

**FACTORS INFLUENCING URBAN AGRICULTURAL
PRACTICES IN KENYA: A CASE OF NAIROBI COUNTY,
KENYA**

BY

KAREN WANJIKU MWANGI

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DECLARATION

This research project report is my original work and has not been submitted for a degree award in any other University.

Signature.....

Date.....

KAREN WANJIKU MWANGI

L50/72771/2008

This research project report is submitted for examination with my approval as the university supervisor.

Signature.....

Date.....

MR. JOHNBOSCO KISIMBII

LECTURER;

DEPARTMENT OF EXTRA MURUAL STUDIES

UNVIERSITY OF NAIROBI

DEDICATION

I dedicate my research project report to my parents, my father David Mwangi, my mother Susan Mwangi who always believed in me and for their commitment and financial support towards my education. To my brother Timothy Mwangi who always gave me a push when I needed it and to my husband Anton Odhiambo and daughter Arina Odhiambo for your encouragement and overwhelming support.

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ABBREVIATIONS AND ACRONYMS

CGIAR:	Consultative Group on International Agriculture Research
ILRI:	International Livestock Research Institute
KARI:	Kenya Agricultural Research Institute
MDG:	Millennium Development Goals
NACOSTI:	National Council for Science, Technology and Innovation
NGO:	Non-governmental Organization
SPSS:	Statistical Package for Social Scientists
UA:	Urban Agriculture
UAP:	Urban Agricultural Practices
UHIe:	Urban Heat Island effect
UNDP:	United Nations Development Program
UN:	United Nations
UK:	United Kingdom
USA:	United States of America

ABSTRACT

Current global agricultural practices are recognized as unsustainable. The increase in overall human population as well as the global trend of rural to urban migration, partially as a result of historically and continual unsustainable agricultural practices, exacerbates the vicious cycle of poverty and hunger in developing countries. The global demand for food is projected to be 70% higher today. 100, 000 people in the UK are estimated to be on waiting lists for allotments of land for urban agricultural practices (Foeken and Mwangi, 2000). The study therefore sought to examine the factors influencing urban agricultural practices in Nairobi Kenya. It is estimated that approximately 800 million people worldwide engage in urban agricultural practices, meaning agriculture located within or on the outskirts of towns or cities (Nguthi, 2007) In Kenya, urban agricultural practices are widespread and are a well-established practice but not officially accepted by the central and local government officials. The study reviewed literature based on urban poverty, preference for fresh foods, food insecurity and population growth. The study employed a descriptive survey research design aimed at identifying the factors influencing urban agricultural practices in Nairobi Kenya. The study was done in Nairobi County which is Kenya's capital and largest city. The data for this research was collected using a survey questionnaire. The study used both primary and secondary data. The process of data analysis involved several stages: the completed questionnaires were edited for completeness and consistency, checked for errors and omissions. Qualitative data was sorted into themes, categories and patterns. This enabled the researcher to make general statements in terms of the observed attributes and conceptualization of the study. The study established that urban poverty in Nairobi County has highly contributed to increased urban agricultural practices poor families spend 60-80% of their income on food and still be are insecure, high urbanization without corresponding Agricultural practices in Nairobi County were positively associated with nutritional status in some income groups. Urban agricultural practices are one way to escape the food insecurity and poverty cycle and population growth. The study concludes that urban poverty (average mean 4.22), preference for fresh food (average mean 4.19), food insecurity (average mean 4.31) and population growth (average mean 4.34), all had a positive influence on urban agricultural practices and has resulted in an increase of these practices. The study recommends; for the County Government of Nairobi through Ministry of Agriculture to formulate policies that govern the practice of urban agriculture. Also that the government should be at the fore front in empowering urban dwellers on the benefits of urban green space, creating social frameworks to plan, implement and maintain these urban green space and create a process to balance the needs of those living in urban areas with the needs of the larger environmental concerns.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Urban agricultural practices are agricultural activities undertaken within (intra-urban) or on the fringe (peri-urban) of a town, city, or metropolis, which grows and raises, processes and distributes a diversity of food and non-food products, re-using largely human and material resources, products and services found in and around that urban area, and in turn supplying human and material resources, products and services largely to that urban area. (Mougeot, 2000). The urban edge may be described as a suburb, exurb, urban boundary, rural-residential, green-belt, edge city, periurban, urban sprawl, mega-polis, micro-polis, urban-rural interface, or metropolitan (Tuan, 2006).

Today's world population is over half urban, North America is 75% urban, whereas Japan, Italy, England, Belgium, Netherlands and Egypt have no possible urban-rural edge (Tuan, 2006), because the geographic urban space and geographic rural space are non-definable due technology diffusion. According to the UN population prospects (median variant), the world population is expected to grow by 34% from 6.8 billion today to 9.1 billion in 2050 (WFP, 2012). Moreover, more than 70% of the world's population is expected to be urban by 2050. This urbanization will bring with it changes in lifestyles, consumption patterns and also the structure of market chains. The global demand for food is projected to be 70% higher than today, involving an additional annual consumption of nearly 1 billion tons of cereals for food and feed and 200 million tons of meat.

According to Lwenya (2013) urban household gardens in the UK represent a significant percentage of the total surface of a city, occupying more than ten times the area of protected nature reserves. The UK is the country with the highest number in private gardens per capita of any nation in Europe but only 20% of garden owners grew food in 1996 compared to 35% ten years earlier, with lawn and flowers being the dominant theme (Brown, 1995).

Considering that the area occupied by gardens could be utilized for growing food instead of lawn and flowers. Household garden food production has the potential to shift both perceptions and practices about food, home and the urban environment (Lee-Smith, 2010) as it provides direct access to fresh and nutritious food, within the household environment, that can be harvested, prepared and fed to family members, often on a daily basis. Household gardens as the medium for up scaling self-provisioned local food production in Norwich present various advantages in comparison to the aforementioned urban agriculture infrastructure types. For example, 100,000 people in the UK are estimated to be on waiting lists for allotments (Foeken and Mwangi, 2000).

In Norwich the waiting list for a plot at the allotments numbers around 700 people indicating the increasing demand for growing food as well as the inability of current allotment arrangements to satisfy it. Additionally, the allotments face the risk of being sold for development purposes (Mubvami and Mushamba, 2004). While challenges associated with the ownership of the land appear as a barrier for scaling-up urban agricultural practices through allotments and community gardens with private household gardens this is not an issue.

Being the ultimate controller of their land; private landowners view their garden as a personal space where they can alter the environment according to their will (Mubvami and Mushamba 2004). Garden share schemes offer the potential to overcome barriers arising around rented property, land scarcity and underutilized gardens. In Kenya, 25% of the country's urban population is dependent on own production for nutritional survival (TUAN, 2004). If present trends hold, the vast majority of these people will be living in irregular settlements without access to decent food, shelter, water and sanitation (UNHABITAT, 2004).

Santandreu, Perazzoli and Dubbeling (2002), indicate that urban agriculture (UA) contributes to urban food supply and food security. In many cities, UAP production has been essential in providing for vulnerable groups. Informal UAP is a livelihood that the urban poor engage in and there is an important association between urban food (and non-food) production and street and market vending of fresh and processed foods. With the growth in urban population, especially the poor, the practice of UA provides an easy entry into the urban job market for a quick-fix of food for the poor and therefore UAP should be re-invented and redesigned to empower the urban poor's livelihood strategies and meet the MDGs that either depend on or are affected by the health of individuals and their environment. Access to urban ready markets open up the possibility of cultivating horticultural food crops such as fruits and vegetables on a commercial basis. The aim of the informal UA worker is usually to feed the household, and producing, processing and selling of the food may enable families to meet their basic requirements such as food, fuel, transport and rent (Veenhuizen, 2006)

The role of urban agricultural practices in the food supply of cities and towns, as a complement to rural agriculture, is becoming an important issue in a globalizing world economy (Madaleno, 2001). It is estimated that approximately 800 million people worldwide engage in urban agricultural practices, meaning agriculture located within or on the outskirts of towns or cities (Nguthi, 2007) Although proper data is lacking, there is evidence that urban agricultural practices (UAP) is increasing in many urban areas, sometimes dramatically so, particularly in developing countries. African towns and cities where specific UAP increases have been measured include Dakar, Senegal, Kumasi, Ghana, Lome, Togo, Bissau, Guinea Bissau, Dar-es- Salaam, Tanzania, and Nairobi, Kenya. The products range from market garden vegetables to livestock such as cattle and poultry. Recent estimates indicate that 72 percent of all urban households in Russia raise food, and 68 percent do so in Tanzania. Berlin has over 80,000 urban farmers, while in China the 14 largest cities produce 85 percent or more of their vegetables (Karanja, 2007).

The concept of sustainable urban development has emerged over the last decades as a new requirement for metropolitan and urban level public action which involves conceptual principles and practices as applied in land use planning. The need for sustainable urban planning and development reached an important point in 2007, when half of the world's population was defined as living in cities. A sustainable city enables all its citizens to meet their own need and to enhance their well-being, without degrading the natural world or the lives of other people, now or in the future. Planning as the

framework within which urban development occurs, can and should play a major role in helping to ensure sustainable urban development (Karanja, 2007).

Urban agriculture practices (UAP) include the growing of plants and raising of animals within and around the cities. In Kenya, most of the agriculture is undertaken in the rural with major components of crops and livestock. In urban areas, the poor practice urban agriculture in smaller magnitude. It is not well recognized by the authorities. In fact, in the past cropping and livestock used to be destroyed or confiscated by the municipal or urban council in accordance with existing by laws. Despite this, urban agriculture is on the rise but there is no appropriate policy to this effect. Kenyan people carry along with them indigenous knowledge on livestock keeping and crop production to the urban areas when they migrate from the rural areas.

Production of vegetable crops, for instance, kales, beans, tomatoes and livestock have become an integral component of urban lifestyle in major towns in the country. This is regardless of whether those practicing it live in marginal areas of the cities or the wealth in suburbs on large compounds. Urban agriculture may take place in locations inside the cities (intra-urban) or on land away from the residence (off-plot), on plate land (owned, leased) or on public lands. "Livestock follow human beings in Africa and people move with indigenous knowledge on their keeping" (Karanja, 2007).

Iverson, (2010) argue that cultivation techniques practiced by farmers in urban and Peri-urban, in Nairobi are very simple and productivity is low. They went further identifying lack of "modern" input, more expensive inputs like irrigation, chemicals and improved breeds as the major constraints in urban agriculture. LaSalle and Hepperly, (2008) found

that in Nairobi town farming is one of the ways people employ to cope with problem of absolute poverty. The current study agrees with LaSalle and Hepperly, (2008) argument that the cultivation techniques practiced in urban areas was simple and farmers experience low productivity.

Current global agricultural practices are recognized as unsustainable. The increase in overall human population as well as the global trend of rural to urban migration, partially as a result of historically and continual unsustainable agricultural practices, exacerbates the vicious cycle of poverty and hunger in developing countries. Furthermore, cities and regions in developed countries practice unsustainable food production, distribution and consumption patterns, and as a result, exceed their global ecological footprint (Rees, 2009). Consequently, the world is facing a global food (FAO, 2009) and water crisis (Sailor, 1998). Cities and Regions must learn to feed themselves to address local food insecurity as well as protect from the climate effects of increased urbanization, including the Urban Heat Island effect (UHIE) by optimizing and fully integrating the local ecosystem services of food, water and forest within a tightly woven compact urban form through the implementation of strategic urban and regional food system planning. Cities can mitigate climate change and reduce the UHIE, by implementing sustainable intensive urban agricultural practices through policy and zoning interventions that include concepts such as green roofs, vertical farming and greenways as continuously productive and edible urban landscapes, referred to in this paper as continuously productive urban agricultural practices in the private and public realm.

A highly participative, adaptive systems approach is explored as the key to sustainability within an economic world order that included corporate social responsibility and social enterprise as the foundation for the integration of multiple synergies. An increasing body of evidence often links urban agricultural practices with urban greenery initiatives, as a carbon sink to reduce UHI effects, to reduce GHG emissions and as a tool for urban beautification and place making (Sailor, 1998).

Urban agricultural practices, through the production of local food is increasingly recognized as a means to reduce fossil fuel emissions by reducing transportation and production outputs, to provide a secure local food source, enhance biodiversity and educate the public regarding food source while fostering a sense of community, environmental awareness and stewardship.

1.2 Statement of the Problem

Most of the world's urban growth in the next two decades 92 percent will be absorbed by cities of the developing world, which are least equipped to deal with rapid urbanization. This will be particularly notable in Africa and Asia, where the urban population will double between 2000 and 2030, making up 81 percent of urban growth during that period, with harmful consequences if governments do not prepare now for the coming growth (United Nations, 2008). The challenge of supplying nutritionally adequate and safe food to city dwellers is substantial. Accomplishing this task under conditions of growth and congestion demands that policy-makers seize opportunities for integrating resource management and planning efforts, understanding potential linkages between

rural and urban areas, and anticipating the changing needs of a country's citizens - both rural and urban.

Many urban households are facing a serious decline in their purchasing power. People have responded in various ways, most notably by diversifying their income sources. A wide range of activities are being employed, all in the informal sector. Urban agricultural practices have increased considerably over the past decades. It is a way to improve the food situation of urban households and to diversify their livelihood options under conditions of persistent economic uncertainty and threats. It is widely believed that the urban poor could benefit from farming in town because of the relatively low start-up investments. The study therefore seeks to examine the factors contributing to increased urban agricultural practices in Nairobi Kenya. In Kenya, urban agriculture is widespread and a well-established practice but not officially accepted by the Central and County government officials. Yet a lot of research has been carried out during the past three decades in Nairobi. In the context of growing advocacy for policy support in favor of urban agriculture research while public resources are shrinking it is necessary to examine the factors influencing urban agricultural practices in country.

1.3 Purpose of the study

The purpose of this study was to establish the factors influencing urban agricultural practices in Nairobi County, Kenya.

1.4 Research Objectives

The study was guided by the following specific objectives:-

1. To determine how urban poverty influence urban agricultural practices in Nairobi County.
2. To establish how preference for fresh food influence urban agricultural practices in Nairobi County.
3. To assess how rising food insecurity influence urban agricultural practices in Nairobi County.
4. To examine how population growth influence urban agricultural practices in Nairobi County.

1.5 Research Questions

The study sought to answer the following research questions:-

1. How does urban poverty influence urban agricultural practices in Nairobi County?
2. To what extent does preference for fresh food influence urban agricultural practices in Nairobi County?
3. To what extent does rising food insecurity influence urban agricultural practices in Nairobi County?
4. In what way does population growth influence urban agricultural practices in Nairobi County?

1.6 Significance of the study

It is hoped that the findings of the study may particularly be useful in providing additional knowledge to existing and future institutions on factors influencing urban

agricultural practices in Kenya. This may expand their knowledge on urban agricultural practices and also identify areas of further study. The study may be a source of reference material for future researchers on other related topics; it may also help other academicians who undertake the same topic in their studies. The study may also highlight other important relationships that require further research. The findings of this study might also help in enlightening the key decision makers in the government agriculture sector. The study hopes in addition to the above, be useful to stakeholders, financiers, entrepreneurs and investors in formulating and planning areas of intervention and support. The generated information might be relevant to decision makers since there is need to support official acceptance of urban agricultural practices as well as to justify funding for urban agriculture research and development geared towards improvement of urban environment.

Finally, the study is important not only to Kenya but also to other countries since some of the factors need to be addressed globally. It will help them understand the factors contributing to increased urban agricultural practices in Kenya and the knowledge can help them find interventions needed.

1.7 Limitations of the study

The limitation of the study lies on whether the sample units will be accessible to enable comprehensive coverage of the study scope.

1.8 Delimitations of the Study

The main focus of this study was Nairobi County where households are the key subjects of the research. Data was specifically collected from the households in 17 constituencies. The aim was to collect data from the respondents with a view to establish the factors influencing urban agricultural practices in Kenya: a case of Nairobi County. The study was delimited to Nairobi County only and therefore the results cannot be generalized since all factors influencing agricultural practices were not looked at. The study only looked at the urban poverty, preferences for fresh food, food insecurity and population growth.

1.9 Definition of Significant Terms

Food insecurity- is a condition related to the ongoing unavailability of food

Fresh foods- Food that has not been processed to extend its life

Population- A population is a summation of all the organisms of the same group or species, who live in the same urban area

Poverty- General scarcity or dearth, or the state of one who lacks a certain amount of material possessions or money

Population growth- increased number of people in the urban towns of a country.

Urban agricultural practices - This is the growing of plants and raising of animals within and around the cities.

1.10 Organization of the Study

Chapter One of the study contains introduction, giving a background of the study while putting the topic of study in perspective. It gives the statement of the problem and outlines the objectives, limitations, and the assumptions of the study. Chapter Two reviews relevant literatures on factors influencing urban agriculture practices. It critically looks at the issues of poverty, food insecurity, preferences for fresh food and population growth. It also outlines empirical review as well as the conceptual framework variables. Chapter Three consists of research methodology which was used in the study. It covers the research design, target population, sample design, data collection, validity and reliability of data collection instruments, data analysis techniques, and ethical considerations. Chapter Four consists of data analysis, presentation and interpretations and discussions. Chapter Five consists of summary, conclusion and recommendation based on the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter covers other scholars work on urban agriculture practices. The main sections covered in this chapter include urban planning and urban agricultural practices, urban governance and urban agricultural practices. It will also discuss urban agriculture concept and its most outstanding features in the regional presence. It shows an overview of its main potentials and risks furt will also be provided after characterizing how the diversity of urban agriculture and its dynamics relate and respond to urbanization processes and other urban dynamics. It covers the study objectives which include urban poverty ,food insecurity, preference for fresh food and population growth. The theories related to the literature have been reviewed and a conceptual framework identified.

2.2 Government Policies and Urban Agricultural Practices in Kenya

In recognition of the diverse opinions on urban agriculture, the Kenya Agricultural Research Institute (KARI) in collaboration with the regional office of Urban Harvest, a system-wide initiative of the Consultative Group on International Agriculture Research (CGIAR) organized a one day stakeholders' workshop to develop consensus on providing an enabling environment for advancing urban and peri-urban agriculture in Kenya (Bryld, 2013). The workshop, which also received support from the International Livestock Research Institute (ILRI), used an issue-based framework as the basis for developing a policy process. Substantive papers were presented on; employment and poverty, health issues and waste management, food security focusing on household nutrition (Fresh

Vegetables and Dairy), land use management and physical planning and legislation and governance.

Representatives of key national institutions, including KARI, the Ministries of Agriculture, Lands and Settlement, Health, and Local Government, confirmed their commitment to carrying forward a policy dialogue and presented substantive data and information relating to urban and peri-urban agriculture from the perspective of their sectors. The Department of Research Development located in the Ministry of Education, Science and Technology presented important data on urban poverty in Kenya in relation to urban agriculture, while the Ministry of Agriculture presented recent statistics on the volume of urban agriculture production in Nairobi. International research institutions and national bodies including NGOs gave perspectives and data on the other aspects of policy (Vorley, 2012). Participants met in groups addressing each aspect of policy to review the adequacy of treatment by the expert presentations, to come up with additional material and to chart the direction policy should take. To do this, each group addressed the key questions of who should be responsible for what. A final plenary session reviewed these suggestions and focused on deciding which institution or institutions should carry the policy process forward.

It was resolved that the Ministry of Agriculture was the right institution to carry forward the process of developing UAP policy, with assistance from KARI, which therefore undertook to take the next step needed, to convene a meeting of key stakeholders from community, market, government, civil society and other actors in UAP to create a National Inter-institutional Steering

Committee of these stakeholders. It was agreed that the national process should build upon the extensive data and analytical material produced by this workshop, as well as on work already done to create a forum for government, private and community sector, including the creation of an urban farmers' network. This Sectoral Mix and Cooperation Model provide the starting point for the national process. According to Bryld (2013) the Urban Harvest agreed to help KARI to compile the workshop report and distribute it to participants, relevant ministries and departments. There has been a recent concerted effort involving relevant government departments and private sector, non-governmental organizations (NGOs) and farmers. Moreover the Minister for Local Government sent a representative to a meeting on Urban and Peri-urban Agriculture Policy in Harare last year, and that Kenya became a signatory to a Declaration that provides for Urban and Peri-urban Agriculture Policy.

2.3 Urban Planning and Urban Agricultural Practices

The cities of the world today face similar systematic sustainability challenges, which are intensifying as urban populations increase rapidly in many parts of the world. In 2008, for the first time in history, half of the human population lived in urban areas. Urbanization levels are expected to rise to seventy percent by the year 2050 (Moreno, 2008). Already, seventy percent of populations in North America, Europe and Latin America live in cities. Thirty-eight to forty percent of populations in Africa and Asia live in cities, and urban populations in developing countries are increasing at a rate of two to four percent annually. During the next decade, it is predicted that there will be over 500 cities

worldwide with populations over one million, and 23 cities with populations over 10 million (Mougeot 2006).

The United Nations predicts that by 2005, the world's number of urban dwellers will surpass rural dwellers, and by 2020 the urban population will be sixty percent of the global population (FAO 1998). These figures imply that urban planners and managers will find it difficult to keep pace with the rate of urban in-migration. A rapidly increasing urban population has implications for demand for food, potable water, shelter, transportation and health and recreation services, and will pose additional stress on natural and cultural resources. While urban planners and managers attempt to maintain orderly urban development and functioning, rapid population growth in cities can derail careful planning, and lead individuals to seek their own solutions. Urban agricultural practices (UAP) forms part of the survival strategy of urban dwellers all over the world, and has historically been integral to urban areas (Drakakis-Smith 1996, Mougeot 1994b). The importance and prevalence of UAP will continue to grow as urban populations increase.

According to Morgan (2008), city planners in most parts of the world have generally dealt with all the essentials of life like air, water and shelter with the conspicuous exception of food. However, he observes that the American Planning Association (A.P.A.) has now developed what he describes as “an exemplary strategy for sustainable food systems in which localization is championed at home and abroad in ways that increase local capacity for food security and food self-reliance”. Morgan (2008) sees the A.P.A. strategy as a testament to what can be achieved when sustainability is treated

seriously and: “when local/global and green/fair are framed in complementary rather than competitive terms”.

It seems that an increasing number of planners (Knowd et al., 2005; Barling et al., 2002) recognize urban agriculture as a potentially important resource in aiming for greater urban sustainability and quality of life, which requires a strategic approach, while also acknowledging the value of such activity in economic, social and environmental terms. The implication is that failing to aim for sustainability in this way risks denying current and future generations an adequate range of choices in the way the economy, society and the environment are managed. What is required is renewed city planning regimes which put making urban land available for food growing as a priority.

Howe (2002) is also concerned about the obstacles to increasing the level of city-based food production in the UK created by the current planning system. He observes that, in spite of the growing interest on the part of the public and policymakers what he sees as the necessary integration of agriculture into urban planning and city development has remained consistently low, other than in a preventative sense, in spite of the fact that the planning system could provide valuable and indeed necessary support for the future of urban food growing. Howe describes and compares planning decisions in relation to urban agriculture which were taken in the two northern cities of Leeds and Bradford. In both cities there were a variety of measures that could be used to preserve or expand planning permission for allotments and other small-scale agricultural activity, and the level of public pressure to advance this process.

Mougeot (2006) identify some specific problems to do with incorporating food growing into land use planning. For example, urban farming may make demands on overstretched public services, such as water supplies. There is also the risk of vandalism of crops and equipment, and crops grown close to main roads may be liable to absorb pollutants. (Mougeot, 2006). Other challenges described include: security of land tenure; funding for start-up costs; access to market outlets; the need for knowledge and skills; and the seasonal limits to growing the in the northern hemisphere. These concerns have to be balanced against the reality that, particularly in the early stages of a project, the actual contribution to food supplies or to income may be quite small.

2.4 Urban Governance and Urban Agricultural Practices

Since the 1980s, urban governance has changed significantly. The change from ‘government’ to ‘governance’ is emblematic of this shift and can be characterized by the changing role of state, market, and civil society in policy making, and the scalar reconfigurations of decision-making (Swyngedouw, 2005). Swyngedouw (2005) outlines three factors pertaining to this reorganization; privatization and deregulation of state functions, up-scaling of regulatory tasks beyond the nation state, and “the down-scaling of governance to ‘local’ practices and arrangements. Following this shift, the act of governing is increasingly contextualized at the urban scale. Non-state actors have increasingly been brought from influencing policymaking on the outside to become an integrated part of governance processes and decision making on the inside (Bulkeley & Mol, 2003).

Governance can as such be identified as a shift from hierarchal to networked relations and decision-making. Associated with the shift described by Harvey (1999), from urban managerialism to urban entrepreneurialism, urban governance has increasingly been responsible for attracting and maintaining stakeholders that ensure economic growth and sustenance. Globalization and the escalation of an increasingly mobile workforce and flexible accumulation, have further, stimulated urban differentiation and competition between cities and regions (Jessop, 1998; Turok, 2009). The decentralization of decision-making can simultaneously be described as an attempt at democratizing governance, including a broader range of stakeholders through participatory governance processes. Bulkeley and Mol (2003) state “increasingly, non-participatory forms of policy making are defined as illegitimate, ineffective and undemocratic, both by politicians and by stakeholders themselves” ‘True’ democratic outcomes of participatory governance processes are, nonetheless, vastly disputed in much literature.

Unequal power relations, informal techniques of government and blurring of responsibility and transparency in policy-making are underlined as challenging democratization of governance processes (Allmendinger & Haughton, 2010; Bulkeley & Mol, 2003; Swyngedouw, 2005). Swyngedouw (2005) describes the duality of urban governance as ‘Janus faced’, speaking to the city’s role, simultaneously ensuring economic growth, and advancing democratic participatory and consensus-orient decision-making. Consensus-oriented governance can, furthermore, be associated with the advent of a range of planning traditions since the 1960s, largely arising out of limitations associated with synoptic planning (Hudson, Galloway, & Kaufman, 1979). Synoptic

planning can be described as a rational comprehensive approach, having little sensitivity to either political conflict or context (Fainstein, 2000; Hudson, et al., 1979). While the unengaged rationale, employed by synoptic planners, is, moreover, abandoned in contemporary planning, Hudson et al. (1979) note that virtually all planning has to address 4 issues indicative of the logic and simplicity central to synoptic planning, namely; “ends, means, trade-offs, [and] action-taking” .Since the 1960s, a range of new planning approaches has evolved and been contextualized within a broader interpretive turn taking place in the 1970s and ‘80s (Healey, 2006; Hudson, et al., 1979). (Healey, 2006) (Healey, 2006). This shift spurred the recognition of collaborative planning approaches, based in Habermas’ communicative rationality and American pragmatism (Fainstein, 2000).

2.5 Urban Poverty and Urban Agricultural Practices

Urban growth combined with limited employment opportunities in cities is leading to a more rapid increase in poverty in urban areas than in rural areas. A massive 43 percent of African’s urban populations live below the poverty line. In several Sub-Saharan nations that share even exceeds 50 percent and Africa’s urban slum populations continue to grow: 69 percent of all households in Addis Ababa, 65 percent in Dar es Salaam and 50 percent in Kampala and Nairobi are slum households (UN-HABITAT, 2008). Poverty is now increasing more rapidly in urban areas than in rural areas, especially in Africa, but most assessments underestimate the scale and depth of urban poverty (UNFPA 2007). Recent comprehensive studies show that unemployment and underemployment are characteristics of urban economies, and that the populations which are growing most in urban areas are those which cannot access the formal labour market. Further, the

infrastructure of cities cannot meet the increased demands for services and this has led to increased crowding and a deteriorating urban environment.

Poverty in the urban areas of developing countries is growing faster than in rural areas. A recent World Bank and IMF report based on more than 200 surveys in 90 developing countries documented a slower pace of poverty reduction during 1993 to 2000 than in the past. The report showed that the growth in urban poverty was 30 percent higher than rural poverty during that time period. This translated into an additional 50 million poor people in urban areas (those living on less than \$1 a day) in a period of just 7 years (IMF, September 2007). In absolute terms, rural poverty remains higher than urban poverty, but urban poverty is growing at a faster rate.

It is therefore clear from the foregoing that, high urbanization without corresponding opportunities for alternative livelihoods is deepening the incidence of poverty in urban areas. This makes it difficult for urban areas in developing countries and Ghana to achieve the first goal of the Millennium Development Goal of eradicating extreme poverty and hunger. With the growing economic crises and issues of climate change with its effect on urban food security, some countries including Ghana have resulted to dependence on food imports. High dependence on food imports, especially for lower income countries with limited foreign exchange reserves, means that any increase in import prices or decline in export earnings could force a decline in food imports, causing their food security to deteriorate further, hitting first and foremost the urban poor (Nguthi, 2007).

Increasing urban poverty is a contributing factor that appears not to be temporary (IFPRI, 1998). Most of the food consumed in cities must be purchased. Poor families can spend 60-80% of their income on food and still be food insecure. Consumer food prices in many cities of the developing world have spiked upward since the removal of subsidies and price controls accompanying structural adjustment policies in the 1980s and 1990s. For instance, food prices in Harare rose to 54% between 1991 and 1992, spurring poor urban consumers to get access to food outside of marketing channels through home production and barter (Tevera, 1996). Even after a more stable macroeconomic environment was restored, urban gardening has remained an important source of food for the large urban food-insecure population. In La Paz, where poverty has reached 73% in slum areas, subsistence production is cited as a way to reduce household expenditures on food, which averages 52- 83% of income.

Urban growth combined with limited employment opportunities in cities is leading to a more rapid increase in poverty in urban areas than in rural areas. A massive 43 percent of African's urban populations live below the poverty line. In several Sub-Saharan nations that share even exceeds 50 percent and Africa's urban slum populations continue to grow: 69 percent of all households in Addis Ababa, 65 percent in Dar es Salaam and 50 percent in Kampala and Nairobi are slum households (UN-HABITAT, 2008). Poverty is now increasing more rapidly in urban areas than in rural areas, especially in Africa, but most assessments underestimate the scale and depth of urban poverty (UN-HABITAT, 2008).

Recent comprehensive studies show that unemployment and underemployment are characteristics of urban employment opportunities increasingly require higher levels of skills, hampering the ability of the urban poor to access a wide range of jobs due to their lack of skills. Changing occupational structures that favor high skills are even impacting the middle classes, which have to fight for lower-paying jobs in severely constricted and competitive job markets, becoming the new poor. Poverty in the urban areas of developing countries is growing faster than in rural areas. A recent World Bank and IMF report based on more than 200 surveys in 90 developing countries documented a slower pace of poverty reduction during 1993 to 2000 than in the past. The report showed that the growth in urban poverty was 30 percent higher than rural poverty during that time period. This translated into an additional 50 million poor people in urban areas (those living on less than \$1 a day) in a period of just 7 years (UN-HABITAT, 2008). In absolute terms, rural poverty remains higher than urban poverty, but urban poverty is growing at a faster rate.

2.6 Preference for Fresh Food and Urban Agricultural Practices

Demand and access to affordable, nutritious food is at the forefront of the urban dwellers problem, a growing concern in the U.S. urban dwellers have the peculiar feature that nutritious food is scarce, or, if available, it is usually of low quality and sold at exorbitant prices (Lewis et al. 2005; Moore and Roux 2006) Not having access to nutritious food increases risk for diet-related problems such as obesity and associated co-morbidities or mortality (U.S. Department of Health and Human Services 2001;(Freedman et al. 1999; Glenny et al 1997; Kitzmann and Beech 2006; and Centers for Disease Control 2009a).

Cummins and Macintyre (2006) and Cohen and Northridge (2000) found that living in a low-income or deprived area is associated with a poor diet (more specifically high fat, high calorie diets that are low in fruit and vegetables) and the prevalence of morbidities, such as obesity.

Chen and Snyder (2009) establish the links from food deserts to malnutrition to obesity to morbidity. Because obesity and co-morbidities have reached epidemic proportions and continue to increase (Flegal et al. 2010) there is “a growing need to develop public health policies and innovative intervention strategies to increase retail availability of fresh fruits and vegetables (FFV) in disadvantaged communities” (Hosler et al. 2008), as well as retail strategies that provide these consumers with affordable and nutritious food choices while providing profits for the entire food supply chain, in particular the retailers. Developing retail strategies for these disadvantaged areas may holistically seem philanthropic in nature (Seelos and Mair 2007), but there is immense symbiotic profit potential in this U.S. market segment. Ogden (1993) reported various indicators of preschooler nutritional status in her study of urban food security in Kigali, and noted that urban agricultural practices were positively associated with nutritional status in some income groups, and under some conditions of maternal employment. In Nairobi, Mwangi (1995) reported few differences in mean nutritional status (expressed as a percentage of the expected mean).

Children from non-farming households were somewhat more likely to be moderately malnourished. Lopez, (2006) report the linkages of urban agricultural practices and malnutrition in Kampala. When controlling for socio-economic status and other

individual and household characteristics, they found that urban agriculture is positively and significantly associated with higher nutritional status in children, particularly in terms of height-for-age, and that there is a significantly lower proportion of moderately to severely malnourished children in households where someone (almost always the mother or primary care-giver) is farming.

They suggest that the impact on nutritional status is a result of both higher and more stable access to food on account of virtually year-round availability of staple foods from urban production, and the ability of mothers who farm to provide more direct childcare than women engaged in other economic activities. These studies generally do not provide conclusive evidence of a positive impact of urban agricultural practices on nutritional status of children. Several reasons could account for this. Most of the studies based their conclusions on differences in height-for-age (indicator for stunting), which is a measure of long-term chronic under nutrition and a reflection of poverty. More importantly, food intake is only one determinant of nutritional status of children - others being the quality of care provided and the incidence of disease (UNICEF, 1990). Without adequate knowledge of the role of these other factors, caution must be exercised in the interpretation of these results.

Urban areas provide at the same time a clear potential for food security and an increased risk. Urban diets can be more varied and nutritious than rural ones for those who have the means to access diversified food. However, cities and towns are cash-intensive and residents often have to pay for goods and services (such as fuel, water and housing) that they do not have to pay for in rural areas. High costs for non-food essentials means that

urban dwellers must stretch their incomes across a wider range of goods such as housing, energy, transportation, household items, education, health care and personal items, in addition to food (Ravertz, 2000).

Malnutrition in all its forms is a growing concern in cities. While there are certainly more foods available year round and more jobs and social services in urban areas, not everyone is able to benefit. A growing number of urban poor face a daily struggle to feed their families. Disadvantaged urban households may have to devote an extremely high proportion of their disposable income to food, between 54 percent and 76 percent in Sub-Saharan capital cities. It is obvious that in this urban context, the higher the proportion of income spent on food by low socio-economic groups, the more precarious their food situation is likely to be, although food budget shares in different cities may not be directly comparable (FAO 2008, b). In urban settings, lack of income translates more directly into lack of food than in rural settings. In all regions, urban and peri-urban agricultural practices are activities in which the poor are disproportionately represented. Food production in the city is in many cases a response of the urban poor to inadequate, unreliable and irregular access to food, and the lack of purchasing power. Engagement in farming in urban areas has also been shown to be associated with greater dietary diversity in most countries (WHO, 2003).

2.7 Food Insecurity and Urban Agricultural Practices

Food insecurity has been recognized as a major purpose of engaging in urban agricultural practices (UAP). Initiative contribute to urban food self-sufficiency and nutrition by helping to provide all citizens with increased access to nutritious foods and reduce their

food expenses which results in food security. Kutiwa et al. (2010) indicate that the practice of urban agriculture is one way to escape the food insecurity and poverty cycle in a cash intensive environment and develop a conceptual model to address three components of food security. Households involved in urban agricultural practices can produce their own food and get immediately the fresh product for consumption. The money saved from the supplement of food make household get access to dietary diversity. The food utilization refers to the nutritional security in terms of food quality. Additional, the major products in urban and periphery is fresh and perishable products such as vegetables, fruits, eggs and milk, which is a complement of rural agriculture but not competing with it (Mougeot, 2001).

In many Asian countries, they have a long history of urban and peri-urban agricultural practices with a great diversity of products to overcome the conflicts between big populations and limit arable land. As an example, many cities in China are able to be self-reliant in non-grain foods. Singapore is 25% self-reliant in vegetables and 100% in meat. In late 1980s of Cuba, the collapse of socialist bloc which had accounted for 85% of Cuba's trade in economic slump made Cuba agriculture face challenges to provide food but to the locally-available resources. But potential food safety risks may be higher for urban agriculture production than those in rural areas because urban environment are more polluted (Howe, 2002).

One of the most urgent and challenging issues facing the African continent is achieving food security for its people. The first formal definition of food security was provided by the United Nations (UN) World Food Summit in 1974. The Summit concluded that food

security is the “availability at all times of adequate world food supplies of basic foodstuffs to sustain a steady expansion of food consumption and to offset fluctuations in production and prices” (UN Report of the World Food Conference, 1974). A more recent definition by the World Food Summit held in Rome in 1996 states that “ Food security 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”.

It is important to note that the problem of food insecurity among poor urban households in most developing countries has its origin partly in the migration of people from rural to urban settlements in search of what they perceive to be better jobs and a good life. For instance, Ellis and Freeman suggest that migration is one of the strategies used by the rural poor to improve their livelihoods (Ellis and Freeman, 2005). Increased urban population and growing urban poverty should raise concerns particularly about African urban food security, supply and distribution systems. The urban poor are particularly vulnerable to variations in food and fuel prices and in income since food (often over 60 percent) and fuel (often more than 10 percent) make up a large part of their household expenses. It is estimated that the rise in food prices between 2007 and 2008 increased the number of people living in extreme poverty in urban areas in East and South Asia, the Middle East and Sub-Saharan Africa (SSA) by at least 1.5 percent (Bakker, 2008).

Although prices of food and fuel have declined in the latter half of 2008 and early 2009, they still remain much higher than they were for much of this decade. Though the food security situation in SSA improved from 2009 to 2010, nearly half of the region’s

population remains food-insecure. By 2020, the number of food insecure people in the region is projected to exceed 500 million (USDA, 2010). The FAO points out that the urban poor are disproportionately affected by rising food prices. There are two main reasons offered for this. First of all, city dwellers are more likely to consume foods that are tradable commodities (wheat, rice), and thus more exposed to market changes. Conversely, in rural areas, diets are often made up of traditional staples such as roots and tubers. Second of all, city residents have much less access to land and other inputs required to grow one's own food (FAO, 2008). This naturally increases their exposure to fluctuating prices and leaves them with few options to react to changing prices. Although prices of food and fuel declined in the latter half of 2008 and early 2009, they still remain much higher than they were for much of this decade. Though the food security situation in Sub Saharan Africa improved from 2009 to 2010, nearly half of the region's population remains food-insecure. By 2020, the number of food insecure people in the region is projected to exceed 500 million (USDA, 2010).

2.8 Population Growth and Urban Agricultural Practices

The rapid increase of the world's urban population coupled with the slowing of rural population growth has led to a major redistribution of the population over the past 30 years. By 2007, one-half of the world's population will live in urban areas compared to little more than one-third in 1972, and the period 1950 to 2050 will see a shift from a 65 per cent rural population to 65 per cent urban (WCED,1997). By 2002, some 70 per cent of the world's urban population will be living in Africa, Asia or Latin America (WCED, 1997). The most striking current changes are the levels of urbanization in less developed

nations: rising from about 27 per cent in 1975 to 40 per cent in 2000 and increase of more than 200 million people (Mugalavai, 2008). Furthermore, there is every indication that the trend will continue for the next 30 years, adding 800 million people to the urban population of the presently less-developed nations. Within these global averages, there are complex regional differences in urban growth and change. The annual percentage change in the urban population by region shows a general slowing in the rate of urbanization for all regions (Mugalavai, 2008). Most of the world's urban population still lives in small and medium-sized cities (see table) which, in most countries, are now growing faster than the very large cities (Nijkamp, 1990).

Half of Africa's population already lives in cities, a proportion that will continue to increase (Gura, 2008), though it is also recognized that agriculture still provides employment and income for the majority of the population (World Bank, 2007). If national data and predictions are correct, a significant part of the African population will live in cities, but will rely on practicing agricultural for income. This situation may cause serious sanitary and environmental challenges for all agricultural activities conducted in an urban area (Cohen, 2010)

Rural-urban linkages are increasing and the distinction between the two sectors is already causing conceptual problems for national statistics institutes. Very little is known about local economic activities and livelihoods. Local economic activities are difficult to assess, because of: underground production such as registered traders with deliberately concealed production; illegal production such as fuel smuggling; informal production, "unregistered traders" mostly at household level; and household production for auto-

consumption, e.g. food. Investigations of livelihoods will prove to be necessary in order to cover all the dimensions of households and understand the continuing structural and social changes among them. Agricultural and non-agricultural practices will have to be analyzed simultaneously and not separately for a better understanding of household strategies and income portfolios (Cohen, 2010)

A major feature of urban agricultural practices (UAP) is the diversity of the socio-economic profiles of the actors involved, and their varying income and livelihood strategies, a reflection of the diversity of the labor and capital basis in urban areas. A typology was established Gura in 1996 (Gura, 2008) and since that time some other research has provided some attempts at classification (Bakker et al., 2010). The first category, home subsistence farmers, refers to urban residents who practice agriculture on small plots around their homes, mostly for subsistence purposes. The second category also refers to urban farmers with predominant subsistence strategies, but whose location in peri-urban areas makes it possible to associate multiple food crops on large plots, without use of chemical inputs or irrigation. This type is especially observed in the rain-fed agricultural systems of Central Africa. The third type refers to commercial urban and peri-urban farmers who are involved in agriculture to earn a monetary income for basic family expenditures, while the “entrepreneurs” (fourth type) have diversified sources of income and are able to invest in a larger scale of production than farmers in the other categories. For these farmers, agriculture not only represents a source of income, but also a source of leisure. This dimension is also present in the other categories, although it may not be the major driver of the activity.

2.9 Theoretical frameworks

This work is grounded by these theories, the innovation-diffusion theory, the rational choice theory and the conceptual framework.

2.9.1 Innovation-Diffusion Theory

This model is composed of four basic theoretical approaches; each focusing on a different element of the innovation process. These are combined to create meta- theory of diffusion consisting of four components: the innovation decision process, the perceived attributes of the technology and the rate of adoption and individual innovativeness (Rogers, 1995). The innovation decision process is characterized by five stages: knowledge, persuasion, decision, implementation and confirmation. In the knowledge stage, the individual or household is exposed to the innovation's existence and gains understanding of how it functions. However, even after knowing about an innovation, individuals may need to be persuaded to use it because they do not regard it as relevant to their situation. The outcome of the persuasion stage is either adoption or rejection of the innovation. The implementation stage is when an individual puts an innovation into use and the final stage is confirmation during which the individual seeks reinforcement for the decision made (Lehmann, 2004).

The study by Rogers (1995) identifies five attributes upon which an innovation is judged. These are relative advantage, compatibility, complexity, triability and observability. Relative advantage refers to the degree to which an innovation is perceived as better than the practice it replaces. Relative advantage is often expressed in terms of economic, social or other benefits. Compatibility refers to the degree to which an innovation is

perceived by potential adopters to be consistent with their existing values and practices. Compatibility with what is already in place makes the new practice seem less uncertain, more familiar and easier to adopt. Complexity refers to the degree to which an innovation is considered as a difficulty to understand and use. If potential adopters perceive an innovation as complex, its adoption rate is low. Triability refers to the extent to an innovation may be subjected to limited experimentation. Finally, observability refers to the degree to which the results of an innovation are visible to others.

This theory posits that innovation spread gradually over time and among people resulting in various adopter categories. The result is an adoption process that forms a normal S-shaped curve when plotted over time (Rogers, 1995). Rogers attributes this distribution of adoption to the role of information, which reduces uncertainty in the diffusion process. Based on this arguments Rogers has classified adopters into five categories: innovators, early adopters, early majority, late majority and laggards. Innovators are described as individuals who are venturesome, eager to try new ideas and take risk. Early adopters are described as the local opinion leaders in the system that function as the role models and are quick to see the value of innovations. Early majority is formed by the largest category. These people only make a decision when they are convinced of the benefits. Late majority are cautious and skeptical persons who do not adopt until the early majority has done so. They are usually the relative poor and are averse to risk. The last group of adopters is the laggards. They are suspicious of innovations and change agents. They are usually poor and seldom take risks. All categories of adopters were demonstrated in the

current study findings, although they were not documented since the study objectives were not covering that.

The innovation diffusion model has several limitations. One of the major shortcomings of the model is that it generally assumes that the most important variable is the information and the willingness of the individual to change. An individual is characterized by his behavior without considering factors that influence his behavior. In reality many other factors are known to influence the adoption of an agricultural innovation. These include the farmer's objectives, the level of resource endowments of the individuals, access to resources, availability of support systems and the characteristics of the innovation. For example access to resource such as labour and land can limit the adoption of an innovation to a small number of individuals in a society (Wejnert, 2001).

This applied to urban and peri-urban poor affected household whose labour and other productive resources are limited. Access to productive resources is also gender biased, with women having less access than men. In such cases an innovative individual may be labeled as a laggard while late and non-adoption is caused by lack of resources. Information and support services from the extension systems may also limit the spread of innovation by targeting innovators and early adopters while ignoring the others (Padel, 2001).

2.9.2 Rational Choice Theory

Rational choice is a choice made out of many alternatives through rational thinking. Rational choice theory makes several assumptions. First, it assumes that human beings

are purposive and goal oriented. Every action taken is guided by a clearly identified goal or purpose. Theories of rational choice are guided by the assumption that people are rational and base their actions on what they perceive to be the most effective means of their goal. It involves weighing up alternative means to alternate ends and choosing between them. Rational choice theorists advocate that to understand more about how and why people behave in a certain way whether individually or socially then we have to see them as rational decision-makers in a world of scarcity. Scott (2000) has assumed that people are motivated by money and by the possibility of making a profit. Sociologists and political scientists have tried to build theories around the idea that all action is fundamentally 'rational' in character and that people calculate the likely costs and benefits of any action before deciding what to do.

This current study found out that the behavior of the urban household can be directed by this theory when making decisions in the adoption of the intervention. Therefore with this approach in mind the theory of rational choice become relevant to this study based on assumption that the urban dwellers take up the agricultural interventions with multi facet of goals. These include: food, nutrition, health security and income generation. If through intervention one is able to meet his/her prescribed goals one take it up the intervention as a livelihood and resulted to acceptance of the intervention. Where one's goal was to generate income and after an attempt found that he/she was not getting profit he/she was to decide to reject the intervention. According to Hudson (1979) most sociological rational choice theories assume that human being act rationally in a broad sense, and

focus on the aggregate outcome that individual actors in interaction with one another are likely to bring about.

2.10 Conceptual Frame Work

The conceptual framework is a diagrammatical presentation of variables in the study. The framework illustrates the interrelationship between dependent and independent variables. The independent variables for the study are factors contributing to increased urban agriculture. The independent variables include: increased High poverty levels, food insecurity, preference for fresh and nutritious food and population growth. Increased urban agriculture is dependent on the high level of poverty, preference for fresh foods, food insecurity and rapid growth in urban population.

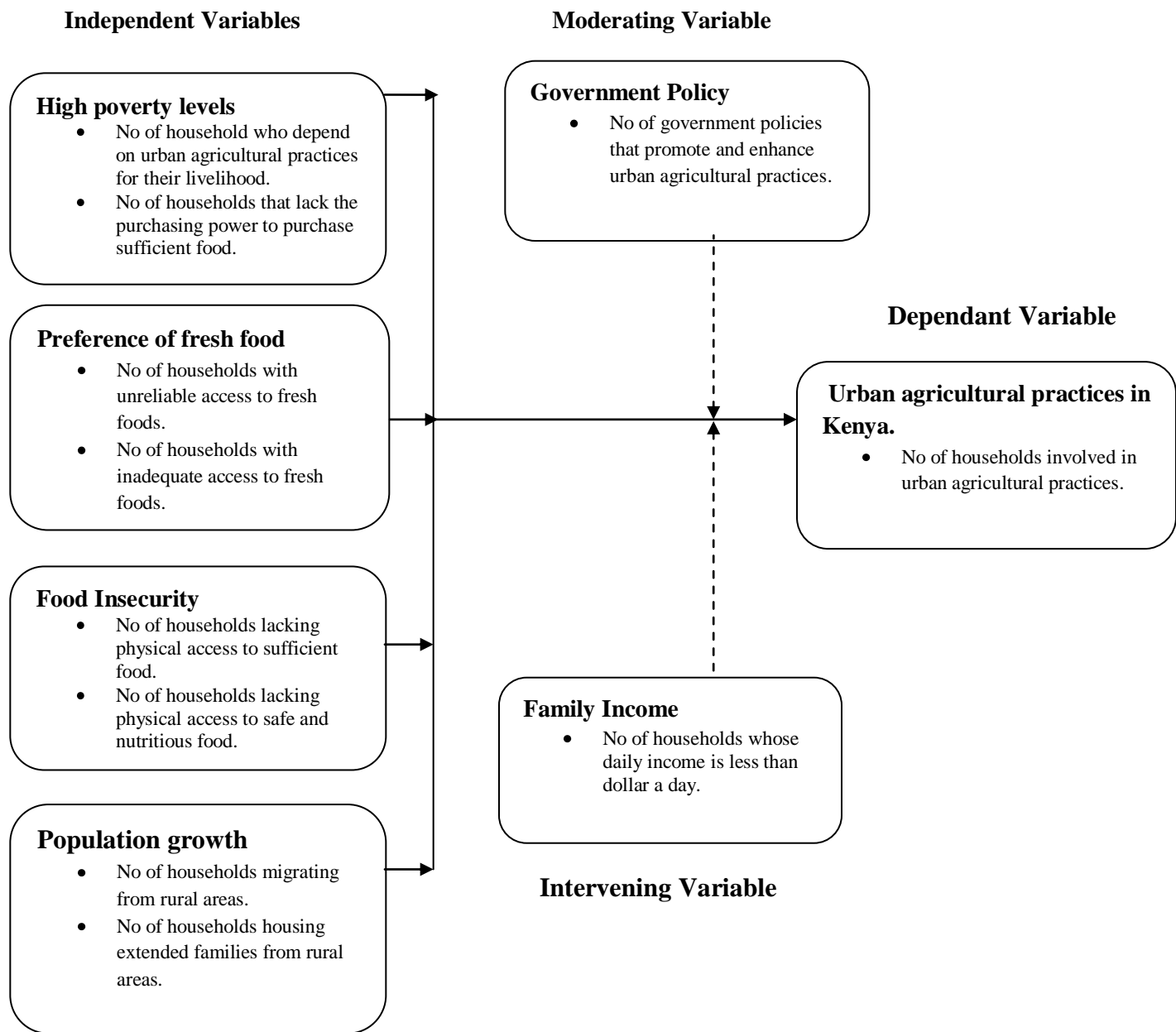


Figure 1: Conceptual Framework

2.11 Summary of literature review

Urban agricultural practices have increasingly gained recognition as a viable intervention strategy for the urban poor to earn extra income. It also allows the poor to reduce their

reliance on cash income for food by growing their own food on plots inside or outside the city, thus increasing their access to much needed food. Urban agricultural practices make a vital contribution to the food self-reliance of many major cities. As reiterated by Mougeot (1994), food self-reliance is not self-sufficiency, but it can go a long way towards reducing the food insecurity of vulnerable groups. Urban agricultural practices cannot be expected to satisfy the urban demand for staple crops like cereals and tubers, which can easily be stored and transported with limited losses from rural areas.

What must be recognized and appreciated is that urban agricultural practices, with limited support, already supplies a significant share of food, especially the more easily perishable vegetables and poultry products, to many cities. Fresh vegetables, for instance, make up an important component of diversified diets, improving dietary quality. They can also be one of the most expensive items in the urban consumers' food basket, given the costs incurred in their marketing, in terms of transportation from producing areas and the sheer quantities that perish during transportation. The marketing channel is an important factor in the cost of food, and the location and extent of local food production may shorten the path of distribution from producer to consumer (Bryld, 2013).

Urban agricultural practices consist of the growing of plants and raising of animals within and around the cities. In Kenya, most of the agriculture is undertaken in the rural with major components of crops and livestock. In urban areas, the poor practice some agriculture in smaller magnitude. It is not well recognized by the authorities. In fact, in the past cropping and livestock used to be destroyed or confiscated by the municipal or urban council in accordance with existing by laws. Despite this, urban agriculture is on

the rise but there is no appropriate policy to this effect. Kenyan people carry along with them indigenous knowledge on livestock keeping and crop production to the urban areas when they migrate from the rural areas. Production of vegetable crops, for instance, kales, beans, tomatoes and livestock have become an integral component of urban lifestyle in major towns in the country. This is regardless of whether those practicing it live in marginal areas of the cities or the wealth in suburbs on large compounds. Urban agricultural practices may take place in locations inside the cities (intra-urban) or on land away from the residence (off-plot), on plate land (owned, leased) or on public lands. "Livestock follow human beings in Africa and people move with indigenous knowledge on their keeping" (Karanja, 2007).

2.12 Research Gaps

Table 1 Knowledge Gaps

Variable	Author and Year	Findings	Knowledge gap
Urban Planning and Urban Agricultural Practices	Lopez Moreno, (2008, 10) Morgan, (2008)	Found out that half of a country's population live in the urban area where the urban levels are expected to rise to seventy percent by the year 2050. However, the city planners in most parts of the world have generally dealt with air, shelter and food without any consideration of food for the growing population.	There is need to focus on urban agriculture for the growing population in the urban centers so that to curb the growing food insecurity that leads to starvation.
Urban Governance and Urban Agricultural	Swyngedouw, (2005) Fainstein, (2000).	There has been quite a number of changes in the urban centers including the change from	The study shows that the current governance is concerned with the city progress and is planning

Practices		government to governance. New planning approaches has evolved since the 1960s. This shift spurred the recognition of collaborative planning approaches, based in Habermas' communicative rationality and American pragmatism.	on how to solve on the emerging issues. It seems to attract and maintain stakeholders that ensure economic growth and sustenance of the city.
Urban Poverty and Urban Agricultural Practices	UN-HABITAT, (2008). Tevera, (1996).	Urban population is higher than the job opportunities available in the city. This has led to the increase of slums due to poverty. Urban dwellers have to purchase food on a daily basis where the prices rise gradually making the poor people think of getting food from marketing channels such as barter.	There is need to emphasize on ways to deal with unemployment in the urban areas so as to hinder the alarming growth of poverty in the areas.
Preference for Fresh Food and Urban Agricultural Practices	Flegal, (2010) Mwangi, (1995)	Found out that not having access to nutritious food increases risk for diet-related problems such as obesity. Obesity and co-morbidities have reached epidemic proportions and continue to increase. However, a study in Nairobi found out that there were a few differences in mean nutritional status in the region.	The study seeks to come up with a clear view that there is a growing need to develop public health policies and innovative intervention strategies to increase retail availability of fresh fruits and vegetables as well as affordable and nutritious food choices in the city.

<p>Food insecurity and urban agricultural practices</p>	<p>Mougeot, (2001). Baker, (2008).</p>	<p>The idea of supporting urban agriculture is highly supported since it will urban dwellers to escape food insecurity and poverty. However, it does not aim to compete with the rural agriculture. The rise of food prices in the urban centres increases the poverty levels of poor urban dwellers by 1.5 percent.</p>	<p>This study will focus on a discussion on how urban dwellers can engage in urban and peri-urban agricultural practices with a great diversity of products to overcome the high prices of food in the urban areas.</p>
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CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter details the overall methodology that was used in the study. This includes the research design, population of the study, sampling procedures, data collection methods, research procedures, method of data analysis and ethical considerations.

3.2 Research Design

The study employed a descriptive survey research design aimed at identifying the factors contributing to increased urban agriculture in Nairobi Kenya. According to Phil (1996), descriptive research studies are designed to obtain information concerning the current situation and other phenomena and wherever possible to draw valid conclusion from the facts discussed. According to LaSalle (2008), descriptive research studies are based on some previous understating of the nature of the research problem. The survey research endeavors to explore the existing status of two or more variables at a given point in time. The method is preferred because it allows for prudent comparison of the research findings. Descriptive survey attempts to describe or define a subject often by creating a profile of a group of problems, people or events through the collection of data and tabulation of the frequencies on research variables or their interaction as indicated.

This study adopted descriptive survey to observe the correlation of different effects on identifying the factors influencing urban agricultural practices in Kenya a case of Nairobi

County. These approaches yielded quantitative and qualitative information that was analyzed through both qualitative and quantitative methods.

3.3 Target Population

According to Kothari (2004), a target population is a well-defined set of people, services, elements, event, and group of things or households that are being investigated. Nsubuga, (2000), explains that the target population should have some observable characteristics, to which the researcher intends to generalize the results of the study. This definition ensures that population of interest has common characteristics.

According to Mugenda and Mugenda (2008) a target population is the population to which the researcher would like to generate his/her results. In conducting a research study, the researcher ideally investigated all the individuals to whom they wish to generalize their findings. In this study, the target population was 510 households from Nairobi County in Kenya who engage in urban agricultural practices.

3.4 Sample Size and Sampling Procedures

The sample size was established and the procedure for establishing it was explained as follows.

3.4.1 Sample Size

The sample consisted of 10 households per constituency in the County. The study sample size therefore, comprised of 170 households who engage in urban agricultural practices.

3.4.2 Sampling Procedure

Purposive sampling procedure was used to select households who engage in urban agricultural practices to participate in the study. Purposive sampling technique was used

for selection of households who practice urban agriculture as they are considered competent in providing the required information. According to Denscombe, (2008) purposive sampling starts with a purpose in mind and the sample is thus selected to include people of interest and exclude those who do not suit the purpose. The method was therefore suitable in selecting households who have been engaging in urban agricultural practices in the area for a reasonable period of time. Denscombe, (2008) also posited that, purposeful sampling is useful when one wants to access a particular subset of people.

3.5 Research Instruments

This study utilized a questionnaire as a primary tool for data collection. The questionnaire contained both structured and unstructured questions with 2 sections. The questions were systematic and pre-determined and were presented with exactly the same wording and in the same order to all respondents. Section 1 of the questionnaire captured questions on the demographic characteristics of respondents, Section 2 entailed questions on factors contributing to increased urban agricultural practices. For closed-ended questions, a five-point likert scale was used. This included: (1) strongly disagree, (2) disagree, (3) moderately agree, (4) agree (5) strongly agree. The strongly agreed responses were scored at 5 for direct positive responses while those of strongly disagreed responses (Not at all) were scored at 1 for direct negative responses.

3.5.1 Piloting of the Study

The data for this research was collected using a survey questionnaire. The research instruments were created using suitable questions from related research and individual questions by the researcher. In the questionnaire, Likert scale was used to determine the

respondent level of agreement or disagreement in a statement. The questionnaire comprised of both close and open ended questions. The questionnaire were a self-administered questionnaire, to enable the study to gather report on people's opinion, attitudes, beliefs and values on factors contributing to increased urban agricultural practices.

3.5.2 Validity of Instruments

Joppe (2000) provides the following explanation of what validity is in quantitative research where validity determines whether the research truly measures that which it was intended to measure or how truthful the research results are. Researchers generally determine validity by asking a series of questions, and often look for the answers in the research of others.

Wainer and Braun (1998) describe the validity in quantitative research as “construct validity”. The construct is the initial concept, notion, question or hypothesis that determines which data is to be gathered and how it is to be gathered. They also assert that quantitative researchers actively cause or affect the interplay between construct and data in order to validate their investigation, usually by the application of a test or other process. In this sense, the involvement of the researchers in the research process would greatly reduce the validity of a test. Data quality was incorporated in the entire study process especially at the data collection point to include completeness of questionnaires, legibility of records and validity of responses. At the data processing point, quality control included data cleaning, validation and confidentiality. There are three types of validity which were addressed and stated; Face validity with pre-testing of survey

instruments is a good way used to increase the likelihood of face validity. Content validity the use of expert opinions, literature searches, and pre-test open-ended questions helped to establish content validity.

To establish the validity of the instruments in this research, the instrument was presented to the research supervisor and defended in the faculty forums where the research proposal was presented. There after the questionnaire was administered with approval of the supervisor.

3.5.3 Reliability of Instruments

Reliability refers to the consistency of measurement and is frequently assessed using the test–retest reliability method. Reliability is increased by including many similar items on a measure, by testing a diverse sample of individuals and by using uniform testing procedures. Reliability gives the internal consistency of data collected. This ensured that the data has certain internal consistent pattern. When no pattern is found in the responses, this indicates that probably the test is too difficult and as a result the respondents just guess the answers randomly (Bulkeley, 2003).

Reliability of the research instrument was enhanced through a pilot study that was done in one constituency by selecting a pilot group of 10 respondents. The respondents was conveniently selected (Denscombe, 2008). The pilot data was not to be included in the actual study. The pilot study allows for pre-testing of the research instrument. This reliability estimate was measured using Cronbach Alpha coefficient (α). Peterson (1994) recommends that instruments used in research should have reliability of about 0.70 and above.

The coefficients of stability (test retest) method were used to estimate the degree to which the same results could be obtained with a repeat measure. Pearson product moment for the pre-test (Orodho 2003) was used to compute the correlation coefficient. This established whether the contents of the questionnaires are consistent. The questionnaire was then being given to the supervisors who assessed it independently and then give an experts opinion which was incorporated in to the final questionnaire.

3.6 Data Collection Procedures

Permission to collect data from households who engage in urban agriculture practices in Nairobi County was sought from the Nairobi County Agriculture Officer, after the approval from the university to carry out the research. The researcher attached a transmittal letter in each questionnaire. The researcher visited each household at different times and sought for permission to collect data as pertains the different ways discussed above.

3.7 Data analysis Techniques

The process of data analysis involved several stages: the completed questionnaires were edited for completeness and consistency, checked for errors and omissions. The research yielded both qualitative and quantitative data. The qualitative data collected was analyzed through content analysis where a thematic framework was developed. The quantitative data generated was analyzed using descriptive statistics with the help of Statistical Package for Social Sciences (SPSS) version 20. The findings were presented using tables, frequencies and percentages.

3.8 Ethical Considerations

The study was conducted in an ethical manner. All respondents were treated with courtesy and respect in order to avoid misunderstanding between the enumerators and respondents and they were informed of the purpose of the study. Each respondent was politely requested to fill the questionnaire and assured of confidentiality with regard to any information they provided. The respondents were assured that the information given was to be treated confidentially and their names were mentioned anywhere. Informed consent form was sought from all the participants that agree to participate. A research approval was sought and given a letter of approval from the University of Nairobi. The researcher administered the questionnaire to the respondents.

3.9 Operationalization Table of variables

This section analyses the operational definition of variables the factors contributing to increased urban agricultural practices in Nairobi Kenya. The operation of the variables is as shown below

Table 3.2: Operationalization table of variables

Indicators	Measurement	Scale	Data Collection Methods	Tool of Analysis
Government and donor funding. Materials' accessibility.	Frequency Percentage Mean Standard deviation	Ordinal Nominal	Questioners Observation	SPSS
Quality and nutritional value	Frequency Percentage Mean Standard deviation	Ordinal Nominal	Questioners Observation	SPSS
National education programme, participatory government programs, good governance	Frequency Percentage Mean Standard deviation	Ordinal Nominal	Questioners Observation	SPSS
National education programme, participatory government programs, good governance	Frequency Percentage Mean Standard deviation	Ordinal Nominal	Questioners Observation	SPSS

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATIONS

4.1 Introduction

This chapter discusses the interpretation and presentation of the findings obtained from the field. The chapter presents response rate, background information, Descriptive analysis, and inferential statistics that have been used to discuss the findings of the study.

4.1.1 Response Rate

The study targeted a sample size of 170 respondents from which 152 responded which constituted 89.4%. This response rate was satisfactory to make conclusions for the study. The response rate was representative. According to Mugenda and Mugenda (2003), a response rate of 50% is adequate for analysis and reporting; a rate of 60% is good and a response rate of 70% and over is excellent. Based on the assertion, the response rate was considered to excellent.

Table 4.3: Response Rate

	Questionnaires Administered	Questionnaires filled & Returned	Percentage
Respondents	170	152	89.4

4.1.2 Reliability Analysis

Reliability of the instrument was determined using Cronbach's alpha.

Table 4.4: Reliability Analysis

Variable	Cronbach Alpha coefficient score	No. Of Items	Comments
Urban poverty	0.889	5	Reliable
Preference for fresh food	0.830	5	Reliable
Food insecurity	0.805	4	Reliable
Population growth	0.832	5	Reliable

A pilot study was carried out to determine reliability of the questionnaires. The pilot study involved the sample respondents. Reliability analysis was subsequently done using Cronbach's Alpha which measured the internal consistency by establishing if certain item within a scale measures the same construct. Gliem and Gliem (2000) established the Alpha value threshold at 0.7, thus forming the study's benchmark. Cronbach alpha was established for every objective which formed a scale. The table shows that Increased poverty level had the highest reliability ($\alpha= 0.889$), followed by Population growth ($\alpha=0.832$), Preference for fresh food ($\alpha=0.830$) and finally the Food insecurity ($\alpha=0.805$). This illustrates that all the variables were reliable as their reliability values exceeded the prescribed threshold of 0.7

4.2 Demographic Characteristics of the Respondents

Table 4.5: Gender of the Respondents

Gender	Frequency	Percentage
Male	54	35.5
Female	98	64.5
Total	152	100

The study sought to establish the respondents gender category, from the research findings, the study established that majority of the respondents as shown by 64.5% were females whereas 35.5% of the respondents were males, this is an indication that both genders were equitably engaged in this research and therefore the findings of this research did not suffer from gender biasness.

Table 4.6: Age Group of the Respondents

Age	Frequency	Percentage
21-30 years	53	34.9
31-40 years	67	44.1
41-50 years	32	21.0
Total	152	100

On respondent's age category, the study revealed that majority of the respondents as shown by 44.1% were aged between 31-40 years, 34.9% of the respondents were aged between 21-30 years whereas 21.1% of the respondents were aged between 41-50 years, there were no respondents aged between 15-20 years. This implies that respondents were well distributed in terms of their age.

Table 4.7: Highest level of Education attained of the Respondents

Education level	Frequency	Percentage
Certificate	38	25.0
Diploma	45	29.6
Undergraduate	36	23.7
Masters	23	15.1
PHD	10	6.6
Total	152	100

The study sought to determine the respondent's highest level of education attained, from the Research findings, the study established that most of the respondents as shown by 25.0% of the respondents had attained certificates, 29.6% had college diploma certificates, whereas 23.7% of the respondents indicated to have attained undergraduate, 15.1% of the respondents indicated to have attained masters level whereas 6.6% of the respondents indicated to have attained PHD level of education. This implies that majority of the respondents were literate and therefore they were in a position to respond to the research question with ease.

Table 4.8: Period which the Respondents had lived in the Urban Center

Education level	Frequency	Percentage
Less than 3 years	20	13.2
3 to 5 years	32	21.0
5 to 7 years	43	28.3
Over 7 years	57	37.5
Total	152	100

Respondents were requested to indicate the period which they had lived in the urban center, from the research findings, the study revealed that most of the respondents as shown by 37.5% had lived in the urban center for more than 7 years, 28.3% of the respondents had lived in town for a period of 5 to 7 years, 21.0% of the respondents had lived in town for a period of 3 to 5 years whereas 13.2% of the respondents had lived in town for not more than three years. This is an indication that a significant number of the participants had lived in the urban center for a considerable period of time and therefore they were in a position to give credible information relating to this research.

Table 4.9: Number of Respondents Practicing Urban Agriculture in Their Premises

Opinion	Frequency	Percentage
Yes	152	100
Total	152	100

The study sought to determine whether respondents engage in urban agricultural practices in their premises, from the research findings, all the respondents as shown by 100% response rate agreed that they practiced their premises, the study further revealed that the move to practice agriculture in their premises was commonly steered by desire for fresh agro-products, need for cheap and affordable agricultural products and inconsistent supply of certain agricultural products in the local markets.

Table 4.10: Trend in Agricultural Practices within the Urban Area

Opinion	Frequency	Percentage
Yes	135	88.8
No	17	11.2
Total	152	100

The study sought to establish whether there was an increase in urban agricultural practices in the area, from the research findings, majority of the respondents as shown by 88.8% were of the opinion that urban agricultural practices have increased whereas 11.2 % were of the contrary opinion. This implies that there has been significant increase in urban agricultural practices in most of the constituencies in Nairobi County.

4.3 Urban Poverty and Urban Agricultural Practices

The tables show the influence of urban poverty and urban agricultural practices in Nairobi County.

Table 4.11: Extent to which Urban Poverty has Influenced Urban Agricultural Practices

Extent	Frequency	Percentage
Very high extent	53	34.9
High extent	73	48.0
Moderate extent	26	17.1
Total	152	100

The study sought to determine the extent to which increased poverty level contribute to increased urban agricultural practices, from the research findings, most of the respondents as shown by 48% were of the opinion that increased poverty levels contributes to increased urban agricultural practices to a high extent, 34.9% of the respondents indicated to a very high extent whereas 17.1% of the respondents indicated to a moderate extent, this implies increased poverty level contributes to increased urban agricultural practices to a high extent.

Table 4.12: Effects of Urban Poverty on the Levels of Urban Agriculture Practices

Statements	Strongly Disagree	Disagree	Moderately Agree	Agree	Strongly Agree	Mean	Std Deviation
Poor families spend 60-80% of their income on food and still be are insecure	3	4	9	73	63	4.24	0.23
Consumer food prices in country have spiked upwards	4	7	8	91	42	4.05	0.25
Poverty is now increasing more rapidly in urban areas than in rural areas	2	5	3	82	60	4.27	0.25
High urbanization without corresponding opportunities for alternative livelihoods is deepening the incidence of poverty in urban areas	3	6	7	84	52	4.16	0.24
Urban poverty and the share of the poor living in cities are rising	1	3	5	75	68	4.36	0.25
Average mean						4.22	

The study sought to establish the level at which respondents agreed with the above statements relating to effects of increased poverty level on levels of urban agricultural practices, from the research findings, majority of the respondents agreed that urban poverty and the share of the poor living in cities are rising as shown by a mean of 4.36 and std deviation of 0.25, poverty is now increasing more rapidly in urban areas than in rural areas as shown by a mean of 4.27, poor families spend 60-80% of their income on food and still be are insecure as shown by a mean of 4.24, high urbanization without corresponding opportunities for alternative livelihoods is deepening the incidence of

poverty in urban areas as shown by a mean of 4.16, consumer food prices in country have spiked upwards as shown by a mean of 4.05, all the cases were supported by a low mean of std deviation which implies that respondents were of similar opinion. The study further established that urban agricultural practices contribute to local economic development, poverty alleviation and social inclusion of the urban poor and women in particular, as well as to the greening of the city. The above findings are in line with the findings by UN-HABITAT, (2008). Poverty is now increasing more rapidly in urban areas than in rural areas, the findings further confirms with findings by Tevera, (1996) that even after a more stable macroeconomic environment is restored, urban gardening has remained an important source of food for the large urban food-insecure population.

4.4 Preference for Fresh Food and Urban Agricultural Practices

The tables show the influence of preference for fresh food and urban agricultural practices in Nairobi County.

Table 4.13: Extent to which Preference for Fresh Food Influences Urban Agricultural Practices

Extent	Frequency	Percentage
Very high extent	43	28.3
High extent	89	58.6
Moderate extent	20	13.2
Total	152	100

The study sought to determine the extent to which preference for fresh food contribute to increased urban agricultural practices, from the research findings, majority of the respondents as shown by 58.6% were of the opinion that preference for fresh food

contributes to increased urban agricultural practices to a high extent, 28.3% of the respondents indicated to a very high extent whereas 13.2% of the respondents indicated to a moderate extent, this implies that preference for fresh food contributes to increased urban agricultural practices to a high extent.

Table 4.14: Effects of Preference for Fresh Food on the Levels of Urban Agricultural Practices

Statements	Strongly disagree	Disagree	Moderately agree	Agree	Strongly agree	Mean	Std deviation
Urban agricultural practices are positively associated with nutritional status in some income groups, and under some conditions of maternal employment	5	6	9	77	55	4.13	0.22
Children from non-farming households are somewhat more likely to be moderately malnourished	3	5	2	80	62	4.27	0.25
urban agricultural practices are positively and significantly associated with higher nutritional status in children	4	7	8	83	50	4.11	0.23
The impact on nutritional status is a result of both higher and more stable access to food	2	6	2	84	58	4.25	0.25
food intake is only one determinant of nutritional status of children	2	3	6	92	49	4.20	0.26
Average mean						4.19	

The research sought to establish the level at which respondents agreed on the above statements relating to preference for fresh food, from the research findings majority of the respondents agreed that; Children from non-farming households are somewhat more likely to be moderately malnourished as shown by a mean of 4.27 and standard deviation of 0.25, the impact on nutritional status is a result of both higher and more stable access to food as shown by a mean of 4.25, food intake is only one determinant of nutritional status of children as shown by a mean of 4.20, urban agricultural practices is positively associated with nutritional status in some income groups, and under some conditions of maternal employment as shown by a mean of 4.13 and standard deviation of 0.22, urban agriculture is positively and significantly associated with higher nutritional status in children as shown by a mean of 4.11. The above findings are in line with the research by Flegal *et al.* (2010) that there is “a growing need to develop public health policies and innovative intervention strategies to increase retail availability of fresh fruits and vegetables

4.5 Food Insecurity and Urban Agricultural Practices

The tables show the influence of food insecurity and urban agricultural practices in Nairobi County.

Table 4.15: Extent to which Food Insecurity influences Urban Agricultural Practices

Extent	Frequency	Percentage
Very high extent	95	62.5
High extent	34	22.4
Moderate extent	23	15.1
Total	152	100

The study sought to determine the extent to which food Insecurity contribute to increased urban agricultural practices, from the research findings, majority of the respondents as shown by 62.5% indicated that food insecurity contributes to increased urban agricultural practices to a very high extent, 22.4% of the respondents indicated to a high extent whereas 15.1% of the respondents indicated to a moderate extent, this implies that food Insecurity contributes to increased urban agricultural practices to a very high extent.

Table 4.16: Effects of Food Insecurity on the Levels of Urban Agricultural Practices

Statements	Strongly disagree	Disagree	Moderately agree	Agree	Strongly agree	Mean	Std deviation
The urban poor are particularly vulnerable to variations in food and fuel prices	1	3	7	87	54	4.25	0.25
food insecure people in the urban cities have increased	2	2	5	70	73	4.38	0.25
city residents have much less access to land and other inputs required to grow one's own food	1	3	6	74	68	4.35	0.24
Though the food security situation in urban areas have improved, nearly half of the region's population remains food-insecure	3	4	3	84	58	4.25	0.25
Average mean						4.31	

The study sought to establish the extent to which respondents agreed with the above statements relating to effects food insecurity on urban agricultural practices, from the research findings, majority of the respondents agreed that food insecure people in the urban cities have increased as shown by a mean of 4.38, and standard deviation of 0.24, city residents have much less access to land and other inputs required to grow one's own food as shown by a mean of 4.35, the urban poor are particularly vulnerable to variations in food and fuel prices and that though the food security situation in urban areas have improved, nearly half of the region's population remains food-insecure as shown by a mean of 4.25 and standard deviation of 0.25 in each case respectively. the study further revealed that urban agricultural practices play an important role in enhancing urban food security since the costs of supplying and distributing food to urban areas based on rural production and imports continue to increase, and do not satisfy the demand, especially of the poorer sectors of the population, the above findings are concurs with the research finding Kutiwa *et al.* (2010) that urban agriculture is one way to escape the food insecurity and poverty cycle in a cash intensive environment.

4.6 Population Growth and Urban Agricultural Practices

The tables show the influence of population growth and urban agricultural practices in Nairobi County.

Table 4.17: Extent to which Population growth influences Urban Agricultural Practices

Extent	Frequency	Percentage
Very high extent	45	29.6
High extent	85	55.9
Moderate extent	22	14.5
Total	152	100

The study sought to determine the extent to which population growth contribute to increased urban agricultural practices, from the research findings, majority of the respondents as shown by 55.9% indicated that population growth contributes to increased urban agricultural practices to a high extent, 29.6% of the respondents indicated to a very high extent whereas 14.5% of the respondents indicated to a moderate extent, this implies that population growth contributes to increased urban agricultural practices to a high extent.

Table 4.18: Effects of Population Growth on the Levels of Urban Agriculture Practices

Statements	Strongly disagree	Disagree	Moderately agree	Agree	Strongly agree	Mean	Std deviation
A significant part of the African population lives in cities, but continuously relies on agricultural practices for income	1	3	6	67	75	4.39	0.24
Rural-urban linkages are increasing and the distinction between the two sectors is already causing conceptual problems for national statistics institutes	2	4	7	78	61	4.26	0.24
Agricultural and non-agricultural practices will have to be analyzed simultaneously and not separately for a better understanding of household strategies and income portfolios	1	2	5	84	60	4.32	0.26
Continuing population growth of cities will not decrease the economic and social importance of urban agricultural practices	2	3	4	68	75	4.39	0.25
Average mean						4.34	

The research sought to establish the level at which respondents agreed with the above statements relating to effects of population growth on urban agricultural practices, from the research findings, majority of the respondents agreed that; continuing population growth of cities will not decrease the economic and social importance of urban agricultural practices a significant part of the African population will live in cities, but

will rely on agricultural practices for income as shown by a mean of 4.39 in each case, agricultural and non-agricultural activities will have to be analyzed simultaneously and not separately for a better understanding of household strategies and income portfolios as shown by a mean of 4.32, rural-urban linkages are increasing and the distinction between the two sectors is already causing conceptual problems for national statistics institutes as shown by a mean of 4.26. All the cases were supported by a low mean of standard deviation which implies that respondents were of similar opinion. The study also established that rapid urbanization goes together with a rapid increase in urban poverty and urban food insecurity. The above findings concurs with the research by (Nijkamp, 1990) that most of the world's urban population still lives in small and medium-sized cities and that most countries, are now growing faster than the very large cities further the findings concur with the World Bank report, (2007) that food production in the city is as a response by the poor due to inadequate, unreliable and irregular access to food, and or lack of purchasing power.

4.7 Discussion of the Findings

This section discusses the key findings as considered under each objective.

4.7.1 Urban Poverty and Urban Agricultural practices

On effects of poverty levels on agricultural practices, the study established that increased poverty level contributes to increased urban agricultural practices to a high extent; urban agriculture is helping poor people in Nairobi city cope with food scarcity and hunger. The contribution of urban agriculture to food security and healthy nutrition is probably its most important asset. Food production in the Nairobi city is in many cases a response of the urban poor to inadequate, unreliable and irregular access to food, and the lack of

purchasing power. The findings concurs with the World Bank (2000) that Most cities in developing countries and especially those Sub Saharan desert are not able to generate sufficient (formal or informal) income opportunities for the rapidly growing population. The findings concur with the research by The World Bank (2000) which estimates that approximately 50% of the poor live in urban areas (25% in 1988). In urban settings, lack of income translates more directly into lack of food than in a rural setting (cash is needed). Further the findings support research findings by Barling, (2002) that the costs of supplying and distributing food from rural areas to the urban areas or to import food for the cities are rising continuously, and it is expected that urban food insecurity will increase and that Urban agriculture may improve both food intake (improved access to a cheap source of proteins) and the quality of the food may improve (poor urban families involved in farming eat more fresh vegetables than other families in the same income category)

urban poverty and the share of the poor living in cities are rising, poverty is now increasing more rapidly in urban areas than in rural areas, poor families spend 60-80% of their income on food and still be are insecure, high urbanization without corresponding (Argenti, 2000). Opportunities for alternative livelihoods are deepening the incidence of poverty in urban areas, consumer food prices in country have spiked upwards. The study further established that urban agricultural practices contribute to local economic development, poverty alleviation and social inclusion of the urban poor and women in particular, as well as to the greening of the city. The above findings are in line with the findings by UN-HABITAT, (2008). Poverty is now increasing more rapidly in urban

areas than in rural areas, the findings further confirms with findings by Tevera, (1996) that even after a more stable macroeconomic environment is restored, urban gardening has remained an important source of food for the large urban food-insecure population.

4.7.2 Preference for Fresh Food and Urban Agricultural Practices

Relating to preference for fresh food by city residents, the study revealed that preference for fresh food contributes to increased urban agricultural practices to a high extent. Poor households in Nairobi city cannot regularly afford to buy perishable foods that contain essential micronutrients, which are especially important for children. However, even non-poor urban dwellers face difficulties in finding adequate amounts of perishable fruits and vegetables. If the supply channels from countryside to city are inadequate, perishables will, periodically, be in short supply and, as a result, more costly therefore urban agriculture has bridged the production gap of perishable fruits and vegetables as well as small livestock rather than production of staple crops. The findings concurs with the research by Lewis *et al.* (2005); Moore and Roux (2006) that Urban agriculture is critical in improving urban food security since the costs of supplying and distributing food to urban areas, based on rural production and imports, continue to increase and do not satisfy the demand, especially of the poorer sectors of the population.

The study also established that among the urban poor children from non-farming households are somewhat more likely to be moderately malnourished, the impact on nutritional status is a result of both higher and more stable access to food, food intake is only one determinant of nutritional status of children, urban agricultural practices are positively associated with nutritional status in some income groups, and under some

conditions of maternal employment, and among HIV positive people. The above findings are in line with the research by Flegal *et al.* (2010) that there is “a growing need to develop public health policies and innovative intervention strategies to increase retail availability of fresh fruits and vegetables.

4.7.3 Food Insecurity and Urban Agricultural Practices

On food security, the study established that; food insecurity highly contributed to increased urban agricultural practices, the study further revealed that food insecure people in the urban cities have increased, Urban agriculture plays a significant role in national development by contributing towards food security, employment creation and income generation city, residents have much less access to land and other inputs required to grow one’s own food, Growing crops or raising livestock in backyards or on undeveloped plots of land improves food sources and offers many urban poor a viable income, Urban agriculture can also provide people with a primary or supplemental income. Income from urban agriculture is particularly high in many African cities the urban poor are particularly vulnerable to variations in food and fuel prices. The study findings support the report by poverty UNFPA (2007). That urban agricultural practice plays an important role in enhancing urban food security since the costs of supplying and distributing food to urban areas based on rural production and imports continue to increase.

Further the study revealed that urban agriculture improves food security by providing healthy and plentiful substitutes for purchased food, especially for poor households. Households that practice urban agriculture are also more likely to have access to a wider variety of nutritious foods such as vegetables and animal products. In Nairobi county ,

urban agriculture has been linked with improved nutritional status in children and do not satisfy the demand, especially of the poorer sectors of the population, the above findings are concurs with the research Kutiwa *et al.* (2010) that urban agriculture is one way to escape the food insecurity and poverty cycle in a cash intensive environment.

4.7.4 Population Growth and Urban Agricultural Practices

On population growth, the study revealed that population growth highly contributed to increased urban agricultural practices, continuing population growth of cities will not decrease the economic and social importance of urban agricultural practices. A significant part of the African population lives in cities, but continues to rely on agricultural practices for income. The study also revealed that population growth, and lack of formal employment opportunities, as well as the special opportunities provided by the city –including the growing demand for food, proximity to markets and availability of heap resources such as urban organic wastes and wastewater has stimulated the development of diverse agricultural production systems in and around Nairobi city (Flegal, 2010). The study also revealed that UA is practiced in a very dynamic environment and with multiple stakeholder r interactions. Because of competition for urban space from economic and politically more accepted functions, and different demands from urban inhabitants, UPA needs to be dynamic and continuously adapt to the rapidly changing conditions, in location and type of crops or animals produced and even people involved

The study also established that population growth in urban centers goes together with a rapid increase in urban poverty and urban food insecurity Agricultural and non-

agricultural activities will have to be analyzed simultaneously and not separately for a better understanding of household strategies and income portfolios, rural-urban linkages are increasing and the distinction between the two sectors is already causing conceptual problems for national statistics institutions.. The above findings concurs with the research by (Nijkamp, 1990) that most of the world's urban population still lives in small and medium-sized cities and that most countries, are now growing faster than the very large cities further the findings concur with the World Bank report, (2007) that food production in the city is as a response by the poor due to inadequate, unreliable and irregular access to food, and or lack of purchasing power.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

From the analysis and data collected, the following discussions, conclusion and recommendations were made. The responses were based on the objectives of the study. The sought to determine the influence of urban poverty on increased urban agricultural practices in Nairobi County, to establish the influence of preference for fresh food on increased urban agricultural practices in Nairobi County, to assess the influence of rising food insecurity on increased urban agricultural practices in Nairobi County and Kenya to examine the influence of population growth on increased urban agricultural practices in Nairobi County, Kenya.

5.2 Summary of the findings

This section presents the key findings as considered under each objective.

5.2.1 Urban Poverty and Urban Agricultural practices

From the findings the study established that increased poverty level contributes to increased urban agricultural practices to a high extent, urban poverty and the share of the poor living in cities are rising, poverty is now increasing more rapidly in urban areas than in rural areas, poor families spend 60-80% of their income on food and still be are insecure, high urbanization without corresponding opportunities for alternative livelihoods is deepening the incidence of poverty in urban areas, consumer food prices in

country have spiked upwards. The study further established that urban agricultural practices contribute to local economic development, poverty alleviation and social inclusion of the urban poor and women in particular, as well as to the greening of the city. The above findings are in line with the findings by UN-HABITAT, (2008). Poverty is now increasing more rapidly in urban areas than in rural areas, the findings further confirms with findings by Tevera, (2011) that even after a more stable macroeconomic environment is restored, urban gardening has remained an important source of food for the large urban food-insecure population.

5.2.2 Preference for Fresh Food and Urban Agricultural Practices

Relating to preference for fresh food by city residents, the study revealed that preference for fresh food contributes to increased urban agricultural practices to a high extent. The study also established that among the urban poor children from non-farming households are somewhat more likely to be moderately malnourished, the impact on nutritional status is a result of both higher and more stable access to food, food intake is only one determinant of nutritional status of children, urban agricultural practices are positively associated with nutritional status in some income groups, and under some conditions of maternal employment, and among HIV positive people. The above findings are in line with the research by Flegal *et al.* (2010) that there is “a growing need to develop public health policies and innovative intervention strategies to increase retail availability of fresh fruits and vegetables.

5.2.3 Food Insecurity and Urban Agricultural Practices

On food security, the study established that food insecurity highly contributed to increased urban agricultural practices, the study further revealed that food insecure people in the urban cities have increased, city residents have much less access to land and other inputs required to grow one's own food, the urban poor are particularly vulnerable to variations in food and fuel prices. The study further revealed that urban agricultural practices plays an important role in enhancing urban food security since the costs of supplying and distributing food to urban areas based on rural production and imports continue to increase, and do not satisfy the demand, especially of the poorer sectors of the population, the above findings are concurs with the research Kutiwa *et al.* (2010) that urban agriculture is one way to escape the food insecurity and poverty cycle in a cash intensive environment.

5.2.4 Population Growth and Urban Agricultural Practices

On population growth, the study revealed that population growth highly contributed to increased urban agricultural practices, continuing population growth of cities will not decrease the economic and social importance of urban agricultural practices. A significant part of the African population lives in cities, but continues to rely on agricultural practices for income. Agricultural and non-agricultural activities will have to be analyzed simultaneously and not separately for a better understanding of household strategies and income portfolios, rural-urban linkages are increasing and the distinction between the two sectors is already causing conceptual problems for national statistics institutions. The study also established that population growth in urban centers goes

together with a rapid increase in urban poverty and urban food insecurity. The above findings concurs with the research by (Nijkamp, 1990) that most of the world's urban population still lives in small and medium-sized cities and that most countries, are now growing faster than the very large cities further the findings concur with the World Bank report, (2007) that food production in the city is as a response by the poor due to inadequate, unreliable and irregular access to food, and or lack of purchasing power.

5.3 Conclusions

From the analysis and summary, the study established that poverty is continually increasing more rapidly in Nairobi county, than in rural areas, further the study revealed that urban agricultural practices contributes to local economic development, poverty alleviation and social inclusion of the urban poor and women in particular therefore the study concludes that urban poverty is a key factor contributing to an increase in urban agricultural practices in Nairobi County.

The study revealed preference for fresh food by city residents has positively influenced urban agriculture practices, urban agricultural practices is positively associated with nutritional status in some income groups; Study concludes that preference for fresh food has had an increase in urban agricultural practices in Nairobi County.

Urban agricultural practices plays an important role in enhancing urban food security since the costs of supplying and distributing food to urban areas based on rural production and imports continue to increase, and do not satisfy the demand, especially of the poorer sectors of the population thus the study concludes, Therefore the study

concludes that rising food insecurity has had an increase in urban agricultural practices in Nairobi County.

The study revealed that most agricultural practices in the city are as a result, a response by the increasing number of poor residents to inadequate, unreliable and irregular access to food, or lack of purchasing power. Urban agricultural practices require little capital and therefore create a form of entrepreneurship for the urban poor to provide themselves with a source of livelihood. Urban agricultural practices also provide an alternative to the ideology of violence when young people cannot see a future for themselves. The study concludes that urban population is a key factor contributing to an increase in urban agriculture in Nairobi County.

5.4 Recommendations

Based on the study findings, the study recommends that; since continuing population growth of cities will not decrease the economic and social importance of urban agricultural practices, it is important that the County Government of Nairobi acknowledge the urban poor and their economic status and through Ministry of Agriculture formulates policies that govern and promote urban agricultural practices.

The government should be at the fore front in empowering urban dwellers the benefits of urban green space, creating social frameworks to plan, implement and maintain the urban green space and create a process of method to balance the needs of those living in urban areas with the needs of the larger environmental concerns. The Florida House Institute for Sustainable Development in Sarasota, Florida, serves as a public community and education center in which innovators with sustainable, energy-saving ideas can

implement and test them. Community centers like Florida House provide urban areas with a central location to learn about urban agriculture and to begin to integrate agriculture with the urban lifestyle

The government should promote and encourage innovative and out of the box ways to practice urban agriculture such as hanging gardens, vertical gardens, stacked greenhouses, greenways and use of hydroponic agriculture as opposed to the conventional methods of farming. In Canada Lufa farm greenhouses are constructed on the rooftops of Greater Montreal.

It is important for policy makers to note that local production of food allows savings in transportation costs, storage, and in product loss, what results in food cost reduction. Local food production also improves the quality of the urban environment through greening and thus, results in the reduction of the cities carbon footprint and a reduction in ozone and particulate matter.

5.5 Recommendation for further studies

- i. The study sought to identify the factors contributing to increased urban agricultural practices in Nairobi County, Kenya.
- ii. The study variables (urban poverty, preference for fresh food, food insecurity and population growth) only accounted for 79.7 percent changes on increased urban agriculture in Nairobi County. The study recommends that other factors accounting for 20.3% need to be identified and their effects assessed as well.

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APPENDICES I: Letter of Transmittal of Data Collection Instrument

Karen Mwangi

Nairobi, Kenya

0716 645 882

11th May 2015

Dear Respondent,

RE: Study on Factors influencing Urban Agricultural Practices in Kenya. A case of Nairobi, County, Kenya

I am a graduate student of the University of Nairobi. I am conducting a research on the aforementioned subject. This is in fulfillment of the degree in Masters of Arts in Project Planning and Management. You have been selected to participate in this study. The findings of this study will be of value in strengthening the performance of monitoring and evaluation systems of non governmental organizations. I would appreciate it if you would kindly assist me by responding to all the items attached in the questionnaire.

Your name need not to appear anywhere in the questionnaire unless you so wish. The information you provide is confidential and will be used for academic research purposes only where possible upon request, I will make available to you the findings if the study.

Your cooperation will be greatly appreciated. Thank you in advance.

Yours Faithfully,

Karen Wanjiku Mwangi

L50/72771/2008

APPENDICES II: Individual Questionnaire

This questionnaire is to collect data for purely academic purposes. All information will be treated with strict confidence. Do not put any name or identification on this questionnaire. *Answer all questions as indicated by either filling in the blank or ticking the option that applies.*

SECTION 1: PERSONAL DEMOGRAPHICS

1.1 What is your Gender?

Male Female

1.2 Age group of respondents

15-20 21-30 31-40 41-50

1.3 What is your academic background?

Certificate Diploma Undergraduate Masters PHD None

1.4 How long have you lived in the Nairobi?

Less than 3 years () 3 to 5 years () 5 to 7 years () Over 7 years ()

1.5 Do you engage in urban agricultural practices where you live?

Yes () No ()

5b. if yes what has made you result to urban agricultural practices?

.....

1.6 Has urban agricultural practices urban increased in your constituency?

Yes () No ()

SECTION 2: FACTORS CONTRIBUTING TO INCREASED URBAN

AGRICULTURAL PRACTICES

URBAN POVERTY

2 To what extent does increased poverty level contribute to increased urban agricultural practices?

a) Very high extent ()

b) High extent ()

c) Moderate extent ()

d) Low extent ()

e) Very low extent ()

3 To what extent do you agree with the following statements on increased poverty level? Rank by placing a tick in the appropriate place.

1= strongly disagree, 2=disagree, 3= moderately agree 4= agree 5= strongly agree

Statements	1	2	3	4	5
Poor families spend 60-80% of their income on food and still be are insecure.					
Consumer food prices in country have spiked upwards.					
Poverty is now increasing more rapidly in urban areas than in rural areas.					
High urbanization without corresponding opportunities for alternative livelihoods is deepening the incidence of poverty in urban areas.					
Urban poverty and the share of the poor living in cities are rising.					

PREFERENCE FOR FRESH FOOD

4 To what extent does the Preference for fresh food contribute to increased urban agricultural practices?

- a) Very high extent ()
- b) High extent ()
- c) Moderate extent ()
- d) Low extent ()
- e) Very low extent ()

5 To what extent do you agree with the following statements on Preference for fresh food? Rank by placing a tick in the appropriate place.

1= strongly disagree, 2=disagree, 3= moderately agree 4= agree 5= strongly agree

Statements	1	2	3	4	5
Urban agricultural practices are positively associated with nutritional status in some income groups, and under some conditions of maternal employment.					
Children from non-farming households are somewhat more likely to be moderately malnourished.					
Urban agricultural practices are positively and significantly associated with higher nutritional status in children.					
The impact on nutritional status is a result of both higher and more stable access to food.					
Food intake is only one determinant of nutritional status of children.					

FOOD INSECURITY

6 To what extent does Food Insecurity contribute to contribute to increased urban agricultural practices?

- a) Very high extent ()
- b) High extent ()
- c) Moderate extent ()
- d) Low extent ()
- e) Very low extent ()

7 To what extent do you agree with the following statements on Food Insecurity? Rank by placing a tick in the appropriate place.

1= strongly disagree, 2=disagree, 3= moderately agree 4= agree 5= strongly agree

Statements	1	2	3	4	5
The urban poor are particularly vulnerable to variations in food and fuel prices.					
Food insecure people in the urban cities have increased.					
City residents have much less access to land and other inputs required to grow one's own food.					
Though the food security situation in urban areas have improved, nearly half of the region's population remains food-insecure.					

POPULATION GROWTH

8 To what extent does Population growth contribute to increased urban agricultural practices?

- a) Very high extent ()
- b) High extent ()
- c) Moderate extent ()
- d) Low extent ()
- e) Very low extent ()

9 To what extent do you agree with the following statements on Population growth?

Rank by placing a tick in the appropriate place.

1= strongly disagree, 2=disagree, 3= moderately agree 4= agree 5= strongly agree

Statements	1	2	3	4	5
A significant part of the African population lives in cities, but continuously relies on agricultural practices for income.					
Rural-urban linkages are increasing and the distinction between the two sectors is already causing conceptual problems for national statistics institutes.					
Agricultural and non-agricultural activities will have to be analyzed simultaneously and not separately for a better Understanding of household strategies and income portfolios.					

Statements	1	2	3	4	5
Continuing population growth of cities will not decrease the economic and social importance of urban agricultural practices.					

APPENDIX III: Research Permit

THIS IS TO CERTIFY THAT:
MS. KAREN WANJIKU MWANGI
of UNIVERSITY OF NAIROBI, 61575-200
nairobi, has been permitted to conduct
research in Nairobi County


on the topic: FACTORS INFLUENCING
URBAN AGRICULTURAL PRACTICES IN
KENYA. A CASE STUDY OF NAIROBI
COUNTY

for the period ending:
31st July, 2016


.....
Applicant's
Signature

Permit No : NACOSTI/P/15/7883/7304
Date Of Issue : 5th August, 2015
Fee Received :Ksh. 1000




.....
Director General
National Commission for Science,
Technology & Innovation

CONDITIONS

- 1. You must report to the County Commissioner and the County Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit**
- 2. Government Officers will not be interviewed without prior appointment.**
- 3. No questionnaire will be used unless it has been approved.**
- 4. Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.**
- 5. You are required to submit at least two(2) hard copies and one(1) soft copy of your final report.**
- 6. The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice.**



REPUBLIC OF KENYA



National Commission for Science,
Technology and Innovation

RESEARCH CLEARANCE
PERMIT

Serial No. A 6078

CONDITIONS: see back page