv. Street vendors in collaboration with LGAs and NGOs should establish vendors association so that such umbrella Organisation will manage all the vending Organisations and be represented in various government and public legal forums.
- v. Other studies should focus on investigating the relation between involvements of vegetable street vendors in community organisations and their household food security.

REFERENCES

- Abadi, N., Techane, A., Tesfay, G., Maxwell, D. and Vaitla, B. (2013). The Impact of Remittances on Household Food Security: A Micro Perspective from Tigray, Ethiopia. Department of National Resource Economics and Management, Mckelle University, Ethiopia.
- Abdiassa, N. (2017). Determinants of Rural livelihood strategies: The case of rural Kebeles of Dire Dawa administration. *Research Journal of Finance Accounting* vol 8, No 15.pp 1-14.
- Abdulla, Q. (2008). Putting food on my table and clothes on my back: Street trading as a food and livelihood security coping strategy in Raisethorpe, Pietermaritzburg. Dissertation for Award Degree of Doctor of philosophy at University of KwaZulu Natal, South Africa. 439pp.
- Abebrese, B. N. and Schachetebeck, C. (2017). *Street trading in South Africa: A case of Tshane Central Business District*. Acta Universitatis Danubius. pp 128-138.
- Adedapo., A. O. and Alabi, O. (2014). Consumer cooperatives food security and sustainability among civil servants in Ekiti state, Nigeria. *Journal of Agriculture and Veterinary Science* 7(4): 1-4.
- Adekoya, A. E. (2009). Food insecurity and coping strategies among rural households in Oyo State, Nigeria. *Journal of Food Agriculture and Environment* 7(4): 187–191.
- Ahiman, O. V., Estrada, E. S. and Garrido, A. (2018). Food Access and Coping Strategies Adopted by Households to fight Hunger among Indigenous Communities of Sierra Tarahumara in Mexico. *Journal of Sustainability* 2018: 1-14.

- Alhassan, A. A. (2010). An assessment of rural livelihood systems in selected communities in the northern region of Ghana. Thesis for Award Degree of MSc at Kwame Nkrumah University, Ghana. 122pp.
- Alinovi, L. and Romano, D. (2008). Measuring Household Resilience to food insecurity: Application to Palestinian Households, Food and Agriculture of United Nations, Rome-Italy.
- Alinovi, L., D'Errico, M., Mane, E. and Romano, D. (2010). Livelihoods Strategies and Household Resilience to Food Insecurity: An Empirical Analysis to Kenya. *European Report on Development*, Dakar-Senegal.
- Altman, M., Hart, T. G. B. and Jacobs, P. T. (2009). Household food security status in South Africa. *Agrekon* 48(4): 345-361.
- Amakye, S. (2017). Coping with household food insecurity during the lean season; strategies employed by smallerholder farmers in Navrongo, Ghana. Dissertation for Award Degree of master at University of Bergen. 89pp.
- Amaza, P. S., Abdoulaye, T., Kwaghe, P. and Tegbaru, A. (2009). Changes in household food security and poverty status in PROSAB area of Southern; *International Institute of Tropical Agriculture*, Ibadan, Nigeria Borno State, and Nigeria. 40pp.
- Amin, S., Rai, A. S. and Ropa, G. (2003). Does microcredit reach the poor and vulnerable? Evidence from Northern Bangladesh, *Journal of Development Economics* 70: 59-82.
- Anetor, F. O. (2015). An Investigation into the Value of Street Vending in Nigeria: A Case of Lagos State. *Journal of Marketing and Consumer Research* 3: 35-39.

- Babbie, E. (1990). *Survey Research Methods Second Edition*. Wards worth Publishing Company, Belmont, California. 395pp.
- Babbie, E. and Mouton, J. (2005). *The Practice of Social Research*, Cape Town: Oxford University Press. 179pp.
- Bailey, K. D. (1994). *Methods of Social Research*. 4th edition. The Free Press. New York. 588pp.
- Bailey, K. D. (1998). *Methods of Social Science Research*. Free Press. Collier Macmillan Publisher, New York. 589pp.
- Baker, J. (2016). Analyzing urban poverty: A summary of methods and approaches: World Bank policy Research working paper No. 3399. pp 1-7.
- Bhowmik, S. K. and Saha, D. (2011). Financial accessibility of the street vendors in India: Cases of inclusion and exclusion. Tata Institute of social science Mumbai-India.
- Bikombo, B. G. (2014). Understanding of Household food insecurity and coping strategies of street traders in Durban. Dissertation for Awards of MSc. Degree at University of South Africa. 121pp.
- Bogale, A. and Shimelis, A. (2009). Household level determinants of food insecurity in Rural areas of Dive Dawa Eastern Ethiopia. *Americana Journal of Food Agriculture Nutrition and Development* volume 9 No 9. pp 1-13.
- Bromley, R. (2000). Street vendors and public policy: A global review. *International Journal of Social and social policy* 20(1/2): 1-28.
- Bzugu, P. M., Gwary, M. M. and Idrisa, Y. (2005). Impact of Extension Services on Rural Poverty Alleviation among Farmers in Askira Uba Local Government Area, Borno State. *Sahela Analyst* 7(1-2): 94-1.

- Cancian, M. and Reed, D. (2009). Family structure, childbearing and parental employment: implications for the level and trend in poverty. *Focus* 26(2): 21-26.
- Carney, D. (2002). Sustainable livelihoods approaches. Progress and possibilities for change. London: Department for International Development.
- Chaudhuri, S. (2015). Urban poor economic opportunities and sustainable development through traditional knowledge and practices. *A Journal of Global Bioethics* 2015; 1-6.
- Chhetri, A. K. and Maharjan, K. L. (2006). Food insecurity and coping strategies in rural areas of Nepal a case study of Dailekh District in mild western development region. *Journal of International Development and Cooperation* vol. 12, No 2, 2006.pp 25-45.
- Coates, J., Swindale, A. and Bilinsky, P. (2007). Household Food Insecurity Access Scale (HFIAS) for Measurement of Household Food Access. *Indicator Guide* (v. 3). Washington, D.C.: FHI 360/FANTA.
- Dagno, W. (2011). Assessment of factors contributing to Food Insecurity to smallholders farmers in Mbulu District, Manyara Region. Dissertation of Award of MSC Degree at Sokoine University of Agriculture, Morogoro, Tanzania. 93pp.
- Damtew, T. (2017). Effect of Small Scale Irrigation Zone Southern Ethiopia. Dissertation for awards of Master of Science at Hawassa University, Ethipoa. pp 1-111.
- Dauda, S. O. R. (2010). Women status household food security and coping strategies in Nigeria. *Pakistan Journal of Social Science* 7(3): 262-268.
- Demeke, A. B. and Zeller, M. (2009). Using panel data to estimate the effect of rainfall shocks on smallholders food security and vulnerability in rural Ethiopia. pp. 185-206.

- Dercon, S. and Krishnan, P. (1996). Income portfolios in rural Ethiopia and Tanzania. *Development Studies* 35(1): 1-38.
- Devereux, S. (2006). Identification of methods and tools for emergency assessments to distinguish between chronic and transitory food insecurity and to evaluate the effects of various types and combinations of shocks on these different groups, World Food Programme, Emergency Assessments Branch (ODAN), Rome.
- DFID, Department for International Development (1999). Sustainable livelihoods and poverty elimination. London: Department for International Development.
- DFID, Department for International Development (2000). Sustainable Livelihoods Guidance.
- Drimie, S., Faber, M., Vearey, J. and Nunez, L. (2013). Dietary diversity of formal and informal residents in Johannesburg, South Africa. BMC public health. pp 1-8.
- Duressa, T. F. and Lemma, T. (2016). Livelihood diversification and food security among household: The case of Hovo Woreda Oromia National Regional states Ethiopia. *International Journal of Agriculture*. Issue 1 No 1 pp 1-18.
- Dzanja, J. K., Fazey, I. and Christie, M. (2013). The role of social capital on rural food security: The case of of Dowa and Lilongwe Districts in central Malawi. *Access International Journal of Agriculture Sciences* 1(4): 46-56.
- Echebiri, R. N., Ndubuisi, C. O. and Nwaogu, D. C. (2017). Effects of livelihood diversification on food security status of rural farm households in Abia state Nigeria. *Scientific Paper Series Management, Economic Engineering in Agriculture and Rural Development* vol.17, 2017. pp 1-8.

- Ellis, F. (2000). *Rural Livelihoods and Diversity in Developing Countries*. Oxford: Oxford University Press. pp 1-10.
- Ellis, F. (2007). Household strategies and rural livelihood diversification. *Journal of Development Studies* 35(1): 1-38.
- Endalew, B. Muche, M. and Tadesse, S. (2015) Assessment of food security situation in Ethiopia: A review. *Asian Journal of Agricultural Research* 9: 55-68.
- Endalew, B., Koricho, T. and Much, M. (2014). Determinants of Household food security among southwest Ethiopia rural households. *Asian Journal of Agricultural Research* 8: 248-258.
- Esquivel, V. (2010). The informal economy in greater buenos aires: Urban research report (9) A. Women in Informal Employment Globalizing and Organizing. pp 1-48.
- Ezeama, N., Ibeh, C., Adinma, E., Emelumadu, O. and Adogu, P. (2015). Coping with Household Food Insecurity: Perspectives of Mothers in Anambra State, Nigeria. *Journal of Food Security*, Vol 3, No. 145-154.
- FANTA, Food and Nutrition Technical Assistance (2005). Measuring Household Food Insecurity Workshop II Report: October 19, 2005. Washington, DC: FANTA at AED. 17pp.
- FAO, Food and Agriculture Organisation of the United Nations (1996). World Food Summit. Food and Agriculture Organisation of the United Nations, Rome-Italy.
- FAO, Food and Agriculture Organisation of the United Nations (2013). Resilience Index Measurement and Analysis model. Food and Agriculture Organisation of the United Nations, Rome-Italy.

- FAO, Food and Agriculture Organisation of the United Nations (2016). Resilience Index Measurement and Analysis - II. Food and Agriculture Organisation of United Nations, Rome-Italy.
- FAO, Food and Agriculture Organisation of the United Nations (2011). Guidelines for measuring household and individual dietary diversity, Food and Agriculture Organisation of the United Nations, Rome, Italy.
- FAO, Food and Agriculture Organisations of the United Nations (2006). Distinguishing between chronic and transitory food insecurity in emergency needs assessment, Food and Agriculture of United Nations. Rome.
- Farzana, F. D., Rahman, A. S., Sultana, S., Raihan, M. J., Haque, M. A., Waid, J. L., Ahshanul, H., Jillian, L., Nuzhat, C. and Tahmeed, A. (2017). Coping strategies related to food insecurity at the household level in Bangladesh. *PLoS ONE* 12: 1-4.
- Faustine, E. M. (2016). Coping strategies and Household resilience to food Insecurity in Chamwino and Manyoni Districts. Dissertation of Award of Phd Degree at Sokoine University of Agriculture, Morogoro. 194pp.
- Frankenberger, T. (2012). Enhancing resilience to food security shocks. TANGO International, Inc.
- Frankenberger, T. R. (1992). Indicators and data collection methods for assessing households food security. UNICEF, Rome-Italy.
- Frayne, B. (2010). The State of Urban Food Insecurity in Southern Africa. Urban Food Security Series No. 2. Queen's University and AFSUN: Kingston and Cape Town. 56pp.

- Frost, P., Bruce, C., Manyewu, M., Alois, M. and Kozanayi, W. (2007). In search of improved rural livelihoods in semi-arid regions through local management of natural resources: lessons from case studies in Zimbabwe. *World Development* 35, 11. pp 1961-1974.
- Fuwa, N. (2000). The poverty and heterogeneity among female-headed households revisited: The case of Panama. *World Development* 28(8): 1515–1542.
- Gebre, G. G. (2012). Determinant of food security among households in Addis Ababa city, Ethiopia. *Interdisciplinary Description of Complex Systems* 10(2): 159-173.
- Gecho, Y., Gezehegu, A., Lemma, T. and Alem, D. (2014). Livelihood strategies and household food security of rural Wolaita Zone, Sothern Ethiopia. *Journal of Developing Country Studies Vol. 4, No 14. pp1-14.*
- Gowele, F. V. (2011). Gender analysis of the food security status, assets, shocks and coping strategies among EFSP beneficiaries in KwaZulu Natal Province (South Africa). Dissertation for Awards Degree of Master of Science at Ghent University. 104pp.
- Grootaert, C., Oh, G. and Swamy, A. (1999). Social Capital and Development Outcomes ingrowth of Pakistan. *Pakistan Business Review* 18(1): 1-18.
- Gujarati, D. N. (2009). *Baisc Econometrics*. Fourth edition. MacGraw-Hill, New York. 909pp.
- Habib, Z. H. (2011). Performance of Evening Street markets of agric-food products in Morogoro Municipality. Dissertation for Award Degree of MSc at Sokoine University of Agriculture, Morogoro, Tanzania. 80pp.

- Haile, H. K., Alema, Z. G. and Kudhlande, G. (2005). *Causes of Household Food Insecurity in Koredegaga Peasant Association, Oromiya Zone, Ethiopia*. Working Paper, Department of Agricultural Economics, University of Free State, South Africa. 12: 2051-2065.
- Haile, M. (2005). Weather patterns, food security and humanitarian response in sub-Saharan. *Philosophical Transactions of the Royal Society B: Biological Sciences* 3(60): 2169–2182.
- Hammer, B., Prskawetz, A. and Freud, I. (2015). Production activities and economic dependency by age and gender in Europe: A cross Country comparison. *The Journal of the Economies of Ageing* 5: 86-97.
- Hatloy, A., Hallund, J., Diarra, M. M. and Oshaug, A. (2000). Food variety, socio-economic status and nutritional status in urban and rural areas in Koutiala, Mali. *Public Health Nutrition* 18(3): 57-65.
- Hlengwa, S. P. (2016). Street vending and the use of urban public spaces in Tongaat central Business District, KwaZulu Natal. A Dissertation for Award Degree of Master of Science at KwaZulu Natal. 116pp.
- Hoddinot, J. and Yohannes, Y. (2002). *Dietary Diversity as a Food Security Indicator*. Washington, DC: Food Consumption and Nutrition Division of the International Food Policy Research Institute. 50pp.
- Husain, S. Yasmin, S. and Islam, S. (2015). Assessment of socioeconomic aspect of street vendors in Dhaka city: Evidence from Bangladesh. *Asian Journal of Social Science* 11(26): 1-11.
- Idrisa, Y. L., Gwary, M. M. and Ibrahim, A. (2006). Determinants of Adoption of Cassava Farming Technologies in Mubi north Local Government Area of Adamawa State Nigeria. *Journal of Production Agriculture and Technology* 2(2): 2636-2642.

- Ifeoma, J. I. and Agwu, A. E. (2014). Assessment of food security situation among farming households in Rural areas of Kano state, Nigeria. *Journal of Central European Agriculture* 2014 15(1): 94-107.
- ILO, International Labour Organisation (2002). Women and men in the informal economy: A statistical picture. Geneva, ILO.164pp.
- Jebran, K., Abdullah, Iqbal, A. and Ullah, I. (2016). Effects of Remittances on Per Capita Economic growth of Pakistan. Research gate. pp 1-19.
- Kamangu, H. E. (2016). Assessment on the State of Household Food Security in Bahi District Tanzania. *International Journal of Food Nutrition and Safety* 2016; 1-12.
- Kassa, K. and Eshetu, Z. (2014). Situation analysis of rural livelihoods and socioeconomic dynamics for sustainable rural development: The case of Legehida Woreda (District), South Wollo of Ethiopia. *Journal of Agriculture and Environmental Management* 3(3): 201-208.
- Kayunze, K. A. and Mwangeni, E. A. (2013). Illness and Food Security in Rufiji District Tanzania. *Journal of Biology, Agriculture and Health Care* 3(4): 1-9.
- Kedir, K. B. (2015). Livelihood and Coping strategies of rural households in Abele Lida Peasant Association of Shebedino District, southern Ethiopia. Dissertation for Award Degree of MSc at University of South Africa. 207pp.
- Kennedy, G., Ballard, T. and Dop, M. (2011). *Guidelines for Measuring Household and Individual Dietary Diversity, Nutrition and Consumer Protection Division*. Food and Agriculture Organisation of United Nation, Rome Italy. 1-3pp.
- Kikech, O. (2004). Survival Strategies among the Poor Slum Dwellers and their effects on Urban Poverty: The case study of Kibera slum. Dissertation for Award Degree of MSc. at University of Nairobi. Nairobi-Kenya. 62pp.

- Kimaiyo, J., Kiptot, E., Tanui, J., Oduol, J., Kegode, H., Isubikalu, P., Buyinza, J., Chemangei, A., Nyangas, S. and Okia, C. (2017). *Livelihood Analysis of Households in Manafwa and Kapchorwa. Research Report*. World Agroforestry Centre, Nairobi, Kenya. 81pp.
- Kothari, C. R. (2004). *Research Methodology. Methods and Techniques*, New Delhi, India. 418pp.
- Krause, N. M. and Jay, G. M. (1994). What do global self-rated health items measure? *Medicalcare*. pp 930–942.
- Krishna, A. and Shrader, E. (2000). Cross-Cultural Measures of Social Capital: A Tool and Results From India and Panama *Social Capital Initiative Working Paper No. 21*.
- Kumburu, N. P., Basili, S. A. L., Makungu, I. M. A. and Warsanga., W. B. (2013). Women roadside vegetable selling in Kilimanjaro: The relationship between demography, income generating and employment creation. *Journal of Co-Operative and Business Studies Volume 1*.
- Kuwornu, J. K. M., Suleyman, D. M. and Amegashie, D. P. K. (2012). Analysis of food security status of farming households: In the Forest Belt of the Central Region of Ghana. *Russian Journal of Agricultural and Socio-economic Sciences* 1(13): 26 - 42.
- Lapah, C. Y. (2013). The social-Economic Trajectories of migrant street vendors in urban South Africa. *Mediterranean Journal of Social Science* 2013; 120-122.
- Leza, T. and Berhanu, K. (2015). Determinants of Rural farm household food security in Boloso Sove District of Wolaita Zone Ethiopia. *Asian Journal of Agricultural Extension, Economics and Sociology* ISSN: 2320-7027. pp 1-12.

- Liwenga, E. T. (2003). *Food Insecurity and Coping Strategies in Semiarid Areas: The Case of Mvumi in Central Tanzania*. Thesis for Award degree of PhD at Stockholm University, Sweden. 189pp.
- Luca, M. D. (2010). *Livelihoods Strategies and Household Resilience to food insecurity: An Empirical Analysis to Kenya*. Food and Agriculture Organisation of United Nation., Rome. 30pp.
- Lund, F. (1998). *Women Street Traders in Urban South Africa: A Synthesis of Selected Research Findings*. University of Natal Durban. 50pp.
- Luzangi, S. D. (2017). *Effect of Behaviour change Intervention to improve Child Nutrition: A case study of Mwanzo Bora Nutrition Program in Morogoro*. Dissertation for Award Degree of Master of Science at Sokoine University of Agriculture. 110pp
- Lyons, M. (2013). Pro-poor business law? On MKURABITA and the legal empowerment of Tanzania's street vendors. *Hague Journal on the Rule of Law* 5(1): 74-95.
- Maliyamkono, T. L., Mason, H., Mugoya, P., Mutakyahwa, R. G. and Osoro, N. (2012). *Transforming the informal sector (How to overcome the challenge)*. Dar es Salaam ESAUP.
- Massawe, G. D. (2016). *Farming systems and Household food security in Tanzania: the case of Mvomero and Kishapu Districts*. Thesis for Award Degree of Phd at Dublin University Collage. 296pp.
- Matata, J., Kiriro, A., Wandara, E. and Dixon, J. (2001). *Farming system approach to technology Development and Transfer in Zimbabwe*. FARMESA CGP/RAF/SWE, Harare. 420pp.

- Matshe, I. (2009). Boosting Smallholder Production for Food Security: Some Approaches and Evidence from Studies in Sub Saharan Africa. *Agrekon* 48(4): 483-511
- Matthew, B. and Ross, L. (2010). *Research Methods*, A practical guide for sciences, Rotolito Lombarda, Italy. 490pp.
- Matunga, B. N. (2008). Causes of Food Insecurity and Coping Strategies in Tanzania: A case of smallholders Farmers in Chamwino District. Dissertation for Award Degree of MSc. at Sokoine University of Agriculture, Morogoro. 88pp.
- Maxwell, D., Caldwell, R. and Langworthy, M. (2008). Measuring food insecurity: Can an indicator based on localized coping behaviours be used to compare across contexts? *Food Policy* 33: 533 - 540.
- Mazhambe, A. (2017). Assessment of the contribution of street vending to the Zimbabwe economy. A case of street vendors in Harare CBD. *Journal of Business and Management* 2017; 91-100.
- Mdegela S. (2014). Assessment of consumers' knowledge on the safety of vegetable produced in Morogoro Urban using low quality water. Dissertation of award of Master of Science at Sokoine University of Agriculture. 92pp.
- Menbere, S. (2014). Factors that affect Smallholder Farmers Livestock Extension Service Demand in Enset (*Ensete ventricosum*) Based Mixed Farming System of Southern Ethiopia. *International Journal of Livestock Production Research* 2(1): 1-11.
- Mendola, M. (2008). Migration and Technological Change in Rural Households: Complements or Substitutes? *Journal of Development Economics* 85(1-2): 150-175.

- Milanzi, A. H. (2011). The contribution of Mama Lishe activities towards household poverty alleviation in Morogoro Municipality, Tanzania. A Dissertation for Award Degree of Master of Arts at Sokoine University of Agriculture, Tanzania. 71pp.
- Mitullah, W. V. (2003). Street vending in African cities: A synthesis of empirical findings from Kenya, Cote D'Ivoire, Ghana, Zimbabwe, Uganda and South Africa. Background paper for 2005 World Development report. University of Nairobi. pp. 2-21.
- Mitullah, W. V. (2005). Street vending in African cities: Synthesis of empirical findings from Kenya, Cote Vour, Ghana, Zimbabwe, Uganda and South Africa. Background paper for the 2005 World development Report. University of Nairobi. pp 1-20.
- Mjonono, M. (2008). An Investigation of Household Food Insecurity Coping Strategies in Umbumbulu. A Dissertation for Award Degree of MSc at University of KwaZulu-Natal. Pietermaritzburg. 112pp.
- Mkemwa, T. H. (2015). Eating behaviour and dietary diversity among adult in Morogoro urban, Rural and Mvomero districts. A Dissertation for Award Degree of Master of Arts at Sokoine University of Agriculture, Tanzania. 86pp.
- MoHCDGEC, Ministry of Health, Community Development, Gender, Elderly and Children (Tanzania Mainland), MoH, Ministry of Health [Zanzibar], Tanzania Food and Nutrition Centre (TFNC), National Bureau of Statistics (NBS), Office of the Chief Government Statistician (OCGS) [Zanzibar] and UNICEF. (2018). *Tanzania National Nutrition Survey using SMART Methodology (TNNS) 2018.*

Dar es Salaam, Tanzania: MoHCDGEC, MoH, TFNC, NBS, OCGS, and UNICEF.

MoHCDGEC, Ministry of Health, Community Development, Gender, Elderly, and Children [Tanzania Mainland], Ministry of Health (MoH) [Zanzibar], National Bureau of Statistics (NBS), Office of the Chief Government Statistician (OCGS), and ICF. (2016). *Tanzania Demographic and Health Survey and Malaria Indicator Survey (TDHS-MIS) 2015-16*. Dar es Salaam, Tanzania, and Rockville, Maryland, USA: MoHCDGEC, MoH, NBS and OCGS.

Montgomery, H. and Weiss, J. (2005). Great expectations: Microfinance and poverty reduction in Asia and Latin America. Oxford Development Studies. *Taylor and Francis Journals* 33(3-4): 391-416.

Morduch, J. (1998). *Does Microfinance Really Help the Poor: New Evidence from Flagship Programmes in Bangladesh*. Development of Economics and HIID, Harvard University and Hoover Institution. 49pp.

Morgan, D. L. (2013). *Focus Group as Qualitative Research Design for Focus Group Discussion*. International Educational and Professional Publisher, Thousand Oaks. 17pp.

Mortazvi, Z., Dorosty, A. R., Eshranghan. M. R., Ghaffari, M., Moghaddam, A. A. and Mohammadi, M. (2017). Household food insecurity in South Eastern Iran: Severity and related factors. *International Journal of Food Science* 2017; 1-7.

Mramba, N. R. (2015). The Conception of Street Vending Business (SVB) in Income Poverty (SVB) in Income Mwanza, College of Business Education, International Business Research. 1-10pp.

- Msoka, C. T. (2007). *Street Vending in Dar es Salaam, Tanzania: The Dynamics Behind Continuing Vulnerability*. Institute of Development Studies University of Dar es Salaam, Dar es salaam-Tanzania. 15pp.
- Msoka, E. (2013). Do entrepreneurship skills have an influence on the performance of women owned enterprises in Africa? Case of micro and small enterprises in Dar es Salaam, Tanzania. *International Journal of Business, Humanities and Technology* 3(3): 53-62.
- Mtshali, S. M. (2002). *Livelihood Security in Rural KwaZulu-Natal, South Africa*. Thesis for Award Degree of PhD at University of Wageningen. 105pp.
- Mugoya, P. (2012). The informal retail trade sub sector in Tanzania: Size, tax potential and poverty reduction. In; Maliyamkono (Ed.), *Transforming the informal sector' (How to overcome the challenges)* Dar es Salaam pp. 67-102.
- Muhanga, M. (2017). Attitude of Voters towards Elections in Morogoro Municipality: A Reflection on 2015 General Election in Tanzania. *Journal of Public Policy and Administration*. Vol. 1, No. 2, 2017, pp. 56-64. doi: 10.11648/j.jpaa.20170102.
- Mulungu, C. A. and Myeya, H. E. (2018). Survival strategies and livelihood diversification of Ileje Migrants in Mbozi District, Southern Tanzania. *Journal of Africam Studies and Development*. ISSN 2141-2189, pp 1-8.
- Mutiba, C. E. (2009). Socio-cultural factors influencing attitude and perceptions on Food and Nutrition in Morogoro Municipality. Dissertation for Award of Master of Science at Sokoine University of Agriculture. 115pp.
- Muzaffar, A. T. (2009). Entrepreneurs of streets. An analytical work on the street food vendors of Dhaka city. *International Journal of Business and Management* 4(2): 1-7.

- Muzah, O. (2015). An assessment of Household Food Security in Urban and peri-urban areas; a case study of Bindura Municipal area, Mashonaland central, Zimbabwe. Dissertatiof for Award Degree of MSc. At Pietermaritzburg Campus, University of KwaZulu-Natal, Cape Town. 123pp.
- Myeya, H., E. and Kamangu, A. A. (2016). Assessment on the state of Household food security in Bahi District, Tanzania. *International Journal of Food Nutrition and Safety* 7(3): 126-137.
- Naicker, N., Mathee, A. and Teare, J. (2015). Food Insecurity in Households in Informal Settlements in Urban South Africa. *South African Medical Journal* 105(4): 268-270.
- Najafi, B. (2003). An Overview of Current Land Utilization Systems and their Contribution to Agricultural Productivity. Report on APO seminar on impact of land utilisation systems on environmental change unit, university of Oxford. [<https://pdfs.semanticscholar.org>] site visited on 12/08/2018.
- Nakibuuka, M. (2015). The vulnerable livelihoods of street vendors in Uganda: A case of Kampala central Division. Dissertation for Awards Degree of Master of Arts Institute of Social Studies, The Hague Neverlands. 72pp.
- Nations, U. (2014). World Urbanization Prospects: The 2014 Revision.: United Nations. New York. [www.sealedair.com] site visited on 12/08/2018.
- Ndobo, F. and Sekhampu, T. (2013). Determinants of vulnerability to food insecurity in South African Township: A gender analysis. *Mediterranean Journal of Social Science* 4(14): 1-15.

- Nelli, N. (2011). *The Resilience of Rural Ethiopian Livelihood, A case study from Haraghe zone, Eastern Ethiopia*, University of Jyvaskyla. 97pp.
- Ngangile, W. J. (2013). *Comparative study of Livelihood strategies and Food Security of recent Migrants and non Migrants in Kilombero Valley*. Dissertation for Award Degree of MSc. at Sokoine University of Agriculture, Morogoro, Tanzania.114pp.
- Ngongi, A. M. (2013). *Food Insecurity and coping strategies of farm Households in Kahama District, Tanzania*.Dissertation for Award of MSc. Degree at Sokoine University of Agriculture, Morogoro,Tanzania. 133pp.
- Nguyen, T., Tan, L., Moustier, P., Le Nhu, T. and Le Thi, H. (2013). *Inclusive Urban Development? Making space for Street Vending in Hanoi, Vietnam*, IIED, London. 40pp.
- Niemisto, N. (2011). *The resilience of rural Ethiopia Livelihood a case study from Hararghe zone Eastern Ethiopia*. Dissertation for Award Degree of Master of Science at University of Jyvaskyla. 97pp.
- Njaya, T. (2014). *Operations of street food vendors and their impact on sustainable Urban life in high density suburbs of Harare*. *Asian Journal of Economic Modelling* 2014; 1-21.
- Njaya, T. (2015). *Strategies for daily survival: The role of social capital among street vendors of Harare Metropolitan*. *Journal of Humanities and Social Science* Voolume 20(7): 1-8.
- Ntwenya, J. Kinabo, J., Msuya.J., Mamiro, P., Mamiro, D. and Katalambula, L. (2015). *Household Food Insecurity and Associated factors in rural communities: A case of Kilosa District, Tanzania*, *African Journal of Agricultural Research* 2015; 1-12.

- Oludimu, O. (1991). Contribution or Rural Non-farm Employment in Southwest Nigeria. In; *Issues in Africa Rural Development* (Edited by Dodss, C. and Olson, C.) Winlock International Institute for Agricultural Development, Arlington. pp.368-385.
- Owunka, C. N., Ihemezie, E. J. and Olumba, C. C. (2018). Household level analysis of food Insecurity and coping strategies: Evidence from Enugu state, Nigeria. *Advances in Social Science Research Journal* 5(6): 1-11.
- Owusu, M. A. (2013). Self-reported health status among street vendors in Accra. Dissertation for Award Degree of Master of Science in Public Health at University of Ghana. 65pp.
- Panwar, A. M. and Garg, V. (2015). Issues and challenges faced by vendors on urban streets: A case of Sonipat city India. *International Journal of Engineering Technology, Management, and Applied Science* Volume 3, Issue 2, ISSN. 2349-4476. pp 1-12.
- Parent, J. A. (2014). Food security and dietary diversity amongst smaller holder farmers in Haiti. Dissertation for Award of Degree of Master of Science at McGill University, Montreal.125pp.
- Policy. *International Journal of Scientific Research* Volume 7 issue ver III, November, 2014. pp 44-50.
- Putnam, R. D. (1995). Bowling Alone: America's Declining Social Capital. *Journal of Democracy* 6(1): 65–78.
- Qureshi, S. (2007). *Creating an Index to Measure Food Security: Identifying the Components and Determinants and Testing Usefulness*. Heller School for Social Policy and Management, Brandeis University. 44pp.

- Regassa, D. T. (2016). Rural livelihood strategies and Household food security: The case of farmers around Derba cement factory, Sululta Worenda Oronia Regional state, Dissertation of Award of Master of Art University of Adis Ababa. pp155.
- Regassa, N. and Stoecker, B. J. (2011). Household food insecurity and hunger among households in Sidama district, southern Ethiopia. *Public Health Nutrition* 15(7): 1276–1283.
- Setebe, J. (2011). Informal Labour Makert in Tanzania: A case of Kinondoni district Dar es Salaam, Diaconia University of Applied Sciences. Helsinki- Finland. 49pp.
- Shimbe, S. P. (2008). The contribution of Urban Agriculture to Household: The case of Morogoro municipality, Sokoine university of Agriculture, Morogoro. 53pp.
- Sikwela, M. M. (2008). Determinants of Household Food Security in the Semi-Arid Areas of Zimbabwe: A Case Study of Irrigation and Non-Irrigation Farmers in Lupane and Hwange Districts. Thesis for Award Degree of Master of Science in Agriculture, Department of Agricultural Economics and Extension, University of Fort Hare, Republic of South Africa. 148pp.
- Skinner, C. (2008). *Street Trade in Africa: A review*. KwaZulu-Natal: School of Development Studies, University of Kwazulu-Natal. 25pp.
- Swindale, A. and Paula, B. (2006). Household Dietary Diversity Score (HDDS) for Measurement of Household Food Access: *Indicator Guide* (v.2). Washington, D.C.: FHI 360/FANTA.
- Taruvinga, A., Muchenje, V. and Mushunje, A. (2013). Determinants of rural household dietary diversity: The case of Amatole and Nyandeni districts, South Africa, *International Journal of Development and Sustainability* 2(4): 2233-2247.

- Tawodzera, G. (2010). *Vulnerability and resilience in crisis: Urban household food insecurity in harare*, University of Cape Town. Cape Town. 264pp.
- Telteh, M. (2011). *Assessing Household Livelihood strategies and food security status in Amasaman, Ghana*, Dissertation for Award Degree of MSc. at Lund University, Lund. 23-27pp.
- Timothy, M. (2017). *An analysis of urban household food insecurity in Cape Town metropolitan District, South Africa: A livelihoods and capability approach*. Dissertation for Award Degree of Master of Science at Ghent University. 86pp.
- Tumaini, U. and Msuya, J. (2017). *Coping Strategies and resilience to Food Insecurity in Urban-rural continuum of Morogoro and Iringa, Tanzania*. *Business Education Journal, Volume I Issue III*. 9pp.
- Uma, U. O. (2016). *Effects of access to microcredit on the food security status of crop farm households in Niger delta, Nigeria*. Dissertation for Award Degree of Phd at University of Nigeria. 185pp.
- URT, United republic of Tanzania (2002). *Morogoro region socio-economic profile*. United republic of Tanzania, Presidents office, Planning and privatisation. Dar es Salaam. 229pp.
- URT, United republic of Tanzania (2012). *Population and housing census*. National Bureau of Statistics, Ministry of Finance, Dar es Salaam and Office of Chief government Statistician President's office, finance, economy and development planning, Zanzibar.264pp

- Uwitije, C. (2016). Contributions of street vending on livelihood of urban low income households in the city of Kigali-Rwanda. Dissertation for Award Degree of Master of Arts at University of Nairobi-Kenya. pp 70-75.
- Vakili, M., Abedi, P., Shariffi. M. and Hossein, M. (2013). Dietary Diversity and Its Related Factors among Adolescents: A Survey in Ahvaz-Iran. *Global Journal of Health Science* 5(2): 1-9.
- Woller, G., Wolfe, J., Brand, M., Fowler, B. and Parrot, L. (2009). Livelihood and Food Security Conceptual Framework, Livelihood and Food security Technical Assistance (LIFT) Project FHI 360, Washington DC. pp36.
- World Bank (1986). *Poverty and Hunger: Issues and Options for Food Security in Developing Countries*. IBRD, Washington, DC. 69pp.
- World Bank (2009). An overview of the legal intuitional and regulatory framework for Bank insolvency. The World Bank, New York.76pp.
- World Bank (2009). *Concept of IS. Informal Labour Markets in Transition Economies*. The World Bank Group, New York. 48pp.
- World Food Programme (WFP) and Food and Agriculture Organisation (FAO), (2010). *The State of Food Insecurity in the World: Addressing Food Insecurity in Protracted Crises*. 62pp.
- Wright, H., Kristjanson, P. and Bhatta, G. (2012). Understanding Adaptive Capacity: Sustainable Livelihoods and Food Security in Coastal Bangladesh. CCAFS Working Paper No. 32. CGIAR.
- Yang, D. (2011): Migrant remittances. *The Journal of Economic Perspectives* 25(3): 129-151.

- Zahav, E. E. (2016). Food security and the urban informal economy in South Africa: The state of knowledge and perspectives from street-food traders in Khayelitsha. Thesi for Award Degree of Master of Art in Public Administration at Stellenbosch University, Stellenbosch. 84pp.
- Zakari, S., Ying, L. and Song, B. (2014). Factors influencing Household food security in West Africa. The case of southern Niger. *Journal of Sustainability* 6: 1-12.
- Zelege, T. (2017). Impact of Livelihood diversification on rural household's food security in Fedis Weroda, Eastern Hararge Zone, Oromiya Region, Ethiopia, University of Haramaya, Haramaya- Ethiopia. *Journal of Poverty, Investment and Development* 32: 36-42.

APPENDICES

Appendix 1: Questionnaire for vegetable street vendors

INTRODUCTION

Good morning/afternoon,

Dear respondent, my name is..... a Master of Science in Human Nutrition Degree Student at Sokoine University of Agriculture, Morogoro. I am currently doing research so as to make my studies successful. The title of my research is *“Livelihood strategies and Household Food Security of vegetable street vendors in Morogoro Town: An empirical analysis”*. All the information that you provide will be treated confidentially and will be used only for purposes of this study.

General information

Questionnaire No..... Name of respondent.....Date of interview.....

Location.1 Ward.....2.Street/Mtaa.....

Section A Demographic and social economic characteristics

1. Sex of respondent (1= Male 2= Female).....()
2. Age of the respondent (in complete year).....
3. Current marital status (Never Married=1, Married=2, Divorced=3, Widowed=4..... ()
4. Education level of respondent (1=Primary education 2=Secondary education 3=College 4=Other specify.....()
5. What is the occupation of respondent? (1=Farmer 2= Trade/Business 3=Employed government/private 4= Manufacturing sector 5= Retired 6=Other specify.....()

6. Are you migrant or indigenous of this municipal/area? (1=Native, 2=Migrant).....()
7. If the answer is migrant in question 6 above what was the reason for your immigrating? (1=Follow my relatives 2=For casual Labour 3=Street vending 4=Others (specify).....()
8. When did you start vegetable vending business?.....
9. From whom you obtain vegetable for selling? (1=From growers 2=From wholesalers 3= From Agent 4=Own production).....()
10. What is the source of capital for your business? (1=Borrowed 2=On credit 3= Own capital 4=Facilitated).....()
11. Do you have any other source of income apart from vegetable vending? (1=Yes 2=No)...()
12. If yes, which one contributes more (1=Vegetable 2= Others (specify).....()
13. How is vegetable vending organized?(1=Is a family business 2=Working for someone eslse 3=A group business 4=For yourself 5=Other specify.....()
14. Is there any restriction in areas where your doing the business? (1=Yes 2=No)....()
15. If yes please explain..... ()
16. Do you have other family member who depends on you? (1=Yes 2=No).....()
17. If yes in question 17 above how many children.....
Spouse.....Others.....

Section B Household food security

status

NO	Question	Response option	Code
1	In the past 30 Days, did you worry that would not have enough food?	0 = No (skip to Q2) 1=Yes	□□
1a	How often did this happen?	1 = Rarely (once or twice in the past	□□

		four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	
2	In the past four weeks, were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources?	0 = No (skip to Q3) 1=Yes	<input type="checkbox"/>
2a	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	<input type="checkbox"/>
3	The past four weeks, did you or any household member have to eat a limited variety of foods due to a lack of resources?	0 = No (skip to Q4) 1 = Yes	<input type="checkbox"/>
3a	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	<input type="checkbox"/>
4	In the past four weeks, did you or any household member have to eat some foods that you really did not want to eat because of a lack of resources to obtain other types of food?	0 = No (skip to Q5) 1 = Yes	<input type="checkbox"/>
4a	How often did this happen?	1 = Rarely (once or twice in the past four weeks)	<input type="checkbox"/>

		2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	
5	In the past four weeks, did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?	0 = No (skip to Q6) 1 = Yes	<input type="checkbox"/>
5a	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	<input type="checkbox"/>
6	In the past four weeks, did you or any other household member have to eat fewer meals in a day because there was not enough food?	0 = No (skip to Q7) 1 = Yes	<input type="checkbox"/>
6a	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	<input type="checkbox"/>
7	In the past four weeks, was there ever no food to eat of any kind in your household because of lack of resources to get food?	0 = No (skip to Q8) 1 = Yes	<input type="checkbox"/>
7a	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks)	<input type="checkbox"/>

		3 = Often (more than ten times in the past four weeks)	
8	In the past four weeks, did you or any household member go to sleep at night hungry because there was not enough food?	0 = No (skip to Q9) 1 = Yes	<input type="checkbox"/>
8a	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	<input type="checkbox"/>
9	In the past four weeks, did you or any household member go a whole day and night without eating anything because there was not enough food?	0 = No (questionnaire is finished) 1 = Yes	<input type="checkbox"/>
9a	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	<input type="checkbox"/>

C. Dietary diversity score

Now I would like to ask you about any types of foods that you ate at your household in 24

hours

Breakfast.....

Lunch.....

Dinner.....

Any drinks or other foods.....

Section D Coping strategies during food shortage

What kind of coping strategies do you undertake in times of food shortage?

.....

.....

.....

.....

.....

.....

.....

Section E Livelihood assets

Natural capital

1. Do you have access to land? (Yes= 1, No=0).....()
2. If yes in question 1 above what is the size of your total land in hectare.....
3. If yes in question 1 above, can you tell me the terms of access (1=Owned 2=Shared 3=rented).....()

Physical (infrastructure, productive goods and equipment) and Access to buying point of vegetables.

Item	Quantity	Terms of access		
		Owned	Shared	Rented
House				
Motorcycle				
Bicycles				
Cellphone				

2. How much time it takes you to access the nearest vegetable selling point (in hours).....

3. What type of transportation do you use for doing your business?

.....

Human capital (skills, health, ability to labour or capabilities)

1. Have you received any training on entrepreneurship development? (1=Yes 2=No).....()

2. If yes, please specify what the training was all about.....

3. What are the benefits you got from the seminar/training?.....
.....
.....

4. If no in question 2 above what do you think are the reasons for not attending training?

.....
.....
.....

5. How do you describe your health status in general? (1=Poor health, 2=moderately healthy, 3= good health.....()

Financial asset

1. Do you have access to credit services) (1= Yes 2= No).....()

2. If yes in question 1 above from where do you get credit(1=Local money lender 2=Friends and relative 3=NGOs, 4=Commercial Bank 5= VICOBA 6=Other.....()

3. For what purpose do you receive credit? (1=To purchase agriculture input 2= To purchase food 3=For vegetable business 4=Other (specify).....()

4. If you don't have access to credit, what is your main reason? (1= No credit service in the area, 2= high interest rate, 4= Fear of indebtedness, 5=, lack of awareness 6, I don't need it, 7 =If other please specify.....())
5. Do you receive remittance? (1= Yes, 2= No).....())
6. If yes to question number 5, who send you a remittance? (1=My son/daughter, 2=parents 3= other relatives, 4= Organisation, 5=other please specify).....())

Social Networks (trusts and cooperation on tasks)

1. In which Community Based Organisations you are a member? indicate by putting tick

Local social relation structures	VIKOBA	SACCOS	Religious Association	Women association	Men association	Committee or local grouping
Membership (YES)						

2. What kind of support do you get from your membership in question 1 above.....

What are challenges do you get as a member of community association?

.....

Appendix 2: Checklist for Municipal Officials

INTRODUCTION

Good morning/afternoon,

Dear respondent, my name is..... a Master of Science in Human Nutrition Degree Student at Sokoine University of Agriculture, Morogoro. I am currently doing research so as to make my studies successful. The title of my research is *“Livelihood strategies and Household Food Security of vegetable street vendors in Morogoro Town: An empirical analysis”*. All the information that you provide will be treated confidentially and will be used only for purposes of this study.

Name interviewer

Name of interviewee Date of Interview.....

1. What strategies do you have to support informal sector/smaller business including vegetable vending activities?
2. What kind of support do you provide to Vegetable vendors?
3. What are the constraints facing in providing support to vegetable vendors?
4. What are possible challenges facing vegetable vendors?
5. Have you ever conducted any entrepreneur seminar/training to vegetable vendors?
6. Are there any NGO working in partnership with LGA to support vegetable vendors in your Municipal?
7. Have you ever being facilitating formation of entrepreneurship groups?
8. What are the municipal regulations with regard to vegetable vending in Morogoro town?
9. How are they enforced?

Appendix 3: Checklist for Focused Group Discussion (Vegetable street vendors)

INTRODUCTION

Good morning/afternoon,

Dear respondent, my name is..... a Master of Science in Human Nutrition Degree Student at Sokoine University of Agriculture, Morogoro. I am currently doing research so as to make my studies successful. The title of my research is *“Livelihood strategies and Household Food Security of vegetable street vendors in Morogoro Town: An empirical analysis”*. All the information that you provide will be treated confidentially and will be used only for purposes of this study.

Name interviewer

Name of interviewee Date of Interview.....

1. What local government do to support vegetable vending activities in your area?
2. What do you think are the major constraints that influence local government support vegetable vendors?
3. Have you ever attended any seminar/training concerning smaller business?
4. Where do you get business skill for conducting vegetable vending activities?
5. Do you have specific place for doing your business allocated by LGA?
6. What are challenges/ constraints facing your business?
7. Do you wish to continue in this business apart from pointed challenges?
8. What are short-term and long term plans in surviving in this business?
9. What are your opinion on forming an association (If does not exist) in terms of acceptance, willingness to meet the costs of running such an association
10. What is your opinion on means of accessing funds from the micro-finance sector?
11. What is perception of the community regarding your vending business? (Do you respect/not respected?)
12. What strategies do you use to cope with food shortage?