

Assessment of the Role of Urban Farming On The Livelihood Of Urban Farmers; A Case Of Moshi Municipal, Tanzania, Africa

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ABSTRACT

This study focuses on the role of urban agriculture on the livelihood of urban farmers in Moshi Municipal, Tanzania, Africa. The general objective was to achieve the role of urban farming on the livelihood of urban farmers in Moshi urban, Tanzania and Africa. Specifically, the study identified the contribution of urban farming on the livelihood of urban farmers. The cross-sectional design was used to gather data on relatively large number of people at the same time. The study used 99 respondents For instance, questionnaires was used to obtain data from ten people. The study respondents were urban farmers, executive officer and street executive officer. Both primary and secondary data were collected where questionnaire, interviewing key informants and observation method was used in data collection. SPSS and content analysis were used for data collection where information was summarized in frequency, percentage narratives and presented in table and figures.

INTRODUCTION

Background of the Research Problem

Globally, the urban farming agenda is an Food and agriculture organization (FAO) flagship initiative to enhance sustainable development, food security and nutrition in urban areas in the world; it consists of a vast range of policies, program and initiative developed and implemented in partnership with different stakeholders such as civil society, private sectors and government, (FAO,2017). At least 55% of the world population already lives in urban areas and 80% of all food produced globally is destined for consumption in urban space, social, economic and environmental sustainability of food system and the evolution of urban diets was be largely dependent on the management urban farming in urban areas, World Food Programme (WFP,2019).Therefore a greater focus on the urban farming is long overdue, FAO 2030 vision for the urban farming agenda is an integral part of the organization vision of resilient, integrated, sustainable and inclusive food system which ensure that all people in urban are free from hunger and all forms of malnutrition (FAO,2018) [1-3].

In Africa, urban farming has expanded enormously over past two decades due to the economic crises in most African countries, for the poor, food security is usually the main motivation for farming in town and for some it is even a survival strategy nevertheless many of poor sell some of their produce, partly to be able to afford other basic household needs but also because some crops are perishable and cannot be stored or because storage is not available in urban area (Mlozi,2015).Urban farming is attributed a potentially beneficial role in terms of the urban economy, urban food supply and urban development in general although in Africa urban farming largely is an informal economic activity, urban farming provides employment as well as an income for those involved, this income can be realized directly through the sale of crops like vegetable, United Nation Development (UNDP,2018)[4-6].

In Tanzania's town, urban agriculture is very common and involves the rising of livestock (dairy cattle, goat, chicken and pigs) and the cultivation of crops (maize, cassava, legumes vegetable and fruits) urban farming is undertaken for both subsistence and commercial purposes and has evolved to the point where it regarded as a survival strategy for the urban poor and economic imperative for the wealthier households, United republic of Tanzania (URT,2016).It is seen as especially

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important for low income households and for female-headed households in particular, the gender aspect in Tanzania is thought to be important because land and title deeds of lands are less easily accessible to women and they are also less likely to use modern farming techniques or inputs, moreover a number of policy measures situation of Tanzania economy in the 1980s had a negative impact on large segments of the population both rural and urban (Agriculture,2015) [7-10].

In Moshi Urban, many people involved in urban farming such as planting crops and raising animals. Some of them prepare vegetables and fruits garden, while others are growing banana around their home place in order to produce food in their family. Few are raising livestock like dairy cattle and other conduct poultry farming that used to increase income and produce food for family. But, urban farmers suffer greater ecological and economic pressure than rural faming and require more intensive and better controlled production to stay competitive (Kiduanga, 2017). In confined urban space many cultivators in urban areas use different methods and techniques in attempt to maximize their cultivatable land to gain more produce. Some farmers grow food on their balconies and rooftops by using plastic container and plastic bags that are filled with soil; in Moshi urban simple techniques like these greatly used to ensure efficient and optimal utilization of the small available land (prain, 2015) [11-15].

Statement of the Research Problem

This study intended to focus on the role of urban farming on the livelihood of urban farmers in which the use of poor technology grow food on their balconies and rooftops by using plastic container and plastic bags that are filled with soil tend to decrease the production on the farm which generate the farmers into poor living standards and continue depending on rural farmers (kiduanga, 2017) for food production in Moshi urban which led to the increase of food scarcity hence eruption of malnutrition, agriculturist fighting on this problem in Moshi urban that was help people to overcome the problem of malnutrition in their family [16-20].

Growing poverty, hunger and lack formal employment opportunity as well as the special opportunity provided by the urban including the growing demand for food, proximity to market and availability of heap resources like urban organic wastes, wastewater have stimulated the development of diverse urban farming around the town (Githugunyi), 2015.Many households in Moshi urban are facing a serious decline in their purchasing power and poverty level is on the rise. People have responded in various ways most notably by diversifying their income source other household's activities. Specifically, the middle income prefers growing their own vegetables due to their increased awareness of health risks associated with most farm produce in the market place [21,22].

Inspite of the challenges facing urban farming practices, both socio-economic and environmental problems, urban farming has been playing an important role as an alternative livelihood strategy. The study aims at assessing the role of urban farming on the livelihood of urban farmers in Moshi urban, Tanzania.

Research Objectives

General Objective of the Study

- The general objective of this study is to assess the role of urban farming on the livelihood of urban farmers in Moshi urban, Tanzania.

Specific Objective of the Study

- To determine the role of urban farming on the livelihood of urban farmers in Moshi urban, Tanzania.
- To examine factors that drive people to practice urban farming in Moshi urban, Tanzania.

Research Questions

- What is role of urban farming on the livelihood of urban farmers in Moshi urban, Tanzania?
- What are the factors that drive people to practice Urban Farming in Moshi Urban, Tanzania?

Significance of the Study

The study aims to assess the contribution of urban farming to livelihoods farmers in Moshi municipality. It suggests the measures and recommendations that will led to sustainable urban farming in Moshi Municipal which can replicated to other areas of Tanzania which share similar characteristics. The findings of the study were also beneficial to the local residents since it was stimulated government and other institution to appreciate the importance of urban farming. Policy makers, planners, environmentalists, agriculturalists and other professionals are expected to take advantages of the findings of this study to improve their strategies towards solving the existing challenges facing sustainability of urban farming for today and future generations.

Scope and Delimitation of the Study

The study has been conducted in Kilimanjaro and more specific to Moshi Municipal, Tanzania, Africa. The study focused on the role of urban farming on the livelihood of urban farmers. Specifically, the study was considering the contribution of urban farming through people's perception in the study area to examine the role urban farming on the livelihood of urban farmer to farmers in Moshi Municipal to the development of people in the study area, examine the challenges that face urban farming and strategies that can be used to ensure sustainable management in Moshi Municipal and measures that can be used to address the challenge of urban farming.

Conceptual Framework

The diagrammatic represent the relationship between variables of the theoretical framework. The role of urban farming on the livelihood of urban farmer is expected to increase level of life of community in Moshi Municipal Communities as shown in the illustration bellow.

Conceptual Framework Showing the Relationship between Urban Faming and Livelihood Famers.

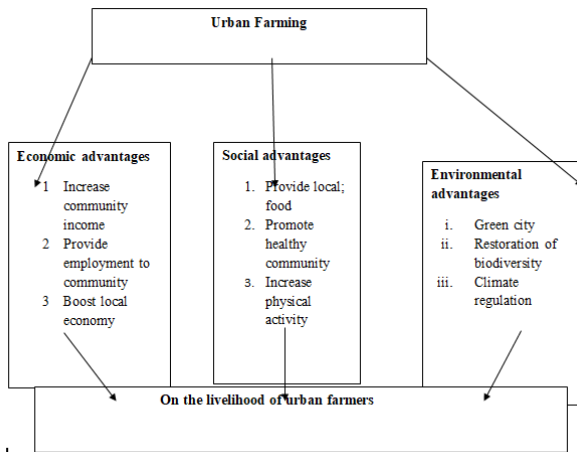


Figure 1.1: Conceptual framework showing the relationship between urban farming and livelihood farmers

Source

Adopted from Maxwell (2015)

The above framework is showing the relationship between variables as how urban farming influences the livelihood of urban of urban farmers in Moshi Municipal, Tanzania, whereby the first frame contained independent variable which is urban farming and the second frame the economic, social and environmental advantages of urban farming to the livelihood of urban farmers in Moshi Municipal, Tanzania.

Economic Advantages

The economic advantages of urban farming include the increase in community income, providing employment opportunities to the people and also contributed to the rise of the economy of urban farmers.

Social Advantages

The social advantages of urban farming include ensuring the availability of food, promoting the health of community and also improvement in living standard of the farmers.

Environmental Advantages

- The environmental advantages of urban farming include the restoration of biodiversity, influencing climate regulation and also promoting green environment.
- Therefore; the mentioned social, economic and environmental advantages played a great role on the livelihood of urban farmers in Moshi Municipal, Tanzania.

Theoretical And Empirical Reviews

This section consists of both theoretical and empirical review of the previous studies. The review of literature is done for the aim of ascertaining what has been researched by other scholars and identify the knowledge gap which is going to be covered present study.

Definition of Key Terms

Urban Farming

Urban farming is the practice of cultivating, processing and distributing food in or around urban area. Or is also termed used for animal husbandry, aquaculture, urban beekeeping and horticulture. Urban agriculture has the potential to improve public health, community engagement, and environmental quality. It includes any privately or commercially owned farms, community gardens, buildings integrated farms and indoor farms in urban area (Sipe, 2019).

Livelihood

Livelihood is defined as a set of activities essential to everyday life that are conducted essential to everyday life that are conducted over one’s life span. Such activities could include securing water, food, fodder, medicine, shelter, clothing; an individual livelihood involves the capacity to acquire a aforementioned necessities in order to satisfy the basic needs of themselves and their households. The activities are usually carried out repeatedly and in a manner that is sustainable and providing dignity (Majhi).

Urban Farmers

Urban farmers are the people who conducting urban farming, raising living organism for food or raw material but the most urban agriculture is for food and for decoration. The terms usually apply to people who do some combination of raising urban crops, orchard, vineyards, poultry or other livestock, a farmer might own a formed land or might work like laborer on land owned by others, but in advanced economies a farmer is usually farm owner (Stone).

Theoretical Review

This part of research provides information of the theory that was guides the research study. According to the Cambridge dictionary “theory means the general principles that explain a certain phenomenon. This study was guided by the theories of climate change.

Theories of Urban farming

Social Practice Theory system helps to provide the relationship between society and urban farming. The concept of social practice was proposed by Shove and Walker in 2005 and published by Dionysius in 2011. The theory explain in the relationship between population and food production in urban area and the human can solve the problem of food in the city due to the increase number of people in the city (pantzar).

He emphasized the real situation of population and the growth of urban and production of food led to food scarcity, theory insist society to interact with environment and to discover new technology in agriculture that can solve the problem of food. The theory suggests the factors that can be used to develop and managing urban farming system such as fund, labor, laws, policies and institutional framework.

Today social practice system is used in many disciplines to analyze different phenomenon which seem to be a stabling stone. For example, Donald sees system approach as the skeleton of science in the sense that it aims to provide a framework or structure of systems on production of food in urban of 42 particular disciplines and particular subject matters in an

orderly and coherent corpus of knowledge. In the field of urban farming, the theory sees this activity as complex phenomenon that requires appropriate technical solutions, sufficient organizational capacity, and co-operation between wide ranges of stakeholders (Morgan).

The theory attempts on analyzing social practice system, argued that the interdisciplinary and multi-sect oral considerations is needed for the proper management of urban farming, transportation, urban growth and development, land use pattern and food. He further argued that when food is seen as part of a system, the relationship of farming system to other parts of the system is revealed and thus the potential for greater sustainability of the operation increases (Bailey).

Strength of Social Practice System Theory

Social practice system viewed this emerging science as a platform from which issues that traditional scientific methodologies fail to handle can be approached. Such issues have either high uncertainty on urban family (example the scientific, technical, and managerial complexities of the system being considered, and the array of potential results) or high decision-making stakes.

Weakness of Social Practice System Theory

Through this theory the only criticism is that the ideas do not suggest the best way which can be used to practice urban farming whereas agriculture sectors do. Because of this, system approach has been opted for in order to describe a frame work which used urban. For example, in managing urban farming, system theory suggests different factors to be considered such as fund, labor, laws, policies and institutional framework. All these function as system and at the absence of one interdependent part, the whole system was failing. Experience developed from system theory has provided new insight for the researcher on the systems used by Moshi Municipal Council to manage urban farming.

Application of Social Practice System Theory

The theory was applied on this study because it relates and shows the relationship between society as the population increase and the need of food in the town that influence people to participate on agriculture activities in town. For example, the preparation of vegetable garden which are used as a food in town.

Modernization theory (Mbiba), views urban farming as a backward, subsistence and rural habit practiced by migrant who are new to urban areas until they acclimatize to the urban way of life or become employed in the formal sector. Mbiba state that the modernist theory finds urban farming to be damaging to the environment like soil erosion, loss of biodiversity and water pollution, and recommend its destruction or elimination without compromise. The activities are viewed as a temporary which should not be practiced in urban areas at all. The theory believes that there is no any contribution of urban dwellers because most of have formal employment and who practiced urban farming are the migrants from the rural.

Strength of the Modernization Theory

Modernization theory explained the environmental impact of urban farming and gives the idea that the urban farming practice can course the loss of biodiversity, soil erosion and water pollution due to intensive farming and the use of chemicals. This means that when we practice urban farming environmental conservation must be considered.

Weakness of the Modernization Theory

Modernization theory is misleading and at odds with goals of poverty alleviation and for food security. The theory is limiting only migrant from the rural to practice urban farming and those from the urban are eliminated from the practice due to that they have formal employment. The theory does not consider urban farming as business activity but only it considered it as for food production.

Application of Modernization Theory

The theory can be used to outlaw the negative effect on environment to be viewed as challenges to sustainable urban development and hence incorporate it in urban planning. That the theory insists on the use of technology in urban farming.

Research Methodology

Introduction

This section describes the process used under research methodology. these include research design, description of the study area, data collection tools, types and sources of data techniques of data collection, sampling and techniques of data analysis the above items were be used as a guideline that was enable the successful completion of this study.

Research Approach

The study used mixed method approach. The approach uses mixed method techniques which includes both qualitative and quantitative. The approach was used to establish information of urban farming in the study area. It is an appropriate as it helps the researcher to collect data in selected wards and process it without the use of any statistical or mathematical operation. It was also appropriate as a researcher gets some pictures to be used for the study during direct observation.

Research Design

Refer to the overall strategy that you choose to integrate the different components of the study in a coherent and logical way, thereby, ensuring you were effectively address the research problem (Morgan).The cross-sectional design was be used in the study. The research design supports the researcher on how to come across research results findings (sileyew).It selected because it assesses the phenomenon with the actual contents of life. The design was useful to this research as it enabled the researcher to gather data on relatively large number of people at the same time, for instance questionnaires data was used obtained from more than ten people.

The design enabled the researcher to increase knowledge about social phenomena and help to understand full behavior pattern of the concerned unit during data collection. Moreover, this

design is important to research as the researcher select some of the units.

Description of the Study Area

Location of the Study Area

Moshi Municipal is the one among of the seven districts in Kilimanjaro region in the north eastern Tanzania. In the last official census Moshi municipal had population of 184,292 and the population density of 3,409 per person per km². The municipality is situated on the lower slopes of mountain Kilimanjaro with the coordinate of 3020'05" S 37020'37" E. (URT, 2021)

Map of Moshi Municipal Council

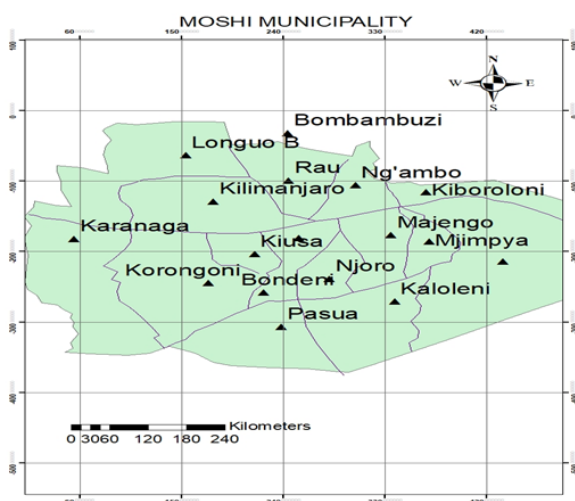


Figure3.1: the Map of Moshi Municipal

Source

Mwenge Catholic University Research Center (2021)

Climate of the Study Area

Moshi has tropical wet and dry climate. Its weather is dominated year-round by monsoonal flow. The northeast monsoon prevails December through March and is accompanied by the highest temperature of the year. The southeast monsoon prevails from June to September. Moshi altitude keeps temperatures lower than surrounding cities, even without the maritime effects that a coastal city enjoys. Nighttime temperatures are relatively consistent throughout the year, averaging from 15 to 17 degrees Celsius. Moshi has noticeably warmer daytime temperatures from October through March, when average high temperatures exceed 30 degrees Celsius, and noticeably cooler daytime temperatures from May through August, when average high temperatures are 25 to 26 degrees Celsius (URT, 2015). (URT, 2015).

Nature of Soil

Moshi was characterized with volcanic fertile soil which influence the agriculture activities where by people in this area grow maize, coffee and banana. The presence fertile soil in

Moshi influence people to engage in agricultural production especially urban faming system.

Nature of Vegetation

Moshi was characterized with both neutral vegetation and artificial vegetation. The vegetation of Moshi is tropical rainfall in which help the vegetation to be green almost though the year.

Area of the Research Study

The study was conducted in Moshi municipality in three 3 wards administrative wards which are Rau, Longuo B and Majengo from the peripheral area. Rau, Longuo B, and Majengo wardS from the peripheral are selected as the most of the time in Urban Farming. Researcher decided to select Moshi municipal council amongst other municipalities due to Moshi municipal report council report of 2015 which explain that Moshi municipal is one of Municipal which involve in Urban Farming system.

Population of the Research Study

The population of the research study is defined as the group of people or item from which the sample size to be used in particular study is being selected (Merium-website). Thus, the targeted population of this study includes all people who have the role in overseeing in Urban Farming in the municipality and all the selected wards whereby according to united republic of Tanzania census of the number of people in the selected three wards is as follows; Rau has population of 9,137, Longuo B 6,632 and Majengo 9,006 (census).The population was organized as follows;

Population of the Research Study at the ward

The targeted population in this study was (40) participants were from Rau ward, (22) from Longuo B Ward and other twenty (35) from Majengo where all these participants are from urban settlement which in all municipal solid urban farming competition, they are the last numbers compared to the rural settlements.

Sampling and Sampling Techniques of the Research Study

Sampling technique is the way in which the researchers use to choose sample size to be used in study (kushmar).The section provided a range of methods that was be used in the particular study. The purposive sampling was be chosen by a researcher to be applied. In this method researcher purposely targeted a group of people that were reliable to the study.

Sample Size of the Research at the Municipality

The sample at the municipality headquarter three (3) participants was involved. In this, the Municipal Director was included because he or she is the one who supervise all the activities to be done in Moshi Municipal Council including agriculture activity. They were selected purposively as they are the one who were responsible with the issues of agriculture management. The Municipal agriculture was selected purposively as he or she is the one who manage all issue agriculture activity in Moshi municipal council including Urban Farming issues, therefore, purposive sampling was be used to obtain key information from the municipality.

Sample Size of the Research Study at the Selected Wards

Sample size in this one hundred (100) was be involved to form the sample size from the wards simple random was used to select residents. The wards executive officers were selected purposively as they are the one who responsible for managing Urban Farming. Other stakeholders were selected purposively. Simple random sampling was used to selects residents. This technique was used to avoid biases in obtaining participants and it was suitable for large numbers. Where the below formula was used to calculate sample size at the ward (Israel).

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

Where N= total population

n=sample size

e=error in prediction

$$\text{Therefore, } n = \frac{24775}{1+24775(0.122)^2}$$

$$n = \frac{24775}{1 + 24775 \times 0.014884}$$

$$n = \frac{24775}{1 + 368.7511}$$

$$n = \frac{24775}{369.7511}$$

$$n = 100$$

Table 3.1: Showing Summary of the Selected Sample Size

Respondents	Expected
Urban farmers	97
Wards executive officers	1
Street executive officers	1
Stakeholders	1
Total	100

Source

Research Data (2021)

Data Collection Methods and Sources of Data

This section gives a detail description of various research instruments was used to gather data. Both primary and secondary data was used in this research study. Primary data were obtained directly from the Moshi municipal council residents and officials. The purpose of primary data is to gets fresh information from the participants which were used to generate new knowledge. Secondary data was obtained from secondary sources, mainly publications, reports from Moshi municipal council’s offices and internet sources

Four methods of data collection were used in this study. These include documentary review, in-depth interview and direct observation. This was used to cross check different types of information by taking the outcomes of one method and comparing them with the results of the other methods involved in this study.

Primary Data

Primary data are those data which are collected a fresh and for the first time direct from the field (Victor, 2017). These data are the data which gathered directly from the field and usually done by survey research through involvement of participation linked with the topic.

Questionnaire Method

Questionnaire is a set of written or printed questions with the choice of answers, derived for the purposes of a survey or statistical study. A data collection method consisting of a series of questions for the purpose of gathering information from respondents. This study employed one type of questionnaire which is close ended questionnaire, questionnaire was provided to the resident of Moshi Urban to be answered. Researcher choose to use questionnaire because it was not cost full in term of money and time even if the geographical was large it was easy to collect data and it give to a respondent to think for answer and also the researcher collected quantities and qualities information about the role of urban farming on the livelihood of urban farmers.

Therefore, questionnaire was used to collect data for the objective number one which states that to determine the role of urban farming on the livelihood of urban farmers in Moshi urban Tanzania. And objective number two which states to examine factors that drive people to practice Urban Agriculture in Moshi urban Tanzania. If the method failed to get the answer the interview would apply.

Interview Method

Interview is essentially a structured conversation where one participant asks a question and the other answer. The interview can be done face to face in which the interviewer and interviewee meet face to face or through telephone in which no one sees the other. This study used structured interview where by output was depend on the ability of the interviewer in large extent. The study conducted interview via interview respondent from three wards in Moshi Municipal. Researcher chooses to use interview because it helps to get first-hand information and sample can be controlled more effectively and the researcher can study the real situation of the situation.

Therefore, interview was used to collect data for the objective number three which states that to assess the immediate and long-term Impacts of Urban Agriculture on livelihoods of farming households and residents in Moshi Urban Tanzania and objective number two which state that to examine factors that drive people to practice Urban Agriculture in Moshi Urban Tanzania and when the method would fail to give findings the questionnaire method was to be applied.

Direct Observation

Is the method of collecting evaluating information in which the evaluator watches the subjects in his or her usual environment without altering that environment (A,2015) In this method researcher takes short walk in the specific areas or targeted wards of Rau, Longuo B and Majengo where urban farming is found, also researcher observed how urban farming is managed, the researcher observed the facilities used in urban farming and the contribution of urban farming on food production. During direct observation do offer additional information on the study and different field pictures taken during observation.

Therefore, direct observation was used to collect data for the objective number one which states that to determine the role of urban farming on the livelihood of urban farmers in Moshi urban Tanzania. And if it failed interview and questionnaire methods was to be applied.

Secondary Sources

Documentary Review

This method used to collect the background information of Moshi Municipal Council and its general strategies on urban farming management systems in the study area. The method include various documents which was used to support the data findings at Moshi municipal council, such as different reports concerning urban farming, Documents such Moshi municipal councils By-laws which is useful as it helps in data findings especially on the issues obeying laws and punishment to be taken for those who breaks the laws.

Findings, Presentations and Discussions

INTRODUCTION

This chapter presents and discusses the major findings of the study. The first part gives the findings on socio- economic characteristics of the sample population including age, sex, marital status, education size of the plots and occupation. The second part presents the roles of urban farming to the livelihood of urban farmers; the third part describes the factors that drive people to practice in urban agriculture while the fourth part discusses the immediate and long-term impacts of urban agriculture on the livelihoods of farming households and residents in Moshi Urban, Tanzania.

Socio Economic Characteristics

The socio-economic characteristics such as age, sex, marital status and education are critical to farm decisions and performance in relation to climate change and variability. Respondent’s level of education helps them to understand the general farms requirements and its application at the right weather season while age reflects farming experience. Sex and marital status determine responsibilities for male and female farmers in the whole process of crop production. In addition, the sizes of the plots determine the nature or state of land owned.

Gender

This is the biological difference between male and female and their social relationship in the community (Oakley), Gender and marital status determine responsibilities for male and female farmers in the whole process of crop production gender has been categorized into male and female as shown in the table below.

Table 4.1: Farmers Gender (N=100)

Gender	Frequency	Percent
Male	53	53.0
Female	47	47.0
Total	100	100.0

Source

Field Data (2021)

The findings from table 4.1 shows that in the both male and female were given equal chance and male were highly volunteered more than female, as results shows that the total respondents were 100 where female were 47 (47.9%) of the respondents while male were 53 (53%) of the respondents. In the areas agricultural activity in urban area is largely carried out by women. Men being high in giving information it do not means that they are the mostly engage in urban agriculture but the women are the most engage in the agricultural activities.

These results are similar to what was observed by Corbett that urban and peri-urban agriculture is largely carried out by women and youth. This is perhaps due to the fact that, large proportion of agricultural activities is generated at household level where women are key actors in terms of household activities.

Age

The age of the respondent in this study reflects farming experience from the time that farmer stated farming or the most age engage much in agriculture ranged from 16 years to above 56 years. However, 88 % of the respondents fall within 25 years to 50 years which is the active working age of Tanzania society.

Table 4.2: Ages of the Respondents

Age	Frequency	Percent %
16-25	21	21.0
26-35	38	38.0
36-45	22	22.0
46-55	9	9.0
above 56 years	10	10.0
Total	100	100.0

Source

Field Data (2021)

From the findings from table 4.2 show that about 21 (21%) were aged from 16-25 years, while 38(38%) were aged range from 36-35 years, where by 22 (22%) of the respondents were age range from 36-45 years, while the same time 9 (9%) of the respondents were age range from 46-55 years and above 56 years were 10 (10%) of the respondents. This means that the age ranging from 26-50 were high about 80% of the respondents because this is the group of working class which mostly involve much in agricultural activities in both urban and peripheral areas.

This finding supports the study made by United Republic of Tanzania that the age between 26 - 57 years is within the labor force age group, that is, people in this age group have a tendency to be active, creative and participate in many social and economic activities.

Education Level

Levels of education attained by the respondent were some of the variables studied. Education in the community is very important part of changes in the particular community that help to transmit knowledge from on personal to another and create awareness among the people in the community.

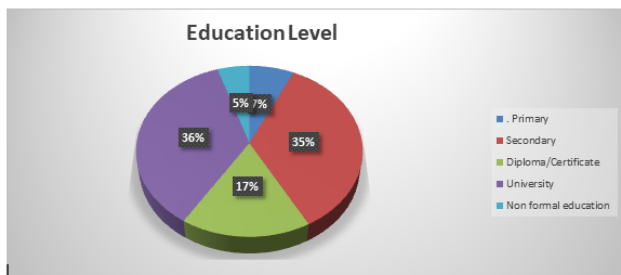


Figure 4.1: A Pie Chart Representing Education Level

Source: Field Data (2021)

The finding from figure 4.1 reveals that about 78% of the respondents are educated whereby about the 7(7%) of the respondents had primary level of education while about 35(35%) of the respondents had secondary level of education, where by those who had diploma/certificate level of education were 17(17%) of the respondents, while those with high education level (university level) were about 36% of the respondent and lastly, those with non-formal education were presented as 5% out of 100%. So, this means that in the study area there is high level of education which helps in critical to farm decisions and performance in relation to climate change and variability. This implies that larger number of the respondents have formal education

This was also supported by the study conducted by Hellis on the impacts of waste management in urban areas, where identified that large respondents had formal education which helps them to understand the importance of waste management so they participate well in that management, so this study also reveals that the tendency of respondents having formal education helps the in decision making and performance of the urban agriculture

Occupation

Refers to the activities in which one engages. Natures of the activities attained by the respondents were also studied, the aim is to identify whether the respondent is involved in single activity or multiple activities. Job occupation of the respondents helps in this study to identify how multiple activities can affect urban agriculture positively or negatives, if the respondent is employed how that employment support agriculture or how that employment affect agriculture.

Table 4.5: Occupation of the Respondents

Occupation	Frequency	Percent%
formal employment	7	7.0
Self-employed	42	42.0
Employee	6	6.0
Unemployed	22	22.0
Business	23	23.0
Total	100	100.0

Source

Field Data (2021)

From the findings from table 4.5 results reveal that about 7 (7%) of the respondent are employed, while 42(42%) of the respondents are self-employed, whereby 6% of the respondents revealed that they're employee, while 22% of the respondents revealed that they are unemployed while last group revealed that they are engaging in their own businesses. From the finding this means that high numbers of the respondents are self-employed which make them engage well in the agricultural activities without any restriction from their employee so they have their own time to participate in urban agriculture the way they want.

According to the research conducted by Michael (2019) on effectiveness of agricultural production in rural area in local government authorities he also identified most of the people in rural areas are self -employed which the support agricultural activities, because most of the time they spent in farms. Also he identified that the extra petty businesses they do helps to support the agriculture through buying requirements such as fertilizers, tools and other agricultural requirements.

The Size of the Plots

The study aimed determine the size of the plots or farm owned by the respondent, which helps to explore the information on how they manage that farm, so this also helps to understand the types of equipment's used in that farm as well as the number of labor or workers involved or employed in working in such farm.

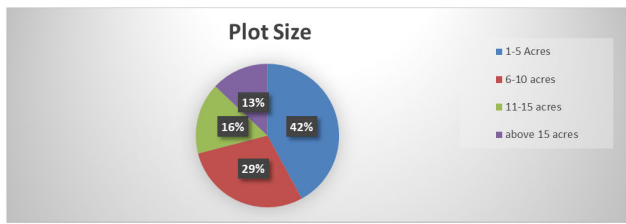


Figure 4.1: Show the Size of the Plot Owned by the Respondents

Source

Field Data (2021)

The finding from figure 4.1 reveal that large number of the respondents own 1-5 hectare of the land the analysis show that 42% is owned by many people this because of the limited space in urban area no huge space that people can own or access to conduct their agriculture followed by 29% that own 6-10 hectares, while 11-15 hectares are owned by 16% of the respondents and above 15 hectares are owned by 13% of the respondents and most of these people owning such huge size of land or farms are those living in peripheral of the city or at the suburb of the municipal.

The study is supported by Ellis who said that urban centers are increasing in population; rural areas are decreasing in population. For these reasons, there is a widespread concern that the rates of rural-urban migration should be slowed so the rural urban migration contribute to the people to fail having large size of land, also due to crowd of infrastructures people fail to own large size of land so the do own small size depending on the nature of the area and limited land.

Role of Urban Farming on the Livelihood of Urban Farmers

The study aimed to investigate on the role of urban farming to the livelihood of urban farmers, in order to identify how urban farming is useful to the urban farmers, the importance of this helps the researcher to know how urban farming is valuable to the people practicing it and non-farmers. Both farmers and non-farms benefits from these activities so the study aimed to acquire information about the roles of the urban farming to the livelihood. The table below shows the analysis of the roles of the urban farming to the livelihood

Table 4.2.1: Role of Urban Farming on the Livelihood of Urban Farmers

Roles of urban farming	Strongly Disagree	Disagree	undecided	agree	Strongly Agree
Ensure urban food security	4%	7%	7%	48%	34%
Creativity and	5%	16%	14%	40%	24%

innovation					
Crop preservation and new crop development	3%	14%	9%	40%	34%
Improves urban environmental quality	0%	11%	1%	50%	38%
Income generation	0%	2%	3%	27%	68%
Maintain food nutrients content	0%	9%	8%	41%	42%
Employment opportunity	1%	1%	7%	30%	61%

Source: Field Data (2021)

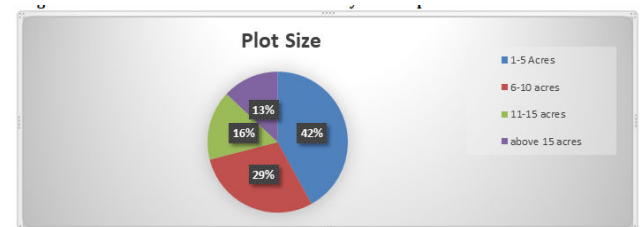


Figure 4.2: Bar Graph Representing Roles of Urban Farming to the Livelihood Urban Farmers

Source: Field Data (2021)

The findings from the table 4.2.1 and figure 4.2 bar chart reveals that the most role of the urban agriculture to the livelihood is that it is a source of income generation where by about 68% strongly agree while 27% agree that income generation is the most and effective roles of urban farming in the area which bring up 95% , the findings also shows that employment opportunity is among of the role of the urban farming because about 91% respond positively where by 61% strongly agree and 30% agree that employment opportunity is the one of the best roles played by urban farming, while 88% is shown that urban farming improve urban environmental quality where by 38% strongly agree while 50 agree that urban farming have played a role in improving urban environmental quality and lastly, the results reveals that urban agriculture also maintain urban food nutrients this is revealed where by 41% agree and 42% strongly agree that urban farming maintain food nutrients content.

This was supported by Mireri, on his study found that urban farming solves the problem of food and employment to the livelihood also he identified that urban farming acts like income generation to the people in urban. He conducts research in Nairobi and found that in Nairobi 75% of population in Nairobi practice urban agriculture that led to the increase of food production and maintain urban food nutrients that solve the problem of Malnutrition on the hand the study found that urban farming solves the problem of employment among the youth in Nairobi where many most of people engage on urban farming other are employed to protect farms and animal husbandry which increase the income of livelihood in the city

The study was also supported by the study conducted by George, found that urban farming contributes 57% in improving urban environmental quality and food in the city Ghana. Even though the crisis in world food prices exploded during 2018 that is due to the problem of urban food security in Africa has been a fact of life for many low-income urban dwellers for decades and especially since the period of structural adjustment in the 1980s in Accra. The study identifies that if the urban dwellers was investing on urban farming was increase the high production of food.



Figure 4.3: Picture Showing Tree Nursery Prepared for Plantation and flowers at Rau Ward Kilimanjaro, Tanzania

Source: Field Data (2021)

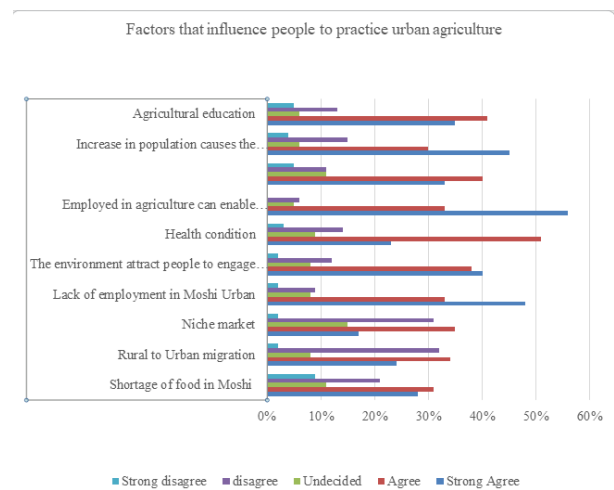
Observation

The observed data used to support the objective two which state that to examine the role of the urban farming to the livelihood but from the picture above show nursery that used to support environment where by all seedlings are raised in that farmer and at the end are taken to the environment for plantation, where by urban agriculture improve environmental quality by providing good oxygen, as well as quod appearance. Also, urban agriculture was observed that it is used to support the environment quality through the decoration due to horticulture in urban, such as cultivation of flowers, vines and vegetables. It has been observed that urban agriculture is a source of employment because people have employed in those gardens to manage it, and other have been employ themselves in planting trees, flowers and vegetable that those who are in need of these requirements they go buy hence these people earn their money or earn their income. This study was also supported by the data obtained through the interviews made between the researchers, ward environmental officer and ward executive officer of Rau ward they also approved that urban agriculture conducted

within improve environmental quality, through good air supply as well as decoration

Factors that Influence People to Practice Urban Agriculture

The study aimed to investigate the driving forces that makes or encouraged people in urban areas to practice or to conduct the urban agriculture, so in order for this agriculture there are some factors that drives or influences farmers to practice the urban agriculture the table below shows the factors that influences the practices;



Source: Field Data (2021)

The findings from table 4.3 reveals that the most factor that influence people to practice urban agriculture is that people who involved is employed in agriculture. This can enable to improve their standard of living about 56% strongly agree while 33% agree that employed in agriculture. This can enable them to improve their living standard that make 89% who verified that that is a big factor, also respondents shows that lack of employment. This is one of the factors that influence people to engage in urban agriculture about 81% reveals where by 48% strongly agree and 33% agree that lack of employment is one of the factors that drive people to practice urban farming.

The findings also about 78% of the respondents reveals that environment attract people to engage themselves in agricultural activities where by 40% strongly agree, 38 agree that environment attract people to engage in urban agriculture, also about 76% agree and strongly agree that agricultural education has influenced the cultivation of smart or urban agriculture in Moshi municipal. Lastly,75% agree and strongly agree that increasing population causes the development of farming as the most of the people migrating from rural to urban so they become jobless so the engage in urban agriculture because they have no any work that they can do to get income.

This study was also supported by research conducted by Giorgio said that agriculture play the role for food security and nutrition especially for children pregnant and lactating women. Urban agriculture represents an opportunity for improving local economy, environmental sustainability, health condition and social interaction. His research was done using resent an opportunity for improving local economy, environmental

sustainability, health condition and social interaction. His research was done using interview and questionnaire and evidence show that about 100-200 million urban farmers worldwide providing the city markets with fresh horticulture goods. The evidence shows that 85 and of their income in purchase and most urban farmers belong to poorest population as 65% of urban farmer are wore an where fruit and vegetable crops give high yields up to 50kgm -2 year though to use of use of efficient of agricultural input, high added value.

It was also supported by research conducted by university of California Agriculture and natural resources (UCANR) organization the research was done through interview whereby about 100 urban farmers where interviewed. The research where done in the university of California and come up with the evidence that urban agriculture is influenced by agricultural education, lack of employments and increasing in population causes the development of urban agriculture and it were divided into three major part social health and economic impact in social impact involve creating safe, community development, education and youth development access and security, food and heath impact include food and heath latency, funeral well – being and lastly economic impacts that include job creation, market expanse farmers, increase home values economic saving of the food research the study give the guide line on how urban agriculture it bring about economic, social and health advantage to the individual. Since the study is direct related to our study due to the fact that all of those impacts are help individual and society at large to overcome poverty

This was supported by the research conducted by Luc Christiansen studies the concentration on the role of agriculture growth in poverty alleviation in low income developing connotes he viewed that very few courtiers have experienced rapid economic growth without agriculture growth either proceeding. Economic growth is strongly without agriculture linked by industrialization and agriculture on his study he uses questionnaire and interview few people along sub-saran African between 1990 to 2000 and 40 percent(40%) shows there is high connection between type of economic development and poverty elevation.

Impacts of Urban Agriculture on Livelihoods of Farming Households

The study aimed to explore the information about the impacts of the urban agriculture to the people living in urban. This helps the research to determine the outcomes of the urban agriculture especially to the livelihood of the urban areas. Mostly, the positive impacts of the agriculture on the basis of the immediate and long-term impacts of the urban agriculture. The table below shows the positive impacts of the urban agriculture to the livelihood of urban farmers.

Table 4.4: Impacts of Urban Agriculture on Livelihoods of Farming Households

Impacts strongly of urban agriculture	strongly disagree	Disagree	Undecided	Agree	strongly agree
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Increase food security	1%	11%	2%	36%	50%
Access to community health	2%	7%	10%	51%	30%
Increases individual economy	0%	1%	5%	41%	53%
Job creation	0%	6%	4%	39%	51%
Market expansion	4%	4%	3%	57%	32%

Source: Field Data (2021)

The findings from table 4.4 reveals that urban agriculture increases individual economy where by about 41% of the respondents agree while 53% of the respondents strongly agree that urban agriculture increases individual economy so means that 94% support that this is the best reason or impact, also about 39% respondents agree while 51% of the respondents strongly agree that urban agriculture results to the job creation to the urban livelihood where by about 90% of the respondent support this as impact of urban farming,

while 36% of the respondents agree and 50% strongly agree that urban farming increase food security to the city which means that about 86% of the respondents supported the reason that one of the impact of the urban farming is that it increases the food security, also about 89% of the respondents supported the reason that urban farming results to the market expansion where by 57% of the respondents agree while 32% of the respondents strongly agree that expansion is a long term impacts of the urban farming.

This study was supported by the research conducted by Balele come with the issue concern food, income, environmental issue is directly relating with urban agriculture system the study was done at Tanzania particularly in Mbeya and Morogoro region. It analyzes and give overview on the ways in which people carry up cultivation and livestock keeping researcher use direct observation method and come up with evidence that a part of environmental destruction that done by urban farmers on so urban farming it played the great rule in food and income of generation among farmers opportunity to the people.

Another study was also conducted by Kumar, Show the different between to agriculture country and non-agriculture country in sub-Saharan countries viewed that those country that proactive agriculture has at least percentage of development compare to non-agriculture countries on study, he uses questionnaire and structure interview he was focus on the different in development between countries participate in agriculture and those who do not.

It was also supported by the study of Kessy, evaluation the performance of small-scale agriculture on poverty elevation in

Tanzania; in term of the income generation, food availability, employment opportunity researcher randomly selected and visited Mbeya, Kilimanjaro and Morogoro. Researcher uses questionnaire, interviews, focus group discussion for collection data. Data were analyzed quantitative. The findings that the reveal that reveal performance of individual attain low income in urban agriculture and government polices factor to give proper direction on firm objectives.



Figure 4.4: A Pictures Showing Tomatoes and Chinese Vegetables at Rau Ward Kili manjaro, Tanzania

Source Field Data (2021)

Observation

From the two pictures above are observed data from Rau ward Kilimanjaro, Tanzania showing impacts of the urban farming that it is usually Increase food security, access to community health as well as increases individual economy. Through cultivation of tomatoes and Chinese vegetable increased food security because people gets vegetables from these garden for food ,also, the people who are cultivating those vegetables once the sell those vegetables the earn money so individual economy increases through that urban agricultural , also, one of the important requirements to resist against diseases are vegetables

so once there is availability of vegetables within the urban area people to improve and maintain their health because they do get body requirement .this was also support by the people working in the garden that many people from that environment depend much on the vegetables cultivated from that areas as well as tomatoes some to not go to the market because they are believing that the price of the vegetables in the market is so high in comparison to the area of production so many people are visiting the place to buy, this was also approved through the interview made between the research and Madam Beatha a member of Tanzania Agribusiness Youth Organization (TAYO)

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