RETAIL BAKERY DESIGN AND OPERATIONAL PERFORMANCE IN KENYA

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DECLARATION

I declare that this research proposal is my very own original work and has not been presented in any other university.

Signature…….. Date……..

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Declaration by the supervisor

This research proposal has been submitted for examination with my approval as the university supervisor

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Much appreciation to my colleagues, family, and friends for support. Above all, special thanks to the almighty God for taking me this far.

DEDICATION

I dedicate this research to my parents and the family as whole for their support and inspiration.

ABBREVIATIONS

BPM:	BUSINESS PROCESS MANAGEMENT
BPO:	BUSINESS PROCESS ORIENTATION
CI:	CONTINOUS IMPROVEMENT
FMS:	FLEXIBLE MANAGEMENT SYSTEMS
ISO:	INTERNATIONAL STANDARDS ORGANIZATION
JIT:	JUST IN TIME
OM:	OPERATIONS MANAGEMENT
QC:	QUALITY CONTROL
RBD:	RETAIL BAKERY DESIGN
ROI:	RETURN ON INVESTMENT
TQM:	TOTAL QUALITY MANAGEMENT
UST:	UNIFIED SERVICES THEORY

ABSTRACT

Bakeries play a significant role in employment and wealth creation but most important it makes bread and other delicacies that we take in daily, Although we take bread daily we rarely think about its production system and difficulties encountered in its production.The shelf life of baked products highly affected by temperature, pH, water activity, and bacterial contaminations. Product safety has to be considered in the design. Food products face risks like lack of traceability, transport delays/breakdowns and temperature abuse, cross-contamination in transport and storage.This has necessitated a revisit of the bakery design. This research was carried out to find the effect of retail bakery design on the operational performance of supermarket retail bakeries in Nairobi County. The core objectives being to identify process type used, and the kind of influence they had on the operational performance. The researcher used a cross-sectional descriptive research design to conduct this research. The population of the study was all the supermarket bakeries in Nairobi County. The researcher used a census of all the 17 supermarkets in Nairobi County. Questionnaires were used as the tools for data collection. Descriptive statistics was used to analyse the data using such as means, standard deviations and frequency distributions. The findings from the study established that most bakeries had a batch type of processes deigns. The study also established that retail bakery design resulted in an improved operational performance in bakeries. This study recommends retail bakery design as opposed to mass and continuous production since it offers flexibility, quality and speed all which increases customer satisfaction and firm's competitiveness.

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CHAPTER ONE: INTRODUCTION

1.1 Background

In the last four years, many bakeries have sprung up in Kenya although we take bread daily, we rarely think about its production despite being a basic commodity. Like other industries, bakeries face tests. These trials of the global external environment, through strategies, drive organizations to search out ways to reduce costs, deliver the products and services customers need and when they need them. This forces a focus on design efficiency and effectiveness. (Kelly, 2009) Producing high-quality products that can be sold at competitive prices is the basic responsibility of the operations area. (Nicholas *et al* , 2003). According to Chase, competitive delivery, asset utilization, quality and cost are the key success factors in manufacturing. In a bakery retail design context, the shelf life of baked products is short and highly deteriorated by temperature, pH, water activity, and contamination levels. Product safety and sterility have to be considered in the design, (Srivastava , 2015) found out that the most Risks like lack of traceability, transport delays/breakdowns and temperature abuse, cross-contamination in transport and storage have medium a driver and dependence. In this proposal, retail bakery design minimizes handling. Retail designs are the most important, difficult, dynamic, and most demanding operations to manage.

The role of operations managers in bakery firms relates to rapid operations to supply high-quality affordable products and the attached service timely, the right quantities to the right locations more frequently due to their perishability nature. A Retail bakery is designed to facilitate distribution or movement of the product mix closest to the customer with the aim of increasing speed and flexibility. Flexible manufacturing systems (FMS) with an intermitted processes together with some automation as evident in retail bakery designs, can improve operations performance. Retail designs usually

include a refrigerated food processing and dispensing equipment. This automates the selling process making it easier thus reducing queues. Process consists of all the operations used to make a product (Walters, 2002).

Processes are the important link between client requirements or customer and the products or services delivery (Kelly, 2009.) Well-designed processes are both effective and efficient and contribute to organizational capabilities. Process design-stages of production process have an immediate effect on the customer. Retail bakery design is the best way to include customer involvement, put the customer first on a very fast-customized service and design what the customer wants, promoting their benefits in terms of quality speed and convenience. Retail processes Designers particularly in retail settings, need to look at the weight on efficiency internally along with the weight on the customer externally if better decisions are to be made (Chase, 2003). In a retail bakery, cakes are usually prepared in batches. All batches go through the same sequence (premixing, mixing, baking, cooling, packaging), but each batch is a different variety (William, 2011). This type of process is able to offer flexibility, speed, and customization as opposed to continuous process of automated factory baking process. Which is in between mass production and a continuous process. Line process gives goods and services in large volumes but in rather very narrow variety narrow, that is, in terms of the product design fundamentals. (Slack_*et_al*, Pearson, 2010)

Operational Performance Management spins around the placement of the various business Units within a firm in order to ensure the units are helping to achieve a global strategy and a set of centralized goals (Childerhouse and Towill, 2003). Performance is mostly measured at two levels: financial performance or operational performance

(Venkatraman and Raman, 1986). Financial measures, are broad and deal with numerous aspects outside manufacturing operations context. Trying to separate the performance of the operations function is to use measures where the operations management plays central part that is operational performance measures (Boyer and Lewis, 2002). Effective firms manipulate operational and process improvements to achieve targeted performance success in many parameters these are: / Quality, cost, flexibility, speed, dependability and quality of service. Dimensions of Service Quality include: / Tangible, Empathy, Assurance, Responsiveness and Reliability. The main objective of operations management is to add value along the supply chain (Roberta S. Russell, 2002).

1.1.1 Retail bakery Design

Bakeries are a productions system and design matters. A company is called design-driven, when the achievement of customer satisfaction and company profitability is based significantly on the process to align the major technical product design characteristics (such as product performance, quality, durability, appearance, and costs) to requirements of the customer (Prasnikar *et al.*, 2008). Although improvements can be made to operating system to meet demands of a customer the processes used to make a product are likely to limit the extent to which these changes can affect performance (Kim and Rupert, 2009). A bakery retail design is an example of batch process. All batches go through the same sequence (premixing, mixing, baking, cooling, packaging), but each batch is a different variety. This type of process is able to offer, speed, flexibility to process and accommodate various products, Lower investment in plant and machinery, Operators Job satisfaction and customization as opposed to continuous process of automated factory baking process. Mass and Line processes produces goods and services in a very narrow variety but in high volumes (William, 2011). The

advantage for this kind of service operation is the accessibility of the customer and interaction (Roth *et al.,* 1997).

Automated factory bakeries provide a good example of a Continuous process. Although function at a high volumes they have low variety. Continuous process often have rigid, high-capital innovations with a highly foreseeable flow. Inspections most often form part of the process, although the control applied as a consequence of those inspections is mostly automatic rather than requiring human discretion. (Slack_*et_al*;, Pearson, 2010).The main drawbacks of a continuous bakery design are that speed, flexibility, and quality are compromised. A continuous process is not suitable for most baked products, with a shelf life of four days, a wrong forecast it is more likely to generate many spoilages and damages during transport. Retail design prevents this. Service types and associated processes were first defined by (Maister and Lovelock, 1982) and refined by (Schmenner, 1990). (Silvestro *et al.,* 1992) use the ideas of (Maister and Lovelock, 1982), and (Schmenner, 1990), but attempted to operationalize them by defining the six dimensions (i.e. customization, contact time, focus on equipment or people, product vs. process characteristics, front and back office and employee discretion,).

1.1.2 Operational performance

Operational Performance is the extent to which an operation satisfies the five generic objectives of flexibility, quality, speed, dependability, and cost (Nigel *et al*, 2010). Delivering quality and quantity goods in specified time is critical for the survival of a manufacturing operation. It is also described as the degree to which the firm is able to meet its own needs for survival and the needs of its stakeholders (Griffin, 2003). It is the valued productive output of a system in the form of goods or services. (Swanson, 2000).Effective firms balance process and operational improvements to

realize targeted performance success in many dimensions including Quality, cost, flexibility, speed, dependability, and quality of service. Dimensions of Service Quality include, Tangibles, Assurance, Responsiveness, Empathy and Reliability (Hassan, Islam and Ahmed, 2011). It is vital also to concentrate all efforts in the value creating processes in order to eliminate costs while maximizing throughput Reliably (Arthur, 2008). The five performance strategies or objectives are: speed, quality, dependability, cost, and flexibility and can also be divided into specific measures such as customer complaints or customer satisfaction, timeliness of delivery, delivery lead times, and mean time between failures, order lead time and price (Nigel et al, 2010). This measures can further be aggregated into more defined strategic objectives like 'achieve zero customer complaints', 'achieve a delivery lead time of one day', etc.

1.1.3 Operational performance and retail bakery design

Retail bakery design is the best way to include customer involvement, put the customer first on a very fast-customized service and design what the customer wants, promoting their benefits in terms of quality speed and convenience (Chase, 2003). A Retail bakery should be designed in a way that customers will delight in the extraordinary aroma and friendly atmosphere coming out of the new custom bakery store or department. This highlights freshness, which is a quality objective of an operational performance. Bakery interior design décor, Retail, sign packages, special bakery display tables and racks create highly fast and flexible operations. (RBA retail bakery design) (IBIE, 2013). For retail bakeries, proximity to customers is very important. Storefront creates convenience to prospective customers walking and getting customized orders and fast deliveries. (Foodservice warehouse, 2015) Goods are constantly on display. Service from storefront customer service eliminates queuing. If the quantities demanded are high one can always get a backup from the main factory.

Factory bakeries usually lack visual displays. Retail bakeries can make custom cakes, bread or cookies in smaller portions and still make a sale. They have a flexibility of selling cookies to customers who visit store anytime depending on hours. A Factory bakery rarely has this option (Monica, 2015) Delivery truck or delivery service is thus required. This consumes time and labor and induces handling damages as well as a truck ready with refrigeration capabilities and the space to transport baked goods daily around town. Due to automation of manufacturing processes, their varieties are fewer (Foodservice warehouse, 2015)

A continuous process is not fit for most baked products, with a shelf life of four days it is likely to generate many spoilages from any wrong forecast and handling damages during transport. Retail minimizes this. Short lead-time is also another advantage of a retail design. Matching capacity service with demand has a significant effect on profitability due to waiting time-effects on demand (Andrews and Parsons, 1989) and excess capacity-effects on operating margins (Thompson, 1998). It is thus vital to fulfil customer requirements first in the process of service delivery so that perceived quality of services is not later on affected by first negative impressions (Maister, 1985). Waiting time prior to placing an order at a fast food restaurant is the key factor in fulfilling customer satisfaction. (Davis and Maggard, 1990)

1.1.4 Supermarkets that operate retail bakeries in Nairobi

This research will be focused on food retail bakeries in the Kenyan context and thereby limit the ability to generalize the findings. Most bakeries are mostly concentrated at the hypermarkets. With supermarkets in Kenya experiencing quick changes and growth, the bakery industry is dominated by a high number of retail setups consisting of hypermarkets in Nairobi. Naivas, Nakumatt, Uchumi, and Tuskys have in-house

bakeries under different trade names e.g. "The fresh corner "of Tuskys, "Fresh bake" of Naivas etc. These bakeries have deeper rivalry grounded on product quality, price, service quality, and customer service. Due to fierce competition which has developed among them, retail bakeries need to continuously increase their operational performance, be customer oriented and be effective and efficient in service delivery (Yu and Ramanathan, 2008).In urban areas with high population growth and increase in disposable income, retailers have increasingly incorporated in-house bakeries to widen their portfolio in an attempt to hold on to their income and remain competitive.

Bakery retailers in Kenya have constantly widened bakery product portfolio, primarily in current retail outlets, to include in-house bakeries. Driven by "one-stop-shopping", in addition to offering consumer convenience and speed, grocery retailers used floor space to accommodate a variety of baked products aimed at growing sales revenues and maintaining customer loyalty.

1.2 Research Problem

If a company makes a mistake with its processes it is very expensive to put things right. (Walters, 2002). Walters argues that even the best products now available will soon be overtaken by competitors' designs, changing demands or improved technology .Organizations thus need to be process centred. Retailing has become fierce in the food industry with the introduction of portable in-house bakeries, milk and juice dispensers etc. Designing processes with this in mind can help solve operations managers 'challenges of how to increase the value of their products which can be done in terms of reducing cost while maintaining the quality. Operations managers are often faced with challenges of which process design to use especially in the food products which exhibit unique characteristics, need special preservation equipment, are affected by the

environment, are highly perishable and are highly regulated by standards. Although the studies of business processes have been widely promoted, "there has been lack of a guide that explains and describes the concepts involved" (AguilarSaven, 2004).

Business environment is currently becoming more turbulent, dynamic capabilities, agility, flexibility, adaptability, and speed are becoming more important sources of competitiveness (Sushil, 2000) ; (Barney, 2001) . Batch processes are fit for customers demand a lot of variety (Walters, 2002).Higher levels of BPO provide direct customer satisfaction benefits as well as indirect financial and operational benefits. Due to the dynamic environments a gap thus exists for research on retail designs and processes of in-house bakeries this is brought about by the need for variety, speed overall, business process design is not well understood from an academic perspective and remains more art than science (Liman and Reijers, 2007). Consequently, while good process management is central to the performance of service firms (Maddern *et al.*, 2007), limited scientifically derived principles of process design exists. This may go some way towards explaining why business process design is difficult in practice with published estimates for success averaging ca. 30% (Oakland and Tanner, 2007).

A study by Ponsignon *et al*. (2011), shows that although operational performance has been widely studied locally, very few studies have focused on retail design. A study by Kathama, (2012) recommends that the management of corporations should seek to improve their operating efficiency and quality of services or products in order enhance their performance. Kangogo, (2014) found out that Processes assist significantly in simplifying the work activities; "it brings some level or degree of work consistency"

1.3 Research questions

To what extent does a retail bakery design affect operations performance?

1.4 Objectives of the Study

1.4.1 Main Objective

This study seeks to establish the relationship between retail oriented bakery design and operational performance

1.4.2 Specific objectives

i. To establish design and type of processes used by supermarket retail bakeries
ii. To determine the effects of these processes on operational performance.
iii. To identify the gaps and prospects in retail process designs of bakeries.

1.5 Value of the Study

Valuable to operations managers who wish to increase their competitiveness by being closer to the customer in order to improve on convenience flexibility and other operational performance indicators. It is also can be valuable to managers who are faced with dilemmas of how they can deliver outstanding value to customers through improving on product quality in this case freshness, cost reduction due to defects prevention, less handling of the most perishable product.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter looks at the available knowledge about retail design, and operations efficiency It will also focus on key drivers of a bakery operational performance that include cost reduction, speed of service delivery, quality, and flexibility. The chapter will further look into other related studies conducted worldwide and the conceptual framework of the study.

2.2 Process design Theories and Theoretical foundation

Process management theories linking and performance calls upon the contingency theory literature and firms routines. Routines are patterns of interactions that occur repeatedly, therefore, a process is an organizational routine (Becker, 2004). Nelson and Winter (1982) define organizational routines as a recurring pattern of behavior which changes based on conditions. These routines can be regarded as a stability or flexibility source. (Feldman and Pentland, 2003) and are revised, sustained and developed accordingly. Process improvement and design alter routines by either improving the processes existing or creating new ones. “Few major trials to develop theoretical positions on possible approaches to business process management exists, probably because the development of business process management has been driven by practitioners rather than academics”. Liman Mansar and Reijers (2007)

The Unified Services Theory (UST) proposes a link between the variability and type of the customer inputs supplied and process design (Sampson and Froehle, 2006). A high inconsistency in customer inputs hinders automation of process and that the existence of customer self inputs needs the process to be close to the customer.

The theory of constraints describes that firms performance is controlled by constraints. These are constraints that bar a firm from maximizing its performance and achieving its objectives. This theory claims that in every system, despite its performance has at least one constraint that limits its performance and this is the system's weakest

2.3 Process design.

Design is shaping the physical form and use of services and goods and the process that yield them. A company is called design-driven, when the achievement of customer satisfaction and company profitability is based significantly on the process to align the major technical product design characteristics (such as product performance, quality, durability, appearance, and costs) to requirements of the customer; examples are firms like Gorenje or Indesit (Prasnikar *et al*., 2008). Design is a general decision making of a total process course for transforming inputs into outputs. The general objective of process design is to achieve customers' needs through meeting appropriate levels of cost, dependability, speed, flexibility, and quality. The general nature of every process is heavily affected by the variety and volume of what is to be processed. In manufacturing, these process types are in order of decreasing variety and increasing volume project, jobbing, batch, mass and line processes. (Walters, 2002) In services, this includes professional services, service shops, and mass services. (William, 2011). Overall, business process design is not well understood from an academic perspective and is more of an art than science (Liman and Reijers, 2007). This proposal argues that, in a retail bakery, if firm competed mostly on its strength to address to customer requirements quickly, its processes need to be designed to have fast throughput times.

2.4 Bakery Designs

Design in bakery processes requires more attention than non-bakery processes due to their perishability nature. Retail designs are one of the most dynamic, important and challenging operations to manage. In a continuous process, equipment's are arranged sequentially according to production operations from the initial operations to the finished good. Inputs flow through a line of operations via material handling equipment like mixer, proofer equipment, etc. Design influences the mix of sales strategies, efficiency and speed flexibility of manufacturing (Takeuchi and Nonaka, 1986).

Continuous production, in a factory bakery ,is used in a situation with dedicated plants and equipment with limited variation and flexibility, handling is highly automated thus the flexibility to process several of products is limited, requires a heavy investment for setting flow lines and Product variation is low. (Walters, 2002). A retail bakery design is more likely to be batch processes- process focus (Heizer and Bary, 2009), while a factory bakery is likely to be product focus; continuous line type of processes. Batch manufacturing produces some intermediate varieties for products with intermediate volumes. Batch process type are common over a wide range of variety and volume levels. (Ranneerselvam, 2009) A bakery retail design is an example of batch process. A retail bakery, cakes are usually prepared in batches. All batches go through the same sequence (premixing, mixing, baking, cooling, packaging), but each batch is a different variety. This type of process is able to offer flexibility, speed, and customization as opposed to continuous process of automated factory baking process. Continuous and line processes are characterized by relatively rigid, heavy-capital technologies with a high predictable flow. (William, 2011) .The main drawbacks of a continuous bakery design is that speed, flexibility, and quality are compromised, wrong forecast results into

waste. (Heizer *et al,* 2013) describes forecasting as the use of quantitative and qualitative techniques to determine an approximate future performance, with the aim of helping managers makes decisions about future levels of production.

A retail bakery design offers service as well, under service process called service shops. Service shops are considered to have high levels of customization, customer interaction, large number of customers and staff discretion, they are ranked in between the extremes of mass services and professional. (Walters, 2002). Service is offered through mixes of back-office and front activities. Retail bakeries and restaurants exhibit this type of service processes. The main advantage of this type of service is that it improves service quality, speed, and flexibility. For example, a bakery firms might have a wide variety of products displayed in retail outlets, while remote operations partake premixing, administration, and purchasing. Design layout refers to the arrangement of storage areas, machines,, workstations, sections, aisles, and common areas within the existing or proposed facility (Russell, 2007).Layout decisions are vital since they need heavy investments of both effort and money, involve long-term obligations and have a heavy weight on the efficiency and cost of short-term operations. Lean layouts decrease material handling costs, utilize labor efficiently, use space efficiently, reduce bottlenecks, facilitate communication and Interaction within the firm, shortens customer service time, and enhance entry and exit of people, materials products and eliminate redundant movement, (Stevenson, 2014).

2.5 Retail bakery flow pattern

The flow pattern below is typical for all kinds of retail bakeries. The first step is to keep the equipment so that from the input ingredients to the end product, the length between the operations are minimum and employees are not frequently crossing the bakery.

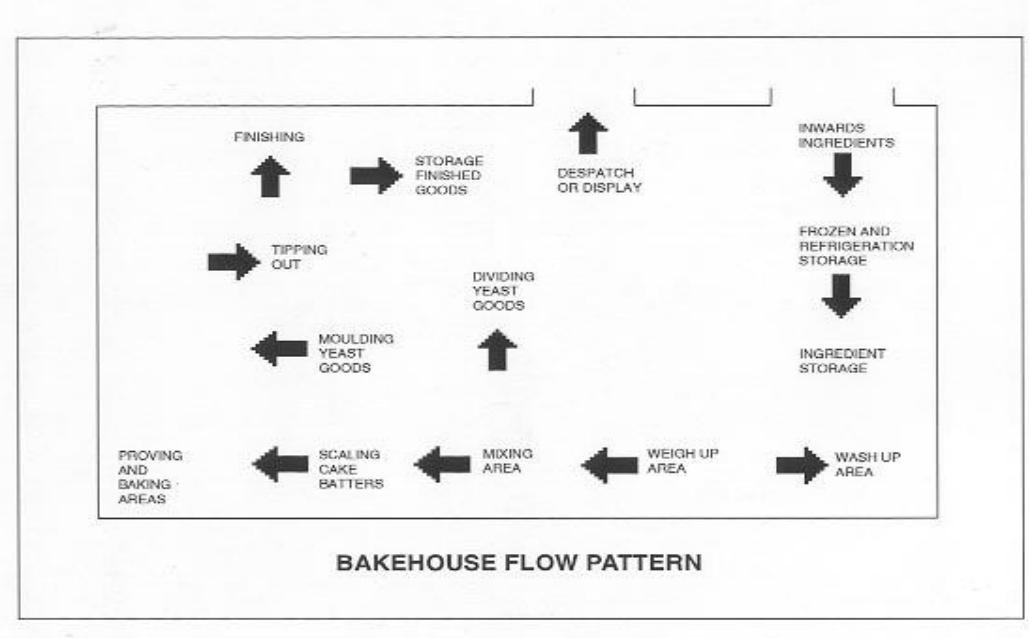


Figure 1 basic bakery flow pattern (setting up a bakery or hot bread shop, 2001)

The typical retail bakery layout would have the following: Flow pattern through the bakery, Oven positioned for optimum customer appeal spaces for extraction hood, and oven ventilation. Inventory area should be accessible and goods are finished ready for handover to the display or despatch. Scaling zone this area should be next to both the wash up and the ingredients store. The Mixing area should be next to scaling area this is another area that can become untidy during operations so it advised to be screened from public view. Sufficient workbench space is important for a product flow-pattern in the retail bakery layout. Bench space has to be reserved as follows: Scaling zone, Mixing zone, Dough resting, dividing, and moulding zone. Batter scaling area. Tipping out area or removal from the oven and finishing bench zone. These benches should be placed as

conveniently as possible for each area and can serve more than one function. Location is an area for this study to consider since it creates convenience. (Slack et. al., 2010). Retail bakery services should be located as near to customer as possible. Retail and service facilities are usually small and less costly than large industrial facilities. One of the most important factors in locating retail or service facilities is proximity to customers. (Russell, 2007).an ideal location for would be an urban highly populated area with both foot and car traffic.

2.6 Operational performance

Performance is predominantly measured at two levels: in the areas of financial performance or the operational performance (Venkatraman and Raman, 1986).General financial measures like profitability and return on investment (ROI) are usually firm-level measures that involve many factors outside manufacturing operations context. Accounting procedures especially cost accounting has not been measuring the right things. Trying to detach the performance of the operations function is to use measures where operations management plays a central role that is operational performance measures (Boyer and Lewis, 2002). Operational excellence is not only desired end state but also a short-term prerequisite for any successful firm. Effective firms balance process and operational improvements to realize set performance goals in various perspectives such as Quality, cost, flexibility, speed, and dependability. (Hassan and Ahmed, 2011). Quality of service Dimensions include: Reliability, Service Quality, Assurance, Empathy, Responsiveness, and Tangible. The main objective of operations management is to add value along the supply chain (Roberta S. Russell). If process performance is to be measured, the system of measurement must consist of performance indicators that can measure "product flow" processes (Schwichtenberg, 2000).

Quality contributes significantly to customer satisfaction. Quality decreases rework costs and improves dependability. Quality brings consistency in the production of the product or service. Quality is conforming to customers' expectations consistently, doing things right, but what needs to be done right will vary according to the nature of operation (Slack, Chambers and Johnston, 2007). Quality is the most noticeable dimension of an operation process. Quality covers a big number of dimensions in the delivery of services and products: it features performance, conformance, serviceability, aesthetics reliability perceived quality and durability. In provision of services, personal attention, kindness empathy, security, dependability, and knowledge hold much importance (Gronroos, 2000.) The new game calls for quality control (QC) to work with all aspects of the organization in development of a total quality control (TQC) (Kannan and Tan, 2005).

Queuing to get service in retail outlets is both unnecessary and undesirable activity customers go through in order to get their services (Tom and Lucey, 1995). Speed means the time elapsed between customers requesting products or services and their receipt of them (Slack, 2007). (Robert, 2002) puts that "response" which is closely related to speed, flexibility, and time based competition dominates many sectors." Speed in other terms means response time. This improves customer value. It reduces inventory internally, reduces risks (shortened forecasting times). Speed can best been seen as company's sales quotes generation rate and how fast and frequent a firm can supply its goods and services as per the Needs. Speed can also mean the time taken to prepare products and services or conduct research and develop a new product.

Dependability: it refers to doing things timely for customers to receive their goods or services just when they need them, or at least when they were promised, (Indran, 2007).

This is learned with time and in the end it overrides all other factors. Despite a product or service being cheap, innovative or fast, if the customer cannot depend that it will be at the right quality, delivered in time, the customer could be lost. Dependability within the firm saves money and time as it cuts ineffective use of both resources and time. Dependability enhances firm's stability, as disruption effects quality of operations time that is above costs and time. A firms operations are dependable if its goods and services are produced and delivered timely to its customers and as per the agreed prices and costs. A firm also rates dependability by the ability of the product to consistently perform as designed and as expected and to function over a reasonable amount of time. (Neely, 2002).

Flexibility: in response to a dynamic environment, firms alter their services and products and changes they conduct their operation. This is referred to as flexibility. As opposed to evolution, which is irreversible, flexibility is the ability to adapt, in a reversible manner, to an existing situation (Bucki and Pesqueux, 2000). It is also the ability to change Customers' needs. Operation needs to be flexible so that it can provide mix flexibility, product or service flexibility, delivery flexibility and volume flexibility. Flexibility rates suppliers' ability to shorten the agreed lead-time when asked, (Roy, 2009). Lead-time therefore plays a major role in defining flexibility Designing flexible operations is advantageous to the internal customers within the operation. Flexibility saves time, speeds up response and maintains dependability (Slack *et al*, 2007).

Types of flexibility requirements: product or service flexibility- being able to launch fresh or modified services or products quickly. Mix flexibility: being able to make a wide-ranging mixed variety of product mix. Volume flexibility being able to adjust output levels. Delivery flexibility how often delivery time can be changed. Operations

become flexible, if the firm can design the product lines to adapt to various product needs and if operations can quickly adopt to these changes. Flexibility advantage puts a firm in a position to produce products at different quality levels and with numerous design modifications. (Kim and Rupert, 2009.) Neely says that flexibility necessitates a firms to adjust operations to adapt to changing or new volumes of production and delivery schedules. Mass customization gives firms ability to give every consumer a tailor-made service or product and also being able to produce massively thus reducing costs. A retail bakery's design flexibility, gives the customer within limits the ability to design their own product. (Neely, 2002).

Costs/price concerned on how to make the product or deliver the product cheap, waste elimination, lean production of low costs through disciplined operations. Every firm intents to keep costs down. Costs are measured by productivity, productivity is calculated as follows: (single factor P = Output / one input), (P = output /input) and (multi-factor P = output /all inputs). Costs performance objectives is the change in unit cost due to volume changes a company produces and the mix of produced products. Often, the higher the cost per Unit., the larger the variety of products, and the lesser the volume produced. Most important, per product cost varies which influences profits, running costs and product prices. Competing on cost calls for standardized products for large market, automation focus on value-added operations, simplified procedures training and coaching for efficiency. Firms minimize waste and unnecessary costs within the system by empowering people with appropriate technology and skills to perform (Kannan and Tan, 2005).

2.7 Empirical Studies on retail designs and operational performance

There is robust advantages of choosing a retail bakery design since it offers flexibility, improves quality reduces food handling hence saving spoilage costs, reduces packaging needs. Dedicated front customer professionals offer Speedy services thus reducing queuing. Past researches shows that success of a profit-making firm is measured by financial measures but also by its effectiveness of operations, a strong contributing factor in the firms' quest for excellence and existence in highly competitive markets. Reijers and Liman (2005) notes that few academic studies give detailed technical directions for designing a business process. A study on Research opportunities in service process design by Arthur - et al, (2002), recommends future studies on the unexploited research areas and mentioned retail process design.

Samar et al, (1998) on "Interfaces for resolving marketing, manufacturing and design conflicts", highlighted the conflicts between design and marketing brought about mostly by design found out that design works closely with incorporating customer preferences and manufacturing (receiving the design for production).there is a conflicts revolve around cost quality and flexibility. Again Samir et al (2015), on "Propagation of risks and their impact on performance in fresh food retail", finds out that the most risks like lack of traceability, transport delays/breakdowns and temperature abuse, cross-contamination in transport and storage have medium driver and dependence powers. A retail bakery design improves handling. Brocke , Jan, Recker and Mendling (2010), on "Value-oriented process modelling: integrating financial perspectives into business process re-design" study found out that according to the two case studies, value-oriented process modelling approach improves and facilitates managerial decision making in the scope of process re-design.

Smart and Maull on Process design principles in service firms revealed that in the business process design area one size does not fit all service organizations and that some design principles fit better under certain contextual conditions a retail bakery design thus fills the gap and extends existing theory providing a platform for future process design research in retail organizations that is aligned more closely with the practitioners 'needs. There are thus gaps in which design to choose in a retail bakery to achieve flexibility, improves quality reduces food handling hence saving spoilage costs, reduces packaging needs. This gap is a big concern and had triggered this research study.

Table 1 operational performance relationship: Retail versus Factory bakery designs, Source: author, 2016

Performance measure	Factory bakery	Retail bakery
QUALITY **FLEXIBILITY** **DEPENDABILITY** **SPEED** **COST** (*ASSURANCE* *EPHATHY* *TANGIBLES* *ERROR FREE PRODUCTS* *RIGHT FIRST TIME* *QUICK DELIVERY* *MINIMUM PRICE HIGHEST VALUE*)	Known customers	Large refrigerated display counters
		Freshly scented atmosphere
	Don't pass market sensitive information	Customized service
	No loyalty	Trained and developed store front service professionals
	Payless attention to promotions atmosphere and locations	Easy communication, feedback from customers and aftersales service
	Larger transactions	Make to order, no preservatives made today for today
	They bring their own cost	Final baking and customization at retail store
	Longer lead time	Shorter lead time
	Not fast enough	Custom lighting showcases influence positively appearance of bakery products customers look for freshly baked and mouth-watering bakery creations - they avoid hardened, faded and weak tasting items.
	Not provide market and competitive information	Retail Bakery Display Case Lighting
		Integration with cafes, coffee shops and juice bars
		Shop Bakery Ovens
		Counter stop glass cabinets clear view of the content
		Bakery products displayed can be readily recognized from a far
		Have and control own competent staff on service of quality
	wrong forecast spoilages	Low cost
	Extra charge by distributors	Own manageable customer service representative who can be trained on operations performance targets
	Damages during transport	less handling damages

2.8 Conceptual framework

Conceptual framework covers the knowledge of how the variables of a study integrate. It thus, identifies the variables needed in the research exploration. It is the blue print in pursuing an investigation. According to Mcgaghie *et al*. (2001), conceptual framework "sets the stage" for the presentation of particular research question that guides the investigation reported based on the statement of problem.

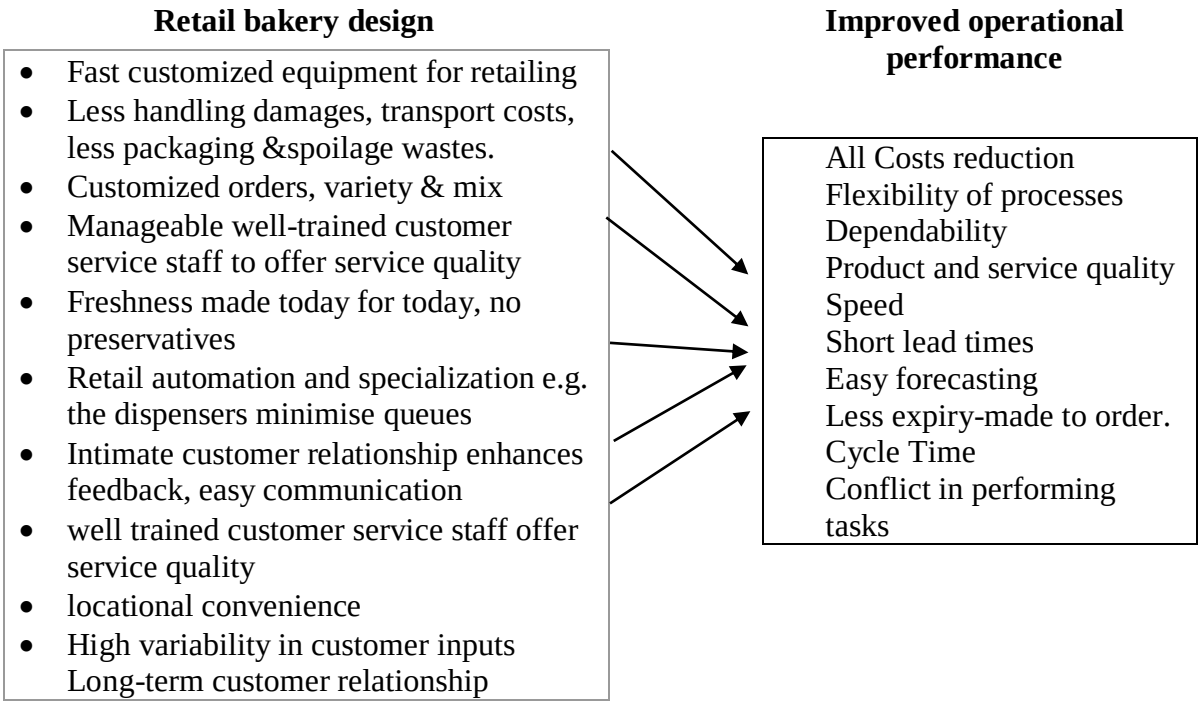


Table 2 Conceptual model, Source: author, 2016

The conceptual framework shown here depicts how the independent variables directly affect the key operations strategy elements that help in developing a competitive advantage and ultimate operational excellence that is a derivative of operational performance.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the methods that will be used by the study to achieve its set objective through presenting research design, a description of the population, data collection method and analysis of data.

3.2 Research Design

This study will use a descriptive research design in order to achieve the set objectives, which were to determine the relationship between retail bakery design and operational performance. The research design will also be cross-sectional. Due to the dynamic environment in which bakeries operate hence, the forms of designs are also changing. This will also afford consistency in the data collected since it will be collected at the same point in time. Descriptive research design Makes predictions and Determine relationships between variables .it is normally directed by one or more formal research questions (John biuret, 2002.)

3.3 Population

The populations that will be observed in this study will be operations /production managers from all 17 supermarket retail bakeries within Nairobi. A census will be carried out due to the relatively small number of supermarkets that operate retail bakeries in Nairobi.

3.4 Data Collection

The data collected will be both primary and secondary in nature second. It will be collected by use of a structured questionnaire with both open and closed ended

questions. This study preferred this method is in due to the small size of the population, which can be reached conveniently. Observations will also be made.

3.5 Data Analysis

In order to analyze the data using Descriptive statistics, it was converted into numerical codes representing attributes or measurement of variables. Descriptive analysis which consists of frequencies, percentages, means and standard deviation was used to summarize the data. A multiple regression analysis was used to establish the relationship between variables.

Operational performance (γ) =constant (α) +$\beta 1$ (retail bakery speed) + β_2 (retail bakery flexibility) + β_3 (retail bakery cost) + β_4 (retail bakery quality)

CHAPTER FOUR: DATA ANALYSIS, INTERPRETATION, AND DISCUSSIONS

4.1 Introduction

The chapter presents the findings and analysis of data collected based on the research objectives of the study. The data was analysed and presented in the form of frequency tables and pie charts.

4.2 Background information

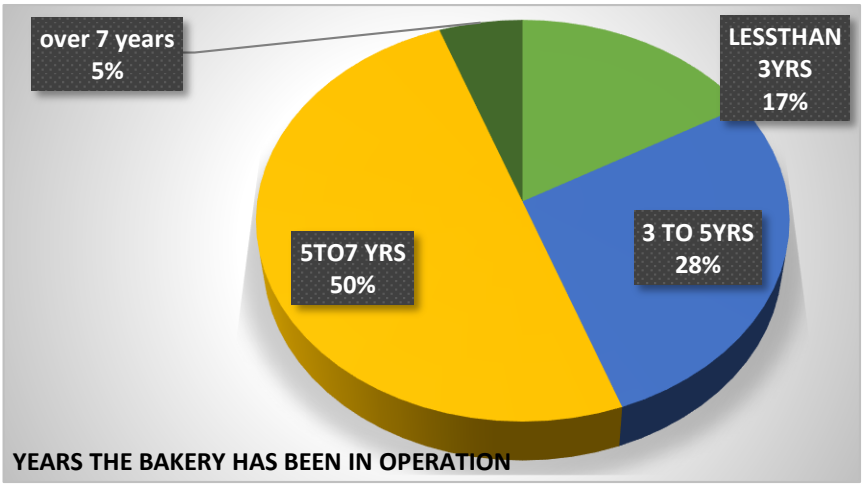
By the use of a questionnaire and observations, data was gathered about operational performance of retail bakery design. The data gathered consisted of the title of the respondent, education level, the years of the operation of the bakery and effects of retail bakery design on several operational performance measurements.

4.3 Years of Operation

Although 6% of supermarket in-house bakeries have been in existence for over 7 years, the result shows that 45% of the supermarket in-house bakeries are less than 5 years old. Most of the bakeries 50% were introduced during the year 2010 this indicates that emergence retail bakeries are still on the rise and there is a high probability of more future entrants.

YEARS THE BAKERY HAS BEEN IN OPERATION

	FREQUENCY	PERCENTAGE
LESS THAN YRS.	3	17
3 TO YRS.	5	28
5 TO 7 YRS.	9	50
over 7 years	1	6
	18	100



4.4 Respondents experience

As shown below, over 72 % of the respondents had over 3 years of experience in the bakery. This indicates that the bakery had been in operation long enough and that the respondent had the capacity to give reliable and relevant data. This also might indicate that retail bakeries are stable and retain their employees for over three years.

Table 3 Respondents experience

Years in the organization

	FREQUENCY	PERCENTAGE
UNDER 3 YEARS	3	18
3 TO 5	10	59
5 TO 7	3	18
Over 7	1	6
	17	100

Source: Research data

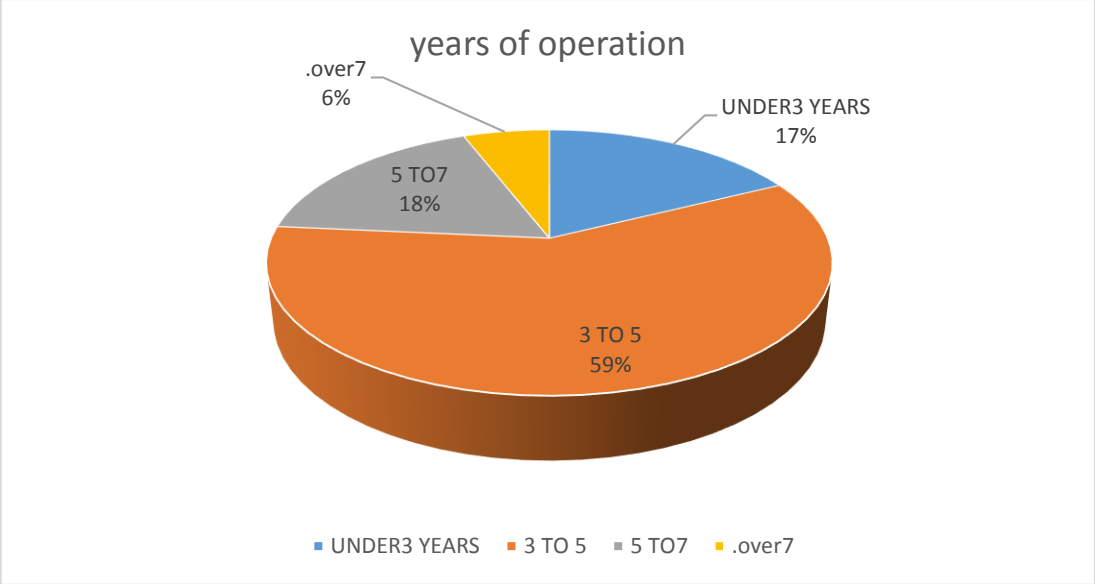


Figure 2 Respondents experience

Source: Research data

4.5 Type of process design employed

According to results most retail bakeries have batch (82%) and jobbing (18%) type of processes, this is due to small but expensive spaces from where they operate in, none of the retail bakeries had either mass or continuous processes. This can be interpreted as due to lack of ample cheap spaces required by continuous production equipment in the highly populated town and cities. This can also be attributed to the fact that flexibility required at a retail set up can only be achieved by either batch or jobbing type of processes.

Despite the limited space in a retail bakery set up, decreased waste in form of expiries and damages, minimizing overproduction and underproduction short lead times were the most mentioned advantages listed under batch process

Table 4 Process type

	FREQUENCY	PERCENTAGE
CONTINUOUS	0	0
MASS	0	0
BATCH	14	82
JOBBING	3	18
PROJECT	0	0
	17	100

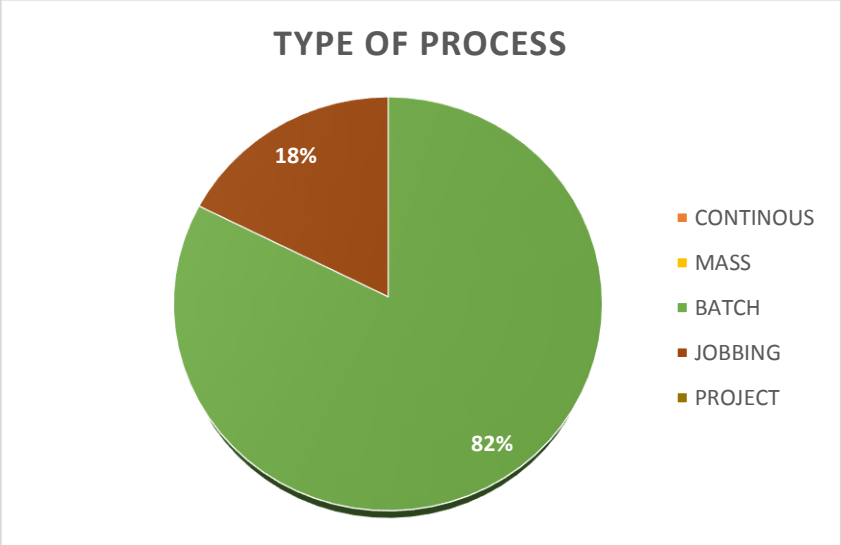


Figure 3 Process type

Source: Research data

4.6 Factors affecting operations performance

Small but expensive spaces in retail bakeries due to their location was grossly sited by 13 out of the 17 respondents as the major factor affecting operations performance. High costs of products, difficulty in scheduling as most orders occur at the evenings and weekends leaving the weekdays with little or no activities. production is sensitive to demand changes.

4.7 Internal business processes and retail bakery design

Over 70% of the respondents agreed that internal business processes especially customer management expanding and deepening relation and innovations (by new products and services) was improved as a result of retail bakery design.

RBD EFFECT ON INTERNAL BUSINESS PROCESSES

	FREQUENCY	PERCENTAGE
5%	0	-
20%	0	-
50%	0	-
70%	9	52.94
100%	8	47.06
	17	100

Figure 4 RBD effect on internal processes Source: Research data

4.8 Retail bakery design and service delivery in baking industry

Over 76 % of the respondents approved with a rating of 70% that service delivery is efficiently addressed under a retail set up of bakeries. As discussed in the literature review, this indicates that one is able to offer empathy such as dependability, personal attention, knowledge, empathy, kindness, and security all which significantly influence service delivery

Table 5 effect of RBD on service delivery

EFFECT OF RBD ON SERVICE DELIVERY

	FREQUENCY	PERCENTAGE
5%	0	0
20%	0	0
50%	0	0
70%	13	76
100%	4	24
	17	100

Source: Research data

4.9 Modifications on process design to improve operational performance in retail bakeries

3 respondents out of 17 agreed that integration with of retail bakeries with coffee shops, milk shops and juice bars, inclusion of an eating area for those who want to consume the product right away.to have a support centre elsewhere to deal with the premixes supplies 6/17 respondents talk of small scale automation like dispensing equipment of standard products to ease to ease operations at peak hours.30% of respondents advised better ventilation or cooling system as the bakery can become uncomfortably hot during baking operations.

4.10 Effect of retail design on Operational performance

26 operational performance indicator variables were rated by 17 respondents and ranked according to percentage scores. All the parameters had over 50% positive score. This proofs, without doubt, the retail bakery design does improve operational performance.

Satisfying customer needs profitably is the basic function of any institution. Timely delivery, flexibility, friendly atmosphere, and perceived product quality respectively were the highly ranked parameters of a retail bakery design.

Table 6 Effect of retail design on operational performance

Source: Research data

Effect of retail design on Operational performance.

		N	MEAN	RANK	SD	MAX	MIN
a	Per unit cost	17	51.65	24	8.34	66	34
b	Product variety	17	86.88	2	7.07	99	76
c	Tailor made services	17	83.65	6	6.87	93	67
d	Conflicts between production and marketing	17	76.71	14	6.15	87	67
e	Customer focus	17	76.41	15	8.19	89	67
f	Customer involvement	17	79.88	10	9.04	99	67
g	Friendly atmosphere	17	85.82	3	7.69	98	77
h	Shorter lead times	17	79.06	11	8.95	90	56
i	Total operational costs	17	59.47	22	7.88	78	45
j	Total revenue	17	73.71	16	4.66	80	64
k	Profitability	17	77.41	12	7.69	89	67

l	Cycle times	17	81.53	8	6.89	98	70
m	Inventory turnover	17	70.82	20	6.71	78	60
n	Per unit equipment utilization	17	57.71	23	5.17	70	50
o	Perceived quality of products/services	17	85.47	4	8.25	99	70
p	Defects and errors	17	83.65	6	6.48	98	75
q	Customer satisfaction	17	77.41	12	5.94	92	63
r	Market share	17	72.35	19	9.69	89	56
s	Response time	17	85.41	5	7.71	99	76
t	Timely deliveries	17	88.29	1	7.68	99	78
u	Overproduction and under production	17	81.24	9	4.44	89	76
v	Reliability	17	73.12	18	5.35	80	60
w	Backlog	17	68.41	21	5.20	77	60
x	Market coverage	17	73.65	17	7.97	89	56

Per unit cost received a positive score of 51.65% despite process type being a batch although continuous process is expected to give a higher score in this parameter, its advantages are offset by high levels of overproduction or underproduction, late or cancelled made orders, poor demand forecasting leading to waste in terms of expiries, handling damages and transport breakdowns.

Grouping the above operational performance parameters into main flexibility, speed, quality and cost and regressing the average of their percentage scores against overall performance we get the following relationship

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.92
R Square	0.84
Adjusted R Square	0.78
Standard Error	3.07
Observations	17

ANOVA

	df	***SS***	***MS***	***F***	***Significance F***
Regression	4	585.92	146.48	15.54	0.000108
Residual	12	113.14	9.43		
Total	16	699.06			

	Coefficients	***Standard Error***	***t Stat***	***P-value***	***Lower 95%***	***Upper 95%***
Intercept	- 186.43	38.57	- 4.83	0.00	- 270.46	-102.39
RBD'S quality	1.04	0.31	3.33	0.01	0.36	1.71
RBD'S speed	0.89	0.22	4.08	0.00	0.41	1.36
RBD'S flexibility	0.95	0.18	5.19	0.00	0.55	1.35
RBD'S cost	0.62	0.18	3.43	0.00	0.23	1.01

Table 7 Regression statistics source: author Oct. 2016

The results above confirms empirically the linear relationship between retail bakery design and operational performance in Kenya.an adjusted R Square of 78 % indicates a strong performance relationship the above four variables while 22%is contributed by other factors. All the variables P values and the significant F value are less than 0.05 which mean that at 95 % level of confidence the relationship between performance and each variance is quite significant.

The weights of each variables to the overall operational performance is shown by the coefficients in table 7 above. The equation in the methodology thus becomes

$$(\gamma) = 0.89\ X_1 + 0.95\ X_2 + 0.62 X_3 + 1.04\ X_4 - 186.43$$

Where (γ), X_1, X_2, X_3, and X_4 are operational performance, retail bakery's speed, flexibility, quality, and cost respectively

4.11 Sales and returns comparison between a factory designed bakery and a retail bakery design

MID MONTH SUMMARY OF RETURNS VALUE FROM AUGUST 2011			
	NAKUMATT SHELF	**OUTLETS**	**TOTAL**
RETURNS VALUE	194,402.57	355,168.00	549,570.57
SALES	2,695,747.33	7,734,988.45	10,430,735.78
% MARGIN	7%	5%	5%

Table 8. Ratio of returns to sales: between retail and factory designed bakeries.
Secondary data retrieved from Nakumatt outlet bakery August 2011.

Table above represents a summary of the proportion of returns value to sales of a company which also runs a retail bakery outlet at Nakumatt. The returns was composed of all damages, expiries and defective products. Despite having related product range, outlets registered more sales and less returns. This can be interpreted as due to the ability of retail bakeries to offer relatively high levels of operational flexibility, speed, and quality. This can also be attributed to easy forecasting and short lead times due to proximity to consumers.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the recommendations and conclusions for further research on the Problem. The main objective of the study was to find to the link between retail oriented bakery design and operational performance. The study also sought to investigate the type of processes used and their effect on operational performance of retail designed bakeries.

5.2 Summary

The study established that there is a significant relationship between retail bakery design and operational performance. The study found out process type matters since it significantly affects flexibility, cost and the quality of goods and services. The study shown that mass production and continuous processes, produce goods cheaply but being unable to be set up in retail outlets due to space constraints and again this can be insignificant in perishable products unless forecasting of demand is done right and there is ready market which usually not the case. Demand forecasting failures can generate a lot of waste due to expiries and lost sales mass production also cannot afford the flexibility and speed associated with batch processes. The study reveals that although per unit cost is may be high in batch processes demand forecasting induced costs are less due to proximity to the customer.

5.3 Conclusion

Retail bakery design, due to perishability nature of foodstuff, could be the future of bakery industry in Kenya and a source of relief to operations managers. As indicated by the results, most operational measurements scored an average of over 50% .retail bakery design is the most appropriate in the current dynamic environment this is because consumer's demands different tastes and preferences delivered quickly in their convenient locations. This research has proven beyond reasonable doubts that flexibility speed deliveries, quality customer involvement are best achieved under a retail bakery design.

5.4 Limitations of the Study

The researcher encountered very busy production and business managers who were reluctant to give information about their bakeries but a promise to get a copy of the project changed this. The researcher was constrained by the time given to carry out this research and the financial resources available to him. However, the researcher was able to carry out sufficient research required to generate a reliable study. The researcher encountered respondents that had difficulty understanding the questionnaire and would rather have had an interview.

5.5 Recommendations of the Study

This study is highly recommended to scholars, entrepreneurs and operation managers in the food industry especially bakeries whose products are quite perishable and adversely affected by the environment, microbial spoilage, handling damages temperatures and stringent legal and quality standards. Based on the findings, there is great evidence to recommend retail bakery design as opposed to mass and continuous production since it

offers flexibility, quality and speed all which increases customer satisfaction and increases firm's competitiveness.

5.6 Suggestions for Further Research

This study will be of great value over a greater population across all food industries in Kenya. The study should be adopted over time to ensure the validity of the information it portrays over time instead of it being a cross-sectional study. The bakeries involved in the study could of great assistance to avail more secondary data which could complement and increase the level of knowledge in the subject matter

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APPENDICES

Appendix I: Research Questionnaire

This study seeks to establish the benefits of retail bakery design on operational performance. Honest opinion would be helpful in proving the above concept Kindly tick as appropriate. Your answers will help us to identify gaps that require improvement. Thank you for your time and comments.

Respondent Data

1. What is your position/title in the organization?

   ……

2. How long have you worked for the organization?

   Less than 3years {} 3yrs -5 years {} 5yr- 7 years {} Over 7 years {}

Organization is Bio-data.

1. How long have the bakery been in operation?

   Less than 3years {} 3yrs -5 years {} 5yr- 7 years {} Over 7 years {}

Retail bakery design and Performance

1. Which among the following process design do you employ in your operations

A, Continuous ( ) B Mass ( ) C Batch ( ) D Jobbing, ( ) E Project ( )

2. Kindly list the advantages of the process type chosen in question "1" above

   ……..... ……. ……..…

   ……..... ……. ……..…

   ……..... ……. ……..…

3. Kindly list the disadvantages of the process type chosen in question "1" above

   ……..... ……. ……..…

   ……..... ……. ……..…

   ……..... ……. ……..…

4. List some of the factors that affect your operations performance?

   ……..... ……. ……..…

   ……..... ……. ……..…

   ……..... ……. ……..

6. What extent would you say a supermarket design of bakery has improved the overall operational performance in the baking industry? (Indicate using percentages increase or decrease, if not sure approximate)……

5. To what extent would you say that internal business processes have improved as a result of retail bakery design? Please tick (√)

   Less than 5 % ( ) 10% ( ) 50% ( ) 70% ( ) 100% ( )

7. To what extent would you say that retail bakery design have improved service delivery in baking industry? Please tick (√)

   Less than 5 % ( ) 20% ( ) 50% ( ) 70% ( ) 100% ( )

8. What other modifications can be done on process design to improve operational performance in retail bakeries? …..... ....

   .....

   .....

   .....

9. Effect of retail design on Operational performance. What effect has design had on the following? (Indicate using percentages increase or decrease, if not sure approximate)

    a. Per unit cost …… ……
    b. Product variety…….
    c. Tailor made services……..
    d. Conflicts between production and marketing …….
    e. Customer focus……..
    f. Customer involvement……..
    g. Friendly atmosphere……..
    h. Shorter lead times……
    i. Total operational costs…… ……..
    j. Total revenue ……
    k. Profitability ……. …….
    l. Cycle times …… ……..
    m. Inventory turnover …….. ……
    n. Per unit equipment utilization……
    o. Perceived quality of products/services…… ……
    p. Defects and errors …….
    q. Customer satisfaction……
    r. Market share ……
    s. Response time ……
    t. Timely deliveries……
    u. Overproduction and under production……..
    v. Reliability……..

w. Backlog ……

x. Market coverage …….. …….…….

Any other comment on retail design is welcome.

Appendix ii: supermarkets that house bakeries in Nairobi

1. CHANDARANA
2. EASTMATT
3. G-MART
4. JAHARIS
5. KASSMART
6. NAIVAS
7. NAKUMATT
8. QUICKMART
9. RIKANA
10. SELFRIDGES
11. SOCIETY STORES
12. STAGEMATT
13. TUMAINI
14. TUSKYS
15. UCHUMI
16. UKWALA
17. KARRYMATT

{Source: *Kenyaplex Business Directory 2015*}