

**INFLUENCE OF TECHNOLOGY TRANSFER ON THE
GROWTH OF MICRO AND SMALL CATERING
ENTERPRISES IN NAIROBI COUNTY, KENYA**

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(Entrepreneurship)

**JOMO KENYATTA UNIVERSITY OF
AGRICULTURE AND TECHNOLOGY**

2016

**Influence of Technology Transfer on the Growth of Micro and Small
Catering Enterprises in Nairobi County, Kenya**

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**A Thesis Submitted in Fulfillment for the Degree of Doctor of
Philosophy in Entrepreneurship in the Jomo Kenyatta University of
Agriculture and Technology**

2016

DECLARATION

This thesis is my original work and has not been presented for the award of a degree in any other university.

Signature..... Date.....

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This thesis has been submitted for examination with our approval as the university supervisors.

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DEDICATION

This work is dedicated to my husband Ephraim Ngwiri Ngaruiya for his encouragement and patience,our three children James Ngaruiya Ngwiri, Elijah Njagi Ngwiri and Hannah Wanjiku Ngwiri for all the sacrifices they made over the years for my sake.

MAY GOD BLESS YOU.

ACKNOWLEDGEMENT

First and foremost, I give God the glory and honor for the strength and perseverance He gave me during the research period. I also take this opportunity to thank the lecturers who guided me throughout the period that I took to complete the research thesis.

Special thanks and appreciation goes to Professor Elegwa Mukulu of Jomo Kenyatta University of Agriculture and Technology (JKUAT), and Dr. Jane G. Mpathia of The Technical University of Kenya (TUK). God bless you two for your patience and encouragement during the research proposal development and document compilation.

To my mother, Mary Marigu Elijah, brothers and sisters, I appreciate all the support you gave me.

Friends and colleagues of the College of Human Resource Development at Jomo Kenyatta University of Agriculture and Technology (JKUAT), thank you all for your support and encouragement.

To you all, God bless you.

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ACRONYMS AND ABBREVIATIONS

BPR	Business Process Reengineering
CBD	Central Business District
CBS	Central Bureau of Statistics
DC	Developed Countries
ETC	Embodied Technological Change
ILO	International Labor Organization
ITT	International Technology Transfer
KIRDI	Kenya Industrial Research and Development Institute
LDCs	Less Developed Countries
MNCs	Multinational Companies
MSEs	Micro and Small Enterprises
MSMEs	Micro Medium and Small Enterprises
NACOSTI	National Council of Science, Technology and Innovation
NCBDA	Nairobi Central Business District Association
NIC	Newly Industrialized Countries
OECD	Organization for Economic Co-operation and Development
POS	Point of Sale
SPSS	Statistical Package for Social Sciences
TC	Technical Capability
TFP	Total Factor Productivity

TOT	Transfer of Technology
TT	Technology Transfer
UNDP	United Nations Development Programme
UNIDO	United Nations Industrial Development Organization.

DEFINITION OF TERMS

Technology Transfer: Technology transfer usually involves some source of technology group which possesses specialized technical skills which transfers the technology to a target group of receptors who do not possess those specialized technical skills and who, therefore, cannot create the tool themselves. Micro and Small Enterprises (MSEs) need to be strengthened and developed so that the income they generate can support transition in terms of enterprise growth (Bozeman *et al.*, 2000).

MSEs: In this study, Micro and Small Enterprises are defined by the number of employees; enterprises having 0-4 employees (micro enterprises) and 5-49 employees (small enterprises) in the non-structured or informal sector of the economy engaged in manufacturing, trade and provision of goods and services (Republic of Kenya, 2005).

Cook- Chill: A catering system based on normal preparation and cooking of food followed by rapid chilling storage in controlled low temperature conditions above freezing point 0-3 degrees centigrade and reheating before consumption (Food Standards Agency Publications, 2011).

- Cook-Freeze:** A specialized food production and distribution system that allow caterers to take advantage of the longer life through blast freezing at -18 to -20 degrees centigrade and storage at that temperature for three to six months (Food Standards Agency Publications, 2011).
- Vacuum Cooking:** A catering system which uses a combination of vacuum sealing in plastic poaches, cooking by steam and then rapidly chilling in an ice water bath (Food Standards Agency Publications, 2011).
- Jua Kali:** A term used to refer to the Micro and Small Enterprises that are operated in the open sheds in Kenya (ROK, 2005)

ABSTRACT

Among the challenges faced by Micro and Small Enterprises (MSEs) is lack of information on the influence of technology transfer on the growth of MSEs. Micro and Small Enterprises need to be strengthened and developed so that the income they generate can support transition in terms of enterprise growth. Over the years, Catering MSEs have shifted from the old traditional methods of operation through the transfer of technology. Therefore this research was carried out so as to avail information on the influence of technology transfer to the growth of Catering MSEs. The research gathered information on the influence of technology transfer of production skills, equipment, knowledge and processes on the growth of MSEs in terms of output, sales volume, profit and assets within the catering sector in the hospitality industry in Nairobi County. The study was conducted using survey method of data collection with both qualitative and quantitative approach. The population of the study was 11,162 licensed Catering MSEs in Nairobi County. A total of 384 respondents was picked through random sampling. Secondary data was obtained from online, print-outs, journals, websites, books, articles and through communication with experts through mobile phone technology. Data was collected using a questionnaire with both closed and open ended questions. Interview guide was used in carrying out interviews. The data obtained in the study was analyzed using descriptive statistics such as means, frequencies and standard deviation. Inferential statistics used in the study included correlation and multiple regressions in order to determine the relation between the independent and dependent variables. Correlation technique was used in the study to analyze the degree of relationship between the independent and dependent variables while logit regression analysis was used to determine the effect of technology transfer on skills, equipment/objects, knowledge and processes on growth. Data was also subjected to factor analysis. The Binomial Logistic Regression was also used to analyze the data. Statistical package for social sciences (SPSS) Version 22 was used to run the data. Data were presented by use of frequency distribution tables, bar graphs and pie charts. The study established that transfer of production skills, equipment, knowledge and processes had a positive effect on the growth of micro and small catering enterprises in Nairobi County, Kenya. Growth was measured in form of profit margin, increase in employees, increase in customers, new outlets and enhancement in quality of products and services. The study concluded that technology transfer of production skills, equipment, knowledge and processes had an influence on the growth of micro and small catering enterprises. The study concluded that technology transfer of production skills, equipment, knowledge and processes had an influence on the growth of micro and small Catering enterprises. The study recommendations were: that the government initiates special capitation through budgetary allocations, development of curriculums that are specific to the Catering MSEs and policy intervention to facilitate Technology Transfer and promote micro and small catering enterprises' growth,

CHAPTER ONE

INTRODUCTION

1.1 Overview

This chapter contains the background information on micro and small enterprises, the problem statement, the general and the specific objectives of the study, the study hypothesis, justification of the study, scope of the study and finally the limitations of the study.

1.2 Background to the Study

In Kenya, the small business sector has both the potential and the historic task of bringing millions of people from the survivalist level including the informal economy to the mainstream economy. Recognizing the critical role small businesses play in the Kenya economy, the Government through Kenya Vision 2030 envisages the strengthening of Micro Small and Medium Enterprises (MSMEs) to become the key industries of tomorrow by improving their productivity and innovation (GOK, 2007).

The vast majority of developed and developing countries rely on dynamism, resourcefulness and risk taking of micro and small enterprises to trigger and sustain the process of economic growth (Ramanathan, 2007). Micro and small enterprises (MSEs) that have invested in new technology have experienced marked growth in terms of customers and profits. Technology transfer has been used to refer to movements of technology from the laboratory to industry, developed to developing countries, or from one application to another domain (Philips, 2002). The transfer is both visible and invisible depending on the mode. The movement may involve physical assets, know-how, and technical knowledge (Bozeman, 2000).

1.1.1 Micro and Small Enterprises

Ever since the subject of MSEs was first introduced by International Labor Organization (ILO) mission to Kenya, micro and small Enterprise development has emerged as an important factor in economic growth particularly its potential in reducing the current unemployment crisis (Republic of Kenya, 1994). Findings from the 1999 MSEs Baseline Survey (CBS, 1999) showed that there were a total of 1.3 million enterprises employing some 2.4 million people and contributed over 75 % of all new jobs created in the country. The sector has continued to play an important role in Kenya's economy with a contribution to the Gross Domestic Product (GDP) increasing from 13.8% in 1993 to about 20% in 2007. In addition, the MSEs contributed over 57% of the new jobs created in 2005/2006 (2007) and 79.8% of total employment in 2008 (Republic of Kenya, 2009). The impact of MSEs is felt in the greater utilization of local raw materials, employment generation, encouragement of rural development, development of entrepreneurship, mobilization of local savings, linkages with bigger industries, provision of regional balance by spreading investments more evenly, provision of avenue for self-employment and provision of opportunity for training managers and semi-skilled workers (GOK,1989).

1.1.2 Micro and small enterprise growth

Over the years the majority MSEs have grown gradually due to technology transfer of production skills, equipment, knowledge and processes. Evenson and Westphal (1995) define enterprise growth as a development process of enterprise from small to big and from weak to strong. Enterprise growth is the development process where enterprises keep the tendencies of balanced and stable growth of total performance level (including output, sales volume, profit and asset gross) or keeps realizing the large enhancement of total performance and the stage spanning of development quality and level.

The increase of quantity is embodied in the extension of enterprise scale such as the increases of sales volume, market share, production value, profit and employee. The growth of quality is embodied in the enhancement of enterprise quality, which includes the technological innovation ability from immature to mature production technology, the optimal efficiency of investment and output, the organizational innovation and reform (Massey, 2006).

1.1.3 Micro and Small Catering enterprise growth

The MSEs in the Catering sector are found within the hospitality industry and provide food, drink and accommodation to the customers. This is an industry that has its own products and markets, technology and production methods where the entrepreneur combines production and sales under one roof. Holt (2001) research findings indicated that the education level of the business owner contributes significantly to its growth. Business development services that include auxiliary services provided to SMEs enable the owners to improve and promote the performance of their businesses (Ngugi, 2000). The level of customer demand particularly from high student population who spend much of their disposable income on eating out is an important factor influencing growth of the hospitality industry (Pissarides, *et al.*, 2001). The growth of the catering industry has been associated with on-the-job training anonymous. The hotel industry in Kenya has grown to the size it is today due to efficient management and continuity in the service and quality of food (Kenya Utalii College, 2000). The performance of hospitality industry is influenced by quality, freshness, taste, price, convenience, design of packaging, nutritional value of the product and the quantity of the product (Riethmuller & Sroppiana, 2000). Carter *et al.*, (2000) identified access to funding, training and frequent alterations of the premises as some of the major factors set to shape the hospitality industry. It is evident that MSE entrepreneurs have moved from the traditional methods of production and service to modern and better methods of production through technology transfer. Technology transfer has had a positive effect on

the growth of MSEs within the catering sector. However; little information on the effect of technology transfer is available to these entrepreneurs. This study was carried out on MSEs in Nairobi so as to avail the much needed information to the entrepreneurs and the policy makers on the effect of technology transfer of production skills, equipment, knowledge and processes on growth.

1.1.4 Micro and Small Enterprise growth in Kenya

Growth of an enterprise can either be horizontal or vertical (Liedholm, 1990). Vertical growth involves graduation and transformation into more modern small and medium enterprises while horizontal growth includes formation of more enterprises at the same level. Vertical growth is desired for any enterprise since it has been associated with increased capacity for employment generation. Liedholm (1990) found that the relative growth in a number of firms was highest in those with between 2 and 49 employees than in one-person enterprises. He concluded that there existed a high potential in these firms if given a conducive environment and resources. The significance of Kenya's MSEs activity has continued to grow since the sector was first brought in to the limelight in 1972. In a report by the International labor organization (ILO) on Employment Income and Equity in Kenya, the report underscored the sector's critical role in promoting growth in incomes and employment (ILO, 1972).

1.1.5 Technology transfer

Cohen (2004) describes in his book "the transfer process of technology to developing countries" that technology can be categorized into four forms as follows: technology as general theoretical and practical understanding of how to do things (know-how or information); technology as objects (goods or tools); technology as installed techniques of productions (processes). Cohen (2004) defines technology as the systematic knowledge of technique. This technique, as the interactions of person /tool/ machine

/object, defines a way of doing a particular task. Cohen (2004) defines technology as a combination of people, materials, cognitive and physical processes, plant, equipment and tools.

1.1.6 Technology Transfer and Micro and Small Enterprise Growth.

In a report presented by KIRDI (2006), for Kenya to industrialize and become competitive, it requires affordable, efficient and clean technologies and efforts to provide technologies to promote MSEs and increase their productivity, promote manufacturing, value addition and promote export oriented industries. According to the Journal of Small Business Management (2013), enterprise growth includes two aspects at least. The first aspect is the survival ability of enterprise. In the intensive market competition, the base of sustainable growth for enterprise is the survival ability of enterprise, and the generation of survival ability depends on the new technology, new product and new originality possessed by the enterprise when it is founded, which can make the enterprise to possess future wider space for competition advantage.

The second aspect is the sustainable development ability of an enterprise. After the generation period, the enterprise survives in the market in virtue of its special survival ability, and whether the enterprise faces favorable circumstance or adversity, it can possess the sustainable development ability to exceed itself and keep developing (Journal of Small Business Management, 2013).

1.2 Statement of the Problem

Among the challenges faced by Micro and Small Enterprises (MSEs) is lack of information on the influence of technology transfer on the growth of MSEs. Weak environment that hinder focus on technology has seen the MSE sector experience low productivity and poor quality goods. The government views micro and small enterprises (MSE) sector as one of the engines for faster economic growth. In this respect, the

government has made specific allocation of funds to the MSE sector with special consideration to the gender (Women), youth and vulnerable groups. The jua kali sector has also been considered, (Medium Term Plan (MTP) report 2008 – 2012). However, many people in Kenya venture into catering MSE without prior training in order to acquire the relevant knowledge, skills to operate a successful enterprise. Even with relevant technology in the market, they are not aware of the benefits of adoption and use. They still use the indigenous technology in running their enterprises. This has hindered catering enterprises' growth in terms of size, period of operation, customer increase, profit margins, outputs and product and service quality. Most of these catering MSEs are still using indigenous technology that is inappropriate in their operations. Little information is available on the influence and use of appropriate technology on enterprise growth (KIRDI (2006).) This study therefore, sought to close the information gap by providing empirical evidence on the relationship between the use of appropriate technology Transfer and business growth in Micro and Small catering enterprises in Kenya. The researcher concentrated on gathering information on how efficient technology transfer of production skills, equipment, knowledge and processes have influenced enterprise growth in terms of turnover, profit margins, firm size and the period of the enterprise operations.

1.3 Objectives of the Study

1.3.1 General Objective

The general objective of this study was to examine the influence of technology transfer on the growth of micro and small catering enterprises in Nairobi County, Kenya.

1.3.2 Specific Objectives

1. To assess the influence of technology transfers of production skills on the growth of Catering Micro and small catering enterprises in Nairobi County -Kenya.

2. To determine the influence of equipment/objects embodied technology transfer on the growth of Catering Micro and small catering enterprises in Nairobi County- Kenya.
3. To examine the influence of knowledge embodied technology transfer on the growth of Catering Micro and small catering enterprises in Nairobi County-Kenya.
4. To determine the influence of process embodied technology transfer on the growth of Catering Micro and small catering enterprises in Nairobi County-Kenya.

1.4 Research Hypotheses

In the study, the researcher tested the following hypothesis to affirm the credibility of the study:

1. **H₀**: There is no significant relationship between technology transfer of production skills and the growth of Micro and small catering enterprises in Nairobi County- Kenya.

H_a: There is significant relationship between technology transfer of production skills and the growth of Micro and small catering enterprises in Nairobi County-Kenya.

2. **H₀**: There is no significant relationship between technology transfer of equipment and the growth of Micro and small catering enterprises in Nairobi County- Kenya.

H_a: There is significant relationship between technology transfer of equipment and the growth of Micro and small catering enterprises in Nairobi County-Kenya.

3. **H₀**: There is no significant relationship between technology transfer of knowledge and the growth of Micro and small catering enterprises in Nairobi County-Kenya.

H_a: There is significant relationship between technology transfer of knowledge and the growth of Micro and small catering enterprises in Nairobi County- Kenya.

4. **H₀**: There is no significant relationship between technology transfer of processes and the growth of Micro and small catering enterprises in Nairobi County- Kenya.

H_a: There is significant relationship between technology transfer of processes and the growth of Micro and small catering enterprises in Nairobi County-Kenya

1.5 Justification of the Study

In developing countries, MSEs by virtue of their size, capital investment and their capacity to generate greater employment have demonstrated their powerful propellant effect for rapid economic growth. The MSEs sector has also been instrumental in bringing about economic transition by providing goods and services, which are of adequate quality and are reasonably priced to a large number of people, and by effectively using the skills and talents of a large number of people without requiring high-level training, large sums of capital or sophisticated technology (ILO, 2008:56). (Nepal *et al.*, 2006) point out that, in recent decades, MSEs have begun to utilize technology transfer as a strategic means of meeting challenges posed by the globalization of business. In Kenya, great effort has been put towards promotion of the use of technology by the MSEs.

The findings of this research will provide information on the influence of technology transfer on the growth of Catering MSEs. This will motivate policy makers to formulate constructive effective policies on technology transfer to MSEs. R&D organizations in the strategic implementation of technologies will also be motivated in facilitating national and international experiences and technical know-how, dissemination of information on best practices. Scholars will understand the linkage between MSEs and economic growth and the use of technology transfer. The community will also benefit indirectly from the study. This will be realized through access to the information on the positive influence of technology transfer by entrepreneurs. Owners of MSEs will also have access to information on the benefits of technology transfer. This will motivate them to seek and use technology transfer continuously for maximum profit and growth of their enterprises. It is also hoped that this study will add to the body of knowledge and increase the understanding of how technology transfer supports the production of better quality products and services at lower prices. The civil society's role in building the entrepreneur's capacity to organize, generate and utilize technology transfer more effectively will be enhanced. Findings will also assist the civil societies carry out roles of advocacy which will ensure that barriers to technology transfer are addressed.

1.6 Scope of the Study

This study was carried out in Nairobi, the capital city of Kenya. MSEs in the Catering sector within the hospitality industry formed the target population of the study. The Catering MSEs where the data was collected were picked from the CBD, South B, South C, Westlands and Kangemi. The sample representing the population was interviewed and given questionnaires to complete. Enterprise owners were the respondents to this study. Entrepreneurs or business owners play the role of the manager responsible for making and implementing major technology transfer decisions. They are also the employers and financiers of the enterprise. They implement the operation of the technology available in the enterprise. Product, object, knowledge and process technology transfer within the MSEs Catering outlets were under focus in this study. The researcher sought to find out how the above independent variables have influenced the growth of the micro and small Catering enterprises.

1.7 Limitations to the Study.

Time was a challenge in conducting this study. To address this problem the researcher trained ten research assistants during piloting and the entire study period. Due to the nature of work in the catering industry, the respondents were busy and it was difficult to obtain information from them. However, the researcher planned time schedules to fit their work schedules.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter explores literature on the influence of technology transfer on the growth of Micro and Small Enterprises (MSEs) with special focus on the catering Mses. The study drew from five main theoretical fields of study, they were, growth of enterprises, product skills technology transfer, equipment/objects technology transfer; knowledge technology transfer and process technology transfer.

2.2 Theoretical Review

A concept is an image or symbolic representation of an abstract idea. Chin and Kramer (1999) define a concept as a “complex mental formulation of experience”. While the theoretical framework is the theory on which the study is based. The conceptual framework is the operationalization of the theory. Several theories have been put forward by scholars to explain the field of entrepreneurship. This research was guided by the following theories:

2.2.1 Theories of Entrepreneurship

Entrepreneurship theories and research remain important to the development of the entrepreneurship field. The current study examined three entrepreneurship theories with a bias on the growth of Small Micro Enterprises (SMEs). These were: (a) Economic entrepreneurship theory, (b) Psychological entrepreneurship theory and (c) Sociological Entrepreneurship theory.

2.2.2 Economic Entrepreneurship Theory

The economic entrepreneurship theory has deep roots in the classical and neoclassical theories of economics, and the Austrian market process (AMP). However, because of criticisms leveled against the classical and neo-classical conjectures led to the Austrian Market process (AMP) which was a model influenced by Joseph Alois Schumpeter (1934). Schumpeter (1934) described entrepreneurship as a driver of market-based systems. To him an important function of an enterprise was to create something new which resulted in processes that served as impulses for the motion of market economy. Murphy *et al.*, 2006) contend that the theory offered a logic dynamic reality. In explaining this, they point to the fact that knowledge is communicated throughout a market system (e.g. via price information), innovation transpires, entrepreneurs satisfy market needs, and system-level change occurs. If an entrepreneur knows how to create new goods or services, or knows a better way to do so, benefits can be reaped through this knowledge. Entrepreneurs effectuate knowledge when they believe it will procure some individually-defined benefits. Fiet (2002) held that entrepreneurs are incentivized to use episodic knowledge (that is, possibly never seen before and never to be seen again), to generate value.

Thus, the AMP was based on three main conceptualizations (Kirzner, 1973). The first was the arbitraging market in which opportunities emerge for given market actors as others overlook certain opportunities or undertake suboptimal activity. The second was alertness to profit-making opportunities, which entrepreneurs discover and entrepreneurial advantage. The third conceptualization, following Say (1803) and Schumpeter (1934), was that ownership is distinct from entrepreneurship. In other words, entrepreneurship does not require ownership of resources, an idea that adds context to uncertainty and risk (Gartner, 2004). These conceptualizations show that every opportunity is unique and therefore previous activity cannot be used to predict outcomes reliably.

Casson (2005) contends that an entrepreneur is the prime mover in economic development, and his function is to innovate, or to carry out new combinations. Anyone who performs this function is an entrepreneur, whether they are independent or dependent employees of a company. However, while the causes generating opportunities are unexplained in the entrepreneurship literature, a generation of scholars led by Shane and Ulrich (2004) examined the relationship among the entrepreneur, product development and technological innovation. The studies noted that the technology opportunity set is endogenously created by investments in new knowledge (Warsh, 2006). However, not only does new knowledge contribute to technological change, it also creates opportunities for use by third party firms (Jaffe, 1989), often-new ventures (Shane, 2001). The creation of new knowledge gives rise to new opportunities through knowledge spillovers; therefore, entrepreneurial activity does not involve simply the arbitrage of opportunities (Kirzner, 1973) but also the exploitation of new opportunities created but not appropriated by incumbent organizations (Acs *et al.*, 1994). The Schumpeter theory is relevant to this study as technology transfer has enabled MSEs in catering to come up with new goods and new methods of production of existing goods to produce better consumers' goods that are more eagerly desired by consumers, than the previous goods and the previous methods of production. The MSE sector has been instrumental in bringing about economic transition by providing goods and services, which are of adequate quality and are reasonably priced, to a large number of people, and by effectively using the skills and talents of a large number of people without requiring high-level training, large sums of capital or sophisticated technology (ILO, 2008:56).

2.2.3 Psychological Entrepreneurship Theory

The level of analysis in psychological theories is the individual (Landstrom,1998). These theories emphasize personal characteristics that define entrepreneurship. Moreover, the experience of financial rewards from one's work was regarded as a manifestation that one was blessed by God, According to this theory the difference in attitude i.e. the internal attitude and ability to judge and forecast the situation lead a man to become a successful entrepreneur.

Coon (2004) defines personality traits as “stable qualities that a person shows in most situations”. Coon argues that there are enduring inborn qualities or potentials of the individual that naturally make him an entrepreneur. Some of the characteristics or behaviors associated with entrepreneurs are that they tend to be more opportunity driven (they nose around), demonstrate high level of creativity and innovation, and show high-level of management skills and business know-how (Rauch and Frese, 2000).

Coon (2004) says that entrepreneurs have been found to be optimistic, (they see the cup as half full than as half empty), emotionally resilient and have mental energy, they are hard workers, show intense commitment and perseverance, thrive on competitive desire to excel and win, tend to be dissatisfied with the status quo and desire improvement, entrepreneurs are also transformational in nature, who are lifelong learners and use failure as a tool and springboard. They also believe that they can personally make a difference, are individuals of integrity and above all visionary.

David McClelland's Theory (1961) on need for achievement explained that human beings have a need to succeed, accomplish, excel or achieve. Entrepreneurs are driven by this need to achieve and excel. In his theory McClelland emphasized the relationship of achievement motivation or need for achievement (Pervin, 1980). According to McClelland, one would expect a relatively greater amount of entrepreneurship in a

society if the average level of need achievement in a society is relatively high. Because having a high achievement encourages an individual to sit challenging goals, work hard to achieve the goals and uses the skills and abilities needed to accomplish them (Pervin, 1980). Moreover, it is the inner drive of individuals that propels them to work more and to achieve something for their own interest by taking personal risk (Islam and Becker, 2001). Need for achievement then, reflects a strong goal orientation, an obsession with job or task to be done. Consequently, McClelland advocates increasing level of need-achievement in a society in order to stimulate entrepreneurship and economic growth (Frese, 2000). Finally, according to McClelland, entrepreneurs are activated by the high extent of achievement motivation and he also stated a desire to do well, not so much for the sake of social recognition or prestige, but for an inner feeling of personal accomplishment, induce people to be an entrepreneur (Frese, 2000). This study is relevant to this theory as the entrepreneur's need for achievement drives him to become innovative by adopting new technology in order to survive in the business engagements and excel. This is what motivated the author to adopt the David McClelland's Theory (1961).

2.2.4 Sociological Entrepreneurship Theory

These are theories based on sociological aspects. This is because socio-cultural factors have a substantial influence in creating entrepreneur as well as entrepreneurship (Gartner *et al.*, 2004). Moreover, social and cultural factors places a high value on innovation, risk taking and independence is more likely to produce entrepreneurial events than a system with contrasting values (Mamun, 2000). Among these type of theories Max Weber's protestant values is ancient one. In this theory Weber argued that protestant or Calvinistic logic or values were instrumental in promoting capitalist enterprise. These values included, first of all, an emphasis on the inherent goodness of work itself. A person's work was regarded as a calling in the very literal rendering of the concept of vocation.

Moreover, the experience of financial rewards from one's work was regarded as a manifestation that one was blessed by God, a number of elect few predestined to share this grace. However, money created temptations to the flesh, whose yearnings were to be suppressed. Protestant values called for self-restraint and deferral of gratification. By investing one's earnings in the form of capital, one could practice such self-denial. Over a period of many years, repeated investment of earnings created the capital base for the takeoff of Western societies into the economic break-through of the industrial revolution (Mamun, 2000).

As previously stated in this study, transfer of technology is an important ingredient for the growth of an enterprise. Growth in an enterprise is brought about by investing one's earnings in the form of capital leading to self-reliance. This status is viewed as financial reward from one's work and regarded as a manifestation of God's blessings.

2.2.5 Resources Based Firm Theory

According to the resource based firm theory definition of (Ghoshal, 2002), the firm comprises of differentiated technological skills, complementary assets and organizational routines and capacities.

Resources can be defined as "anything that could be thought of as strength or weakness of a given firm." Resources are "(tangible and intangible) assets that are tied to the firm over a substantial period of time. In the opinion of Gottschalk (2007), resources can be viewed as stocks and flows. In this study the resources are the independent variables which were production skills, equipment, knowledge and process. Physical resources were the tangible property the firm uses in production which includes the firm's plant and equipment which is one of the independent variable of this study. The human resources in a firm include knowledge, training and the experience of the employees in the firm. In this study, the level of knowledge achieved through training and experience

is represented in better production skills and process. Firm specific resources are developed, and used by the company to adapt to the changing environment. The sources of a sustained competitive advantage can be knowledge, learning, culture, teamwork and human capital (Barney, 2001). Barney (1991a) and Wernerfelt (1984). identified two basic perspectives of the firm, namely the resource and the product perspective. Barney (1991) has researched how resources contribute to the performance of one single-business firm. He assumed that resources are (1) heterogeneously distributed across firms and (2) cannot be transferred only with costs. Barney (1996) also identified four attributes of resources: (1) value, (2) rarity, (3) imitability and (4) operability. The resource based firm theory explains differences in firm performance. According to Gottschalk (2007) resources influence firm performance. Resources can create and sustain competitive advantages; however only a few of the many possible resources generate sustained competitive advantages (Wade & Hulland. 2004). Barney (2001) altered the VRIO - value, rarity, imitability and operability - framework of firm resource attributes. Operability was expanded into substitutability, combination and exploration. Substitutability of a resource diminishes above normal profits generated by a resource (Gottschalk. 2007).

Exploration and combination enable the company to utilize the resources to generate competitive advantages. Wade and Hulland (2004) define six attributes of firm resources. Resource attributes, which ex ante limit competition are value, rarity, appropriability. Immutability, sustainability and mobility ex post limit competition. Wade and Hulland (2004) suggest that while some resources generate competitive advantages, others help sustain them. Technology transfer embodied in the four independent variables of this study generates a competitive advantage and ultimately the firm's growth. Resources, which generate competitive advantages, can be thought of as ex ante limitations to competition, whereas resources that sustain competitive advantages can be identified as ex post limitations to competition. Gottschalk (2007) considers a resource as anything that could be thought to be strength in an enterprise.

Both tangible and intangible resources are a source of strength and competitive advantage. The theory states that sources of competitive advantage include knowledge, learning, culture, human capital and teamwork. The study was guided by the resource based theory in looking at the effect of the transfer of technology to firm resources among them production skills, equipment/objects; knowledge and process.

2.3 Conceptual Framework

A conceptual framework is a hypothesized model identifying the module under study and the relationship between the dependent, intervening and the independent variables (Mugenda & Mugenda, 2003). This study aimed at examining the influence of technology transfer on the growth of micro and small catering enterprises in Nairobi County, Kenya. The independent variables for the study were; production embodied technology transfer, objects/tools embodied Technology Transfer, Person-embodied Technology Transfer and Process embodied. Enterprise growth (new outlets, period of operation, customer turnover, profit margins, intangible assets, employment, revenues and financing resources were treated as dependent variables.

However the intervening variables were; application and access to appropriate and information technology by entrepreneurs. The type /level of available technology, technology must be efficient, affordable and clean to increase productivity, promote manufacturing, value addition, upgrade product quality, evolve new designs and promote export oriented industries. Indigenous knowledge need to be improved to offer competitive advantage. International/ government regulations and policies (ISO compliance; eco-labeling /product standardization; this may influence MSEs growth due to prevailing market forces that affect product growth and standardization, environmentally friendly products fetch high prices hence higher profit margins. Products that are of high quality standards attract more clients and hence higher profit margins.

Appropriate human resource also influence growth of MSEs because they will be quick to adopt new technological equipment for product processing through training on better and more advanced and appropriate skills. This will ensure technology is successfully transferred and efficiently utilized and encourage innovation, adaptation and designing of new products. Occupational health and safety procedures, clean working environment will motivate the catering staff to increase volume of production, increased product quality, produce safe, hygienically and clean products and minimize on the waste.

The conceptual framework shows that Technology embodied in foods and drinks (products) influence enterprise growth positively due to the increase in the number of the customers served per day. Adoption of latest technology in catering saves on labour through: additional employment in the capital goods sector where new machines are being produced, decreases in prices resulting from lower production costs on account of technological innovations, new investments made using profits due to technological change, decreases in wages as a consequence of the initial job losses, and new products created using new technologies

The number of customers increase when there is value addition in the foods and drinks served in a catering outlet e.g. the quality of rice served as a result of equipment embodied Technology Transfer. The increase is as a result of better and higher quality products (food and drink). Technology embodied in Objects/tools (equipment) result in higher production output that enables the enterprise to meet deadlines and serve more customers within the same time e.g. an oven with a higher production capacity.

Performance levels go up impacting positively on enterprise growth. Employees that are trained transfer the knowledge to their methods of production resulting into better quality products .This attracts more customers and impacts positively on enterprise growth. New technological processes transferred to the enterprise for production purpose

impact positively as the employees are able to come up with quality products for sale to the customers who buy in greater quantity and come in greater numbers.

The research therefore pursued four objectives; assess the influence of technology transfers of production skills on the growth of Catering Micro and small catering enterprises in Nairobi County, determine the influence of equipment/objects embodied technology transfer on the growth of Catering Micro and small catering enterprises and examine the influence of knowledge embodied technology transfer on the growth of Catering Micro and small catering enterprises. The results of the study were used to recommend appropriate policy interventions that might help formulate policy on technology transfer for growth of MSEs.

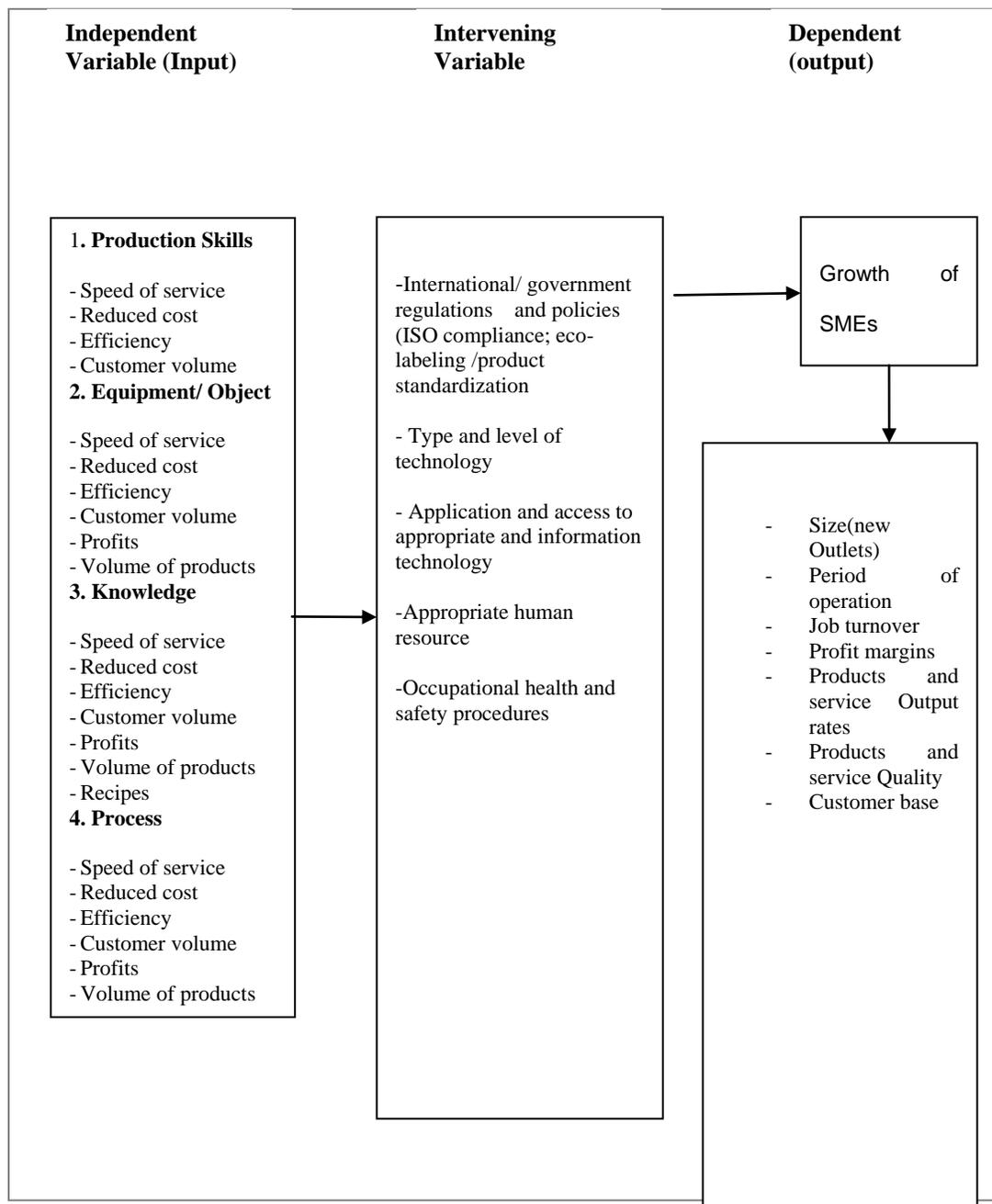


Figure 2.1: Conceptual Framework Model: Effect of technology transfer on Catering MSEs

2.4 Empirical Literature Review

2.4.1 Production Skills

Without access to technology, MSEs lack the capability to produce efficiently, meet deadlines, upgrade product quality and evolve new product designs. It is only MSEs with the capacity to initiate improvements in products, processes and production organizations that take advantage of the emerging opportunities as argued by (UNIDO, 2004). In the catering sector entrepreneurs have gradually moved from the old methods of production to contemporary methods of production in order to save on labor when fewer more qualified staff is employed, food costs due to reduction of waste, equipment costs when fewer and heavy duty equipment is used (www.food.gov.uk). Productivity is an important economic factor which has a key role in evaluating the economic growth. It is identified as the foundation for economic prosperity, a prerequisite for national development and also an important indicator of organizational competitiveness (Dedrick *et al.*, 2003). According to Allen and Shonnard (2001) each and every product has its own life cycle beginning when raw materials are extracted or harvested from the earth and proceeds through a number of manufacturing steps until the product is delivered to consumers, used and then disposed of or recycled.

Production capabilities refer to the skills that are necessary to efficiently operate a plant with a given technology and the improvement of the technology over time. This includes for instance process; product and engineering capabilities (Astrid *et al.*, 2010). Richard Cantillon (1680-1734) was the first of the major economic thinkers to define the entrepreneur as an agent who buys means of production at certain prices to combine them into a new product. He classified economic agents into landowners, hirelings, and entrepreneurs, and considered the entrepreneur as the most active among these three agents, connecting the producers with customers. Jean Baptise Say (1767-1832) improved Cantillon's definition by adding that the entrepreneur brings people together

to build a productive item. New products often embody new ideas and innovations and when these products are traded internationally, they transmit knowledge across borders. The local firms have to do reverse engineering if they have to benefit from this channel, which depends on the skill content of the labor and local absorptive capacity (Kathuria, 1999).

Substantial efforts are needed to lead the economy from subsistence to market oriented production and from subsistence-based to an enterprise-based production pattern with enough emphasis on comparative advantage of the regions. Enterprise development, even in products with comparative advantages and unique opportunities is severely constrained in the absence of technology development and transfer mechanism. Most of the growth of the standard of living, measured by GDP/capita is the result of improvements in productivity (Kathuria, 1999). Productivity is the relationship between the output and the inputs used in production and it measures the efficiency of the economy. The most common indicator is labor productivity e.g. value added per hour of work, or per person employed. It is however only a partial measure of productivity because its level and evolution over time depends on other factors of production, above all on the amount of capital used in production. As machines and equipment are substituted for labor, the labor productivity increases (ILO, 2005).

Workers have had to shift from the old traditional methods of production of food and drink to faster and more efficient methods to meet the customer demands. Productivity at the organizational level is affected by the level of competition which leads other organizations to step up the development of their productivity (Dedrick *et al.*, 2003). Increased productivity, however, does not necessarily imply increased profitability. Competition may result in lower prices, thus eroding improvement in margins. The beneficiaries will then be consumers, who get more value added for the price paid (Dedrick *et al.*, 2003). This phenomenon is defined as consumer surplus. Higher productivity can be translated in to higher real earnings for its employees. Moreover, it

causes the cost of manufacturing to be reduced and the customers to pay relatively low price. This role increases the market share (Tabatabae, 2000). In the past it was enough to produce most foods traditionally. Enterprise owners have now had to adopt new methods of production through technology to serve a wider customer demand.

2.4.2 Equipment/ Object Technology

The import of capital goods and machinery is among the major modes of technology transfer for building industrial infrastructure and strengthening the recipient country's technological capability. This channel of technology transfer which is used by many LDCs particularly the East Asian Newly Industrialized Countries (NICs) assisted these countries in accessing the advanced technologies embodied in the machinery and equipment. However, the success of this method of technology transfer in the development of the recipient country's local technological capability relies on the level of industrial development together with the degree of technical and managerial expertise and its absorptive capacity (Republic of Kenya, 1989).

Individuals or new establishments who are interested in endeavoring into the catering businesses need to consider to at least getting some of the useful technological equipment or machineries in their plants. However, as it involves high cost, thorough or careful planning should be undertaken by the owner or a responsible manager before any technological equipment can be purchased. This can be done through a rigorous investigation and cross referencing with those companies who already use such equipment (Munira *et al.*, 2011).

Liddle (2009) notes that some of catering commissary establishments thought that the tools and technology in the restaurant industry is limited to basic appliances and tools without realizing some complex equipment used. Grimes (2009) claims that some advanced features have integrated on the kitchen appliances such as timers and digital

temperature gauges, timers or inaccurate temperature dials. Liddle (2009) reported that many restaurants and food service operations have rapidly adopted the point-of-sale technologies or POS system to increase the overall convenience of the dining experience and technologies improving the restaurant operation as well as increased the repeat business.

The Technology Atlas Team identifies Object-embodied technology which can be called "Techno-ware" and consists of tools, equipment, machines, vehicles, and physical facilities as one of the components of technology. The increases in customers demand and volumes of production have led many commissary food establishments in Kenya to adopt technology.

Blast chillers, freezers, steam jacketed kettle tilting skillets are among examples of equipment that involve technological advancement in the sector to provide healthy meal options to the customers. Means of technology transfer include acquisition of capital equipment and machinery through trade, licensing (and/or franchising or distribution) agreements through which skills, ideas and technical information are transferred and through the movement of experts and skilled labor (Liddle, 2009). According to David *et al.*, (2011), production and service equipment in these enterprises include large equipment such as ranges, steamers, boiling pans, fish fryers, sinks and tables, mechanical equipment such as peelers, mincers, mixers, refrigerators dishwashers, utensils and small equipment such as pots, pans, whisks bowls and spoons.

Benner and Veloso (2006) contended that the implementation of technology in commissary food service establishments is closely associated with the increased in productivity, quality, safety as well as hygiene and cleanliness. Rodgers (2003) further noted that the application of technological cooking equipment and preparation techniques have tremendously increased the food production. Ikiara *et al.*, (2011) defines technology as the integration of the physical objects or artifacts, the process of

making the objects and the meaning associated with the physical objects. The latest definition given by Mascus (2010b) has broadened the concept of technology where technology is defined as ‘the information necessary to achieve a certain production outcome from a particular means of combining or processing selected inputs which include production processes, intra-firm organizational structures, management techniques, and means of finance, marketing methods or any of its combination.

From the systems perspective Afriyie (2013) defines technology as encompassing the basic knowledge sub-system; the technical support system (software); and the capital-embodied technology (hardware). Studies done by the researchers have offered various definitions and concepts of technology from different disciplines, contexts and perspectives. These are physical objects which maybe tools, machines and consumer products, A developing country can implement embodied technological change (ETC) through the importation of “mature” machineries (including second-hand capital goods from more industrialized countries (Navaretti ,2004). On the other hand, a late starter DC can enjoy the “last comer” benefit of jumping directly on a relatively new technology (Perkins &Neumayer, 2005).

According to a Food Standards Agency Publication, cooking equipment provides the backbone of any busy catering operation. It is the key to catering success and quality. It controls the most critical steps in the food production process. Technology transfer in the catering sector has made it possible to have high technology refrigerators, equipment that are environment conscious in terms of energy conservation, combination ovens, more decorative units, greater economy of water , better ventilation and more mechanized automated use of combination machines (Food Standards Agency Publication,2011).

Today the trend is towards self-diagnostic equipment and automated service. In order to maximize the use of equipment and to maintain high levels of output and viability food

production systems such as cook-chill, cook-freeze and sous- vide have been introduced in certain areas of catering. The production systems come in the form of centralized production using the skilled staff available to cook in bulk and then to distribute to finishing kitchens, which are smaller in size, employing semi-skilled and unskilled labor. (Food Standards Agency Publication, 2011).

A growing range of kitchen equipment from cookers and refrigerated storage to large ware housing systems come with onboard computer control and several products can additionally be specified with extra hardware and software to permit continuous monitoring of the main equipment functions. Some appliances can also be specified with a two way interactive link, enabling programme subject to frequent change (such as recipes) to be downloaded to the appliance from the computer directly via cable or wireless hook up, or via modern connection to the internet. The temperature monitoring of all refrigerators and freezers within the establishment can be linked to a computer system. Several temperature readings are sent to the computer each day and it can record temperature highs and lows, and any unusual trends. Any temperatures outside the specified limits will be highlighted (Catering Equipment Supplier's Association, 2011). Catering enterprises have moved from traditional production using traditional production equipment to more technology packed methods. Traditional pots have now been replaced by pressurized cookers; firewood has been replaced by gas and steam and electric cookers that are faster and more efficient. Technology embodied in objects and equipment has made it possible to serve more customers over long periods of time by using micro waves and food warmers to maintain food temperatures.

2.4.3 Knowledge

According to Gibson (1994), the most effective way to accomplish technology transfer is to transfer the people with the requisite knowledge to the arenas where that technology is needed. As we move more rapidly into the full utilization of computers and related

technologies this is more evident than ever before, but there is a broader aspect of technology transfer which is easily overlooked. That is the transfer of the fundamental scientific and technological knowledge and skills to the larger numbers of people required in the work place to ensure that the technology is successfully “transferred” and efficiently used. Capacity transfer includes provision of the know-how and software not simply to manufacture existing products but, more importantly, to innovate and adapt existing technologies and products, and ultimately design new products (Phillips, 2002).

Low educational achievement leads to a general failure of most MSEs. Proprietors must appreciate the role of technology in production processes, product quality and market competitiveness. Even where they develop interest in new technology, their limited education adversely affects the absorption capacity of acquired technology (ILO, 2005). International movement of people is associated with nationals studying or working abroad for a limited period and applying their new knowledge when they return.

Cohen, (2004) argue that the capacity to make use of external knowledge is a function of the level of prior related knowledge. This prior knowledge includes basic skills, shared language and also knowledge about the last Scientific and technological developments. Buzz refers to the information and communication ecology created by face-to-face contacts, co-presence and co-location of people and firms within the same industry and place or region. This buzz consists of specific information and continuous updates of this information, intended and unanticipated learning processes in organized and accidental meetings, the application of the same interpretative schemes and mutual understanding of new knowledge and technologies, as well as shared cultural traditions and habits within a particular technology field, which stimulate the establishment of conventions and other institutional arrangements. Persons in a buzz environment work together and interact with other skilled individuals,

Catering enterprises today have to compete for survival, growth and profitability. Managers within the industry have to learn to adjust to change in line with the market demands for quality and value for money (British Hospitality Association, 2009). In Kenya, universities, technical colleges and youth polytechnics have introduced hospitality and tourism units with Catering courses as a core unit so as to train the personnel for the MSEs in Catering.

2.4.4 Process Technology Transfer

Firms must be able to create and commercialize a stream of new products and processes that extend the technology frontier, while at the same time keeping a step or two ahead of their rivals (Sheu, 2007). Simplifying an operation has been made possible by technology transfer. Technology makes this possible through elimination of unnecessary movement by combining two operations in to one or improving old methods (David *et al.*, 2011). A mechanical potato peeler is more efficient and faster than a knife. It saves time and gives a better product. The International Journal of Business and Management (August, 2009) further defines enterprise growth as the ability of enterprise to grow continually, quickly and healthily through the optimization of the change speed between production factor and production result in the development process.

Business process re-engineering (BPR) is not another technique for downsizing an organization. Re-engineering is not another quality improvement, just-in time, or cycle 50 time reduction program. These activities typically focus on improving the existing process making it easier and faster. Whereas re-engineering has the goal of radically changing the processes, Business Process Reengineering (BPR) concerns the fundamental rethinking and radical redesign of a business process to obtain dramatic and sustained improvements in quality, cost, service, lead time and productivity (Gunasekaran *et al.*, 2002; Appendix 6).

The “driving force” behind effective business process reengineering efforts must be those critical factors which influence the customer’s perception of value, and improve the firm’s competitiveness. Business Process Reengineering Aims to achieve quantum improvements and IT is the primary facilitator to achieve the requested goal of BPR (Limayem, 2006). In Catering enterprises Business Process Reengineering is seen in the use of mechanical equipment with timers. This means the worker does not have to spend time checking on time.

The BPR analysis task typically consists of the following: Collecting data on the existing process, breaking the existing process down into activities, capturing expenses, staff and materials information for each activity, capturing the sequence and timing of the several activities, capturing information flow and material flow through the process.

Production technology considers the methods and processes for production of goods and services, whereas consumption technology considers methods, processes and techniques by which a particular need or demand may be satisfied (Soliman *et al.*, 1998). A skilled worker is one who is able to complete a task in the minimum time, to the required standard and with the minimum effort. Today, technology has benefitted the manufacturing industry as the introduction of robots on assembly lines have allowed heavy goods to be created quickly and efficiently. In today’s society when we talk about manufacturing and business output this isn’t just limited to factories anymore. (Soliman *et al.*, 1998).

Micro and small enterprises that have changed from the old methods of production to faster, new and modern methods have higher production outputs and can serve a wider market. Technology transfer has enabled for processes to be simplified with the objective of making work easier through elimination of unnecessary movement, combination of two operations into one or improvement of methods (Katz, 1974). An example is a catering outlet that uses the traditional method in preparation and cooking

of French fries. (Chips).The process is long and tiring as compared to where modern technology in form of electric deep fat fryers and vegetable slicers are used.

Labor turnover can be an important channel for technology transfer and technology diffusion. In fact the ability of local firms to absorb new technologies is contingent on the fact whether there is a labor turnover. Not only are new technologies diffused faster to MSEs, the productivity of local firms also increases through labor turnover. This is because the value addition of MNC trained worker is much higher if (s) he works for a local firm than for the foreign firm as (s) he is one among many in the MNCs. In developing countries, technology acquisition often amounts to adapting existing methods to local circumstances (Evenson & Westphal, 1995).

A research carried out by Jens von Axelson in 1989 on the development of production methods for transfer to MSEs had the objective of creating better understanding regarding diffusion of production methods, in a network context, to Swedish MSEs among industrial researchers and other interested parties. He found out that production method diffusion is easy in theory but hard in practice. The MSEs characterized with little resources and varying leadership implies that a production method needs to be implemented according to general implementation programme such as Industry. This phase could be supported by a network activity where the method is presented and implementation issues and monitoring systems are described in a do-like-this manner.

There are production methods that could help in these situations. Jens von Axelson (1989) found out that dissemination of new production methods follows predictable patterns and the knowledge of innovation diffusion is a great factor to consider in the national innovation system where the method is presented and implementation issues and monitoring systems are described in a do-like-this manner. There are production methods that could help in these situations. He found out that dissemination of new

production methods follows predictable patterns and the knowledge of innovation diffusion is a great factor to consider in the national innovation system.

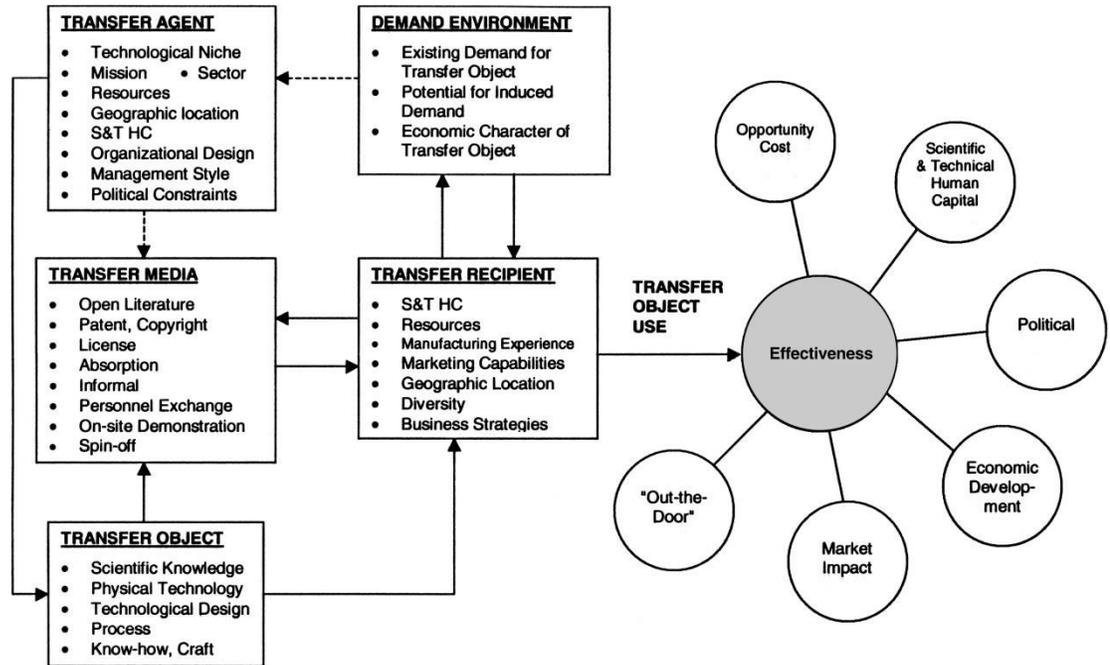


Figure 2.2: Contingent Effectiveness Model of technology transfer

Source: Resource Policy (2000)

Figure 2.4 presents the elements of the contingent effectiveness model of technology transfer. The model draws its name from the assumptions that parties to the technology transfer have multiple goals and effectiveness criteria. The model has five broad dimensions which determine effectiveness. They include characteristics of the transfer agent, characteristics of the transfer media, and characteristics of the transfer object, demand environment, and characteristics of the transfer recipient. The arrows in the model indicate relations among the dimensions while broken lines indicate weaker links. Over the past fifty years catering establishments have come up with production and service designs unit that allow a smooth flow of production process from the point of delivery to the point of sale with the minimum obstruction.

2.5 Critique of existing Literature

The literature reviewed leaves no doubt on the importance of technology transfer to the growth and competitiveness of enterprises for economic and industrial growth. Several studies have been carried out in this field. Maskus (2010b) in his study agrees that the technology transfer concept is not only concerned about the transfer of technological knowledge or information but also the technology recipient's capability to learn and absorb technology into the production function while a study carried out in Malaysia (2012) on the effect of application of technology devices in commissary catering establishments and its application on productivity found that the benefits brought about were vast. Studies carried out in the UK by Brunnel, *et al.*, (2011) on fostering the development of technologies and practices to reduce the energy inputs into the refrigeration of food found out that catering establishments traditionally use a range of refrigerators and freezers to store raw material, side orders and part and fully prepared dishes prior to serving and that in recent years establishments have to have in addition blast chillers or blast freezers.

A study carried out by Murray and Black (2000) found out that training and education in contract catering management are important and there is a need to sustain interest in training to gain the application of technological cooking equipment maximum output in contract catering organizations. With high technological capabilities, a motivated workforce and an effective management, higher value-added products and services will be produced at competitive costs (NPC report, 2003). The study by Murray and Black (2000) was limited to only contract catering enterprises in a developed country.

Albadvi and Keramati (2006) also provided the satisfactory evidences to show that IT implementation increased productivity when supported by rational complementary investment. Technology is embodied in production techniques, use of technological tools, well trained employees and new and better processes of production. Technology

transfer is the engine of growth of enterprises. According to Gunasekaran *et al.*, (2002) Business Process Reengineering (BPR) concerns the fundamental rethinking and radical redesign of a business process to obtain dramatic and sustained improvements in quality, cost, service, lead time and productivity. It is clear from the literature reviewed that technology transfer is vital for enterprise growth. However, the studies have concentrated on the importance of technology transfer to the growth of large foreign multinational enterprises and have failed to address the same in relation to MSEs in Kenya.

2.6 Summary of Literature

Empirical and theoretical literature reviewed in this study showed that technology is important and vital for enterprise growth. Enterprises need to bring in technology embodied in production skills; equipment, knowledge and processes to enable them grow in to large entities. They therefore need access to information on the importance of trained employees, adoption of new technological equipment for product processing.

Literature relevant to the current study was extensively reviewed. The study was guided by a number of theories. The theories included Economic entrepreneurship, Psychological entrepreneurship, Sociological entrepreneurship, Schumpeter and the resource based theories. Relationship between the independent variables and the dependent variable were presented on a conceptual framework. Growth was the dependent variable while the independent variables were production skills, equipment, knowledge and process embodied technology transfers.

Once this information is gained by the entrepreneurs in the Catering MSEs which was the focus of this study, the enterprises will grow continually, quickly and healthily through the optimization of the change speed between production factor and production result to entities that will contribute positively to National economic growth. Literature reviewed under empirical review confirmed that studies had been done on technology transfer and its influence on enterprise growth. Critique on the existing literature on the study and this formed the foundation for the research study.

2.7 Research Gap

The current study explored literature relevant to the study both in developed and developing countries and identified a number of research gaps.

A study by Dedrick *et al.*, (2003) found out that Productivity is an important economic factor which has a key role in evaluating the economic growth. It is identified as the foundation for economic prosperity, a prerequisite for national development and also an important indicator of organizational competitiveness. This study made no attempt to show the aspects of productivity that contribute to organizational competitiveness.

A study by British Hospitality Association (2009) found out that catering enterprises have to compete for survival, growth and profitability and that the managers within the industry have to learn to adjust to change in line with the market demands for quality and value for money. This study failed to show how catering enterprises have responded to technological change for survival, growth and profitability.

A study by Sheu (2007) found out that firms must be able to create and commercialize a stream of new products and processes that extend the technology frontier, while at the same time keeping a step or two ahead of their rivals. The study failed to make any attempt at how the new products and processes affect the enterprise growth.

This study focused on filling these gaps by providing the missing information. Entrepreneurs in the MSEs Catering sector lack information on the importance and influence of technology transfer on the growth of an enterprise. Access to this information will make it possible for plans, policies and government expectations to be realized.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The purpose of this study was to investigate the influence of technology transfer on the growth of catering MSEs in Kenya. The study was carried out in Nairobi County-Kenya. This section outlines the research design, the target population for the study, sample, sampling frame, and the research instruments that were used. The section also describes how pilot testing validity and reliability and data analysis were carried out.

3.2 Research Design

According to Kothari (2004) the research design constitutes the blueprint for the collection, measurement and analysis of data. In other words, it is a master plan specifying the methods and procedures for collecting and analyzing the needed information. It ensures that the study is relevant to the problem and uses economical procedures in collection and analysis of data. This study employed the descriptive research method. Gay (1981) defines descriptive research as a process of collecting data in order to test hypothesis or to answer questions concerning the current status of the subjects in the study. This method facilitated the collection of information among the Catering MSEs in Nairobi County, Kenya to establish the influence of technology transfer on their growth. The information helped answer the research questions. Both qualitative and quantitative information was collected so that each supplemented the other to minimize subjectivity and enhance objectivity. Qualitative information includes, design, techniques and measures that do not produce discrete numerical data while quantitative information includes designs, techniques and measures that produce discrete numerical data (Mugenda and Mugenda 2003). The researcher gathered information and the respondent's opinions, experiences and feelings on the influence of technology

transfer on the enterprises where they work. More often than not the data was in qualitative form which was coded into categories for analysis.

A Quantitative research approach is a systematic investigation of scientific mathematical properties and their relationships. (Cooper & Schindler, 2010). This research approach involved the testing of the hypothesis that technology transfer influences the growth of MSEs within the catering sector. According to Mugenda and Mugenda (2003) quantitative approach focuses on designs, techniques and measures and produce numerical discrete data or quantifiable data. The research employed a mixed model approach whereby it combined both qualitative and quantitative data collection approaches. It was necessary to use this approach as it increased the statistical reliability of the results (Kothari, 2004). This model approach also made it possible for the researcher to infer to the micro and small catering enterprises.

A Qualitative approach refers to the in-depth investigation and is more descriptive than numerical and was also used in this study (Saunders *et al.*, 2007). Qualitative approach on the other hand involved the interpretation of phenomena without depending on numerical measurements or statistical methods. It was mainly concerned with observing, listening and interpretation of phenomena. The use of both qualitative and quantitative data approaches reinforces each other (Kombo & Tramp 2009). Interviews were conducted on one-to-one basis which allowed for interaction with the respondents during data collection and made it possible for clarification of any unclear issues. The qualitative data collected using questionnaires, interviews so that the analysis and reporting was narrative. In this study, qualitative data was quantified by converting it into numerical codes and then analyzed statistically. Therefore the descriptive study describes the phenomena as it is Saunders *et al.*, (2007). This design was the most suitable for this study because the determinants were studied in the field without manipulation.

3.3 Target Population

The subject for the study was catering MSEs in Nairobi County, Kenya to establish the influence of technology transfer on their growth. The researcher carried out the study in Nairobi where many catering MSEs have come up in order to cater for the large population within the county. Nairobi, being the capital city of Kenya represents people of diverse origin. The researcher carried out survey method of data collection from a population of 11,162 respondents. The population sample comprised 384 enterprise owners who were selected through stratified random sampling. The population for this investigation was small scale entrepreneurs in the catering sector within the hospitality industry Nairobi County. The Nairobi Central Business District is defined by the Nairobi Central Business District Association (NCBDA) which is a registered society under the Societies Act (Cap 108) and was formed in May 1997 as a rectangular shape, around the Uhuru Highway, Haille Selassie Avenue, Moi Avenue and University Way. As a result the labor force population has increased. Catering MSEs which provide food and drinks to the labor force have also increased in number over the past ten years.

The study target population included Medium Restaurant with bar/Membership club, Small Restaurant with bar/Membership club. These two categories are basically the same as both of them serve all types of meals which include lunches and dinners to their customers. The only variation is the size and therefore the number of customers served which also determine the number of employees.

In Mega eating houses, Snack Bar, Tea House “Hotel”, Medium eating House, Snack Bar Tea House “Hotel”, Small eating House, Snack bar, Tea House. These three categories are basically the same as they offer a limited choice of popular foods and snacks at a reasonable price with little or no waiting time. The foods or snacks can be consumed on the premises or purchased over the counter and taken away to be eaten elsewhere. Tea and coffee are available for customers as accompaniments. The only

variation is the size and therefore the number of customers served which also determines the number of employees.

The sixth category is “Other Catering and Accommodation” in Nairobi Central Business District. This category includes catering concerns that undertake freelance catering as a business. Outside catering for functions, Schools and hospitals and any other enterprise are in this category. All the items in the field of enquiry constitute the “universe” or population (Kothari, 2004).

3.4 Sampling Frame

There was a total of eleven thousand, one hundred and sixty two (11,162) licensed micro and small catering enterprises in Nairobi in 2014/2015. According to Mugenda & Mugenda (2008), Stratified random sampling helps the researcher achieve the desired representation of various sub –groups in the population. The total population embraced six categories of different sizes therefore the frame was organized by the six categories into separate strata. The researcher chose this method so as to have existing sub-groups fairly and randomly represented within the sample. The method also ensured that every group in each category was proportionally represented (Table 3.1).

Table 3.1: Total licensed micro and small catering enterprises in Nairobi.

Code	Strata	Total
543	Medium Restaurant with bar/Membership club	1,234
546	Small Restaurant with bar/Membership club	1,327
549	Mega eating house, Snack Bar, Tea House “Hotel”	667
552	Medium eating House, Snack Bar Tea House “Hotel”	1,445
555	Small eating House, Snack bar, Tea House	5,673
595	Other Catering and Accommodation	776
Total		11,162

Source: Nairobi County (August, 2014).

3.5 Sampling technique and sample size

3.5.1 Sampling Technique

Enterprise owners from the stratum samples provided the information for the study. Stratified simple random sampling method was used in the selection of the samples. Since all probability samples must provide a known nonzero probability of selection for each population element, the stratified simple random sampling is considered a special case in which each population element has a proportional and equal chance of selection; it ensures that every population representative has an equal chance of being represented. (Mugenda & Mugenda, 2003)

The researcher used simple random sampling which had no complexities involved. All you need is a relatively small, clearly defined population. According to Kombo and

Tramp (2009) a researcher may simply obtain a list of the whole population and then use a sequence of numbers from random numbers table (or draws of a hat, flips of a coin), selects 10% or 20% or some portion of names on that list, making sure he/she is not drawing from any letter of the alphabet more heavily than others. The researcher obtained stratum sample sizes by first obtaining a full list of all the members of the population for each of the six strata. The researcher did this to ensure that data is obtained from enterprises that have embraced Technology Transfer in their day to day operations.

Purposive Sampling was also used for this study. According to Maina (2012) the purposive sampling technique allows the researcher to use cases that have the required information with respect to the objectives of the study. The researcher on this basis identified Catering MSEs that had embraced technology transfer in their operations. One enterprise was picked from each of the six strata through purposeful sampling. Managers were then given questionnaires to complete.

3.5.2 Sample Size

According to Mugenda and Mugenda (2003) when the population size is more than 10,000 the sample size n is calculated as follows:

$$n = \frac{z^2 pq}{d^2}$$

n= desired sample size

z=standard normal deviate at the required confidence level.

p= the proportion in the target population estimated to have the characteristics being measured.

$$q = 1 - p$$

d=level of statistical significance set

$$n = \frac{(1.96)^2(0.5)(0.5)}{(0.05)^2} = 384$$

The total sample size calculated from the total population will therefore be Three hundred and eighty four catering MSEs.

Formula for calculating the stratum sample size.

$$ns = n \times ps = 384 \times \frac{x}{11162}$$

Where ns= Stratum sample size

n=size sample

$$ps = \frac{\text{Total number of MSEs in stratum}}{\text{Total MSEs in the target group}}$$

Total sample for the whole population was 384

Table 3.2: Total licensed catering MSEs Stratum and sample sizes in Nairobi.

Code	Stratum	Population	Sample size
543:	Medium Restaurant with bar/Membership club	1,234	43
546:	Small Restaurant with bar/Membership club	1,327	46
549:	Mega eating house, Snack Bar, Tea House “Hotel”	667	23
552:	Medium eating House, Snack Bar Tea House “Hotel”	1,445	50
555:	Small eating House, Snack bar, Tea House	5,673	195
595:	Other Catering and Accommodation	776	27
	Total	11,162	384

The stratum sample sizes have been rounded to obtain whole figures.

3.6 Data Collection Tools and Procedure

Secondary and primary data were required for this research. Secondary data was obtained from online, print-outs, journals, websites, books, articles and through communication with experts through the mobile phone technology. Primary data was obtained from owners of MSEs through self-administered survey method of data collection. The following instruments were used as testing devices.

Questionnaire was the main instrument of data collection. According to Mugenda and Mugenda, (2003), questionnaires are used to obtain important information about the population. Each question in the questionnaire was developed to address a specific objective, research question or objective of the study. Questionnaires were prepared for use in the sampled catering enterprises. The questionnaires had different sections as follows: Part A: General and demographic data, Part B: The influence of production

technology transfer, Part C: The influence of Equipment and object technology transfer, Part D: The influence of knowledge technology transfer, Part E: The influence of process technology transfer. Part F: The role of production skills, equipment, knowledge and process embodied TT on Catering MSEs growth. The interviews helped the researcher probe the respondents so as to get more details on the subject under study.

The questions for the interview were both structured and unstructured. Structured questions with a list of all possible alternatives from which respondents selected the answers that best described their situations were used. They were then administered for completion by enterprise owners. Questionnaires detailing all the variables of the study with open spaces for comments were used for the study. In order to yield qualitative data, open ended questions were also used.

An interview guide was used in this study as it was flexible and enabled the researcher to collect large amounts of information that would otherwise not have been available. According to Mugenda and Mugenda (2003) a study can use both structured interview guides and unstructured interview guides. According to Maina (2012) a trained interviewer can hold the respondents attention and can also clarify a few issues during the interview. An interview schedule ensured that standard data was obtained from all the Catering MSEs within the sample. All the Catering MSEs owners/managers who were the respondents of this study were booked by telephone for interview appointments in advance. Interviews were conducted in person at an agreed time where an appropriate venue within the micro and small catering enterprise was identified and used for the interview.

A training session was organized on 20th April, 2015 for the assistants on data collection before they proceeded to the field on 2nd May, 2015. The research instruments were then pre-tested and adjusted accordingly. The data collection exercise commenced on 8th May, 2015 until 30th July, 2015. The researcher followed up the assistants closely during

this period for feedback and co-ordination to ensure that the exercise went on as planned. Twenty respondents from the population completed the questionnaires for the purpose of pilot testing. The data collected each day was stored appropriately awaiting analysis.

3.6.1 Margin of Error

According to Mugenda and Mugenda (2003) the margin of error is the statistical concept which expresses the discrepancy between the characteristics of the population and the characteristics of the sample, although the sample is drawn from that population. The Confidence level for this study was 95 percent (0.95). According to Saunders *et al.*, (2009) if any sample is selected 100 times at least 95 percent of the samples would represent the characteristics of the population. The margin of error for the study was therefore 5 percent (0.05). The standard normal deviate at 95 percent is 1.96 (Z value) as shown in Table 3.2.

Table 3.3: Levels of confidence associated with values

Level of confidence	Z value
90% certain	1.65
95% certain	1.96
99% certain	2.57

Source: Saunders *et al.*, (2009)

3.7 Pilot Test

Pilot testing was done on the research tools in order to take note of any ambiguity so as to refine the research instruments. The researcher administered a set of structured and unstructured questionnaires through pilot study so as to appraise the questionnaire appropriateness and to be able to estimate the time required for the study. Fleiss (1986) asserts that it is imperative that instruments for data collection be as accurate as possible. This enabled the researcher to refine, redesign and re-write the questionnaire where it was necessary with the help of peers who have in-depth knowledge in statistics. The interview guide was adjusted to ensure that all the required information was captured.

3.7.1 Reliability of Research Instruments

This is a measure of the degree to which a research instrument yields consistent results after repeated measurements are taken of the same subjects under similar conditions (Gay, 1992). In this study, reliability of the research instrument was tested using the split half design. Mugenda and Mugenda (1999) observe that this design requires a single testing and has the advantage of eliminating chance error due to differing conditions. The following was done as outlined by Mugenda and Mugenda (1999). Items from the domain of indicators that measure a given variable, for instance higher income, are sampled. The instrument is then administered to the pilot group. The split half model then splits the scale into two parts into which the responses are assigned randomly and the correlation between the two parts is examined. This yields Cronbach Coefficient Alpha for each half. The average is taken to measure reliability of the instrument (Cronbach, 1975).

3.7.2 Validity of Research Instruments

This refers to the extent to which the research design and the data that it yields allows the researcher to draw accurate conclusions (Leedy, 1997). To ensure internal validity, especially when qualitative approaches are used, triangulation of the methods of data collection is recommended (Leedy, 1997). In this study triangulation method of data collection methods (questionnaires and interview schedules) were used.

Principal component factor analysis was used prior to undertaking multiple regression analysis in order to establish the few independent variables with the strongest effect on enterprise growth from among the X1-X4 variables. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) and Bartlett's test of Sphericity was carried out before factor analysis. Bartlett's Test of Sphericity was used to test the null hypothesis that the correlation matrix upon which the factor analysis was based is an identity matrix. An identity matrix is that in which all of the diagonal elements are 1 and all of diagonal elements are 0. For the KMO, usually a value of 0.6 is a suggested minimum Tabachnick and Fidell (2001). On the other hand if The Null Hypothesis that the Correlation matrix is an identity matrix was accepted, the sample data was not good for factor analysis.

3.7.3 Common Method Bias

According to Creswell (2007) Common Method Bias refers to the degree to which correlations are altered (inflated) due to a methods effect. In this study, bias may have occurred if the respondents were required to respond to the questionnaires simultaneously. The researcher designed different questionnaires for the dependent and independent variables of the study. These were administered at different times. The researcher ensured prolonged engagement with the respondents within the Catering MSEs to check for any misinformation that may stem from the researcher or

instrumentation and made decisions about what is salient and relevant to the study. The research instruments were also varied so as to minimize the Common Method Bias in the study.

3.8 Data Collection Procedure and Analysis

3.8.1 Data Collection Procedure

The document analysis checklist was used to collect secondary data from micro and small catering enterprises, while questionnaires were used for collecting primary data. Secondary data constitute information from already written sources. The researcher read several documents and recorded the data from them on the Document Analysis Checklist to assist in review of related literature and also to enrich and/or verifying the primary data during the compiling of the report. Primary data was gathered from respondents of various MSEs in the field after obtaining the Research Permit from National Commission for Science, Technology and Innovation. The researcher also developed the work plan and pre-tested the instruments through a pilot study (pilot run) was carried out in one firm in each of the six categories). It was also necessary to prepare enough copies of the instruments (questionnaires) ready for distribution.

The researcher visited the sampled 384 micro and small catering enterprises in Nairobi County and administered the questionnaires to the enterprise owners, after establishing a rapport with each of them and explaining the purpose of the study and assuring them that the information they gave was confidential. This ensured a high response rate from the respondents. Data for this research was obtained from the 280 enterprise owners. Enough time was allowed to fill the questionnaires and after one week, they were collected. Cooper (1984) asserts that one of the ways to maximize questionnaires response as well as the return rate is by sending a preliminary notification about the questionnaires, and writing passionate requests for cooperation by the respondents.

The researcher obtained an introductory and authorization letter to carry out the research from the university (JKUAT). To this end the researcher made passionate appeals for respondents to cooperate by filling the questionnaires and then alerting the researcher for collection. In some cases the researcher had to travel to the establishments more than once to pick the questionnaires from respondents who begged for more time to complete the questionnaires or needed another appointment for the interview.

Once all the questionnaires were picked, the researcher was guided by the following order in processing and analyzing the data as presented by Creswell (2009). Sorting and arranging the data into different types depending on sources of information after which the researcher read through all the data to obtain a general sense of all the information obtained. A Codebook was then developed for data coding based on the research variables.

According to Mugenda and Mugenda (2003) data must be converted to numerical codes representing attributes or measurements of the variables for analysis. One numerical code was assigned to each independent variable and each dependent variable. Enterprise growth was measured in terms size, age since inception, turnover, profit margins, output, quality, customer base and efficiency in relation to technology transfer of production skills, equipment knowledge and processes. The researcher used the code book to transfer the numerical numbers representing the responses from the questionnaires.

3.9 Data Processing and Analysis

The nominal and ordinal data were collected using questionnaires and quantified from the qualitative data and was subjected to quantitative analysis applying descriptive and inferential statistics in line with the four research objectives. Descriptive statistics was used to describe the population characteristics numerically and hence more precisely in accordance with Saunders *et al.*, (2007). The Inferential statistical analysis of the results

were done to determine whether or not there is a statistical relationship established between growth (the dependent variable) and the independent variables on the basis of the research questions. Quantitative data obtained from the questionnaire was analyzed using statistical package for social scientists (SPSS) software package version 22. Qualitatively, thematic analysis, categories and patterns were used in interpretation of data. Graphs, charts and tables were used to present descriptive data analysis results. Descriptive statistics such as measures of central tendency was used to describe levels of dispersion. The relationship between independent variable(s) Technology Transfer and the Dependent variable (Enterprise growth) as per the findings of this study was determined based on hypothesis testing and regression analysis.

Correlation analysis was done to establish the relationship between the variables. Correlation analysis measures the extent of interdependence where two variables are lineally related. (Namusonge, 2010). If variables are correlated then a change in one variable is accompanied by a proportionate change in another variable. If variables are independent $r = 0$, if dependent then $r = 1$. If the value of R is close to 1 then it shows a strong correlation between the variables. If the value of R is close to 0 then it shows the association is weak (Namusonge, 2010).

Analysis of Variance (ANOVA) was used in this study as it allows for test of significant difference in two or more groups. The test was also used in the study to measure variations within the groups. In addition, chi square test of independence was used test the relationship between categorical data and which is measured at nominal and ordinal levels of measurement.

Binomial logistic regression analysis (simply referred to as logit in this study) was conducted to establish the influence of technology transfer on the growth of catering MSE's. A logistic regression was performed in this study because it predicts the probability that an observation falls into one of two categories of a dichotomous

dependent variable based on one or more independent variables that is either categorical or continuous (Mugenda & Mugenda, 2003). The dichotomous dependent variable in this study was performance status i.e. with ‘Yes’ meaning positive performance and ‘No’ meaning nonperformance. Yes was code 1 and No was code 0. The general binomial logistic regression equation is presents as:

The study used the Logistic (or Logit) regression to establish the effects of the independent variables to enterprise growth. According to Mugenda (2012), this method of analysis is a statistical procedure where the dependent variable is measured at the nominal or ordinal levels with only two response categories such as yes or no. The equation being $\text{Log}\left(\frac{p}{1-p}\right)$. In this study, the researcher used the above equation as the logistic transformation of the probability P, written as Logit (P) short for logistic unit. The counted proportion P only lied between 1 and 0 to predict how the technology transfer of production skills, equipment, knowledge and processes have affected the growth of catering MSEs in Kenya.

The logit of a number p between 0 and 1 is given by the formula:

$$\text{logit}(p) = \log\left(\frac{p}{1-p}\right) = \log(p) - \log(1-p) = -\log\left(\frac{1}{p} - 1\right).$$

$$\text{Logit (Growth)} = \beta_0 + \beta_1\text{Production skills} + \beta_2\text{Equipment} + \beta_3\text{Knowledge} + \beta_4\text{Process}$$

Where, $\beta_0, \beta_1, \beta_2, \beta_3, \beta_4$ are model parameters

According to Mugenda (2013), qualitative research generates voluminous amounts of data that can sometimes be overwhelming to the researcher. The data therefore needed to be carefully organized and analyzed to answer the research questions. The chi-square test was used to determine whether an independent variable is a factor influencing the dependent variable or not (Mugenda & Mugenda, 2008). This test was used for each of

the independent variable over the dependent variable. The model was fitted on the basis of the explanatory variables determined by inferential statistics. Qualitative analytic reasoning process was used to interpret and structure the meanings that could be derived from the data.

3.9 Summary of The Methods of Testing the Hypothesis

The major purpose of hypothesis testing is to choose between two competing hypotheses about the value of a population parameter (Piffer, 2011). Descriptive statistics used to analyze data was used to summarize finding and describe the population sample involved in hypotheses testing and making of inferences. The general guideline that was used is that the significance value (p or sig.) that represent the percentage or the probability the results are due to chance. The convention to be used is that results must be equal or less than 5 % to chance. That is p must be smaller or equals to 0.05 in order to claim the relationship to be truly significant (Seward, 2007).

One-way analysis of variance was used to test the first hypothesis and this test was preferred because it is capable of comparing the means of three or more groups on a given attribute {(a) production skills, (b) equipment/objects (c) knowledge (d) processes}. ANOVA was most preferred in the first hypothesis because it can be used to examine differences among the means of several different groups at once. Since ANOVA is used to test independent variables, the researcher opted to use it.

The Wald test was used to determine statistical significance for each of the predictor variables in the study.

The Bartlett's Test of Sphericity was used to test if the strength of the relationship among variables was significant.

The logit regression model was used in predicting P, which was determined by the independent variables.

The general hypothesis to be tested was;

Ho: Technology transfer has no statistical significant influence on enterprise growth)

Vs

Hi: Technology transfer has a statistically significant influence on enterprise growth.

If the P value associated with the above test is < 0.05 , the Ho was accepted. The Xi was considered to have significance on Y. If the P value associated with this test was above .05, The Ho Was Rejected.

3.10 Measurement of the Independent Variables

The influence of the five independent variables was measured against the production and service output, production and service quality, efficiency of production and service, employee satisfaction, customer volume, enterprise profits and the size of the enterprise.

3.11 Measuring of the dependent variable.

To measure the growth of MSEs the study employed multiple regression models.

Multiple regression attempts to determine whether a group of variables together predict a given dependent variable (Orodho, 2005). Multiple regressions incorporate more than one independent variable to explain variations of the dependent variables

When researching factors affecting growth it was necessary to first define how firm growth and growth would be measured. Various indicators are used to measure growth and there doesn't seem to be any general measurement. Measuring sales growth and relative employment growth during a specific time period are the most common

indicators used. Indicators such as assets, market share, profits and output are also commonly used, however not as commonly as sales and employment. Output and market share vary greatly within industries and is therefore hard to compare, total assets also depends on the industry's capital intensity and changes over time and profits is not that relevant unless measuring size over a long period of time. Therefore sales and employment are the two most important indicators measuring firm's size and growth. Employment numbers is also a measure that is easily accessible, since it is an important figure for governments. Sales figures are on the other hand affected by inflation and exchange rates and it is difficult to compare sales figures between industries. That is why it is important to use multiple growth indicators to study firm growth (Davidson *et al.*, 2006).

According to Evenson and Westphal (2006) enterprise growth is the development process where enterprises keep the tendencies of balanced and stable growth of total performance level (including output, sales volume, profit and asset gross) or keeps realizing the large enhancement of total performance and the stage spanning of development quality and level. In this study growth was measured against the total performance in the speed of output where more units are produced and more customers are served within a given time with quality products and services. The increase in the number of customers that were served over a given time was used as a growth indicator. The researcher looked at the increase of the number of customers served in each year since the inception of the enterprise. The increase in net profits over each year was an indicator of enterprise growth over the same period. Employee satisfaction and turnover over the same period was also used as a growth indicator. An enterprise that is able to retain the same employees over a given period is a clear indicator of improved working conditions and positive growth over the same period. Opening up of new micro and small catering outlets over the same given period indicated growth.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSION

4.1 Introduction

This chapter presents and discusses the findings of the current study. The general objective of this study was to find out the influence of technology transfer on the growth of micro and small catering enterprises in Nairobi County, Kenya. The specific objectives were to: assess how technology transfers of production skills have influenced the growth of micro and small catering enterprises in Nairobi County, Kenya, determine how equipment/objects embodied technology transfers have influenced the growth of micro and small catering enterprises in Nairobi County, Kenya ,examine how knowledge embodied technology transfers have influenced the growth of micro and small catering enterprises in Nairobi County, Kenya and determine how process embodied technology transfers have influenced the growth of micro and small catering enterprises in Nairobi County, Kenya. The study also tested four hypotheses.

4.2 Reliability Results

Reliability analysis was done using the Cronbach's Alpha Test (Cronbach, 1951). Drost (2011) suggests that estimates of reliability should be based on the average inter-correlations among all the single items within a test. For internal consistency Bryman (2012) opines that where Cronbach's Alpha Test is used in reliability testing. as a rule of thumb, the value should not be lower than .0.6. In the current study, Cronbach's Coefficient was 0.702 and which was above the recommended value.

The Cronbach Alpha Values obtained for the four independent variables ranged from 0.833 to 0.893 meaning that they were above the critical value of 0.8 and hence all questions were retained in the study. Specifically the average values for each of the

variables were 0.878 for individual factors, 0.896 for firm factors, 0.835 for firm resources and 0.891 for environmental factors.

4.2.1 Validity Results

A research study has internal validity if the outcome was dependent upon the variables specifically under study. According to Weirisma (2002), validity is the extent to which the instrument measures what it was designed to measure (Weirisma, 2002). In this study, content validity – a form of internal was tested. According to Gay (1981), content validity is established by an expert. The researcher therefore consulted the supervisors to approve the content of the instruments. On the other hand, a study has external validity if the findings generalize to other situations and subjects beyond those that were studied (Orodho, 2005). In this study, the researcher was interested with population validity. In the present study, the researcher ensured external validity by selecting a sample from which the generalizations was made and which was indeed representative of the population being generalized to. The population to which the study was based was the catering MES's in Nairobi County, Kenya.

4.3 Sample Characteristics

4.3.1: Response Rate

Of the sampled 384 firm owners, 280 managed to fill and give back the questionnaires thus yielding a response rate of 73.49%. According to Saunders *et al.*, (2009), 30%-50% for delivery and collection is acceptable in descriptive research. This information is presented in Table 4.1.

Table 4.1: Questionnaire Return Rate

Subgroups	Questionnaire issued	%	Questionnaire returned	%
Medium Restaurant with bar/Membership club	43	11	27	9.6
Small Restaurant with bar/Membership club	46	12	32	11.4
Mega eating house, Snack Bar, Tea House “Hotel”	23	6	22	7.9
Medium eating House, Snack Bar Tea House “Hotel”	50	13	32	11.4
Small eating House, Snack bar, Tea House	195	51	143	51.1
Other Catering and Accommodation	27	7	24	8.6
Total	384	100	280	100

The study was conducted from six strata in which Small Eating House, Snack bar, Tea House had the largest representation (n=51, 51.1%) in the study. It can also be depicted that questionnaires from Mega eating house, Snack Bar, Tea House “Hotel” had the largest return rate (7.9%) as compared to the expected 6% while those from Medium Eating Houses, Snack Bar Tea House “Hotel” had the lowest return rate (11.4%) as compared to the expected (13%). The overall return rate was 73.49%.

The response for this study was thus considered adequate for data analysis to proceed. This was consistent with researchers among them Babbie (1990) who observed that in descriptive research, a response rate of above 50% is adequate for analysis. In addition to the responses from firm owners, key informant interviews were conducted. The response rate from the key informants was also encouraging. The importance of

responses from key informants was the in-depth understanding of the topic under consideration.

4.3.2: Gender of Respondents

In order to gather contextual information from the firm owners who were selected for the current study, data concerning gender, age, level of education and length of service were collected. Descriptive statistics on this gender information are presented in Table 4.2.

Table 4.2: Gender of Respondents Study Sample

Gender	Frequency	Percent
Male	157	56.1
Female	123	43.9
Total	280	100.0

Gender information indicates that there were more male owners (n=157, 56.1%) than there were females (n=123, 43.9) of micro and small catering enterprises. This indicates that female participation in micro and small catering enterprises is lower than that of males despite their important contributions to the Country's economy.

Descriptive results as presented in Figure 4.1 indicate that the current age of firm owners ranged from 18 years to 50 years with a mean of 35.1 (STD=1.716). It can be noted from the Table that firm owners with 31-40 years of age were the majority (n=134, 47.9%) followed by 18-30 years of age (n=76, 27.1%).

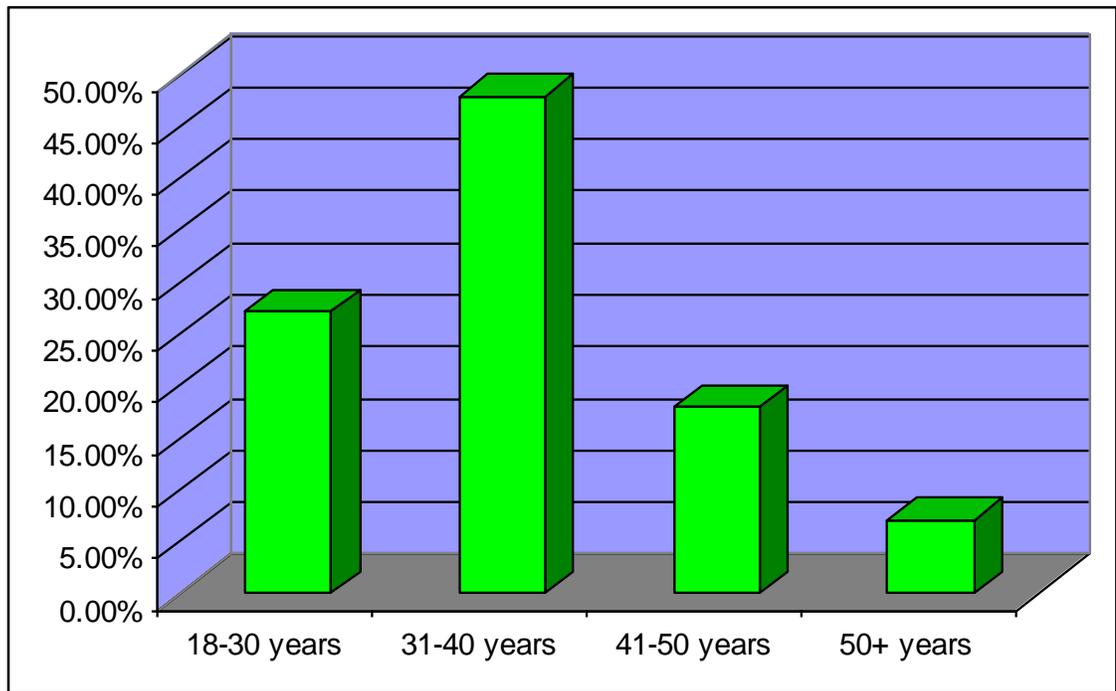


Figure 4.1: Age in Years of Firm Owners

Firm owners with age bracket between 41-50 years were represented by 17.9% of respondents. Only 20 firm owners (7.1%) were above 50 years. The findings suggest that age is a factor in the ownership of micro and small catering enterprises with medium aged firm owners showing keen interests. In addition, comparison in the means of ages of both females and males owners using one way ANOVA did not show significant results at .05 levels ($F=2.038, d=1, p=.155$). These results show that any gender may engage in micro and small catering enterprises at equal chances and at any age.

One of the indicators of survival of any business is the duration of existence. The study thus asked the firm owners to indicate the length of service and operation of their firms in Nairobi County. Results of the findings are presented in Table 4.3.

Table 4.3: Length of Service of Firm Owners

Length of Service	Frequency	Percent
1-4 years	113	40.4
5-10 years	91	32.5
10+ years	76	27.1
Total	280	100.0

Results presented in Table 4.3 show that majority of businesses (n=113, 40.45%) had operated between 1-4 years. Those that operated in duration of between 5 and 10 years were 91 respondents (32.5 %). Only 76(27.1%) had operated for over ten years. This implies that most of the micro and small business owners were not new entrants and had been in business for between one and ten years.

Regarding the level of education, majority of firm owners (n=84, 30.0%) had attained a diploma level of education. This level was followed by owners with university education having a bachelor's degree (n=78, 27.9%). The owners with masters degree was (n=9, 3.2%) and owners with primary level of education were also few (n=37, n=13.2). This information is presented in Figure 4.2

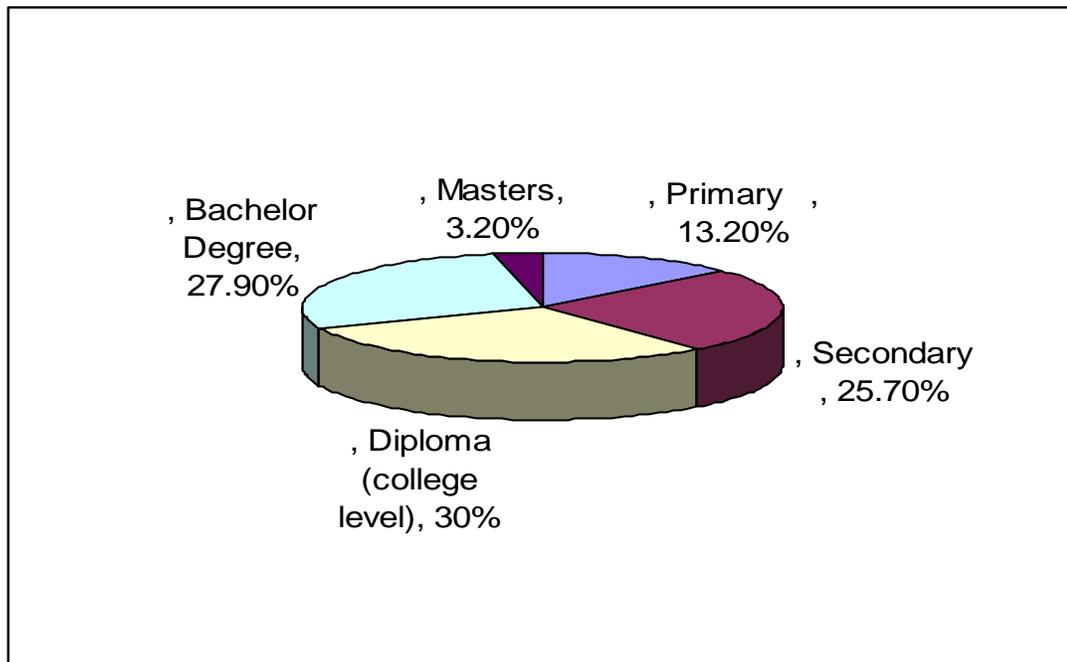


Figure 4.2: level of Education of Firm Owners

Chi-square test of independent between gender and level of education did not reveal any significant results ($\chi^2=.745$, $d=4$, $p=.946$). These results imply that firm owners spread proportionally across gender and levels of education. Both females and males achieved equivalent levels of education.

4.3.3: Form of Business and Business Type Cross Tabulation

As part of the sample characteristics, the sample size was distributed between the two types of micro and small catering enterprises and forms of business. A cross tabulation between micro and small catering enterprises and forms of business is shown in Table 4.4.

Table 4.4: Form of Business and Business Type Cross Tabulation

	Business Type		Total
	Micro	Small	
	Enterprises	Enterprises	
Form of Business			
Medium Restaurant with bar/Membership club	7 (2.5%)	20(7.14%)	27(9.64)
Small Restaurant with bar/Membership club	32(11.43%)	0(0%)	32(11.4%)
Mega eating house, Snack Bar, Tea House “Hotel”	1(0.36%)	21(7.5%)	22(7.8%)
Medium eating House, Snack Bar Tea House “Hotel”	22(7.85%)	10(3.57%)	32(11.4%)
Small eating House, Snack bar, Tea House	141(50.36%)	2(0.71%)	143(51.1%)
Other Catering and Accommodation	24(8.57%)	0(0%)	24(8.57%)
Total	227(81.1%)	53(18.9%)	280(100%)

Of the 280 respondents, Medium Restaurant with bar/Membership club comprised of 27 MSEs; seven micro and 20 small enterprises. Small Restaurant with bar/Membership club had 32 MSEs; all micro enterprises. Mega eating house, Snack Bar, Tea House “Hotel” comprised of one micro and 21 small enterprise while Medium eating House, Snack Bar Tea House “Hotel” consisted of 22 micro and 10 small enterprises. Finally, Small Eating House, Snack bar, Tea House comprised of 141 micro and two small enterprises.

Chi-square test of independence between business type and forms of business shows a significant association at $p=0.05$ level of significance between the variables ($\chi^2=182.339$, $DF=5$, $p=.000$). This shows that there were disproportionately more firms in micro enterprises than in small enterprises. However, this seems to be more in Small eating House, Snack bar and Tea House than any other form of business. From Table 4.4, it can be noted that out of 227 micro enterprises , 141 (50.36%) were from Small eating House, Snack bar and Tea House and only one(0.36%) were from Mega eating house, Snack Bar, Tea House “Hotel. It can also be seen that there were only a total of 53(18.9%) small enterprises in the selected sample. The findings imply that majority of catering firm owners preferred micro enterprises partly because it was easier to operate given the small initial capital involved.

4.3.4 Capital Base of Micro and Small Catering Enterprises

The characteristic of micro and small catering enterprises was further captured by use of capital base. Information presented in Table 4.7 shows that majority of MSEs ($n=242$, 86.4%) that were selected for the current study operated under a capital base of equal or less than Kshs500000.

Table 4.5: Form of Business and Capital Base Cross Tabulation

Form of Business	Capital Base(kshs)			Total
	<= 500000	500001-1500000	>1500000	
Medium Restaurant with bar/Membership club	11	16	0	27
Small Restaurant with bar/Membership club	32	0	0	32
Mega eating house, Snack Bar, Tea House “Hotel”	1	15	6	22
Medium eating House, Snack Bar Tea House “Hotel”	32	0	0	32
Small eating House, Snack bar, Tea House	142	0	1	143
Other Catering and Accommodation	24	0	0	24
Total	242	31	7	280

Of the 280 respondents, 31 (11.1%) of MSEs operated on a capital base that ranged between Kshs 500001-1500000 and only 2.5% (n=7) of MSEs had a capital greater than Ksh1500000. The study also noted that those MSEs in the Kshs \leq 500000 were in the micro enterprises. Chi-square test of independence between capital base and the types of business indicated significant results at p=0.05 level ($\chi^2=233.953$, p=.000). The results in Table 4:5 show that the types of enterprises were unevenly distributed depending on the capital base of businesses.

4.4 Descriptive Statistics

The general objective of this study was to find out the influence of technology transfer on the growth of micro and small catering enterprises in Nairobi County. The study analyzed descriptive statistics involving the following variables: production Skills Technology transfer, Equipment/ Object Technology transfer, knowledge embodied Technology transfer, Process embodied Technology transfer, Size growth, Age growth, turnover growth, projected margin profits, output rates, quality and customer base of the enterprise.

4.4.1 Production Skills Technology Transfer And Growth of Micro and Small Catering Enterprises

This section attempts to establish the relationship between technology transfer and production skills and its possible influence on the growth of micro and small catering enterprises.

First, the questionnaires utilized with firm owners attempted to find out the role of technology transfer on production skills and growth of micro and small catering enterprises

4.4.1.1 The Role of Technology Transfer of Production Skills and Growth of Micro and Small Catering Enterprises

The firm owners were asked to indicate whether or not technology transfer had any effect on production skills in micro and small catering enterprises, where yes was assigned a score of 1 and no was given 0 score. Respondents were asked to indicate their agreement based on their opinion by ticking (√) one cell for each statement provided in the dichotomous-scale statements in Table 4.6, which also indicates the findings of the study based on each statement. The results were collected and presented in Table 4.6.

Table4.6: The Role of Technology Transfer on Production Skills

Statements	Frequencies (%) N=280	
	Yes	No
Organization uses trained personnel	86.8	13.2
Food is produced and served on time	85.7	14.3
Food and production costs are reduced	85.7	14.3
Food production and service is fast	87.1	12.9
Enhances efficiency in operations	86.4	13.6
Increased customer satisfaction	86.8	13.2
Enhanced service quality	86.1	13.9
Improved overall performance of organization	86.8	13.2
Enabled workers increase output	86.4	13.6
Enabled organization grow in terms of profit	81.4	18.6
Enabled organization grow in terms of size	81.1	18.9
Enabled organization grow in terms of customers	86.8	13.2
Played role in production volume of organization	71.1	28.9
Average	84.5	15.5

On average, ‘Yes’ responses that technology transfer influences production skills and that organizations in micro and small catering enterprises uses trained personnel, food is produced and serviced on time, food and production costs are reduced, food production and service is as a result fast, efficiency in operation is enhanced, increase in customer satisfaction, quality service is enhanced ,improved overall performance of enterprises, workers increases output, the enterprises grow in terms of profit, size ,customers and

also production volume accounted for 84.5% of all responses. The results imply that technology transfer enhances production skills among the owners and employees in micro and small catering enterprises. Further, Chi-square test of independence between technology transfer of production skills and gender of firm owners did not reveal any significance association at .05 level ($\chi^2=7.094$, DF=8, $p=.527$). There was no significant difference between the use of technology transfer of production skills between males and females in micro and small catering enterprises. According to the resource based firm theory of Ghoshal *et al.*, (2002), the firm comprises of differentiated technological skills, complementary assets and organizational routines and capacities.

4.4.1.2 Number of Trained Employees in Micro And Small Catering Enterprises

As a means of measuring the degree of adoption of technology transfer of production skills, the research instruments sought to find out the number of trained employees who had acquired different levels of education in micro and small catering enterprises. The mean of the number of degrees, diplomas and certificates have been presented in Table 4.7. One-way ANOVA of the mean of number of trained employees with primary level of education (certificates) among the various forms of business did not indicate any significant results at .05 level ($F=1.399$, DF=5, $p=.225$). Owners with primary level of education were proportionally distributed across the various forms of business. Similarly, variations in the owners with diploma across the forms of business were not also significant at .05 level ($F=2.16$, DF=5, $p=.059$). Owners with diploma awards were likely to be well distributed across all the forms of businesses. However, one-way ANOVA on business owners with bachelor degrees level shows significant results at .05 with forms of business ($F=2.698$, DF=5, $p=.021$). Business owners from Mega eating house, Snack Bar and Tea House “Hotel” were likely to be more educated or to employ workers with bachelor’s degree than any other form of business.

Table 4.7: Number of Trained Employees in micro and small catering enterprises

	Mean of Trained Employees					
	Certificate		Diploma		Degree	
	Mean	STD	Mean	STD	Mean	STD
Forms of business						
Medium Restaurant with bar/Membership club	10	10	9	6	6	6
Small Restaurant with bar/Membership club	7	4	5	4	1	2
Mega eating house, Snack Bar, Tea House “Hotel”	8	5	7	6	7	5
Medium eating House, Snack Bar Tea House “Hotel”	6	6	6	6	4	3
Small eating House, Snack bar, Tea House	7	6	6	5	5	3
Other Catering and Accommodation	7	5	7	6	3	4
Average	7.5	6	6.7	5.5	3.7	3.3

Further, Table 4.7 shows that majority of employees in micro and small catering enterprises had attained primary level of education with an average of 7.5(STD=6). However, these cadres of employees were evenly distributed among the forms of business as revealed by the standard deviations. Those employees with college education were also evenly distributed (M=6.7, STD=5.5). The least number of employees in micro and small catering enterprises had attained bachelor degree level of education

with an average of 3.7(STD=3). The interest of education among employees in micro and small catering enterprises underscores the importance of new knowledge which is an essential factor in production. Employees with the pre-requisite skills override those without in marginal productivity.

4.4.1.3 Change of Production Techniques in Growth of Micro and Small Catering Enterprises

The importance of technology transfer in production skills was further highlighted through enquiry on whether production techniques changed after acquiring new knowledge and skills. The business owners were asked to state whether or not production techniques had changed after the introduction of new production skills through technology transfer. This information is presented in Table 4.8.

Table 4.8: Change of Production Techniques In Micro and Small Catering Enterprises

Forms of Business	Changes in Production Techniques		Total
	No	Yes	
Medium Restaurant with bar/Membership club	3	24	27
Small Restaurant with bar/Membership club	10	22	32
Mega eating house, Snack Bar, Tea House “Hotel”	4	18	22
Medium eating House, Snack Bar Tea House “Hotel”	7	25	32
Small eating House, Snack bar, Tea House	32	111	143
Other Catering and Accommodation	8	16	24
Total	64	216	280

The majority of business owners (n=216, 77.1%) said that the introduction of technology transfer in terms of production skills has led to notable change of techniques of production. Chi-square test of independence did not reveal any significant association between the variables under consideration at .05 level ($\chi^2=5.194$ DF=5, p=.393). All business owners across the forms of business had similar feelings concerning changes in techniques as a result of technology transfer in micro and small catering enterprises.

4.4.1.4 Effect Of New Production Techniques in Growth of Micro and Small Catering Enterprises

Questionnaire utilized with owners of business sought information concerning whether or not the new production techniques had any positive effect on a given number of variables (see Table 4.9).

Table 4.9: Positive Effect of New Production Techniques in Micro and Small Enterprises

Positive effect of New production technique on :	Frequencies (%) N=280	
	Yes	No
Quality of food	80	20
Profits of the establishment	86.1	13.9
Number of customers served per day	86.8	13.2
Speed of production	85.4	14.6
Efficiency of the employees	85.0	15.0
Satisfaction of the employees	86.4	14.6
Rate of output per hour	88.2	11.8
Overall performance	87.5	12.5
Quality of service to customers	83.9	16.1
Average	85.5	14.5

On average majority of owners (n=238, 85.5%) who participated in the current study were of the opinion that the new production techniques had a positive effect on production. Specifically the new production technique had positive effect on the

following attributes: quality of food (80.0%), profits of the establishment (86.1%), number of customers served per day (86.8%), speed of production (85.4%), efficiency of the employees (85.0%), satisfaction of the employees (86.4%), rate of output per hour (88.2%), overall performance (87.5%) and quality of service to customers (83.9%).

4.3.2 The Role of Equipment /Object Technology Transfer on Growth of Micro and Small Catering Enterprises

Table 4.10: The Role of Equipment /Object Technology Transfer

Statements	Frequencies (%)	
	N=280	
	Yes	No
Acquired new modern equipment for operations	91.4	8.6
Equipment ensured food is produced and served on time	92.4	7.6
Equipment ensured production and service methods are fast	91.8	8.2
Equipment ensured food production and services is fast	92.5	7.5
Equipment enhanced efficiency in production/service methods	91.4	8.6
Equipment increased customer satisfaction	91.8	8.2
Equipment enhanced service quality	92.1	7.9
Equipment enhanced quality of food and drinks	92.5	7.5
Equipment improved overall performance	92.1	7.9
Equipment increased workers output	91.1	8.9
Equipment caused growth of output	89.6	8.4
Equipment enabled better production methods	89.3	10.7
Equipment has enabled growth in terms of customers/day	86.8	13.2
Average	91	9.0

One of the reasons firm owners adopted technology transfer through equipment was to ensure that food was produced and served on time in catering businesses (n=259,92.4%). Other roles of technology transfer in equipment and objects were as follows: equipment ensured production and service methods are fast (n=257, 91.8%), equipment ensured food production and services are fast (n=259, 92.5%), equipment enhanced efficiency in

production/service methods (n=255, 91.4%), equipment increased customer satisfaction (n=257, 91.8%), equipment enhanced service quality (n=257,92.1%), equipment enhanced quality of food and drinks(n=259,92.5%), equipment improved overall performance (n=259, 92.1%), equipment increased workers output (n=256, 91.1%), equipment caused growth of output (n=251, 89.6%), equipment enabled better production methods(n=250,89.3%) and equipment had enabled growth in terms of customers/day(n=243,86.8%). Chi-square test of independence did not reveal any statistical association at .05 level ($\chi^2=33.395$, DF=45, p=.899). The results imply that the role of new equipment was not significantly influenced by the forms of businesses in micro and small catering enterprises.

4.4.2.1 Effect of New Production Equipment in Micro and Small Catering Enterprises

The effect of the new production equipment was measured through dichotomous type questions where respondents were asked to indicate whether or not new production equipment had any positive effect on a number of attributes as shown in Table 4.11. On average, 91.5% of respondents stated that the new production equipment had a positive effect on production techniques in micro and small catering enterprises. Only 8.5% of business owners had divergent views.

The majority of respondents (89.6%) said that the new equipment were useful in enhancing the quality of products. Accordingly, a majority of respondents also stated that new production equipment had a positive effect on the following ways: the new equipment were essential for improving the quality of services to customers (92.9%),

increasing profit margin (92.4%), and increasing customers per day (90.9%). This information is presented in Table 4.11.

Table 4.11: Positive Effect of New Production Equipment

positive effect of New production technique on :	Frequencies (%) N=280	
	Yes	No
Quality of products	89.6	10.4
Quality of service to customers	92.9	7.1
Profit establishment	92.4	7.6
Customers per day	90.9	9.1
Speed of production	89.4	10.6
Efficiency of employees	93.2	6.8
Satisfaction of employees	91.9	8.1
Rate of output per hour	92.9	7.1
Overall performance	90.2	9.8
Average	91.5	8.5

Other positive effects of new production equipment that were included in the study were: increasing speed of production (89.4%), enhancing efficiency of employees (93.2%), improving satisfaction of employees (91.9%), increasing the rate of output per hour (92.9%) and improving overall performance (90.2%).

The respondents who were interviewed supported the above views and in addition noted that paradigm shift from the old to modern and new equipment added new blood to an ailing sector which is affected by poor quality goods and services and also stiff competitions among the business players. Chi-square test of independence between forms of business and effects of new equipment was significant at .05 levels ($\chi^2=30.103$, DF=40, p=.025).The results show that small enterprises may have adopted better equipment than micro enterprises and this may have had better and positive effects on production in catering. These results are supported by Rodgers (2003) who further noted that the application of technological cooking equipment and preparation techniques tremendously increased the food production. According to him, catering establishments have moved from the old methods of production to faster and efficient processes where new technology have been used by professionals

4.4.3 The Role of Knowledge Embodied Technology Transfer and Growth of Micro And Small Catering Enterprises

One of the variables that influence the growth of micro and small catering enterprises is the technology transfer of knowledge. This view was supported by a majority of respondents (81.5%) who indicated that technology transfer of knowledge has had a role to play in production in micro and small catering enterprises(see Table 4.12). The new knowledge gained by participating micro and small catering enterprises was measured by academic level achieved by firm owners and employees.

Table 4.12: The Role of Knowledge Embodied Technology Transfer

Statements	Frequencies	
	(%) N=280	
	Yes	No
Academic level is a major factor for employment in the enterprise	71.4	28.6
Academic level ensures food production and service methods are standard	82.5	17.5
Academic level ensures food production and service is fast	80.4	19.6
Academic level enhances efficiency in production and service methods	82.1	17.9
Academic level increased customer satisfaction	81.1	18.9
Knowledge enhanced service quality	82.1	17.9
Academic level enhanced quality products	83.1	16.9
Academic level improved overall performance of organization	81.8	18.2
Academic level enabled workers increase output	80.7	19.3
Academic level has led to growth of output	81.1	18.9
Academic level has led better production methods	82.9	17.1
Academic level enabled organization grow in terms of customers	82.1	17.9
Academic level played role in growth of organization	78.6	11.4
Average	81.5	18.5

Majority of respondents (82.5%) felt that high academic level ensures food production and service methods are standard, ensures food production and service is fast(80.4%), enhances efficiency in production and service methods(82.1%) , increases customer satisfaction (81.1%), service quality (82.1%) and quality of products (83.1%). In

addition, academic level improves overall performance of organization (81.8%), increases output of workers (80.7%), enhances growth (81.1%), improves production methods and it increases the number of customers (82.1%)

These dynamic processes of creating, combining and sharing information are a key to generate new knowledge (Bathelt, *et al.*, 2003). These findings are also consistent with Cohen and Levinthal (2004) who argue that the capacity to make use of external knowledge is a function of the level of prior related knowledge.

4.4.3.1 Effect of Knowledge Embodied Technology Transfer and Micro And Small Catering Enterprises

As noted earlier in a section of this study, interviewees who contributed in giving information noted that majority of micro and small catering enterprises had embraced the importance of investing in education as part of enhancing growth. Participants using a questionnaire were asked to say yes or no that academic level of employee had any effect on some growth indicators (see Table 4.13). On average, of the total number of respondents selected for the current study (n=280), 82.5% agreed that academic level of employees had some positive effects on growth variables.

Table 4.13: Positive effect of academic level of employees

Positive Effect of Academic Level of Employees on :	Frequencies (%) N=280	
	Yes	No
Quality of products	84.6	15.4
Quality of service to customers	83.6	6.4
Profit establishment	82.5	17.5
Customers per day	81.8	18.2
Speed of production	82.1	17.9
Efficiency of employees	83.2	16.8
Satisfaction of employees	82.1	17.9
Rate of output per hour	83.6	16.4
Overall performance	79.3	10.7
Average	82.5	17.5

Majority of firm owners (71.4%) felt that employment opportunities largely depended on the level of academic achievement in micro and small catering enterprises. One of the key informants said that employees with higher academic achievement have a higher chance of being employed than employees with lower levels of academic achievement. Chi-square test of independence between gender and academic achievement was insignificant at .05 level ($\chi^2=36.25$, DF=1, p=.056). The results show that gender was not a factor for one to secure employment in micro and small catering enterprises.

One of the positive effects of academic level of employees is its role in enhancing quality of products as stated by 84.6% of respondents. This view was shared by one of the key informants who said that with new knowledge, firm owners are able to adopt

varying methods aimed at improving quality of goods and services. Academic level of education was also noted to enhance the quality of service to customers (83.6%), increased profit establishment (82.5%), increased customers per day (81.8%), improved efficiency of employees (83.2%), and enhances satisfaction of employees (82.1%) and the overall performance of the firm (79.3%). There are several ways to increase the knowledge and competence, e.g. education, recruitment, through consultants and e-learning (Cornia, 2002). According to Foray (2004), knowledge is absorbed by another person or a group than the inventor, is used in new dimensions and this stimulates economic growth.

4.4.4 The Role of Process Embodied Technology Transfer and Growth of Micro And Small Catering Enterprises

The study sought to establish the role of process technology transfer and its influence on the growth of micro and small catering enterprises. The role of process embodied technology transfer was measured using dichotomous type questions where participants were asked to state whether or not introduction of new methods could influence the growth of micro and small catering enterprises.

As presented in Table 4.14, majority of firm owners (84.6%) stated that they had adopted new and standardized production processes in an attempt to enhance production and service operations in their businesses.

Table 4.14: The Role of Process Embodied Technology Transfer

Responses	Frequencies (%)	
	N=280	
	Yes	No
Standardized production processes ensures food is produced and served on time	84.6	15.4
Standardized production processes ensures food production and service methods are standard	83.1	16.9
Standardized production ensures processes food production and service is fast	83.9	16.1
Standardized production processes enhances efficiency in production and service methods	84.3	15.7
Standardized production processes increased customer satisfaction	85.0	15.0
Standardized production processes enhanced quality of services	84.6	15.4
Standardized production enhanced quality of products	83.6	16.4
Standardized production processes enhanced overall performance	83.2	16.8
Standardized production processes increased workers output	83.9	16.1
Standardized production processes enabled organization grow in terms of output	81.9	16.1
Standardized production processes enabled organization grow size	83.5	16.1
Average	83.2	16.8

Moreover, applications of standard production processes are essential in enhancing food production and services (n=234, 83.1%). In addition, a majority of firm owners (83.9%)

felt that adoption of new production processes is needed to speed up food production and services. The participants also stated other benefits of adopting the new production processes such as enhancing efficiency in production and service methods (84.3%), enhancement of customer satisfaction (85.0%), enhanced quality services (84.6%), enhanced quality products (83.6%), enhanced overall performance (83.2%), increased workers output (83.9%) and organizations grow in terms of size (83.5%).

The above findings have been supported Katz (1974) who argued that technology transfer has enabled for processes to be simplified with the objective of making work easier through elimination of unnecessary movement, combination of two operations into one or improvement of methods. An informal discussion with one of the key informants gives an example in the peeling of potatoes where a blunt traditional knife is substituted with a potato peeler which is simple and safe to use. A second example is where catering outlets that use the traditional method in preparation and cooking of French fries. The process is long and tiring as compared to where modern technology in form of electric deep fat fryers and vegetable slicers are used.

4.4.4.1 Effect of Experienced and Well Trained Employees on Production Processes

An informal discussion with one of the key informants revealed that well trained employees in micro and small catering enterprises changes have taken place from the old methods of production to faster, new and modern methods with higher production outputs that can serve a wider market. In addition, questionnaires utilized with firm owners endeavored to find out whether there is any positive effect of experienced and trained employees on enhancement of production processes. On average, majority of

firm owners (84.2%) believed that trained employees enhances production processes in micro and small catering enterprises. This information is presented in Table 4.15.

Table4.15: Positive Effect of Experienced and Well Trained Employees on Production Processes

Statements	Frequencies (%) N=280	
	Yes	No
Methods of production improves	84.6	15.4
Enhances Better and faster processes	83.9	16.1
Adopts Processes that are fast and simple	82.6	16.1
Number of customers serviced per day increases	84.6	15.4
Speed of production is enhanced	84.3	15.8
Efficiency of enterprises improves	83.8	16.2
Satisfaction of the employees is enhanced	84.6	15.4
Rate of output per hour increases	84.5	15.5
Overall performance is enhanced	83.9	16.1
Average	84.2	15.8

The results presented in Table 4.15 show that experienced and well trained employees have had positive effects in enhancing production processes in micro and small catering enterprises. Some of the positive effects are that use of experienced and well trained employees have improved methods of production (84.6%), enhances better and faster processes (83.9%), assumes processes that are fast and simple (82,5%), new processes increases the number of customers per day (84.6%), the speed of production is enhanced

(84.3%), enhancement of firms efficiency (83.8%), enhances satisfaction of the employees (84.6%) ,rate of output per hour increases and overall performance is enhanced (83.9%).

4.4.5 The Role of Production Skills, Knowledge and Process Embodied Technology Transfer And Growth of Micro and Small Catering Enterprises

The questionnaire contained a dichotomous scale which consisted of two statements with yes scoring 1 and no scoring 0. The respondents were instructed to circle the number which best represented his/her feeling about each statement in the scale. Of interest was to seek responses in support or not to the hypothesis that micro and small catering enterprises have grown in terms of size, turnover, profit margin, product output and customer due the constructs presented in Table 4.16. Majority of firm owners (83.6%) indicated that micro and small catering enterprises have experienced growth due to the employment of well skilled and experienced staff.

The purchase of modern equipment was also identified by 87.9% of respondents as being important in the growth of micro and small catering enterprises. As can be seen in the Table, technology transfer of knowledge through engaging in professionally trained employees enhances growth in micro and small catering enterprises. This view was supported by 67.9% of respondents.

Table 4.15: Views of Firm Owners on the Role of Production Skills, Knowledge and Process Embodied Technology Transfer on Growth of micro and small catering enterprises

Growth of Micro and Small Enterprises Depends on the following Variables	Frequencies (%) N=280	
	Yes	No
Employment of well skilled and experienced staff	83.6	16.4
Purchase of modern equipment	87.9	12.1
Professionally trained employees	67.9	33.1
Introduction of standard processes	68.6	32.4
Speed at which customers are served	87.9	12.1
Quality of food in the enterprise	92.5	7.5
Low employee turnover	82.4	17.6
Average	81.4	18.6

A summary of the responses in Table 4.16 reveals that growth is also dependent on other variables: introduction of standard processes (68.6%), the speed at which customers are served (87.9%), enhancement of quality of food in the enterprise (92.5%) and low employee turnover (82.4%).

4.4.6 Measurement and Model for Firm growth In Micro And Small Catering Enterprises

4.4.6.1 Age of Existence of Micro And Small Catering Enterprise

One method of describing the growth of enterprises is the measure of its duration of survival. In this study, period of survival was measured in terms of number of years that a firm had existed since its inception. This study sought to determine the period over which the firm had been in operation and to establish whether the period of operation

was a determinant in the growth level of firms. This information is presented in Table 4.17.

Table 4.17: Period of Operating Micro and Small Enterprises

Age of Firm	Frequency	Percent
1-5	114	40.7
6-10	74	26.4
11-15	52	18.6
16-20	35	12.5
21-30	4	1.4
31-40	1	.4
Total	280	100.0

The results presented in Table 4:17show that majority of firm owners (n=114, 40.7%) stated that their firms had been in operation for a period of between one and five years. Majority of the firms in this category are those in Small eating House, Snack bar and Tea House. In summary, it can be seen from the Table that majority of micro and small catering enterprises (n=166, 59.3%) had been in existence for more than five years. These findings indicate that majority of the MSEs had operated for an adequate period of time, an indicator of growth.

Further analysis was conducted using Pearson’s Chi-square to establish whether the period of operation of micro and small catering enterprise was a determinant in the overall growth of these firms. The chi-square test between duration of operation and forms of business shows significant relation at .05 levels ($\chi^2=61.199$, DF=25, p=.000).

Results show that there was a significant difference between the findings from MSEs that had operated for varying category of ages. This means that MSEs that had operated for a longer length of time had a higher chance of survival and consequently achieved higher magnitude of growth.

4.4.6.2 Additional Branches Operated

Respondents were asked to state the number of extra branches they had established as an extension of the mother enterprise. The results are presented in Table 4.18.

Table 4.18: Additional Branches of Operated

Responses	Frequency	Percent
0-3	238	85.0
4-6	25	8.9
7-10	17	6.1
Total	280	100.0

The findings show that majority of respondents (n=238, 85%) had established more businesses that were between zero and three. The least proportion of respondents (n=17, 6.1%) had operated the highest number of extra new businesses in the range of between seven and 10. Results show that majority of those firms with businesses in the range 0-3 were from Small eating House, Snack bar, Tea House (n=119). These results imply that although firms in micro and small catering enterprises have exhibited opportunities of growth, the growth is slow in firms with meager capital like those found in Small eating House, Snack bar, Tea House.

4.4.6.3 Comparison Between The Number of Employees at The Beginning of Businesses and Currently

As indicated in other sections of this study, one indicator of growth is the number of employees engaged in a firm, either on permanent or on part time terms/basis. As presented in Table 4.19, on average there has been a tremendous increase in the number of employees in micro and small catering enterprises from the initial mean of 8.14 (STD=6.06) to the current mean of 23.71(STD=18.78),an increase of 230%. The impact of technology transfer on the growth of micro and small catering enterprises is greatly felt in the category of ‘Other Catering and Accommodation’ hotels with an increase of 376%. However, all other forms of businesses recorded impressive growth in the number of employees (see Table 4.19).

Table 4.19: Comparison between the Numbers of Employees

Responses	Employees		Employees	
	At the beginning		currently	
Forms of business	Mean	STD	Mean	STD
Medium Restaurant with bar/Membership club	12.81	7.626	33.44	45.989
Small Restaurant with bar/Membership club	9.81	5.897	22.72	9.864
Mega eating house, Snack Bar, Tea House “Hotel”	12.14	11.942	23.64	13.988
Medium eating House, Snack Bar Tea House “Hotel”	6.25	4.642	23.64	13.988
Small eating House, Snack bar, Tea House	6.43	4.368	17.80	13.631
Other Catering and Accommodation	4.42	3.623	21.04	15.270
Average	8.14	6.06	23.71	18.78

The results presented in Table 4.19 show that the number of employees in Medium Restaurant with bar/Membership club moved from an initial mean of 12.81(STD=7.626) to a current mean of 33.44(STD=45.989) ,an increase of 161%. All other forms of business indicated progressive increases: Small Restaurant with bar/Membership club (131.6%), Mega eating house, Snack Bar, Tea House “Hotel” (94.7%), Medium eating House, Snack Bar Tea House “Hotel”(278%) and Small eating House, Snack bar, Tea House (176.8%).

One way ANOVA between forms of businesses and number of employees at the beginning shows significant variations at .05 levels ($F=3.164$, $DF=5$, $p=.009$). Results also show significant results between forms of businesses and number of employees currently at .05 levels ($F=3.432$, $DF=5$, $p=.005$). These results reveal variations in the number of employees across the forms of business. Although growth is recorded across all the businesses, this growth differs significantly from one form of business to another.

4.4.6.4 Comparisons in Number of Initial and Current Customers

Another measure of growth is the number of customers served in micro and small catering enterprises. The questionnaires utilized with firm owners sought to gather data concerning the number of customers who were normally served in catering businesses during the period of study. The initial number of customers as per the time the business started was compared to the current period. The difference between the two numbers was used to establish a relationship of decreasing or increasing trend and a conclusion was drawn based on these results. As indicated in Table 4.20, the mean number of customers increased from initial 73.24($STD=60.16$) to a mean of 242.04($STD=169.48$), an increase of 339%.

Table 4.20: Comparisons in the Number of Initial and Current Customers

Forms of business	Initial customers		Current customers	
	Mean	STD	Mean	STD
Medium Restaurant with bar/Membership club	75.96	52.36	262.78	171.49
Small Restaurant with bar/Membership club	57.63	39.51	194.72	87.061
Mega eating house, Snack Bar, Tea House “Hotel”	79.09	73.42	338.23	165.80
Medium eating House, Snack Bar Tea House “Hotel”	91.69	68.20	227.59	130.94
Small eating House, Snack bar, Tea House	57.19	48.08	211.89	273.33
Other Catering and Accommodation	77.92	79.39	217.04	188.29
Average	73.24	60.16	242.04	169.48

The results presented in Table 4.20 show that growth as measured by the number of customers served has been recorded across the varying forms of micro and small catering enterprises. For instance, Medium Restaurant with bar/Membership club recorded an increase of customers from a mean of 75.96 (STD=52.36) to a mean of 262.78 (STD=171.49). However, all other forms of business also increased in the mean number of customers served as indicated in Table 4.20.

4.4.6.5 Comparison of Startup Capital with Net Profits for Five Years in Micro and Small Catering Enterprises

To find out whether micro and small catering enterprises were growing in terms of profit margin, a comparison was made between the initial capital of businesses and their perceived profits for a period of five years. More specifically, business owners were asked to indicate the startup capital of their businesses and how much profit they received in the succeeding years for a continuous period of five years. Information on the averages of initial capital and net profits was sourced from financial records of the MSEs and used for comparisons. One way analysis of variance of startup capital of the enterprises among forms of business indicates significant results at .05 level ($F=111.967$, $DF=5$, $p=.000$). The results show that there was significant difference in startup capital for the various forms of businesses. For instance, Mega eating house, Snack Bar, Tea House “Hotel” exhibited a higher mean on startup capital ($M=1329000$, $STD=1145000$) than mean score of Small Eating House, Snack bar, Tea House ($M=105000$, $STD=45000$).

Table 4.21: Startup Capital and Net Profits in micro and small catering enterprises

Forms of business	Initial Capital('000)	Profits('000)				
		Year	Year	Year	Year	Year
		1	2	3	4	5
Medium Restaurant with bar/Membership club	488	930	693	788	862	959
Small Restaurant with bar/Membership club	137	153	169	218	237	318
Mega eating house, Snack Bar, Tea House "Hotel"	1329	908	1080	142	158	1716
Medium eating House, Snack Bar Tea House "Hotel"	244	354	392	480	566	596
Small eating House, Snack bar, Tea House	105	186	213	240	296	353
Other Catering and Accommodation	20	179	196	244	242	297
Average	387	452	457	565	632	706

Results presented in Table 4.21 show that the mean for all the net profit in each form of enterprise increased substantially for the successive five years under study. When this profit is compared with the startup capital in each category of business, it was revealed that micro and small catering enterprises had experienced noticeable growth in terms of profit. However, the magnitude of growth differed significantly among the forms of business under considerations at .05 levels ($F=30.855$, $DF=5$, $p=.000$).

Results show that those businesses that invested higher in startup capital also earned more in terms of net profits. Growth of micro and small catering enterprises could partly be attributed to the huge investment in technology transfer in terms of new production skills, modern equipment, new knowledge and new production processes among the forms of micro and small catering enterprises.

4.5 Correlation Analysis for the Linear Relationship between Technology Transfer Variables and the Growth of micro and small catering enterprises

When using binomial logistic regression, part of the process involves checking whether there exists a linear relationship between any independent variables (Technology transfer variables) indicators and the logit transformation of the dependent variable (Growth levels) of Firms (Tidwell, 1962).

In this study, correlation analysis was used to establish the degree of relationship between two variables with the Pearson correlation coefficient (r), which yields a statistic that ranges from -1 to 1. The correlation coefficient assumes that there is a linear relationship between two variables. One of the variables is the independent and the other the dependent variable. The independent variables of the current study are technology transfer of production skills, equipment /objects, knowledge and processes. The dependent variable was growth which was measured by profit margin, increase in customers and employees which enhanced quality of products and services, increased output and increase in firm size.

Results of correlation analysis between technology transfer factors and growth variables show positive and significant results. Table 4.22 shows this information.

Table 4.22: Correlation Analysis Relationship between Technology Transfer Variables and the Growth of micro and small catering enterprises in Nairobi County, Kenya.

		Growth	Productions Skills	Equipments/ Objects	Knowledge	Processes
Growth	Pearson Correlation	1				
	Sig.					
Productions skills	Pearson Correlation	.692	1			
	Sig.	.000				
Equipments	Pearson Correlation	.749	.691**	1		
	Sig.	.000	.000			
Knowledge	Pearson Correlation	.757	.658**	.786**	1	
	Sig.	.000	.000	.000		
Processes	Pearson Correlation	.732	.650**	.636**	.668**	1
	Sig.	.000	.000	.000	.000	

For instance, correlation between technology transfer of production skills and growth ($r=.692$, $p=.000$) is positive and highly significant at .05 levels. This implies that an enhancement in technology transfer of production skills leads to an enlargement in firm size, improved quality of products and services, increased profit margin, increased number of employees and customer base in catering micro and small catering enterprise.

Similarly, correlation between technology transfer of equipment/objects and growth ($r=.749, p=.000$) show positive and highly significant at .05 levels. The results show evidence of the positive influence of technology transfer of equipment and objects on the growth of firms in terms of increased profit margin, increased number of employees and customers and enhanced quality of goods and services. Positive correlations between technology transfer of knowledge and growth variables ($r=.757, p=.000$) are also found at .05 significant levels. This implies that an increase in technology transfer of knowledge leads to some proportionate increase in growth levels (increase in profits, firm size, increased employee and customer base, increased output and enhanced quality. Results of correlation analyses between technology transfer of processes and growth variables are largely positive as presented in the Table ($r=.732, p=.000$). These findings indicate that enhanced processes due to technology transfer leads to increased growth of micro and small catering enterprises.

4.6 Technology Transfer of Production Skills and the Growth of Micro and Small Catering Enterprises in Nairobi County, Kenya

The first objective was to assess how technology transfers of production skills have influenced the growth of micro and small catering enterprises in Nairobi County, Kenya. The owners of micro and small enterprises in catering sectors were asked to indicate the role of production skills in technology transfer and how this influences the growth of catering enterprises in Kenya. The responses were measured on a dichotomous scale 'yes' and 'no' with yes= 1 and no= 0. Descriptive statistics were calculated earlier and the results are presented in Table 4.6.

4.6.1 Results of Factor analysis and Reliability Analysis

This sub-section highlights findings on factor analysis and reliability tests on technology transfers of production skills. The findings of the descriptive statistics were subjected to factor and reliability analysis. Factor analysis was used so as to decompose the information contained in the independent variables into information about an inherent set of latent components or factors. This operation was useful in collapsing or reducing the number of variables into fewer factors which are of similar characteristics.

4.6.2 Factor Analysis on Technology Transfers of Production Skills

To work out a factor analysis, three stages are essential: generation of correlation matrix variables, factors are extracted from the correlation matrix based on the correlation coefficients and finally, the factors are rotated in order to maximize the relationship between the variables and some of the factors. The study used twenty three items to evaluate technology transfers of production skills.

The overall Cronbach Coefficient ($\alpha = .968$) on the twenty three items showed internal consistency result and above the 60 percent cut off value for being acceptable. A factor analysis using extraction method: principle component and rotation Method: Varimax with Kaiser Normalization reduced the data through seeking underlying unobservable (latent) variables that are reflected in the observed variables. The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy was beyond the minimum value of .5 (KMO=0.72) indicating that the sample size was satisfactory for factor analysis to proceed.

The Bartlett's Test of Sphericity which is an indication of the strength of the relationship among variables was statistically significant at .001 level ($\chi^2=10121.423$, DF=123, p=0.000). Three components with Eigen values greater than one was extracted accounting for 83.47% of the total variance which is greater than the threshold of 50% i.e. the first three factors together account for 83.47% of the total variance. Items loading above .5 for every component were grouped to form three factors. The structure matrix of the three factors with their loadings as presented in Table 4.23.

Table 4.23: Production Skills process Total Variance Explained

Component	Initial Eigen values			Extraction sums of squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
							10.45		
1	15.69	68.25	68.25	15.69	68.25	68.25	3	45.44	45.44
2	2.438	10.6	78.85	2.438	10.61	78.85	7.66	33.3	78.75
3	1.061	4.614	83.47	1.061	4.614	83.47	1.086	4.722	83.47
4	0.922	4.008	87.48						

Extraction Method: Principal Component Analysis.

Three components factors with Eigen values >1.0 were extracted

The resultant three components were then re-named as Efficiency Enhancement (component 1), Organization Techniques (component 2) and Quality Service (component 3). The first production technology transfer factor named ‘efficiency enhancement’ comprises of growth enhancers such as customer and employee satisfaction. Component 1 comprised of twelve variables, namely, organization uses trained personnel, food is produced and serviced on time after training, food and production costs are reduced, food production and service is fast, enhanced efficiency in operation after training and increased customer satisfaction, training enhanced service quality and improved overall performance of organization, training enabled workers increase output and organization grow in terms of profit.

The average scores for Efficiency Enhancement factor level of acceptance were calculated (see the Table). The overall mean score is 10.2714 (SD=3.9228) with a majority of owners (n=246, 87.8%) scoring highly for efficiency enhancement. These results indicate that Efficiency Enhancement component is a key factor in increasing technology transfers and hence production skills. For instance, training of employees and use of new technological processes transfer knowledge on new methods of production resulting into better quality products in catering sector. These findings concur with Dedrick *et al.*, (2003) who said new methods of production include product and engineering capabilities. Reliability coefficient reveals that the items are strongly internally consistent with Cronbach coefficient ($\alpha = .986$). See Table 4.24.

Table 4.24: Production Skill Technology Transfer Rotated Component Matrix

Statements	Components		
	1	2	3
Organization uses trained personnel	.880	.362	.021
Food is produced and serviced on time	.884	.324	.002
Food and production costs are reduced	.885	.345	.005
Food production and service is fast	.886	.389	.016
Enhances efficiency in operation	.868	.373	.024
Increased customer satisfaction	.880	.377	.031
Enhanced service quality	.895	.355	-.009
Improved overall performance of organization	.906	.365	.012
Enabled workers increase output	.856	.358	.014
Enabled organization grow in terms of profit	.815	.236	.079
Enabled organization grow in terms of size	.756	.284	.087
Enabled organization grow in terms of customers	.906	.365	.012
Played role in production volume of organization	.031	.105	.957
Production techniques changed	.079	.330	.925
Quality of food	.197	.742	.325
Quality of service to customers	.313	.863	.121
Profits of establishment	.414	.853	-.067
Number of customers served per day	.413	.862	.016
Speed of production	.387	.879	-.035
Efficiency of the employees	.400	.831	-.076
Satisfaction of the employees	.478	.769	-.074
Rate of output per hour	.435	.794	.020
Overall performance	.418	.802	-.021
Reliability coefficient: Cronbach alpha(overall=.968)	.986	.946	.706

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 4 iterations.

The second production skills technology transfer factor named 'Organization Techniques' involved indicators that include the quality of service to customers as a result of training, training increases profits of establishment, number of customers served per day, training improves speed of production, training enhances efficiency of the employees and satisfaction of the employees, rate of output per hour for workers increases and use of trained personnel improves overall performance of the organization. The overall mean score for level of acceptance of Organization Techniques is 7.6929(SD=2.86718) with a majority of owners supporting the usefulness of Organization Techniques in the transfer of production skills (n=259, 92.5%). These results indicate that Organization Techniques are important ingredients in production skills technology transfer of small and micro enterprises. The reliability test with Cronbach coefficient supported high internal reliability ($\alpha=.946$). According to the resource based firm theory definition of Ghoshal *et al.*, (2002), the firm comprises of differentiated technological skills, complementary assets and organizational routines and capacities.

The final component of production skills technology transfer factor named 'Quality Service' was defined by two variables that involved the role played by transfer of technology in volume production of organization and production techniques changes arising from use of technological transfer in Micro and Small Enterprises. The calculated mean score of the two items is 1.4821(STD=.63334, n=252, 90%). These findings show that Quality Service greatly defines the role played by technology transfer on production skills in small and micro enterprises. The reliability test with Cronbach coefficient supported internal consistency ($\alpha = .706$). The MSE sector has been instrumental in bringing about economic transition by providing goods and services, which are of adequate quality and are reasonably priced, to a large number of people, and by effectively using the skills and talents of a large number of people without requiring high-level training, large sums of capital or sophisticated technology (ILO, 2008:56).

A binomial logistic regression was performed and this predicts the probability that an observation falls into one of two categories of a dichotomous dependent variable based on one or more independent variables that is categorical or continuous (Mugenda (2012)). In this study, logistic regression was used to assess the influence of a number of factors on the probability that firm owners would report that micro and small catering enterprises had experienced level of growth. The first null hypothesis that was tested was stated:

H₀₁: There is no significant relationship between technology transfer of production skills and the growth of micro and small catering enterprises in Nairobi County, Kenya.

In the current study, the dependent variable (level of growth) was categorical and measured on a dichotomous scale (growth and no growth). The logistic regression model contained three component factors, namely; Efficiency Enhancement, Organization Techniques and Quality Service. The logistic regression model was summarized as:

The logit of a number p between 0 and 1 is given by the formula:

$$\text{logit}(p) = \log\left(\frac{p}{1-p}\right) = \log(p) - \log(1-p) = -\log\left(\frac{1}{p} - 1\right).$$

$$\text{Logit (Growth)} = \beta_0 + \beta_1\text{Production skills} + \beta_2\text{Equipment} + \beta_3\text{Knowledge} + \beta_4\text{Process}$$

Where, $\beta_0, \beta_1, \beta_2, \beta_3, \beta_4$ are model parameters

Thus the Logit (level of growth) = -3.774 + .259(Efficiency Enhancement) + .680(Organization Techniques) + .111(Quality Service). The summary of this information is presented in Table 4.25.

Table 4.25: A summary of Variables in the Equation is shown in the table

Components	B	S.E.	Wald	Df	Sig.	Exp(B)
Efficiency	.259	.060	18.649	279	.000	1.295
Enhancement						
Organization	.680	.248	7.537	279	.006	1.973
Techniques						
Quality Service	.111	.075	2.196	279	.138	1.117
Constant	-3.774	.797	22.425	279	.000	.023

n=280 $\chi^2 = 76.991$; df = 3; Sig. = .000.

Cox and Snell R square (.240); Nagelkerke R square (.336), overall percentage correct prediction (68.4%)

The general model having all predictors variables was significant at .05 levels ($\chi^2 = 76.991$; df = 3; $p = .000$, n=280) indicating that the logistic regression model was able to isolate business owners who realized firm growth and those who did not report any growth in micro and small catering enterprises in Nairobi county- Kenya. The explained variation in the dependent (levels in growth) variable based on the above model ranges from 24.0% to 33.6 % (Cox and Snell R square =.240; Nagelkerke R square =.336) and correctly classified 67.9% of cases.

The Wald test was used to determine statistical significance for each of the predictor variables. From these results, it is noted that Efficiency Enhancement ($p = .000$) and Organization Techniques ($p = .006$) added significantly to the model/prediction, but Quality Service ($p = .138$) did not add significantly to the model. The information in the

'Variables in the Equation' Table was used to predict the probability of an event occurring based on a one unit change in the independent variable when all other independent variables are kept constant. The table shows that the odds of achieving positive growth ('yes' category) are 1.295 times greater for firms with high Efficiency Enhancement levels than those without. The Table also shows that the strongest predictor of positive growth was the firms' Organization Techniques reporting an odds ratio of 1.973. However, the predictor variable with least odd ratio is firms' Quality Service. The results show that micro and small catering enterprises whose owners had ensured high degree of efficiency enhanced organization techniques and maintained high quality services and products through technology transfer of production skills reported positive growths. Schumpeter Theory (1961) cites the need for new goods and new methods of production of existing goods to produce better consumers' goods that are more eagerly desired by consumers, than the previous goods and the previous methods of production.

The null hypothesis H_{o1} that there is no significant relationship between technology transfer of production skills and the growth of micro and small entering enterprises in Nairobi County, Kenya was rejected.

The results of the current study have been supported with findings from case studies on the growth of micro and small catering enterprises in many countries both developed and developing. According to Richard Cantillon (1775), Production capabilities and skills are necessary to efficiently operate a plant with a given technology and the improvement of the technology over time. This view is also supported by Dedrick *et al.*, (2003) who argued that Productivity skills are important economic factors which have key roles in evaluating the economic growth. Without access to technology MSEs lack the capability to produce efficiently, meet deadlines, upgrade product quality and evolve new product designs (UNIDO, 2004). Kathuria (1999) noted that new products often embody new ideas and innovations and when these products are traded internationally, they transmit

knowledge across borders. The local firms have to do reverse engineering if they have to benefit from this channel, which depends on the skill content of the labor and local absorptive capacity (Kathuria, 1999). In Nairobi County, catering enterprises have had to develop their resources through technology transfer of skills to meet the rising demand for services for food and drink. Workers have had to shift from the old traditional methods of production of food and drink to faster and more efficient methods to meet the customer demands (Key informant).

4.7 The Equipment/Objects Embodied Technology Transfers and the Growth of Micro and Small Catering Enterprises in Nairobi, Kenya

The second objective was to determine how equipment/objects embodied technology transfers had influenced the growth of micro and small catering enterprises in Kenya. The respondents were asked to indicate the role of technology transfer in equipment and objects and how this influences the growth of catering enterprises in Nairobi, Kenya. The responses were measured on a dichotomous scale 'yes' and 'no' with yes= 1 and no= 0. Descriptive statistics were calculated earlier and the results are presented in Table 4.10.

4.7.1 Factor Analysis of Equipment and Objects Technology Transfer

The equipment and objects technology transfer in micro and small catering enterprises was measured using four components. Twenty four items of dichotomous type questions were used for the four component variables namely; Effective Equipment (component 1), Employees Satisfaction (component 2), Customers Care (component 3) and Role of Equipment (component 4).

The Cronbach Coefficient ($\alpha = .971$) on the twenty four items showed internal consistency and above the threshold of .60. Factor analysis applied with principle component and rotation Method: Varimax with Kaiser Normalization was used to validate the target variables. The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy was beyond the minimum value of .5 (KMO=.859) indicating that the sample size was adequate for factor analysis. The Bartlett's Test of Sphericity was statistically significant at .001 level ($\chi^2=12131.763$, DF=276, p=.000) showing that the original variables were sufficiently correlated.

From Table 4.25, four components with Eigen values greater than one was extracted accounting for 86.6% of the total variance which is greater than the threshold of 50%. Items loading above .50 for every component were grouped to form the four factors. The structure matrix of the four factors with their loadings is presented in Table 4.26

Table 4.26: Equipment and Objects Technology Transfer Total Variance Explained

Component	Initial Eigen values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
	14.73			14.73					
1	8	61.407	61.407	8	61.407	61.407	9.344	38.933	38.933
2	2.776	11.565	72.972	2.776	11.565	72.972	4.378	18.243	57.175
3	2.306	9.61	82.582	2.306	9.61	82.582	3.774	15.725	72.9
4	1.023	4.262	86.845	1.023	4.262	86.845	3.347	13.944	86.845
5	0.504	2.132	88.944						
6	0.484	2.018	90.962						

Extraction Method: Principal Component Analysis

The first component within equipment and objects technology transfer corresponds to the 'Effective Equipment' (see the Table 4.26). Twelve items were loaded into this variable and included statements such as acquisition of new and modern equipment for production and services, new and modern equipment have ensured that food is produced and served on time, equipment ensured production and service methods are fast, new and modern equipment/object has ensured that food production and service is fast, new and modern equipment /object have enhanced efficiency in production and service methods, new and modern equipment/object has increased customer satisfaction, equipment has enhanced service quality, equipment enhanced quality of food and drinks, equipment improved overall performance and equipment increased workers output. The overall mean score is 10.97(STD=3.05) with a majority of owners of catering enterprises (n=263, 94%) saying that new equipment are useful in Micro and Small Enterprises. These results indicate that firm owners recognize the useful effects of modern equipment to enhance production in their businesses. Items used for Effects of Equipment had internal consistency that was above the set limit of .6(α =.981).

The variable 'Employees Satisfaction' was the second component factor with four items that was loaded within it and had statements such as equipment technology transfer enhances efficiency of employees, satisfaction of employees, increases rate of output per hour and improves overall performance. Reliability test with Cronbach coefficient was above the marker of .6(α =.971). Descriptive statistics reveal that the overall mean score of Employees Satisfaction is 11.453 (STD=.9812) with majority of owners of the view that employees satisfaction is partly dependent on the type of machines used. These results show that use of New and advanced equipment increase the overall convenience of workers in the catering industry and thus improving the restaurant operation as well as increase the business performances. This opinion was in agreement with Benner and Veloso (2006) who said that the implementation of technology in commissary food service establishments is closely associated with the increase in productivity, quality, safety of employees as well as hygiene and cleanliness of the enterprises. Rodgers

(2003) further noted that the application of technological cooking equipment and preparation techniques tremendously increased the food production.

Table 4.27: Equipment and Objects Technology Transfer Rotated Component Matrix

Item Description	Components			
	1	2	3	4
Acquired new modern equipment for operations	.872	.142	.251	.195
Equipment ensured food is produced and served on time	.828	.156	.266	.155
Equipment ensured production and service methods are fast	.885	.161	.230	.146
Equipment ensured food production and services is fast	.904	.189	.239	.173
Equipment efficiency in production/service methods	.856	.345	.186	.119
Equipment increased customer satisfaction	.870	.320	.206	.125
Equipment enhanced service quality	.858	.320	.141	.155
Equipment enhanced quality of food and drinks	.857	.369	.132	.164
Equipment improved overall performance	.831	.429	.136	.137
Equipment increased workers output	.796	.423	.110	.117
Equipment caused growth of output	.705	.275	.081	.434
Equipment enabled better production methods	.629	.218	.022	.600
Equipment has enabled growth in terms of customers/day	.441	.067	.014	.835
Modern equipment played a role in growth of organization	.101	.061	.221	.836
Production equipment changed over time	.096	.060	.369	.774
Quality of products	.126	.093	.673	.602
Quality of service to customers	.191	.164	.829	.355
Profit establishment	.271	.252	.853	.150
Customers per day	.294	.503	.713	.114
Speed of production	.291	.512	.740	.087
Efficiency of employees	.358	.843	.304	.049
Satisfaction of employees	.345	.820	.248	.134
Rate of output per hour	.409	.829	.269	.050
Overall performance	.444	.794	.208	.148
Reliability coefficient: Cronbach alpha(overall=.971)	.981	.969	.939	.860

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

The third equipment and objects technology transfer factor was renamed as 'Customer Care'. It comprises of five statements that attempts to explore to what extent equipment technology transfer enhances customer satisfaction. The items that loaded to this variable were the Quality of products and services for the customers, speed of production to ensure no shortages and increased number of customers served per day. Reliability test with Cronbach coefficient on the items was above the marker of .6(α=.939). The overall mean score is 9.982 (STD=1.824). This score was in regard to the responses of a majority of owners (n=237, 84.6%) who noted that improved equipment and objects were essential components of customer care and welfare. These findings show that the welfare of customers is enhanced by introduction and use of modern and advanced equipment and machines. Liddle (2009) reported that many restaurants and food service operations have rapidly adopted the point-of-sale technologies or POS system to increase the overall convenience of the dining experience and technologies improving the restaurant operation as well increased the repeat business. According to Liddle (2009) Blast chillers, freezers, steam jacketed kettle tilting skillets are examples of equipment that involve technological advancement in the sector to provide healthy meal options to the customers.

The fourth equipment and objects technology transfer factor 'Role of Equipment' was operationalized by using three items such as new equipment enabled better production methods, new equipment has enabled growth in terms of customers/day and modern equipment played a role in growth of organization. Majority of firm owners (n=258, 90%) were of the opinion that micro and small catering enterprises should be equipped with modern equipment to enhance production. This information suggest a large proportion of firm owners believe that the role of equipment was to enhance better production methods and thus increase customers served per day. This view was consistent with Grimes (2009) who claims that some advanced features have been integrated on the kitchen appliances such as timers and digital temperature gauges, timers or inaccurate temperature dials to enhance production.

A binomial logistic regression was performed and this predicts the probability that an observation falls into one of two categories of a dichotomous dependent variable based on one or more independent variables that is categorical or continuous.

In this study, logistic regression was used to find out the influence of a number of factors on the likelihood that firm owners would indicate that that Micro and Small Enterprises had experienced certain level of growth. The second null hypothesis stated as follows:

H₀₂: There is no significant relationship between technology transfer of equipment/objects and the growth of Micro and Small Enterprises in Nairobi County, Kenya.

One of the reasons firm owners adopted technology transfer through equipment was to ensure that food is produced and served on time in catering businesses (n=259,92.4%). Other roles of technology transfer in equipment and objects are as follows: equipment ensured production and service methods are fast (n=257, 91.8%), equipment ensured food production and services are fast (n=259, 92.5%), equipment enhanced efficiency in production/service methods (n=255, 91.4%), equipment increased customer satisfaction (n=257, 91.8%), equipment enhanced service quality (n=257,92.1%), equipment enhanced quality of food and drinks(n=259,92.5%), equipment improved overall performance (n=259, 92.1%), equipment increased workers output (n=256, 91.1%), equipment caused growth of output (n=251, 89.6%), equipment enabled better production methods(n=250,89.3%) and equipment has enabled growth in terms of customers/day(n=243,86.8%).

A binomial logistic regression was utilized in this study since it is the appropriate technique where the dependent variable is dichotomous or categorical and the

independent variables are either categorical or continuous. In this study, the dependent variable (growth levels) was categorical (growth or no growth).

The logistic regression model contained four component factors, namely; Effective Equipment, Employees Satisfaction, Customers Care and Role of Equipment. The logistic regression model was summarized and fitted as:

$$\text{Logit (level of growth)} = -1.555 + .270(\text{Effective Equipment}) + .032(\text{Employees Satisfaction}) + .547 (\text{Customers Care}) + .386(\text{Role of Equipment}).$$

Table 4.28: A summary of Variables in the Equation

Components	B	S.E.	Wald	Df	Sig.	Exp(B)
Effective of Equipment	.270	.136	3.946	279	.047	1.310
Employees Satisfaction	.032	.278	.014	279	.907	1.033
Customers Care	.547	.105	27.055	279	.000	1.729
Role of Equipment	.386	.168	5.280	279	.022	1.471
Constant	-1.555	.675	5.305	279	.021	.211

n=280

$\chi^2 = 87.665$; df = 4; Sig. = .000.

Cox and Snell R square (.269); Nagelkerke R square (.496)

Overall percentage correct prediction (90.4%)

The general model having all predictors variables was significant at .05 levels ($\chi^2 = 87.665$; df = 4; Sig. = .000, n=280) indicating that the logistic regression model was able to select business owners who realized firm growth and those who did not report any growth in Nairobi County, Kenya. The explained variation in the dependent (levels in growth) variable based on the above model ranges from 26.9% to 49.6 % (Cox and Snell R square =.269; Nagelkerke R square =.496) and correctly classified 90.4.9% of cases.

The Wald test was also used to determine statistical significance for each of the predictor variables. From these results, it is noted that Effective Equipment ($p = .047$), Customers Care ($p = .000$) and Role of Equipment ($p = .022$) added significantly to the model/prediction, but Employees Satisfaction ($p = .907$) did not add significantly to the model. The table shows that the odds of achieving positive growth ('yes' category) are 1.729 times greater for firms with enhanced customer care than those without. The results also show that the odds of achieving high growth are 1.310 times for firms with Effective Equipment than those without. These results show that Micro and Small Enterprises, whose owners had introduced modern and effective equipment, were using equipment that enhanced customer care and used equipment that enhanced employees satisfaction as a result of technology transfer of equipment all achieved positive growths. According to David et al., (2011), production and service equipment in these enterprises include large equipment such as ranges, steamers, boiling pans, fish fryers, sinks and tables, mechanical equipment such as peelers, mincers, mixers, refrigerators dishwashers, utensils and small equipment such as pots, pans, whisks bowls and spoons.

The null hypothesis H_{02} that *there is no significant relationship between technology transfer of equipment/objects and the growth of Micro and Small Enterprises in Nairobi County, Kenya* was rejected in favor of the alternative.

The above findings concur with Liddle (2009) who noted that some of catering commissary establishments thought that the tools and technology in the restaurant industry is limited to basic appliances and tools without realizing some complex equipment used. Moreover, the means of technology transfer include acquisition of capital equipment and machinery through trade, licensing (and/or franchising or distribution) agreements through which skills, ideas and technical information are transferred and through the movement of experts and skilled labor (Ikiara *et al.*, (2011).

4.8 Knowledge Embodied Technology Transfers and the Growth of Micro And Small Catering Enterprises In Nairobi, Kenya

The third objective was to examine how knowledge embodied technology transfers have influenced the growth of micro and small catering enterprises in Nairobi County- Kenya. The respondents were asked to indicate the role of technology transfer in knowledge and how this influences the growth of Catering Enterprises in Nairobi County- Kenya. The responses were measured on a dichotomous scale 'yes' and 'no' with yes= 1 and no= 0. Descriptive statistics were calculated earlier and the results are presented in Table 4.25.

4.8.1 Factor Analysis on Knowledge Embodied Technology Transfer

Knowledge embodied technology transfer contained twenty four items which were reduced to form two components. The reliability test with Cronbach Coefficient on all the twenty four items showed internal consistency with alpha coefficient beyond the marker of .6($\alpha=.986$).

The factor analysis extraction method: principle component was also used to validate the data using Varimax rotation method with Kaiser Normalization. The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy was beyond the minimum value of .5 (KMO=.937) indicating that the sample size was adequate for factor analysis. The Bartlett's Test of Sphericity was statistically significant at .001 level ($\chi^2=12374.639$, DF=276, p=.000) a proof that the variables are sufficiently correlated. Rotation converged in three iterations as can be observed in the Rotated Component Matrix table.

Table 4.29: Knowledge Embodied Technology Transfer Total Variance Explained

Component	Initial Eigen values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
			77.55						
1	18.614	8	77.558	18.614	77.558	77.558	10.338	43.074	43.074
2	1.203	5.011	82.569	1.203	5.011	82.569	9.479	39.496	82.569
3	0.704	2.931	85.501						
4	0.606	2.526	88.026						

Extraction Method: Principal Component Analysis.

Two components were extracted using factor analysis with Eigen values exceeding unity and accounting for 82.569% of the total variance (See Table). This is beyond the threshold of 50% thus showing that the two factor model could be used for the data. Items loading above .5 for every component were grouped to form two factors. The structure matrix of the two factors with their loadings is presented in Table 4.30.

Table 4.30: Knowledge Embodied Technology Transfer Rotated Component Matrix

Item description	Component	
	1	2
Academic level is a major factor for employment in the enterprise	.640	.377
Academic level ensures food is produced and served on time	.766	.432
Academic level ensures food production and service methods are standard	.811	.459
Academic level ensures food production and service is fast	.818	.430
Academic level enhances efficiency in production and service methods	.795	.543
Academic level increased customer satisfaction	.801	.452
Knowledge enhanced service quality	.730	.314
Academic level enhanced quality products	.790	.433
Academic level improved overall performance of organization	.818	.493
Academic level enabled workers increase output	.809	.458
Academic level has led to growth of output	.790	.424
Academic level has led better production methods	.774	.499
Academic level enabled organization grow in terms of customers	.784	.474
Academic level played role in growth of organization	.498	.575
Production techniques have changed over time	.313	.555
Quality of products	.498	.830
Quality of service to customers	.492	.824
Profit establishment	.461	.791
Number of customers served per day	.507	.792
Speed of production	.456	.852
Efficiency	.480	.827
Satisfaction of employees	.480	.821
Rate of output per hour	.457	.849
Overall performance	.433	.775
Reliability coefficient: Cronbach alpha(overall= .986)	.982	.971

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

The two components were then re-named as Academic Status (component 1) and Effects of Academics (component 2). These components were named depending on the concepts or constructs they measure. The first component corresponding to Academic Status with thirteen items included constructs that assessed whether Academic level is a major factor for employment in the enterprise, ensures food is produced and served on time, ensures food production and service methods are standard, ensures food production and service is fast, enhances efficiency in production and service methods, increased customer satisfaction, enhances service quality, enhanced quality products, improves overall performance of organization, enables workers increase output, has led to growth of output , led better production methods and enable organization grow in terms of customers.

The overall mean score of acceptance for academic status is 10.485 (STD= 4.63) with a majority of owners (n=248, 86.4%) underscoring the importance of academic status in technological transfer of knowledge. The results show that acquiring high academic status is essential for effective knowledge technological transfer in catering services in micro and small catering enterprises. This finding extends Gibson (1990) argument that the most effective way to accomplish technology transfer is to transfer the people with the requisite knowledge to the arenas where that technology is needed. The reliability test with Cronbach Coefficient on the twelve items showed internal consistency with alpha coefficient beyond the minimum of .6($\alpha=.982$).

The second component factor loadings were denoted as ‘Effects of Academics’ variable.

Eleven items that loaded on ‘Effects of Academics’ variable had statements that explored the extent to which academic achievement played role in growth of organization, production techniques have changed over time, quality of products and services to customers have improved, profits have been realized, increase of the numbers of customers per day and Speed of production, enhancement of efficiency ,satisfaction

of employees ,increase of rate of output per hour and improvement of overall performance. Descriptive statistics on the acceptance of this variable indicates a mean of 9.05 (STD=3.878) with a majority of enterprise owners (n=253, 90.4%) believing that achieving high academic levels is the most effective means to acquire requisite knowledge to the areas where that technology is needed. These results show that academic achievements have positive effects on technological knowledge and skills to firm through the numbers of people required in the work place to ensure that the technology is successfully “transferred” and efficiently used. According to (Phillips *et al.*, 2002) Capacity transfer includes provision of the know-how and software not simply to manufacture existing products but, more importantly, to innovate and adapt existing technologies and products, and ultimately design new products. The reliability test on all the items in this variable was above the minimum limit of .6($\alpha=.971$).

A binomial logistic regression was performed and this predicts the probability that an observation falls into one of two categories of a dichotomous dependent variable based on one or more independent variables that is categorical or continuous. In this study, logistic regression was used to find out the influence of a number of predictor variables on the likelihood that firm owners would indicate that Micro and Small Enterprises had experienced certain level of growth. The third null hypothesis stated as follows:

H₀₃: *There is no significant relationship between technology transfer of knowledge and the growth of Micro and Small Enterprises in Nairobi County, Kenya.*

A binomial logistic regression was utilized in this study since it is the appropriate technique where the dependent variable is dichotomous or categorical and the independent variables are either categorical or continuous. In this study, the dependent variable (growth levels) was categorical (growth or no growth).

The logistic regression model contained two component factors, namely; Academic Status and Effects of Academics. The logistic regression model was summarized and fitted as:

Logit (level of growth) = -1.555 + .173 (Academic Status) + .190 (Effects of Academics).

Table 4.31: A summary of Variables in the Equation

Components	B	S.E.	Wald	Df	Sig.	Exp(B)
Academic Status	.173	.072	5.774	279	.016	1.189
Effects of Academics	.190	.086	4.879	279	.027	1.209
Constant	-.826	.342	5.851	279	.016	.438

n=280

$\chi^2 = 88.195$; $df = 2$; $Sig. = .000$.

Cox and Snell R square (.270); Nagelkerke R square (.499)

Overall percentage correct prediction (86.8%)

The general model was significant at .05 levels ($\chi^2 = 88.195$; $df = 2$; $Sig. = .000$, $n=280$) indicating that the logistic regression model was able to distinguish business owners who realized firm growth and those who did not report any growth in Nairobi County, Kenya. The explained variation in the dependent (levels in growth) variable based on the above model ranges from 27.0% to 49.9 % (Cox and Snell R square =.270; Nagelkerke R square =.499) and correctly classified 86.8% of cases.

The Wald test was also used to determine statistical significance for each of the predictor variables. From these results, it is noted that the two test variables Academic Status ($p = .016$) and Effects of Academics added significantly to the model/prediction. The results show that the odds of achieving positive growth ('yes' category) are 1.189 times greater for firms with high academic status than those without. The results also show that the odds of achieving high growth are 1.209 times for firms with positive Effects of Academics than those without. These results show that Micro and Small Enterprises, whose owners had enhanced technology transfer of knowledge, achieved positive growths levels.

The null hypothesis H_{o3} that there is no significant relationship between technology transfer of knowledge and the growth of micro and small catering enterprises in Nairobi, Kenya was rejected.

The above findings are consistent with findings of case studies on the influence of technology transfer of knowledge and the growth of micro and small catering enterprises. For instance, Phillips et al. (2002) attributes general failure of most MSEs to low educational achievement. In addition, even where firm owners develop interest in new technology, their limited education adversely affects the absorption capacity of acquired technology (ILO, 2005). A challenge for developing countries is to facilitate temporary movement abroad and to encourage returnees to undertake local research and business development.

This school of thought is supported by Cornia (2002) who cited several ways to increase the knowledge and competence, e.g. education, recruitment, through consultants and e-learning. In contrast, Cohen and Levinthal (2004) argue that the capacity to make use of external knowledge is a function of the level of prior related knowledge. According to Bathelt, et al. (2003), this prior knowledge includes basic skills, shared language and also knowledge about the last scientific and technological developments.

4.9 Process Embodied Technology Transfers and the Growth of Micro and Small Catering Enterprises in Nairobi, Kenya

The fourth objective was to determine how process embodied technology transfers have influenced the growth of micro and small catering enterprises in Kenya.

The respondents were asked to indicate the role of process embodied technology transfers and how this influences the growth of catering enterprises in Kenya. The responses were measured on a dichotomous scale 'yes' and 'no' with yes= 1 and no= 0. Descriptive statistics were calculated earlier and the results are presented in Table 4:32.

4.9.1 Factor Analysis Process Embodied Technology Transfer

Twenty three items that asked yes and no type questions were used to measure the processes of technology transfer in micro and small catering enterprises. When a reliability test was run with Cronbach coefficient on all the twenty three items, a high level of internal consistency was achieved ($\alpha=.985$). A factor analysis was carried out using Principal Component and Varimax Rotation Method with Kaiser Normalization to check the consistency of the items. The Kaiser-Meyer-Olkin (KMO) measure of Sampling Adequacy was beyond the minimum value of .5 (KMO=.818) indicating that the sample size was adequate for the variables used in factor analysis.

The Bartlett's Test of Sphericity was statistically significant at .001 level ($\chi^2=10663.993$, DF=219, p=.000) showing that the variables are sufficiently correlated and therefore component analysis is applicable. Rotation converged in three iterations (Table 4.32).

Rotated Component Matrix Table.

Table 4.32: Process Embodied Technology Transfer Total Variance Explained

Component	Initial Eigen values			Extraction Sums of Squared			Rotation Sums of Squared		
				Loadings			Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
	17.59			17.59					
1	2	76.486	76.486	2	76.486	76.486	11.268	48.991	48.991
2	3.185	13.849	90.336	3.185	13.849	90.336	9.509	41.345	90.336
3	0.72	3.131	93.467						
4	0.369	1.606	95.073						

Extraction Method: Principal Component Analysis.

For Eigen values beyond unity, two components were extracted which accounted for 90.336% of the total variance. This value was above the minimum threshold of 50%. This shows that the two factor model can fit in the collected information. In addition, items with strongest association to the underlying latent variable and with loading above .5 for each component were combined to form the two renamed variables namely; Standard Production Process and Production Process Effect.

The first component factor renamed ‘Standard Production Process’ was loaded with twelve statements that measured the degree to which production processes are standardized in Micro and Small Enterprises. Reliability score on the twelve items was above the set limit of .6($\alpha=.987$). The overall acceptance score of this variable indicates a mean of 10.11 (STD=4.260) with a majority of enterprise owners (n=239, 85.6%) believing that technology transfer in Micro and Small Enterprises is dependent on standardized production process. These results show that technology transfer is greatly influenced by use of standard processes especially where trained firm owners are involved.

Sheu (2007) argues that firms must be able to create and commercialize a stream of new processes that extend the technology frontier, while at the same time keeping a step or two ahead of their rivals. This view is also supported by Gunasekaran *et al.*, (2002) who advocate the use of standard business process re-engineering (BPR. According to him, Reengineering (BPR) concerns the fundamental rethinking and radical redesign of a business process to obtain dramatic and sustained improvements in quality, cost, service, lead time and productivity.

Table 4.33 : Rotated Component Matrix

Item Description	Component	
	1	2
Adopted new standardized production processes	.876	.386
Standardized production ensures food is produced and served on time	.891	.373
Standardized production ensures food production and service methods are standard	.893	.371
Standardized production ensures food production and service is fast	.904	.330
Standardized production enhances efficiency in production and service methods	.913	.338
Standardized production increased customer satisfaction	.909	.378
Standardized production enhanced quality of services	.915	.365
Standardized production enhanced quality of products	.917	.341
Standardized production enhanced overall performance	.905	.347
Standardized production increased workers output	.919	.325
Standardized production enabled organization grow in terms of output	.917	.360
Standardized production enabled organization grow size	.901	.372
Experience played role in growth of organization	.499	.576
Production processes changed over time	.277	.720
Methods of production	.299	.918
Better and faster processes	.324	.915
Processes that are fast and simple	.307	.920
Number of customers serviced per day	.328	.921
Speed of production	.337	.903
Efficiency of enterprise	.393	.851
Satisfaction of the employee	.381	.862
Rate of output per hour	.396	.861
Overall performance	.378	.851
Reliability coefficient: Cronbach alpha(overall= .985)	.987	.981

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

The second component factor loadings were named as 'Production Process Effect'. Eleven items that were loaded onto Production Process Effect involved statements that measured the degree to which the production processes are effective in the overall performance of Micro and Small Enterprises. The overall mean score was 9.160 (STD=3.749) with majority of firm owners (250, 89.9%) of the opinion that production processes are effective in transforming micro and small catering enterprises. These results show that technology transfer has enabled for processes in Micro and Small Enterprises that change from the old methods of production to faster, new and modern methods that have resulted in higher production outputs. In addition, the Production technology process considers the methods and processes for production of goods and services, whereas consumption technology considers methods, processes and techniques by which a particular need or demand may be satisfied (Soliman *et al.*, 1998). Reliability score on the items was above the minimum .6 ($\alpha=.981$).

In this study, logistic regression was used to find out the influence of Standard Production Process and Production Process Effect on the likelihood that firm owners would indicate that Micro and Small Enterprises had experienced certain level of growth. The fourth null hypothesis stated as follows:

H₀₄: *There is no significant relationship between technology transfer of processes and the growth of Micro and Small Enterprises in Nairobi County, Kenya.*

Results in Table obtained from the study showed that experienced and well trained employees have had positive effect in enhancing production processes in micro and small catering enterprises. Some of the positive effects is that use of experienced and well trained employees have improved methods of production (84.6%), enhances better and faster processes (83.9%), assumes processes that are fast and simple (82,5%), new processes increases the number of customers per day (84.6%), the speed of production is enhanced (84.3%), enhancement of firms efficiency (83.8%), enhances satisfaction of

the employees (84.6%) ,rate of output per hour increases and overall performance is enhanced (83.9%).

A binomial logistic regression was utilized in this study since it is the appropriate technique where the dependent variable is dichotomous or categorical and the independent variables are either categorical or continuous. In this study, the dependent variable (growth levels) was categorical (growth or no growth).

The logistic regression model contained two component factors, namely; Standard Production Process and Production Process Effect. The logistic regression model was summarized and fitted as:

Logit (level of growth) =-.634+.194 (Standard Production Process) +.140 (Production Process Effect).

Table 4.34: A summary of Variables in the Equation

Components	B	S.E.	Wald	Df	Sig.	Exp(B)
Standard Production Process	.194	.049	15.582	279	.000	1.214
Production Process Effect	.140	.057	5.988	279	.014	1.151
Constant	-.634	.364	3.027	279	.082	.530

n=280

$\chi^2 = 66.696$; df = 2; Sig. = .000.

Cox and Snell R square (.212); Nagelkerke R square (.406)

Overall percentage correct prediction (91.1%)

The general model was significant at .05 levels ($\chi^2 = 66.696$; df = 2; Sig. = .000, n=280) indicating that the logistic regression model was able to distinguish business owners who realized firm growth and those who did not report any growth in Nairobi- Kenya.

The explained variation in the dependent (levels in growth) variable based on the above model ranges from 21.2% to 40.06 % (Cox and Snell R square =.212; Nagelkerke R square =.406) and correctly classified 91.1% of cases.

The Wald test was also used to determine statistical significance for each of the predictor variables. From these results, it is noted that the two test variables Standard Production Process ($p = .000$) and Production Process Effects ($p = .014$) added significantly to the model/prediction.

The results show that the odds of achieving positive growth ('yes' category) are 1.214 times greater for firms with enhanced standard production process than those without. The Table also shows that the odds of achieving high growth are 1.151 times for firms with positive Effects of production process than those without. These results show that Micro and Small Enterprises, whose owners had enhanced technology transfer of production process reported positive growths levels.

H₀₄ that there is no significant relationship between technology transfer of processes and the growth of Micro and Small Enterprises in Nairobi, Kenya was rejected.

An emerging factor in the growth of micro and small catering enterprises in Nairobi County, Kenya is the introduction of new processes through technology transfer. This assertion is in agreement with Katz (1974) who said that technology transfer has enabled for processes to be simplified with the objective of making work easier through elimination of unnecessary movement, combination of two operations into one or improvement of methods. An example is a catering outlet that uses the traditional method in preparation and cooking of French fries. The process is long and tiring as compared to where modern technology in form of electric deep fat fryers and vegetable slicers is used.

A research carried out by Jens von Axelson (1989) on the development of production methods for transfer to MSEs had the objective of creating better understanding regarding diffusion of production methods, in a network context, to Swedish MSEs among industrial researchers and other interested parties. In Nairobi, Kenya the study established that production skills play a major role in the growth of MSEs the development of production methods for transfer to MSEs and therefore creating better understanding regarding diffusion of production methods is important.

4.10 Measurement and Model for Firm Growth

The growth of micro and small catering enterprises in Kenya was measured using five variables, namely; profit margin, increase in employees, increase in customers, firm size and quality of products and services. The study used fifteen items to evaluate the growth of micro and small catering enterprises.

4.10.1 Results of Factor and Reliability Analysis on Growth of Micro And Small Catering Enterprises

A factor analysis using extraction method: principle component and rotation Method: Varimax with Kaiser Normalization reduced the data to (latent) variables that are reflected in the observed variables. The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy was beyond the minimum value of .5 (KMO=.818) indicating that the sample size was satisfactory for factor analysis to proceed. The Bartlett's Test of Sphericity which is an indication of the strength of the relationship among variables was statistically significant at .001 level ($\chi^2=2725.164$, DF=105, p=0.000). Five components with Eigen values greater than one was extracted accounting for 73.0% of the total variance which is greater than the threshold of 50% i.e. the first five factors account 73.0% of the total variance. Items loading above .5 for every component were grouped

to form five component factors. The structure matrix of the five factors with their loadings is presented in Table 4.35.

Table 4.35: Firm Growth Total Variance Explained

Component	Initial Eigen values			Extraction sums of squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	5.519	36.793	36.79	5.519	36.79	36.793	4.392	29.281	29.281
2	1.803	12.018	48.811	1.803	12.01	48.811	2.268	15.123	44.403
3	1.440	9.603	58.414	1.440	9.603	58.414	1.666	11.106	55.509
4	1.158	7.721	66.135	1.158	7.721	66.135	1.323	8.817	64.327
5	1.044	6.963	73.098	1.044	6.963	73.098	1.316	8.771	73.098
6	.859	5.726	78.824						

Extraction Method: Principal Component Analysis.

Three component factors with Eigen values >1.0 were extracted

The resultant five components were re-named as Profit Growth (component 1), Employees Growth (component 2) and Firm Size (component 3), Quality of Products and Services (component 4) and Customers Growth (component 5. Component 1 comprised of five variables, namely; startup capital and net profits in years 1-5.

Table 4.36: Firm Growth Rotated Component Matrix

Item description	Component				
	1	2	3	4	5
Number of other enterprises	.031	.009	.802	-.021	.006
Startup capital (Kshs)	.584	.224	-.290	.013	.242
Net profit in year 1	.620	.416	.234	.009	-.215
Net profit in year 2	.945	.173	.057	.004	.120
Net profit in year 3	.941	.112	.015	.024	.168
Net profit in year 4	.936	.170	.075	.027	.085
Net profit in year 5	.888	.162	.173	.018	.049
Improved quality products	.064	-.023	.258	.760	.102
Opened new branches elsewhere	.094	.180	.679	.204	.336
Serve more customers	-.017	-.004	-.122	-.071	.827
Customers served at the beginning	.102	.221	-.023	.037	.754
Customers served currently	.185	-.032	.349	-.035	.628
Employees at the beginning	.179	.800	-.104	-.101	.178
Current number of employees	.130	.751	.411	.061	-.022

Extraction Method: Principal Component Analysis.
 Rotation Method: Varimax with Kaiser Normalization
 a. Rotation converged in 6 iterations.

The second factor named Employees Growth involved items initial number of employees and the current number of employees. The third component of growth factor named Firm Size was defined by one variable that involved the number of other enterprises that has been opened by the mother firms. The fourth component was named as Quality Products and Services and involved one item that measured the influence of quality products and services on growth. The final component factor was named as Customers Growth and contained statements that measured growth in terms of increased customer base. The overall Cronbach Coefficient ($\alpha = .817$) on the fifteen items showed internal consistency result and above the 60 percent cut off value for being acceptable. These findings show that the five variables are adequate to measure growth in micro and small catering enterprises.

4.11 Hypothesis Testing for the Null Hypotheses

The postulated hypotheses for the study were tested to either reject or accept them. They were:

- i. **H₀₁**: There is no significant relationship between technology transfer of production skills and the growth of Micro and small catering enterprises in Nairobi County, Kenya.

H_{a1}: There is significant relationship between technology transfer of production skills and the growth of Micro and small catering enterprises in Nairobi County, Kenya.

- ii. **H₀₁**: There is no significant relationship between technology transfer of equipment and the growth of micro and small catering enterprises in Nairobi County, Kenya.

H_{a1}: There is significant relationship between technology transfer of equipment and the growth of micro and small catering enterprises in Nairobi County, Kenya.

iii. **H₀₁**: There is no significant relationship between technology transfer of knowledge and the growth of micro and small catering enterprises in Nairobi County, Kenya.

H_{a1}: There is significant relationship between technology transfer of knowledge and the growth of micro and small catering enterprises in Nairobi County, Kenya.

iv. **H₀₁**:: There is no significant relationship between technology transfer of processes and the growth of micro and small catering enterprises in Nairobi County, Kenya.

H_{a1}: There is significant relationship between technology transfer of processes and the growth of micro and small catering enterprises in Nairobi County, Kenya.

Table 4.37: Table showing the results of the Hypotheses Testing

No.	Hypothesis	Co-efficient P-values	Conclusion
i	<p>H₀₁: There is no significant relationship between technology transfer of production skills and the growth of micro and small catering enterprises in Nairobi County, Kenya.</p> <p>H_{a2}: There is significant relationship between technology transfer of production skills and the growth of micro and small catering enterprises in Nairobi County, Kenya.</p>	<p>P=.000</p> <p><=0.05</p>	<p>Accept: H_{a1}</p> <p>Reject: H₀₁</p>
ii	<p>H₀₂: There is no significant relationship between technology transfer of equipment and the growth of micro and small catering enterprises in Nairobi County, Kenya.</p> <p>H_{a2}: There is significant relationship between technology transfer of equipment and the growth of micro and small catering enterprises in Nairobi County, Kenya.</p>	<p>P=.000</p> <p><=0.05</p>	<p>Accept: H_{a2}:</p> <p>Reject: H_{a2}</p>
iii	<p>H₀₃: There is no significant relationship between technology transfer of knowledge and the growth of micro and small catering enterprises in Nairobi County, Kenya.</p> <p>H_{a3}: There is significant relationship between technology transfer of knowledge and the growth of micro and small catering enterprises in Nairobi County, Kenya.</p>	<p>P=.000</p> <p><=0.05</p>	<p>Accept: H_{a3}:</p> <p>Reject: H₀₃</p>
iv	<p>H₀₄: There is no significant relationship between technology transfer of processes and the growth of Micro and small catering enterprises in Nairobi County, Kenya.</p> <p>H_{a4}: There is significant relationship between technology transfer of processes and the growth of micro and small catering enterprises in Nairobi County, Kenya.</p>	<p>P=.000</p> <p><=0.05</p>	<p>Accept H_{a4}:</p> <p>Reject: H₀₄</p>

4:12 Summary of the Chapter

Data analysis in this study was carried out using both descriptive and inferential statistics. The statistical package for social sciences (SPSS) Version 22 was used to run the data. Descriptive statistics for the study included means, standard deviations, frequencies and percentages. Inferential statistics used in the study included correlation and multiple regressions in order to determine the relation between the independent and dependent variables. Correlation technique was used in the study to analyze the degree of relationship between the independent and dependent variables while logit regression analysis was used to determine the effect of technology transfer on skills, equipment/objects, knowledge and processes. Data was also subjected to factor analysis. The Binomial Logistic Regression was also used to analyze the data. The study established that transfer of production skills, equipment, knowledge and processes leads to the growth of micro and small enterprises catering in Nairobi County, Kenya. Growth was measured in form of profit margin, increase in employees, increase in customers, enlargement in firm size and enhancement in quality of products and services.

Since the study objective was concerned with the relationship between the independent and the dependent variable. Regression analysis was used to determine the relationship between them (Table 4.22). The results of the two show that there is a strong relationship between the independent variables of the study and growth. The four null hypotheses of the study were there for rejected based on these results. Micro and small catering enterprises that had embraced technology transfer of production skills, equipment, knowledge and processes had showed a marked growth in terms of profit margins, increase in the number of employees, increase in customers, enlargement of firm size and improvement in the quality of both products and services.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter contains a summary of the findings, conclusions and recommendations of the study. The purpose of this study was to find out the influence of technology transfer on the growth of micro and small Catering enterprises in Nairobi County, Kenya. The study contained four independent variables namely; technology transfer of production skills, equipment/objects embodied technology transfer, knowledge embodied technology transfer and process embodied technology transfer.

5.2 Summary of Findings

The purpose of this study was to investigate the influence of technology transfer on the growth of MSEs in Catering in Kenya. This study focused on providing information on the influence of technology transfer on the growth of MSEs in Nairobi County. It specifically aimed at finding how product, object, person and process embodied technology transfer had influenced the growth of micro small Catering enterprises in the Catering sector within the hospitality industry in Nairobi County, Kenya.

The study sampled 384 firm owners, however, only 280 managed to fill and return the questionnaires thus yielding a response rate of 73.49%. The study collected background information concerning the growth of micro and small enterprises. The data that were included in this section comprised of data on gender, age, level of education and length of service. Chi-square test of independence and one way ANOVA was used to test whether the sample characteristics had any statistical influence on growth of micro and small enterprises.

5.2.1. The Influence Of Technology Transfer of Production Skills on The Growth Of Micro and Small Catering Enterprises in Nairobi County, Kenya

The first objective was to assess how technology transfer of production skills had influenced the growth of micro and small enterprises catering in Nairobi County, Kenya. To explore this variable, 23 items were used and analysis carried out using descriptive statistics, factor analysis and logistic regression to establish whether technology transfer on production skills influenced growth of micro and small enterprises.

A total of 280 respondents and majority of owners (85.5%) who participated in the current study were of the opinion that the new production techniques had a positive effect on production. Specifically the new production technique had positive effect on the following attributes: quality of food (80.0%), profits of the establishment (86.1%), number of customers served per day (86.8%), speed of production (85.4%), efficiency of the employees (85.0%), satisfaction of the employees (86.4%), rate of output per hour (88.2%), overall performance (87.5%) and quality of service to customers (83.9%).

On average of the total 280 respondents minority of owners (14.5%) who participated in the current study were of the opinion that the new production techniques had no effect on production. Specifically only 42 respondents felt that new production technique had no effect on the following attributes: quality of food (20.0%), profits of the establishment (13.9%), number of customers served per day (13.2%), speed of production (14.6%), efficiency of the employees (15.0%), satisfaction of the employees (13.6%), rate of output per hour (11.8%), overall performance (12.5%) and quality of service to customers (16.1%). The study found out that technology transfer of equipment/objects was a major component in the growth of Catering micro and small Catering enterprises in Nairobi County, Kenya.

5.2.2 The Influence Of Equipment/Objects Embodied Technology Transfer on The Growth of Micro and Small Catering Enterprises in Nairobi County, Kenya

The second objective was to determine how equipment/objects embodied technology transfers have influenced the growth of micro and small Catering enterprises in Nairobi County, Kenya. To test this variable, Twenty four items of dichotomous type questions were used and analysis carried out using descriptive statistics, factor analysis and logistic regression to establish whether technology transfer on equipment/objects influenced growth of micro and small Catering enterprises.

On average, majority of business owners (91%) stated that their businesses had adopted technology transfer through acquisition of new and modern equipment and objects. Consequently, the introduction of such new and modern equipment had an influence on the growth of micro and small Catering enterprises. When asked whether they have acquired new and modern equipment, majority of firm owners (91.4%) said yes and cited the major reason for the acquisition of technology transfer as for production and service operations in micro and small Catering enterprises.

One of the reasons firm owners adopted technology transfer through equipment was to ensure that food is produced and served on time in Catering businesses (92.4%). However (6%) respondents felt that technology transfer in equipment and objects had no effect on enterprise growth was as follows: equipment ensured production and service methods are fast (8.2%), equipment ensured food production and services are fast (7.5%), equipment enhanced efficiency in production/service methods (8.4%), equipment increased customer satisfaction (8.2%), equipment enhanced service quality (7.9%), equipment enhanced quality of food and drinks(7.5%), equipment improved overall performance (7.9%), equipment increased workers output (91.1%), equipment caused growth of output (10.4%), equipment enabled better production methods(10,7%) and equipment has enabled growth in terms of customers/day(13.2%).The study found

out that technology transfer of equipment/objects was a major component in the growth of micro and small Catering enterprises in Nairobi County, Kenya.

5.2.3 The Influence of Knowledge Embodied Technology Transfers on The Growth Of Micro and Small Catering Enterprises in Nairobi County, Kenya

The third objective was to examine how knowledge embodied technology transfers have influenced the growth of micro and small catering enterprises in Nairobi County.

Knowledge embodied technology transfer contained twenty four items and analysis carried out using descriptive statistics, factor analysis and logistic regression to establish whether knowledge embodied technology transfers influenced growth of micro and small Catering enterprises.

Respondents who were not of this view were as follows: Academic level of education did not enhance the quality of service to customers (16.4%), did not increase profit in the establishment (17.5%), did not increase the customers per day (18.2%), had no improvement on the efficiency of employees (14.8%), and not enhanced satisfaction of employees (17.9%) and no effect on the overall performance of the firm (20.7%).The implication of this in the study was that technology transfer of knowledge had significant influence on the growth of micro and small Catering enterprises in Nairobi County, Kenya.

5.2.4 The Influence of Process Embodied Technology Transfer on The Growth of Micro and Small Catering Enterprises in Nairobi County- Kenya

The fourth objective was to determine how process embodied technology transfers have influenced the growth of micro and small Catering enterprises in Nairobi County, Kenya.

To test this variable, twenty three items were used and analysis carried out using descriptive statistics, factor analysis and logistic regression to establish whether process embodied technology transfers influenced growth of micro and small Catering enterprises.

One of the positive effects of academic level of employees is its role in enhancing quality of products as stated by 84.6% of respondents. This view was shared by one of the key informants who said that with new knowledge, firm owners are able to adopt varying methods aimed at improving quality of goods and services. Academic level of education was also noted to enhance the quality of service to customers (83.6%), increased profit establishment (82.5%), increased customers per day (81.8%), improved efficiency of employees (83.2%), and enhances satisfaction of employees (82.1%) and the overall performance of the firm (79.3%)

5.3 Conclusions of the Study

The study examined the influence of technology transfer on the growth of micro and small Catering enterprises in Nairobi County. The study concludes that;

5.3.1 The Influence of Technology Transfer of Production Skills on The Growth of Micro and Small Catering Enterprises in Nairobi County, Kenya

The study concludes that technology transfer of production skills leads to the growth of micro and small Catering enterprises in Nairobi County, Kenya. The growth was measured in form of profit margin, increase in employees, increase in customers, enlargement in firm size and enhancement in quality of products and services.

All the predictor variables making up technology transfers of production skills i.e. Efficiency Enhancement, Organization Techniques and Quality Service were all found to be positively and significantly associated with the growth of micro and small Catering

enterprises. The equipment/objects embodied technology transfers comprised of four variables, namely, Effective Equipment, Employees Satisfaction, Customers Care and Role of Equipment. All these variables were found to be highly and positively associated with the growth of micro and small Catering enterprises.

5.3.2 The Influence of Equipment/Objects Embodied Technology Transfer on The Growth of Micro And Small Catering Enterprises in Nairobi County, Kenya

The study concludes that technology transfer of equipment leads to the growth of micro and small Catering enterprises in Nairobi County, Kenya. The growth was measured in form of profit margin, increase in employees, increase in customers, enlargement in firm size and enhancement in quality of products and services.

The equipment and objects technology transfer in micro and small Catering enterprises was measured using four components. Twenty four items of dichotomous type questions were used for the four component variables namely; Effective Equipment (component 1), Employees Satisfaction (component 2), Customers Care (component 3) and Role of Equipment (component 4). . All these variables were found to be highly and positively associated with the growth of micro and small Catering enterprises. (Table 4.22)

5.3.3 The influence of Knowledge Embodied Technology Transfers on the Growth of Micro And Small Catering Enterprises In Nairobi County, Kenya

The study conclude that technology transfer of knowledge and processes leads to the growth of micro and small Catering enterprises in Nairobi County, Kenya. The growth was measured in form of profit margin, increase in employees, increase in customers, enlargement in firm size and enhancement in quality of products and services.

Knowledge embodied technology transfer contained twenty four items and these were extracted to form two components .namely; Academic Status and Effects of Academics.

Further analyses revealed that all these predictor variables were positively associated with the growth of micro and small Catering enterprises. (Table 4.22)

5.3.4 The Influence Of Process Embodied Technology Transfer on The Growth of Micro And Small Catering Enterprises In Nairobi County- Kenya

The study concludes that technology transfer of processes leads to the growth of micro and small Catering enterprises in Nairobi County, Kenya. The growth was measured in form of profit margin, increase in employees, increase in customers, enlargement in firm size and enhancement in quality of products and services.

Process Embodied Technology Transfers with two component variables, namely: Standard Production Process and Production Process Effect were all positively associated with the growth of micro and small Catering enterprises. Enterprises that had adopted Process Embodied Technology Transfers had acquired Standard Production Processes with a positive influence on their growth. (Table 4.22)

5.4 Recommendations

As noted earlier in the current study, one major component in the growth of micro and small Catering enterprises is the adoption of technology transfer. Technology transfer of production skills, knowledge, equipment and process are key determinants in the growth of micro and small Catering enterprises in Nairobi County, Kenya. The study therefore recommends:

5.4.1 The Influence Of Technology Transfer Of Production Skills on The Growth Of Micro and Small Catering Enterprises in Nairobi County, Kenya

Development of skills is an important ingredient for the growth of the Catering enterprises. The technology resides in the product itself. This study recommends that the

government initiates special capitation through budgetary allocations to be used in setting up additional technical colleges for the acquisition of the skills that are required for production and service in Catering MSEs.

5.4.2 The Influence of Equipment/Objects Embodied Technology Transfer on The Growth of Micro And Small Catering Enterprises in Nairobi County, Kenya

Access to finance continues to be an area that warrants further attention and requires effective initiatives. This study recommends that the government should initiate special capitation through budgetary allocations to support the import and acquisition of modern technology embodied equipment.

5.4.3 The Influence of Knowledge Embodied Technology Transfers on The Growth Of Micro and Small Catering Enterprises in Nairobi County, Kenya

It will be of great interest to Catering MSEs training providers, institutions of higher learning, policy makers and scholars alike to know, from empirical research, the nature and types of training offered to enhance Catering MSEs growth, factors that influences the transfer of learning among MSEs and the extent to which training leads to MSE growth in Kenya. Institutions of higher learning should be encouraged to develop curriculums that are specific to the Catering MSEs so as to create continuous dialogue between the instructor and learner pertaining to the intrinsic nature, diffusion, and utilization of certain scientific forms that are relevant.

5.4.4 The Influence of Process Embodied Technology Transfer on The Growth Of Micro and Small Catering Enterprises in Nairobi County- Kenya.

The technology required resides in the production process. Policy intervention and effective initiatives by the government on internship programs for Catering MSEs so as to enable them acquire standard production and service procedures.

5.5 Areas for Further Research

1. This research was carried out in Nairobi County, Kenya. The findings cannot be generalized in all the other counties in Kenya. Further research should be carried out in other Counties to establish the influence of Technology Transfer on the growth of Micro and Small Enterprises.
2. The study concentrated on the growth of micro and small Catering enterprises. Similar studies should be carried out to find out the influence of technology transfer on the growth of other micro and small enterprises.
3. The study concentrated on only five variables (profit margin, increase in employees, increase in customers, enlargement in firm size and enhancement in quality of products and services) that affect the growth of micro and small Catering enterprises due to time limitation. There are other variables that influence the growth of MSEs and further researches should be carried out in future so as to avail information on the same

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APPENDICES

Appendix 1: Letter of Introduction


**JOMO KENYATTA UNIVERSITY
OF
AGRICULTURE AND TECHNOLOGY**
P.O. BOX 62000-00200 NAIROBI, KENYA. TELEPHONE: (020) - 221306
Nairobi CBD Campus

Department of Entrepreneurship and Procurement

Date: 20th April, 2015

Ref:JKU/6/EPD/17a

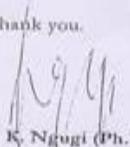
To Whom It May Concern;

SUBJECT: BANCY MUTHONI NGWIRI – HD413-0023/2008

This is to introduce to you Bancy Muthoni Ngwiri who is a student pursuing Doctor of Philosophy in Entrepreneurship Programme at Jomo Kenyatta University of Agriculture and Technology, Nairobi CBD Campus. The student is currently undertaking a research Project entitled: **Influence of technology transfer on the growth of Micro and Small catering enterprises in Nairobi County** in partial fulfillment of the requirement for the degree programme.

The purpose of this letter is to request you to give the student the necessary support and assistance to enable her obtain necessary data for the project. Please note that the information given is purely for academic purpose and will be treated with strict confidence.

Thank you.


P. K. Ngugi (Ph.D)
ASSOCIATE CHAIRMAN, EPD

 JKUAT is ISO 9001:2008 Certified.
Setting Trends in Higher Education, Research and Innovation

Appendix 2: Letter from NCSTI



NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone: +254-20-2213471,
2241349, 310571, 2219420
Fax: +254-20-318245, 318249
Email: secretary@nacosti.go.ke
Website: www.nacosti.go.ke
When replying please quote

9th Floor, Utalii House
Uhuru Highway
P.O. Box 30623-00100
NAIROBI-KENYA

Ref: No.

Date:

28th May, 2015

NACOSTI/P/15/0693/6328

Bancy Muthoni Ngwiri
Jomo Kenyatta University of Agriculture
And Technology
P.O. Box 62000-00200
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on *"Influence of technology transfer on the growth of Micro and Small Enterprises in Nairobi County,"* I am pleased to inform you that you have been authorized to undertake research in **Nairobi County** for a period ending **31st December, 2015.**

You are advised to report to **the County Commissioner and the County Director of Education, Nairobi County** before embarking on the research project.

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.


DR. S. K. LANGAT, OGW
FOR: DIRECTOR GENERAL/CEO

Copy to:

Appendix 3: Letter to Respondents

Dear Respondent,

The questionnaire is aimed at collecting information about the influence of technology transfer on the growth of MSEs in the catering industry in Kenya. The information you give will be of benefit to the researcher in accomplishing academic goals. Please do not omit any feature and respond to items honestly. Your response will be held in total confidence and only used for the purpose of this study.

Appendix 4: Questionnaire

PART A: DEMOGRAPHIC INFORMATION

Kindly tick the appropriate response in the box provided.

1. Gender

Male

Female

2. Age in years

18-30

31-40

41-50

50 and above

3. Level of education

0 levels

A level

Certificate

Diploma

1st degree

2nd degree

Masters

PhD.

4. Job Group/ Scale: _____

5. Length of service in your current organization:

1 - 4 years

5-10 years

Above 10 years

PART B:

The role of TT on MSE growth is scored on yes-1 and no-0 scale

Section I: The role production skills TT on MSE growth this is scored out of a 1 point for YES and 0 points for NO. as shown below. Please tick where appropriate.

Role of Production skills TT MSEs growth	YES (1)	NO (0)
1. This organization uses trained personnel in its production and service operations.		
2. Employment of trained personnel has ensured that food is produced and served on time.		
3. Employment of trained personnel ensures food production and service costs are reduced.		
4. Employment of trained personnel ensures that food production and service is fast.		
5. Employment of trained personnel enhances efficiency in operation.		
6. Employment of trained personnel has increased customer satisfaction.		
7. Employment of trained personnel has enhanced the service quality		
8. Employment of trained personnel has enhanced the service quality		
9. Trained personnel have improved the overall performance of the organization.		
10. Employment of trained personnel has enabled the workers increase output.		
11. Employment of trained personnel has enabled the organization grow in terms of profit.		
12. Employment of trained personnel has enabled the organization grow in terms of size.		
13. Employment of trained personnel has enabled the organization grow in terms of size.		
14. Employment of trained personnel has enabled the organization grow in terms of customers.		

OPEN-ENDED QUESTIONS

1. How long ago is it since your Micro and Small (MSEs) adopted technology transfer in the following? Production skills, Use of new and better equipment and objects, employment of well trained personnel, use of new production processes.

a) Employment of trained personnel

b) Use of modern equipment

c) Use of new production methods

2. TT has played any role in the production volume of the organization? Yes ()
No () Please tick where appropriate.

3. How does the management ensure that a new method of production is communicated to the workers? Through training () through meetings () through seminars () through short courses () through apprenticeship () Please tick where appropriate

4. Do you think newly employed trained staffs have had any influence on the production methods in any way? How?

.....
.....

5. Has labor turn-over affected the level of production in any way? If so, how? Explain briefly.

.....
.....

.....

6. Have production techniques changed over the years? Yes () No (). If yes, how? Explain briefly

.....

.....

7. New production techniques have had a positive effect on the following: Please tick where appropriate.

(a) Quality of food. Yes () No ()

(b) Quality of service to the customers. Yes () No ()

(c) Profits of the establishment Yes () No ()

(d) Number of customers served per day Yes () No ()

(e) The speed of production. Yes () No ()

(f) Efficiency of the employees. Yes () No ()

(g) Satisfaction of the employees. Yes () No ()

(h) Rate of output per hour Yes () No ()

(i) Overall performance Yes () No ()

(j) What recommendations would you make to the management on technology use?.....

PART C

The role equipment/ object TT on MSEs growth this is scored out of a 1 point for Yes and 0 points for No as shown below. Please tick where appropriate.

The role of equipment/ Object TT on MSEs growth	Yes (1)	No (0)
1. This has acquired new and modern equipment for its production and service operations.		
2. New and modern equipment have ensured that food is produced and served on time.		
3. New and modern Equipment/object has ensured food production and service methods are standard.		
4. New and modern Equipment/object has ensured that food production and service is fast.		
5. New and modern Equipment /object have enhanced efficiency in production and service methods.		
6. New and modern Equipment/object has increased customer satisfaction.		
7. New and modern equipment have enhanced the service quality		
8. New and modern Equipment/object has enhanced the quality of food and drink.		
9. New and modern Equipment/object has improved the overall performance of the organization.		
10. New and modern Equipment/object has enabled the workers increase output.		
11. New and modern Equipment/object has enabled the organization grow in terms of output.		
12. New and modern Object/equipment has enabled the organization to come up with better production methods of food and drink.		
13. New and modern Equipment/object has enabled the organization grow in terms of customers/day.		

OPEN-ENDED QUESTIONS

1. New and modern Equipment/object has played any role in the growth of the organization? Yes () No () Please tick where appropriate.

2. Have the production equipment changed over the years? Yes () No (). If yes, how? Explain briefly

.....
.....

3. New production equipment has had a positive effect on the following:

4. Please tick where appropriate.

a) Quality of products Yes () No ()

b) Quality of service to the customers. Yes () No ()

c) Profits of the establishment Yes () No ()

d) Number of customers served per day Yes () No ()

e) The speed of production. Yes () No ()

f) Efficiency of the employees. Yes () No ()

g) Satisfaction of the employees. Yes () No ()

h) Rate of output per hour Yes () No ()

i) Overall performance Yes () No ()

5. What recommendations would you make to the management on purchase of equipment?

.....

PART D

The role knowledge embodied TT on MSE growth this scored out of a 1 point for Yes and 0 points for No as shown below. Please tick where appropriate.

The role of Knowledge embodied TT on MSEs	Yes (1)	NO (0)
1. The academic level of employees in this enterprise is a major factor for employment.		
2. The academic level of employees ensures that food is produced and served on time.		
3. The academic level of employees ensures food production and service methods are standard.		
4. The academic level of employees ensures that food production and service is fast.		
5. The academic level of employees enhances efficiency in production and service methods.		
6. The academic level of employees has increased customer satisfaction.		
7. Person/knowledge TT has enhanced the service quality		
8. The academic level of employees has enhanced the quality of products.		
9. The academic level of employees has improved the overall performance of the organization.		
10. The academic level of employees has enabled the workers increase output.		
11. The academic level of employees has enabled the organization grow in terms of output.		
12. The academic level of employees has enabled the organization to come up with better production methods.		
13. The academic level of employees has enabled the organization grow in terms of customers.		

OPEN-ENDED QUESTIONS

1. Do you think the academic level of employees has played any role in the growth of the organization? Yes () No () Please tick where appropriate.

2. Have the production techniques changed over the years? Yes () No (). If yes, how? Explain briefly

.....

3. The academic level of employees has had a positive effect on the following:

4. Please tick where appropriate.

- a) Quality of products Yes () No ()
- b) Quality of service to the customers. Yes () No ()
- c) Profits of the establishment .Yes () No ()
- d) Number of customers served per day Yes () No ()
- e) The speed of production. Yes () No ()
- f) Efficiency. Yes () No ()
- g) Satisfaction of the employees. Yes () No ()
- h) Rate of output per hour Yes () No ()
- i) Overall performance Yes () No ()

5. What recommendations would you make to the management on the academic level of employees.?

.....

PART E

The role process embodied TT on MSE growth this scored out of a 1 point for Yes and 0 points for No as shown below. Please tick where appropriate.

The role of process embodied TT on MSE growth	Yes (1)	No (0)
1. This organization has adopted new standardized production processes by trained employees in its production and service operations.		
2. New standardized production processes by trained employees ensures that food is produced and served on time.		
3. New standardized production processes by trained employees ensures food production and service methods are standard.		
4. New standardized production processes by trained employees ensures that food production and service is fast.		
5. New standardized production processes by trained employees enhances efficiency in production and service methods.		
6. New standardized production processes by trained employees have increased customer satisfaction.		
7. New standardized production processes by trained employees have enhanced the service quality		
8. New standardized production processes by trained employees has enhanced the quality of products.		
9. New standardized production processes by trained employees have improved the overall performance of the organization.		
10. New standardized production processes by trained employees have enabled the workers increase output.		
11. New standardized production processes by trained employees have enabled the organization grow in terms of output.		
12. New standardized production processes by trained employees have enabled the organization grow in terms of size.		

OPEN-ENDED QUESTIONS

1. Do you think experienced and well trained employees have played any role in the growth of the organization? Yes () No ()

2. Please tick where appropriate.

Have the production processes changed over the years? Yes () No (). If yes, how? Explain briefly

.....
.....

3. Experienced and well trained employees have a positive effect on the following:

4. Please tick where appropriate.

a) Methods of production Yes () No ()

b) Better and faster processes. Yes () No ()

c) Processes that are fast and simple Yes () No ()

d) Number of customers served per day Yes () No ()

e) The speed of production. Yes () No ()

f) Efficiency of the enterprise. Yes () No ()

g) Satisfaction of the employees. Yes () No ()

h) Rate of output per hour .Yes () No ()

i) Overall performance Yes () No ()

5. What recommendations would you make to the management on experienced and well trained employees?

Part F

The role of production skills, equipment, knowledge and process embodied TT on MSE growth this scored out of a 1 point for Yes and 0 points for No as shown below. Please tick where appropriate.

This enterprise has grown in terms new outlets, turnover, profit margins, product output, and customer base because of:	Yes	No
1. Employment of well skilled and experienced staff. (On job/off the job training).		
2. Purchase of modern food preparation, production and service equipment.		
3. Professionally trained employees from degree, diploma and certificate award institutions.		
4. Introduction of standard processes in preparation, production and service of food and drink.		
5. The speed at which the customers are served.		
6. The quality of the food in the enterprise.		
7. Low employee turnover.		

Open ended questions.

1. When was this enterprise started?.....
2. What was the startup capital in Kenya shillings?.....
3. What was the net profit for the last five years of operation? Fill the net profit for each year.
 - (a) Year 1Kshs.....
 - (b) Year 2Kshs
 - (c) Year 3Kshs
 - (d) Year 4Kshs
 - (e) Year 5Kshs
4. Have been able to do the following since you started operation?
 - a) Increase the number of employees.
 - b) Open new branches elsewhere.
 - c) Serve more customers.
5. How many customers did you serve when you opened the enterprise?.....
6. How many customers do you serve currently?.....
7. Increase the production levels.
8. Introduce new products.
9. How many employees did you have when you started operation?.....
10. How many employees do you have now?.....

11. Do you think the use of new and modern equipment has contributed to the growth of the enterprise? Yes () No () What are your future plans on the growth of this enterprise?

Appendix 5: Interview Guide

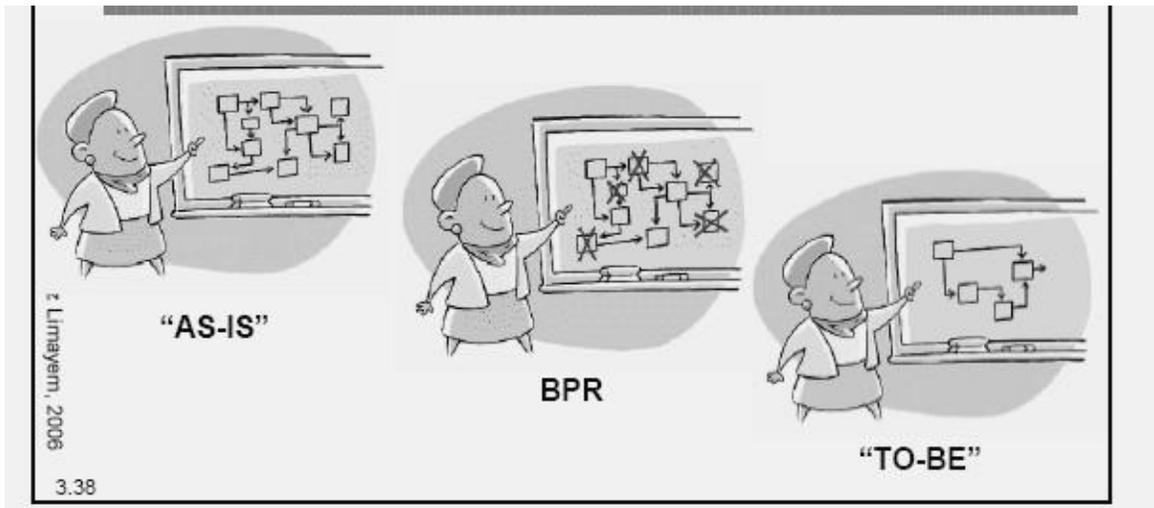
Interview Schedule for Catering Micro and Small Enterprises in Nairobi County

Enterprise-----

1. How many sections do you have in the kitchen?
2. What machines do you have in each of the following sections that make your work easier during preparation, cooking and service of your foods?
 - i. Stores
 - ii. Vegetable section
 - iii. Meat section
 - iv. Service Area
 - v. Wash up area
 - vi. Billing section
 - vii. Restaurant
3. Do you think there has been any change in the way you performed your duties when you started this enterprise and the way you perform them today? **(State)**
4. Has this organization embraced the following?
 - i. New and modern equipment?
 - ii. New procedures of doing your duties?
 - iii. Training of new employees?
 - iv. Improvement of products?

- v. Increase of the customer service?
5. In your opinion, would you call your work place “modern” in terms of technology? If yes, why? and if no, why?
- How would you compare those employees who have been trained and those who have not been trained?
6. How have you used technology to increase and reach the number of customers that you serve each day?
- (Email) (Mobile phone)
7. How have you used technology to increase the number of products each day?
- (Use of new equipment)(Trained personnel)(Adopting the latest production processes)
8. How have you used technology to reduce the number of employees?
9. What are your plans for the future in terms of technology and the growth of this enterprise?

Appendix 6: Bpr Schematic



BPR schematic Source: Limayem, (2006)

Appendix 7: All Registered Enterprises 2014/2015

LOCAL AUTHORITY INTEGRATED FINANCIAL OPERATIONS MANAGEMENT SYSTEMS BUSINESS ACTIVITY CODE SUMMARY				
LA Name : - 001 / NAIROBI CITY COUNTY				
Main Activity Code Main Activity Description :		No of Businesses :	Revenue Potential (Ksh) :	
100	GENERAL TRADE, WHOLESALE, RETAIL, STORES,	146,369	1,147,864,000.00	
Business Registration Details				
Activity Code :	Main Activity Description :	Category No of Businesses :	Category Permit Fee (Ksh) :	Category Rev Potential (Ksh) :
103	Hyper-supermarket	119	120,000	14,280,000
104	Mega-supermarkets/Wholesalers	25	80,000	2,000,000
105	Large Trader Shop/Retail Service	4,162	30,000	124,860,000
110	Medium Trader Shop/Retail Service	30,507	15,000	457,605,000
115	Small Trader Shop/Retail Service	102,895	5,000	514,475,000
120	Kiosk	1,625	4,000	6,500,000
195	Other General Merchant Shop and Retail Service	7,036	4,000	28,144,000
Main Activity Code Main Activity Description :		No of Businesses :	Revenue Potential (Ksh) :	
200	INFORMAL SECTOR	9,084	18,890,500.00	
Business Registration Details				
Activity Code :	Main Activity Description :	Category No of Businesses :	Category Permit Fee (Ksh) :	Category Rev Potential (Ksh) :
201	1 Hawker with Motor Vehicle	7	7,000	49,000
205	1 Hawker without Motor Vehicle	7	5,000	35,000
210	Small Informal Sector Trader/Service Provider	413	2,500	1,032,500
215	Semi Permanent Informal Sector Trader	460	3,000	1,380,000
220	Other Informal Sector	8,186	2,000	16,372,000
295	Other Informal Sector Operation	11	2,000	22,000
Main Activity Code Main Activity Description :		No of Businesses :	Revenue Potential (Ksh) :	
300	TRANSPORT, STORAGE, AND COMMUNICATIONS	17,318	314,817,000.00	
Business Registration Details				
Activity Code :	Main Activity Description :	Category No of Businesses :	Category Permit Fee (Ksh) :	Category Rev Potential (Ksh) :
301	Mega Transport Company	18	160,000	2,880,000
303	Large Transport Company	70	100,000	7,000,000
305	Medium Transport Company	370	36,000	13,320,000
310	Small Transport Company	407	25,000	10,175,000
315	Other Transport Company	3,259	15,000	48,885,000
320	Independent Transport operator	6,051	7,000	42,357,000
325	Large Petrol Filling Station	291	30,000	8,730,000
330	Medium Petrol Filling Station	159	20,000	3,180,000
335	Small Petrol Filling Station	1,560	10,000	15,600,000
340	Large Cold Storage Facility	7	70,000	490,000
345	Medium Cold Storage Facility	15	30,000	450,000
350	Small Cold Storage Facility	19	15,000	285,000
355	Large Storage Facility	286	60,000	17,160,000
360	Medium Storage Facility	1,155	30,000	34,650,000
362	Small Storage Facility	1,335	15,000	20,025,000
363	Large Private Vehicles Parking	17	100,000	1,700,000
364	Medium Private Vehicles Parking	20	50,000	1,000,000
365	Small Private Vehicles Parking	1,446	30,000	43,380,000

**LOCAL AUTHORITY INTEGRATED FINANCIAL OPERATIONS MANAGEMENT SYSTEMS
BUSINESS ACTIVITY CODE SUMMARY**

LA Name : - 001 / NAIROBI CITY COUNTY

Activity Code	Main Activity Description	No of Businesses	Permit Fee (Ksh)	Revenue Potential (Ksh)
370	Mega Communications Company	33	200,000	6,600,000
380	Large Communications Company	205	100,000	20,500,000
385	Medium Communications Company	99	60,000	5,940,000
390	Small Communications Company	185	40,000	7,400,000
395	Other Transport, Storage and Communications	311	10,000	3,110,000

Main Activity Code	Main Activity Description	No of Businesses	Revenue Potential (Ksh)
400	AGRICULTURE, FORESTRY, AND NATURAL RESOURCES	3,818	97,060,000.00

Business Registration Details

Activity Code	Main Activity Description	Category No of Businesses	Category Permit Fee (Ksh)	Category Rev Potential (Ksh)
402	Mega Agricultural Producer/Processor/Dealer/Exporter	16	100,000	1,600,000
405	Large Agricultural Producer/Processor/Dealer/Exporter	80	80,000	6,400,000
407	Medium Agricultural Producer/Processor/Dealer/Exporter	107	40,000	4,280,000
410	Small Agricultural Producer/Processor/Dealer/Exporter	468	25,000	11,700,000
415	Other Agricultural Producer/Processor/Dealer/Exporter	2,931	20,000	58,620,000
420	Large Mining or Natural Resources Extraction Operation	14	200,000	2,800,000
425	Medium Mining or Natural Resources Extraction Operation	42	100,000	4,200,000
430	Small Mining or Natural Resources Extraction Operation	52	50,000	2,600,000
495	Other Agricultural, Forestry, and Natural Resources Exploitation	108	45,000	4,860,000

Main Activity Code	Main Activity Description	No of Businesses	Revenue Potential (Ksh)
500	ACCOMMODATION AND CATERING	20,224	434,940,000.00

Business Registration Details

Activity Code	Main Activity Description	Category No of Businesses	Category Permit Fee (Ksh)	Category Rev Potential (Ksh)
503	Small High Standard Lodging House/Hotel D	12	70,000	840,000
505	Large High Standard Lodging House/Hotel D	42	200,000	8,400,000
506	Medium High Standard Lodging House/Hotel D	122	140,000	17,080,000
509	Small High Standard Lodging House/Hotel D	149	70,000	10,430,000
512	Large Lodging House with Restaurant and/or bar B/C class	265	55,000	14,575,000
515	Medium Lodging House with Restaurant and/or bar B/C class	241	45,000	10,845,000
518	Small Lodging House with Restaurant and/or bar B/C class	252	35,000	8,820,000
521	Large Lodging House B/C Class	230	70,000	16,100,000
524	Medium Lodging House B/C Class	305	45,000	12,725,000
527	Small Lodging House B/C Class	307	35,000	10,745,000
530	Mega Restaurant with Bar/Membership Club	42	100,000	4,200,000
540	Large Restaurant with Bar/Membership Club	727	50,000	36,350,000
543	Medium Restaurant with Bar/Membership Club	1,234	30,000	37,020,000
545	Small Restaurant with Bar/Membership Club	1,327	20,000	26,540,000
549	Mega eating house; Snack Bar; Tea House "Hotel"	657	35,000	22,995,000
550	Large Eating House; Snack Bar; Tea House "Hotel"	209	25,000	5,225,000
552	Medium Eating House; Snack Bar; Tea House "Hotel"	1,445	15,000	21,675,000
555	Small Eating House; Snack Bar; Tea House "Hotel"	5,673	15,000	85,095,000
558	Butchery with roast meat and/or soup kitchen	1,555	15,000	23,325,000
561	Large Bar/traditional beer seller	67	20,000	1,340,000
564	Medium Bar/traditional beer seller	435	15,000	6,525,000
567	Small Bar/traditional beer seller	4,087	10,000	40,870,000

**LOCAL AUTHORITY INTEGRATED FINANCIAL OPERATIONS MANAGEMENT SYSTEMS
BUSINESS ACTIVITY CODE SUMMARY**

LA Name : - 001 / NAIROBI CITY COUNTY

805	Large Industrial Plant	540	150,000	81,000,000
810	Medium Industrial Plant	677	100,000	67,700,000
815	Small Industrial Plant	376	60,000	22,560,000
818	Other Industrial Plant/Factory	54	25,000	1,350,000
819	Mega Workshop	17	100,000	1,700,000
820	Large Workshop	995	70,000	69,650,000
825	Medium Workshop	3,371	30,000	101,130,000
830	Small Workshop	8,650	15,000	129,750,000
895	Other Manufacturer	2,232	10,000	22,320,000
Total No. of Businesses		258,115	Total Potential	3,575,192,500

Sources: Nairobi County Council