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

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ABSTRACT

Technology transfer usually involves some source of technology group which posses 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.Over the years, Caterirng 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 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. There was a total population of 11,162 licensed Catering MSEs in Nairobi County. A total of 384 respondents was picked through random sampling. Data was collected using a questionnaire with both closed and open ended questions.An interview guide was used in carrying out the interviews. The data obtained in the study was analyzed using descriptive statistics such as means,frequecies 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 variable while logit regression analysis was used to determine the effect of technology transfer on processes. 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 technology transfer of processes leads to the growth of micro and small catering enterprises in Nairobi County. 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 study concluded that technology transfer processes had an influence on the growth of micro and small catering

enterprises. The study recommends 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.

Keywords: Cook-Chill: Cook-Freeze: Vacuum Cooking: Technology Transfer:

1.1 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 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 *et al.,* 2004). 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 *et al.,* 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, *et al.,* 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 *et al.,* 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. Different ethnic groups in Kenya have their own traditional dishes. Fish and "ugali"(Staple food for the Dholuo tribe in Kenya made with maize flour cooked in hot water and eaten with fish and green vegetables) are associated with the Dholuo tribe, "pilau" and "biriani"(Stable foods for the Swahili people found at the coast in Kenya made with rice as the basic ingredient). The difference in the two dishes is the herbs and the spices added, "irio" (Staple food for the Kikuyu ethnic group in Kenya made with maize and beans and mashed with potatoes and green vegetables).and githeri (Stable food for the Kikuyu tribe in Kenya made with maize and beans boiled in hot water), chicken and "ugali" with the Luhyas while "muthokoi" (Stable food for the Akamba tribe in Kenya made with traditionally broken maize) is associated with the Akamba tribe.

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 processes on growth.

1.1.4 Micro and Small Enterprise growth in Kenya

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.

Micro and Small Enterprises (MSEs) in developing countries are however confronted with several drawbacks and challenges that they have to overcome in order to operate successfully (UNIDO, 2002).In today's world of cut-throat fierce competition, customer satisfaction is very essential for an organization to not only exist but excel in the market. Today's market is enormously more complex. Henceforth, to survive in the market, the company not only needs to maximize its

profit but also needs to satisfy its customers and should try to build upon from there. According to Nteere (2012) the average Kenyan enterprise employs 1-2 workers while over 70% enterprises employ only one person. The lower end of these enterprises is usually confined to subsistence

1.3 OBJECTIVE OF THE STUDY

1.3.1 GENERAL OBJECTIVE

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

1.3.2 SPECIFIC OBJECTIVE

i. To determine how process embodied technology transfer have influenced 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:

H_o: 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 thegrowth 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 provided information on the influence of technology transfer on the growth of Catering MSEs. This will motivate policy makers 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 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. Process technology transfer within the MSEs catering outlets was under focus in this study.

1.7 LIMITATIONS TO THE STUDY.

This study focused on providing information on the influence of technology transfer on the growth of MSEs within the catering sector in Nairobi County, Kenya. It specifically aimed at finding how process embodied technology transfer has influenced the growth of Micro Small Enterprises in the catering sector within the hospitality industry in Nairobi County- Kenya. Data were obtained from a total of 384 MSEs in Nairobi. It was not possible for the researcher to do this alone and she sought the assistance of ten assistants to facilitate the exercise. The study also used questionnaires in collection of data

and it was difficult to obtain accurate information. This challenge was addressed by ensuring that the questionnaires were valid and reliable.

LITERATURE REVIEW

2.1 Introduction

This chapter explores literature on the influence of technology transfer on the growth of MSEs with special focus on the catering MSEs. The study draws from two main theoretical fields of study, they are, growth of enterprises 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. 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 RESOURCES BASED FIRM THEORY

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 basic conceptual model describing the resource based firm theory is displayed in Figure 2.1.
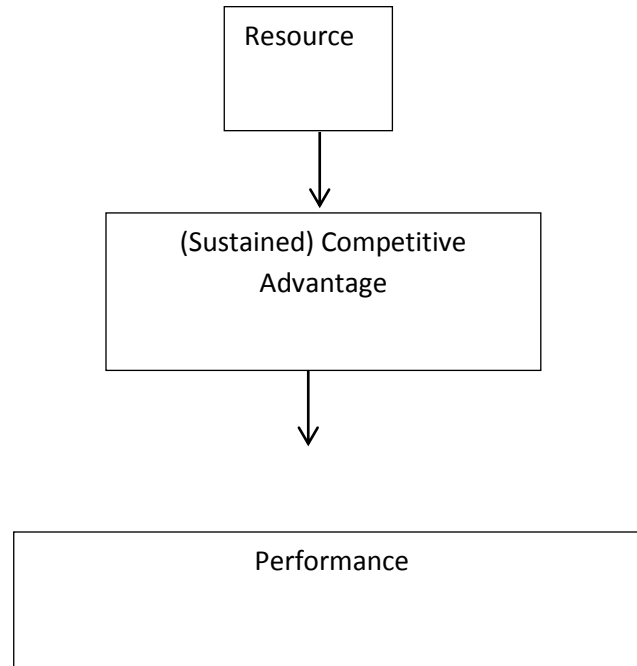
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┌──────────────┐
│   Resource   │
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│          Performance              │
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Figure 2.1: The resource based firm theory. Source: Ghoshal *et al.,* (2002)

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 is the independent variable which is the process. 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 (1997) 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 independent variable 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 above theory in looking at the effect of the transfer of technology on firm resources among them the process

2.2.3 SCHUMPETER THEORY

Schumpeter Theory (1969) 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 innovations included by Schumpeter in his entrepreneurs' activities include new techniques of production, opening of new markets, opening of new sources of supply, improvement of management techniques, and improvement of distribution methods. Schumpeter emphasized the interruption of previous market processes, the disruption of existing equilibrium by the new innovative production processes. The function of entrepreneurs is to reform or revolutionize the pattern of production by exploiting an invention or more generally, an untried technological possibility for producing a new commodity or producing an old one in a new way by opening up a new source of supply of materials or a new outlet for products, by reorganizing an industry .

 According to Joseph Schumpeter, entrepreneurship innovation is a creative activity of doing things that are generally not done in the ordinary course of business. An entrepreneur is one who innovates. They are all especially motivated and talented class of people and looked upon as different. They are innovative and creative and foresee the potentially profitable opportunity and try to exploit it. Innovation involves problem solving and the entrepreneur is a problem solver. Innovation may occur in any of the following forms: Introduction of a new product or production of a new quality of an existing product, introduction of a new method of production that is

not tested, the opening of a new market where it has not previously entered, the conquest of new source of supply of raw materials or semi- manufactured goods, creating monopoly position or the breaking of a monopoly position.

An inventor is one who discovers new methods, new techniques and new material and an innovator is one who utilizes or applies inventions and discoveries in order to make new combinations and thus manufactures new and better products which brings him satisfaction as well as profits.

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).

2.2.4 RELATIONSHIP BETWEEN THE DEPENDENT (ENTERPRISE GROWTH) AND INDEPENDENT VARIABLE (PROCESS)

Enterprise growth is the dependent variable and is determined by the independent variable. Five main compensation mechanisms work to offset technology's labor-saving effects through: (1) additional employment in the capital goods sector where new machines are being produced, (2) decreases in prices resulting from lower production costs on account of technological innovations, (3) new investments made using profits due to technological change, (4) decreases in wages as a consequence of the initial job losses, and (5) new products created using new technologies(Discussion paper No. 7820,2013).

Transfer. The increase is as a result of better and higher quality products (food and drink).

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

In this study the researcher sought to find out how MSEs in catering have responded to the pull towards technology transfer of processes. The number of customers increase when there is value addition in the foods and drinks served in a catering outlet e.g. the greater quantity and come in greater numbers. 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 (Maskus, 2010).

Table 2.1 shows different types of technology and explains how

technology can be transferred through products, process or people.

TYPE OF TECHNOLOGY	DESCRIPTION
Process-embodied	Patent rights or blueprints of the actual scientific process and Engineering details. The technology resides in the process itself.
Product-embodied	Patent rights of a physical product, or the physical product itself. The technology resides in the patent rights or product itself.
Person-embodied	Person-embodied technology literally means "knowledge about the technology residing in the person". Creating continuous dialogue between the "sender" and "receiver" pertaining to the intrinsic nature, diffusion, and utilization of certain scientific forms that are hard to articulate in the form of either process or product.

Table 2.1: Different types of Technology Source: (Bhagat&Kedia, 1988)

2.3 EMPIRICAL LITERATURE REVIEW
2.3.1 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).

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.

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). 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

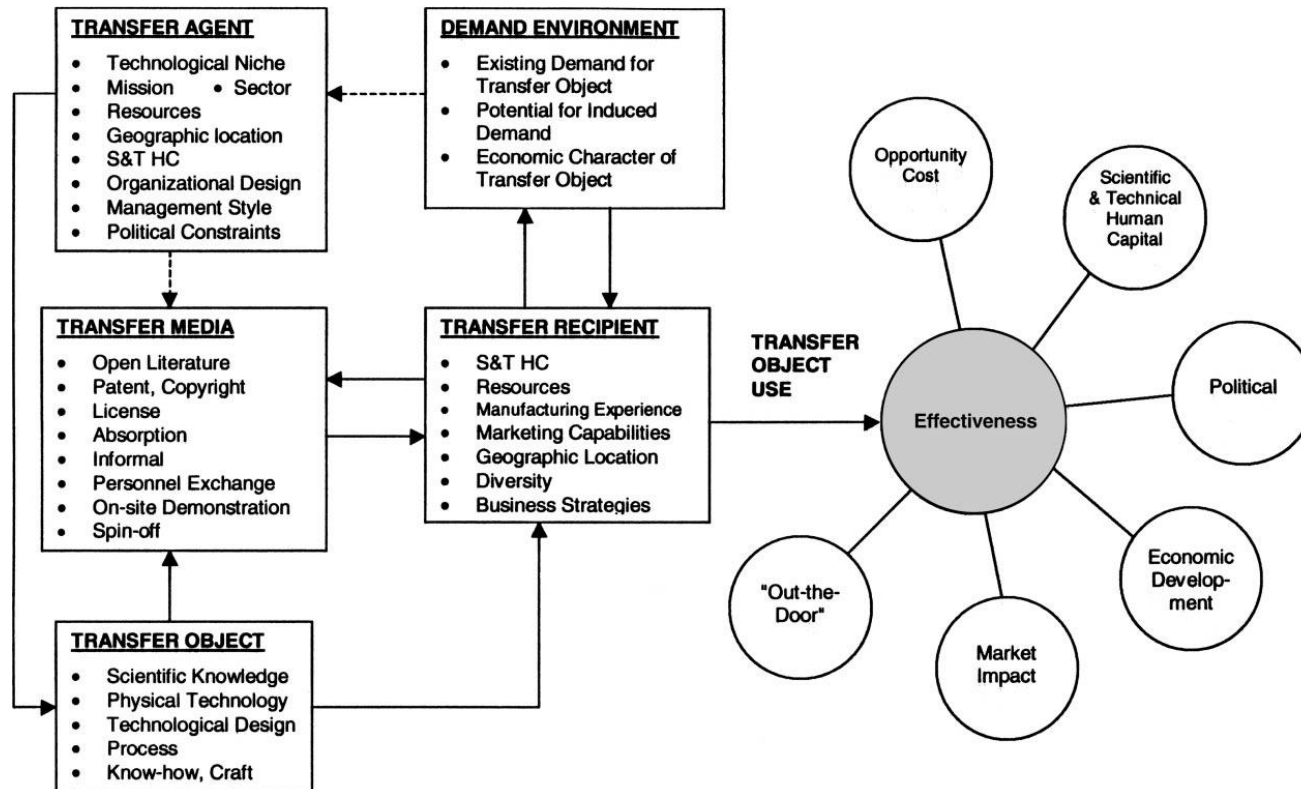consider in the national innovation system.

Figure 2.4   Figure 2.4 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.

2.3.2 SUMMARY OF LITERATURE

 Literature reviewed in this study showed that technology is important and vital for enterprise growth. Enterprises need to bring in technology embodied in processes to enable them grow in to larger entities. They therefor need access to information on the importance of trained employees, adoption of new technological equipment for product processing. Once this information is gained by the entrepreneurs the Catering MSEs which is the focus of this study

2.3.3 Research gaps

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 (2010) in his study agrees that the

technology transfer concept is not only concerned with 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 as 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 increase 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.

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

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. This study added to the body of information on technology transfer and how it has influenced the growth of MSE within the catering sector.

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 (2003) 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 would be relevant to the problem and that it uses economical procedures in collection and analysis of data. The descriptive research design was used for this study among the catering MSEs in Catering in Nairobi County- Kenya to establish the influence of technology transfer on their growth. The researcher carried out survey method of data collection from a sampled population. The researcher gathered information and the respondent's opinions, experiences and feelings on the influence of technology transfer on the enterprises where they work. In this study, a combination of qualitative and quantitative approaches of doing research was used as recommended by Creswell (2009).

The subject of analysis was Micro and Small Catering enterprises in Nairobi County, Kenya. The study was designed to collect both quantitative and qualitative data from entrepreneurs who own, finance and manage micro and small catering enterprises. This enabled the researcher establish whether the postulated determinant (process) technology transfer had influenced their growth.

A Quantitative research approach is a systematic investigation of scientific mathematical properties and their relationships. (Cooper & Schindler, 2011). This research approach involved the testing of the hypothesis that technology transfer influences the growth of MSEs within the catering sector. The measurements were quantitative and later analyzed using statistical techniques. According to Mugenda and Mugenda (2003) quantitative approach focuses on designs, techniques and measures and produce numerical discreet 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 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 *et al.,* 2006).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 population for this investigation was small scale entrepreneurs in the catering sector within the hospitality industry Nairobi County-Kenya. 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. According to the Daily Nation of 25th March, 2013, Kenya has shown tremendous economic growth over the past ten years which has increased in industries in Nairobi Central Business District. As a result the labor force population

has gone up. 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.

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.

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3.4 SAMPLING FRAME

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

Table 3.1: Total licensed micro and small catering enterprises in Nairobi. Source: Nairobi County (August, 2014).

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

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

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×ps ns= $384 \times \frac{x}{11162}$

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

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 (2006) 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.

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.

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

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ns =n×ps   ns= 384× $\frac{x}{11162}$

Where ns= Stratum sample size   n=size sample

Total sample for the whole population was 384

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

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

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

3.6 Data collection Instruments

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.

Questionnaires were the main instrument of data collection. According to Mugenda and Mugenda, (2003), questionnaires are used to obtain important information about the population. 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

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.

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

Table 3.2 Levels of confidence associated with values

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

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, 1951).

3.7.2 Validity

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-X5 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 Creswel (2007) Common Method Bias refers to the degree to which correlations are altered (inflated) due to a methods effect. In this study, bias may occur if the respondents are 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.

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. 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 processes. The researcher used the code book to transfer the numerical numbers representing the responses from the questionnaires.

3.9 SUMMARY OF THE METHODS OF TESTING THE HYPOTHESIS

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

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 independent variable 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.

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, Delmar & Gartner, 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.

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 objective was to: assess how technology transfers of process embodied technology transfers have influenced the growth of micro and small catering enterprises in Nairobi County, Kenya. The study also tested the hypotheses.

4.2.1: QUESTIONNAIRE RETURN 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.

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**

Table 4.1: Questionnaire Return Rate

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.

4.2.2: FIRM OWNERS SAMPLE CHARACTERISTICS

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.

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

Table 4.2: Gender of Study Sample

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 in the Country's economy.

Descriptive results as presented in Figure 4.1 indicate that the current age of firm owners ranged from18 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%).
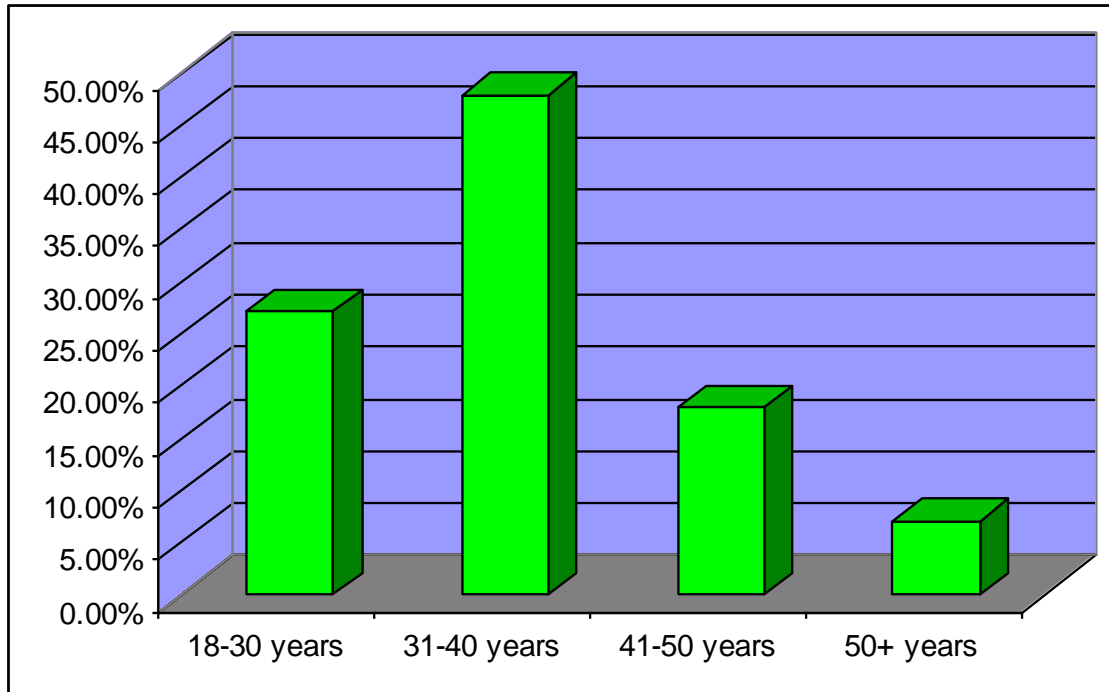
Figure 4.1: Age in Years of Firm Owners

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

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**

Table 4.3: Length of Service of Firm Owners Nairobi County. Results of the findings are presented in Table 4.3.

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 master's degree are (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.
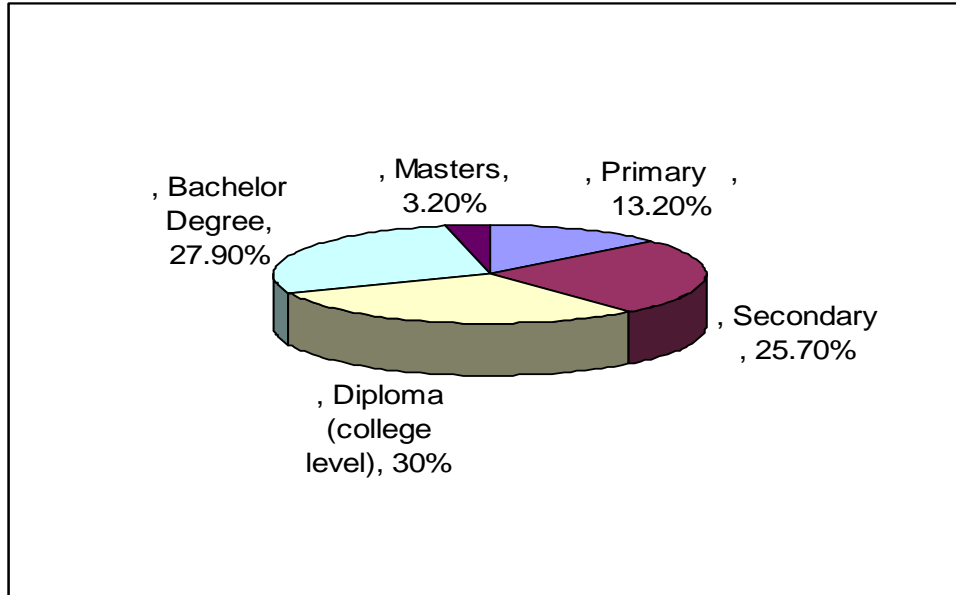
Figure 4.2: level of Education of Firm Owners

Chi-square test of independent between gender and level of education did not reveal any significant results (χ^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.

4.2.3: 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.

Form of Business	Business Type		Total
	Micro Enterprises	Small Enterprises	
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%)**

Table 4.4: Form of Business and Business Type Cross Tabulation

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.

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 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 firms owners preferred micro enterprises partly because it was easier to operate given the small initial capital involved.

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 eatin sample. The findings imply that majority of catering firms owners preferred micro enterprises partly because it was easier to operate given the small initial capital involved.

4.2.4 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 Kshs

500,000.

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**

- Table 4.5: Form of Business and Capital Base Cross Tabulation

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 ≤ 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 (χ^2 =233.953, p =.000). The results show that the types of enterprises were unevenly distributed depending on the capital base of businesses.

4.3 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 variable: Process embodied Technology transfer, Size growth, Age growth, turn over growth, projected margin profits, output rates, quality and customer base of the enterprise.

4.3.1 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 4.6, 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.

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**

Table 4.6: The Role of Process Embodied Technology Transfer

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 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 is used.

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

4.3.2 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 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 enhance production processes in micro and small catering enterprises. This information is presented in Table 4.7.

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**

Table 4.7: Positive Effect of Experienced and Well Trained Employees on Production Processes

The results presented in Table 4.7 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 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%).

4.3.3 THE ROLE OF 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 has grown in terms of size, turnover, profit margin, product output and customer due the constructs presented in Table 4.7. 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.

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**

Table 4.8: Views of Firm Owners on the Role of Process Embodied Technology Transfer on Growth of micro and small catering enterprises

A summary of the responses in Table 4.8 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%).

4.3.4 Measurement and Model for Firm growth in micro and small catering enterprises

4.3.4.1 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.

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**

Table 4.9: Period of Operating Micro and Small Enterprises

The results presented in Table 4:9 show 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 (χ^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.

4.3.4.2 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.

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

Table 4.10: Additional Branches of Operated

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.

As indicated in other sections of this study, one indicator of growth is the number of employees engaged in a firm, either as 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 4.11).

4.3 COMPARISON BETWEEN THE NUMBER OF EMPLOYEES AT THE BEGINNING OF BUSINESSES AND CURRENTLY

Responses	Employees At the beginning		Employees 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**

Table 4.11: Comparison between the Numbers of Employees

The results presented in Table 4.11 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.

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**

Table 4.11: Table 4.4: Form of Business and Business Type Cross Tabulation

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 4.12.

4.3.1 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" ex

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).

Forms of business	Initial Capital('000)	Profits('000)				
		Year1	Year 2	Year3	Year4	Year 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	1423	1589	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**

Table 4.13: Startup Capital and Net Profits in micro and small catering enterprises

Results presented in Table 4.13 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.

4.4: 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 variable) 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 4.14 shows this information.

Technology transfer Variable		Growth of Firms Indicators					
		Firm size	Quality	Profit margin	Product output	Customer base	No. of Employees
Processes	Pearson Correlation	.597**	.555**	.474**	.683**	.621**	.521**
	Sig.	.000	.000	.000	.000	.000	.000

Table 4.14: Correlation Analysis Relationship between Technology Transfer Variable and the Growth of micro and small catering enterprises in Nairobi

County, Kenya.

Results of correlation analyses between technology transfer of processes and growth variables are largely positive as presented in the Table (*r=.597, p=.000; r=.555, p=.000; r=.474, p=.000; r=.683, p=.000; r=.621, p=.000; r=.521, p=.000).* These findings indicate that enhanced processes due to technology transfer leads to increased growth of micro and small catering enterprises.

4.5: 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 4:7.

4.5.1 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 (á=.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 (χ^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 (see Table 4:15**)**

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	17.592	76.486	76.486	17.592	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						

Table 4.15: Process Embodied Technology Transfer Total Variance Explained

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(á=.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

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**

Table 4.16: Rotated Component MatrixExtraction 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

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 null hypothesis stated as follows:

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 (α=.981).

H₀:*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 number of customers per day (84.6%), the speed of production is enhanced (84.3%), enhancement of firms efficiency (83.8%), enhances

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).

better and faster processes (83.9%),assumes processes that are fast and simple (82,5%), new processes increases the

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

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).

Components	B	S.E.	Wald	Df	Sig.	Exp(B)
Standard Production Process	.194	.049	15.582	1	.000	1.214
Production Process Effect	.140	.057	5.988	1	.014	1.151
Constant	-.634	.364	3.027	1	.082	.530

Table 4.17: A summary of Variables in the Equation

n=280

$\chi2 = 66.696$; df = 2; Sig. = .000.

Cox an6d 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.

H$_o$ 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.

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 therefor creating better understanding regarding diffusion of production methods is important.

4.6 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.

4.6.1 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 (χ^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.

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	36.793	36.793	4.392	29.281	29.281
2	1.803	12.018	48.811	1.803	12.018	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						

Table 4.18: Firm Growth Total Variance Explained

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.

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
Served 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

Table 4.19: Firm

Growth Rotated Component Matrix Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization
.

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 ($á = .817$) 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.

4.7 Hypothesis Testing for the Null and Alternative Hypotheses

The postulated hypotheses for the study were tested to

either reject or accept them. They were:

i. H_o: 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.

Hypothesis	Coefficient p-Values	Conclusion
H_o: There is no significant relationship between technology transfer of processes and the growth of Micro and small catering enterprises in Nairobi County, Kenya.		Accept H_a: Reject H_o:
H_a: There is significant relationship between technology transfer of processes and the growth of micro and small catering enterprises in Nairobi County, Kenya.	P=.000 <=0.05	

Table 4.20: Table showing the results of the Hypotheses Testing

4:8 SUMMARY

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 variable. Correlation technique was used in the study to analyze the degree of relationship between the independent and dependent variable while logit regression analysis was used to determine the effect of technology transfer on 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 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 and ANOVA analysis were used to determine the relationship between them. The results of the two show that there is a strong relationship between the independent variables of the study and growth. The null

hypotheses of the study was there for rejected based on these results. Micro and small catering enterprises that had embraced technology transfer of 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.

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter contains a summary of the findings, conclusions and recommendations of the 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 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.

Questionnaires and interview guides were the main instrument used in the collection of data. The dependent variable was the growth of micro and small catering enterprises. In addition, the study tested four null hypotheses. The summary, conclusions and recommendations of the study are based on the specific objectives of the study.

Descriptive research design was adopted for this study. 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 survey method of data collection from a population of 11,162 respondents. The population sample comprised 384 enterprise owners who were selected by stratified random sampling. The researcher gathered information and the respondent's opinions, experiences and feelings on the influence of technology transfer on the enterprises where they work.

The study showed that the four independent variables influenced the growth of micro and small catering enterprises in Nairobi County, Kenya. Measurement enterprise size, age of enterprise since inception, customer turnover, profit margins, product output and quality, customer base and efficiency as the operational variable for enterprise performance showed that micro and small catering enterprise that had adopted technology transfer of production skills, equipment, knowledge and processes had showed marked growth over the past six years.

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.

First, gender characteristics revealed that males were slightly more than females indicating that females' participation in micro and small catering enterprises was lower than that of males. However, this did not statistically influence the growth of micro and small catering enterprises.

Secondly, although age was believed to be a factor in the ownership of micro and small catering enterprises ,comparison in the means of ages of both females and males owners using one way ANOVA did not show

significant results at. Findings of the study showed that majority of firm owners (40.45%) had a length of stay of between one and four years. Finally, all firm owners had attained a certain level of education: certificate (13.2%), diploma (30.0%), bachelor's degree (27.9%) and master's degree (3.2%). These levels of education were useful in technology transfer in micro and small catering enterprises.

5.2.2 Assessing 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.

5.2.3 Determining 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 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.

5.2.4 Examine 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.

5.2.5 Determine 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%).

Results obtained in the study show that experienced and well trained employees have had no positive effect in enhancing production processes in micro and small catering enterprises. The percentage of respondents who felt that trained employees had no positive effects and that use of experienced and well trained employees have not improved methods of production (15.4%), had not enhance better and faster processes (16.1%),had not made processes fast and simple (17,5%), new processes had not increased the number of customers per day (15.4%), the speed of production is had not been enhanced (15.7%),had not enhanced the firm's efficiency (16.2%), had not enhanced satisfaction of the employees (15.4%) ,rate of output per hour had not increased and overall performance had not been enhanced (16.1%).The study concluded that adoption technology transfer of processes was a significant component in the growth of micro and small catering enterprises in Nairobi County,Kenya. The growth of micro and small catering enterprises in Nairobi County,Kenya was measured using five variables, namely; profit margin, increase in employees, increase in customers, firm size and quality of products and services.

5.3 Conclusion

The study examined the influence of technology transfer on the growth of micro and small catering enterprises in Nairobi County. The study concludes that there are more male enterprises owners than there are female enterprise owners 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 County's economy. The study concludes that the current age of firm owners ranged from18 years to 50 years. Majority of businesses 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. The study concludes 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 (30.0%) had attained a diploma level of education. This level was followed by owners with university education having a bachelor's degree (27.9%). Owners with masters degree were (3.2%) and owners with primary level of education were also few (13.2%).

According to the summary of findings in the current study, out of 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.

According to the results of findings, 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.

Finally, 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.

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

5.4 Recommendation

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. However, more males than females seemed to participate in the micro and small catering enterprises and more so the adoptions of technology transfer in micro and small catering enterprises. While Kenya's constitution advocates for proportional participation of females in all sectors, there is no policy or strategy that targets the special needs of female firm owners in micro and small catering

enterprises. This study, therefore, recommends inclusion of more females in this sector where the Government offers incentives to female entrepreneurs through waiver of business license fees.

All the micro and small catering enterprises in Nairobi County operate under a capital portfolio of below Kshs three million. This implies that micro and small catering enterprises are constrained by finances. Moreover, 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 cushion micro and small catering enterprises from collapse due to financial constraints. There are no unique policies that target the development of MSEs. Identifying and recognizing the specific characteristics of MSEs and their special needs could enhance their growth. One of the strategies should focus more on enhancing training, market identification and process benchmarking.

In general, the study has noted that technology transfer in production skills, knowledge, equipment and process are key determinants in the growth of micro and small catering enterprises in Nairobi County, Kenya. Whereas usefulness of technology transfer is well supported in the current study a majority of firm owners, a small proportion of firm owners have not adopted it. The study recommends that all firms should be encouraged to adopt the new technology transfer in their businesses.

5.4.5 Recommendation for Further Research

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.

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.

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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