

**AN ANALYSIS OF EFFECTS OF WAITING TIME LENGTHS ON
EFFICIENCY OF SERVICE IN FOOD OUTLETS IN NAIROBI**

BY

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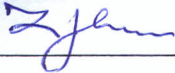


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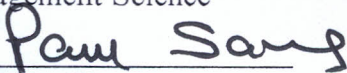
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DEDICATION

This research project is dedicated to my very understanding wife Susan Kariuki and to our two children Frederick Karani and Joan Marugi. They have all been very supportive during the time that I have had to sacrifice family matters in order to create time to complete my masters degree program.

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ABBREVIATIONS

CBD:	Central Business District
CS:	Customer Service
FCFS:	First-Come, First-Served
LCFS:	Last-Come, First-Served
MS:	Management Science
OR:	Operations Research
POS:	Points of Sale
SQ:	Service Quality

DEFINITION OF TERMS

Cashier: A representative of a business who has the responsibility to checkout items purchased by customers, collect and keep records of customer's payment.

Customer: Is any person or organization subscribing or Potentially Capable of subscribing to any Services

Customer service: Set of behaviours that a business undertakes during its interaction with its customers which is geared towards improvement of organization performance

Customer Relationship Management: is about understanding the habits and preferences of the customers and prospect

Management: Techniques and profiles used by entrepreneurs to run their business.

Queuing: waiting in line for service

Server/ waiter: A person who attends to customers in a food outlet.

Service quality: expected level of service delivery in food outlets.

Efficiency: Efficiency is a measure of time, cost and effort

Food outlet: A place where food and drinks are sold including fast food and full service restaurants.

ABSTRACT

The hospitality and service sector have been facing frequent service delays to their customers a bad experience for its clients. One of the reasons behind this is the queuing system prevailing in this sector. Waiting is inevitable in any service organization. Hence queues are formed. A long queue makes customer dissatisfied whereas increasing servers to decrease the length of a queue increases costs. This study intended to investigate the prevailing queuing system in selected restaurants in Nairobi's Central Business District (NCBD) by evaluating the influence of waiting time on service quality and customer satisfaction. The data was collected through a questionnaire administered to 134 food outlet managers and assistant managers. Out of these, 119 responses were received (89% response rate) and analyzed. Selection of the food outlets was by a census of all the food outlets appearing under "restaurant" category in the 2010 Telkom Kenya Nairobi directory. The data was then analyzed using Statistical Package for Social Sciences (SPSS). From this data results of the study are presented in the form of tables, pie charts and bar graphs.

Some targeted respondents were unwilling to participate in the study while a few of the restaurants listed in the yellow pages of the directory had closed down at the time of the study and therefore could not provide any information.

From this study it was established that the rule of first come first served is well respected in NCBD food outlets. Secondly it emerged from the study that number of servers was very important in the provision of efficient services. Thirdly managing cost of service provision was found to be very important in order to avoid losses while providing quick service. Finally it was established that management should be alert during peak periods due to high numbers of arrivals and resulting complaints during this period.

Following on this study the recommendations are firstly that food outlets should develop rules and procedures that are friendly to customers as they wait in line. Secondly food outlets in NCBD should work towards reducing average waiting time. Thirdly they should have contingent work force during peak times.

This study recommends further study on waiting time in transport service especially the "matatu" sector and also waiting time in public hospitals where waiting can be quite long.

CHAPTER ONE

INTRODUCTION

1.0 Overview

This chapter examines the background to the study, statement of the problem, objectives of the study, research questions, the purpose of the study, significance of the study and the conceptual framework adopted for the study

1.1 : Background of the Study

Operations management is the systematic direction and control of the processes that transform inputs into finished goods and services. The operations function comprises a significant percentage of the employees and physical assets in most organizations. Operations managers are concerned with each step in providing a service or product (World report, 2009).

This paper proposes that efficient services in food outlets can be influenced or enhanced through queue (or waiting time) management systems. In this paper factors such as queue discipline, customer average waiting time, number of servers available, cost of service, and the customer arrival rate have been identified as the independent variables. Individually and collectively they impact on efficient service delivery (the dependent variable) as evidenced by level of sales, profits and attraction and retention of customers. It is therefore important to understand the impact that waiting time lengths have on sales and profits and number of customers in food outlets.

Improving efficiency is of utmost importance for food outlets in order to increase profits at optimal cost and remain competitive. This can explain the surge in recent years in usage of points of sale (POS) software that track arrival time, size and order of each customer. Where a restaurant takes reservations, the manager needs to decide how to seat walk in customers so that they do not occupy tables that are reserved while considering the possibility of booked customer not turning up. Using such decisions a manager can

make a lot of savings in a day. 21st century customers want it all and want it now (Howardell, 2003). This view reflects general attitudes of a desire to avoid queues.

Service providers trade in a highly competitive market place where competitors are located within walking distances of one another, knowing fully well that if they fail to provide what customers want, the customer will very easily find another service provider that does (Codrington, 2003).

A decline of 12% in customer satisfaction with customer service (CS) in the retail environment in the U.S between 1996 and 2001 (the American customer satisfaction index University of Michigan) supports these concerns. More than 69% of retail customers in the U.S are reported to “shop hop” in an attempt to overcome frustrations due to poor customer service (CS) (Gowanet, 2001).

The relevance of excellent CS in terms of survival in a competitive market place has been discussed repeatedly in recent years (Du Vazquez et, al 2003; madam 2003; Nielsen 2002; Saxby 2003).

Clarity about consumer’s interpretation of service quality (SQ) in specific contexts, say as food outlets such as queuing would be useful to understand why customers tend to get dissatisfied with service and shop – hop. It would be valuable in terms of adapting and improving CS in specific situations to attract and retain customers and ultimately improve efficiency.

Service providers have adopted two general strategies towards managing long queues at popular attractions; reservations systems and premiums (Barbieri, 2005). Reservation systems allow the consumer to purchase a “ticket” for use during a certain time window. In general the time window starts at the time when the consumer would have reached the front of the line if they had waited. Premiums on the other hand are an additional charge over and above the regular price.

Metters et al (2003) state that “researchers found that the overall opinion of a customer correlates more highly with how long the customers thinks they waited than how long they really have been waiting”

Recently, Itting (2002) attempted to incorporate the impact of waiting time on customers demand. He suggested that it may be appropriate for the researchers and service firms to devote more attention to the relationship between time and consumer behaviour. The perspective that time is perceived as a form of price provides an important insight. However, he added that there are difficulties in measuring such a perceived price and in accounting for a price that may differ for each customer.

In the restaurant industry, waiting time for service typically represents the first direct interaction between customers and most delivery processes (Davis, et al, 1998). Customers in a restaurant who are unhappy about their long wait for seating or food service may complain about the quality of service received. Jones and Dent (1994) argued that response time is one of the major areas of concern to restaurant customers. Anecdotal evidence suggests that nearly two – thirds of service complaints in restaurant are time and in particular are about having to wait too long to be served.

Despite these issues starting to be recognized in the literature review, relatively few empirical studies have been conducted to assess restaurants and customer’s interactions and any resultant impacts. Even fewer studies are based on field research involving real customers who are actually experiencing waiting time or service delays (Price, 1992; Proctor, 1994; Jones and Peppiatt, 1996 and Church, 2000).

Despite many studies that have been done on waiting lines, balking (departing queuing system) and reneging (refusing to join queue systems) are problems that continue to be encountered in food outlets during peak periods.

1.2: Statement of the Problem

Waiting in lines is part of everyday life. Some estimates state that Americans spend 37 billion hours per year waiting in lines. Whether it is waiting in line at a grocery store to buy deli items (by taking a number) or checking out at the cash registers (finding the quickest line), waiting in line at the bank for a teller, or waiting at an amusement park to go on the newest ride, we spend a lot of time waiting. People wait in lines at the movies, campus dining rooms, the Registrar's Office for class registration, at the Division of Motor Vehicles, and even at the end of the school term to sell books back (Randolph 1991). How long one waits in line depends on a number of factors, the wait length is a result of the number of people served before you, the number of servers working, and the amount of time it takes to serve each individual customer. Wait time can also be affected by the design of the waiting line system. Any time there are more customer demands for service than can be provided, a waiting line occurs. With the fact that every minute spent waiting in line is a minute that the customer is not generating revenue; food outlet managers have to continuously work to providing efficient quick services to their customers. Thus it is in this background that the study sought to analyze the effects of waiting time lengths on efficiency of service in food outlets in Nairobi.

1.3: Study Objectives

The general objective of this study was to analyze the effects of waiting time lengths on efficiency of service in food outlets in Nairobi.

1.3.1: Specific Research Objectives

The study was guided by the following research objectives:-

- i) To determine the effects of queue discipline in effective service delivery in food outlets.
- ii) To establish the average time that customers have to wait in lines before getting to the service counter.
- iii) To establish the effect of the number of servers on the efficiency of service in food outlets.

- iv) To establish the cost of service in providing efficient services in food outlets in Nairobi.
- v) To investigate how the arrival rate of customers to the food outlets impacts the services rendered.

1.4: Research Questions

To address the above objectives, the following research questions were used;

- i) To what extent does of queue discipline affect effective service delivery in food outlets?
- ii) What is the average time that customers have to wait in lines before getting to the service counter?
- iii) Does the number of servers in a food outlet affect the efficiency of service delivery?
- iv) To what extent does cost of service affect provision of efficient services in food outlets?
- v) Does the arrival rate of customers to food outlets impact on the efficiency services rendered?

1.5: Significance of the study

The findings of this study are expected to be of benefit to the following groups;

Food outlet managers: it will offer guidelines to the restaurant managers on how to carry out queuing management systems activities effectively for better customer service.

The employees: Would get to understand how reducing waiting time is valuable in regard to customer satisfaction and business profit maximization through pace (speedy) service.

Customers: The customers will benefit from quicker services which would in turn reduce waiting time

Food outlet suppliers: Quicker service would ultimately increase business volume and therefore benefit suppliers to the food outlets.

Academicians and Researchers: Finally the study will be of use to the academicians and researchers who would like to pursue the subject further.

1.6: The Scope of the Study

The study involved employees and managers of food outlets within the Nairobi Central Business District (NCBD). For the purpose of this study NCBD is described as the area bounded by Uhuru Highway, Haileselassie Avenue, Race Course Road, River Road and University Way as indicated in appendix vi. The list of food outlets and bars was obtained from yellow pages of Telkom 2010 Nairobi Directory under the heading "Restaurants" as in appendix vii.

1.7 Limitations of the Study

The scope of the study was limited by time needed to complete it. Nairobi has over three million people and thousands of food outlets to cater for them. These could not be studied in the short time available for the study. Secondly it would have been very costly to undertake a study of all the Nairobi food outlets.

Some food outlets managers/ owners were unwilling to participate in this study due to the need for secrecy in sharing information with some others.

1.8 Assumptions of the study

The assumptions of the study were that:-

The answers given through the questionnaire were honest responses.

That the respondents reported their self-perceptions accurately.

CHAPTER TWO

LITERATURE REVIEW

2.1: Introduction

This chapter reviewed a number of publications (articles, seminar papers, government policy papers, conference proceedings, training manuals, legislative documents, research reports, business journals, textbooks, newspapers, and periodicals) to shed light on the need to have efficient queuing models in managing restaurants.

2.2: Queuing or Waiting Lines

In situations of excess demand, many firms use waiting lines to allocate products and services among their customers. The resulting allocation is likely to be inefficient, creating opportunities for Pareto improving trades among those who are waiting in line. Yet, in the queuing context, the trading of places is rare and inefficiencies often persist over time. Even in advanced market economies, waiting lines are unavoidable. Car dealerships deliver vehicles in the order in which they were purchased. At airports, passengers are by and large checked in the order in which they arrive (Houston Chronicle, 2003). Theme parks use waiting lines to allocate seats on popular rides. Government agencies and nonprofit organizations commonly use waiting lists to allocate scarce resources. Health services, housing vouchers, rooms in nursing homes, hangars at airports, and spots in day care centers are frequently made available in the order in which applications for these services were received (Houston Chronicle, 2003).

Universities use waiting lists to allocate seats in popular courses, student housing, books from the library and parking spaces. As many of these examples make clear, producers often use waiting lists in conjunction with pricing. When prices remain substantially below the market-clearing level, private-sector waiting lists can be quite long. Prospective US customers of Mercedes-Benz, for instance, can wait for two years for the delivery of the ML model and up to four years for an SL (Houston Chronicle, 2003).

Bowen et al (1990) state that “waiting lines occur whenever the number of arrivals at the facility exceeds the capacity of the system to process them (359).” Maister (1985) examines the non-physical attributes of waiting lines from the customer perspective. His work examines the psychology of waiting lines and offers advice to managers to improve *this aspect of the service*.

Metters et al (2003) state that “researchers found that the overall opinion of a customer correlates more highly with how long the customer thinks they waited than how long they really have been waiting.” Sasser et al (1989) suggest that the “attitudes of people waiting depend heavily on the conditions under which they are waiting. Customers must be convinced that what they are waiting for is worth it.” As Sasser, Olsen and Wycoff (1989) note, one of the most frequent irritants mentioned by customers at restaurants is the prior seating of those who have arrived later. They observe: the feeling that somebody has just successfully ‘cut in front’ of you causes even the most patient of customers to become furious.

2.3: The Average Time That Customers Wait in Lines

Queuing theory (waiting line theory) is the formal study of waiting in line and is an entire discipline within the field of operations management, its associated terminology, and how queuing theory relates to customer satisfaction.

Queuing theory utilizes mathematical models and performance measures to assess and hopefully improve the flow of customers through a queuing system (Bunday 1997).

Queuing theories have many applications and have been used extensively by the service industries. Queuing theory has been used in the past to assess such things as staff schedules, working environment, productivity, customer waiting time, and customer waiting environment. In the service industry, queuing theory can be applied to assess a multitude of factors such as order fill-time, customer waiting time, customer relation’s time, and traders and staffing levels. The application of queuing theory may be of particular benefit in restaurants with high-volume customer workloads and/or those that

provide multiple points of service. Problematic queuing systems (long lines) can lead to the customer's perceptions of excessive, unfair, or unexplained waiting time resulting in significant detrimental effects on the customer's overall satisfaction with the service transaction.

A Queuing System can be simply described as customers arriving for service, waiting for service if it is not immediate, and if having waited for service, leaving the system after being served (Gross & Harris, 1998). Queuing Theory or Waiting Line Theory was developed by Danish mathematician named A. K. Erlang, who, in 1909, published "*The Theory of Probabilities and Telephone Conversations*" based on work he did for the Danish Telephone Company in Copenhagen, Denmark. The goal of Queuing Theory (Waiting Line Theory) is to find the trade-off point between the cost of improved service and the cost of making the customer wait.

Since its invention, the waiting line theory has been gaining wide acceptance in management. Now in management the queuing theory is used first to minimize the total cost of waiting and service and second to achieve a certain level of service that satisfies the customer. Nowadays the application areas of queuing theory have broadened well beyond telephone systems (Gross and Harris, 1998).

According to Turban et al, 1994, Queuing theory has applications in; determining the capacity of an emergency room in a hospital, determining the number of runways at an airport, determining the number of traffic lights and their frequency of operations, determining the size of a restaurant, scheduling work in large computer system, and facility designs (banks, Post offices, amusement parks, fast food restaurant).

Today we encounter a myriad of queues in our everyday life and Queuing Theory, as and when possible, help us navigate around these (Gross et al, 1998). To better gauge the Queuing Theory it is imperative to have a deep knowledge in Queuing System. A Queuing System has got five components: Arrival, Queue, server, Exit and Cost.

Arrival

Arrival means how customers arrive at the business houses and service areas to take services. Different authors like Gross & Harris (1998), Turban & Meredith (1994), Edward (2003), Binkley, Kristofer, and Matthew (2004) have described different arrival rates in queuing theory. These are Internal, External, Finite, Infinite, Batch, Individual, Scheduled, and Nonscheduled.

Waiting line formulae generally require an arrival rate, or the number of units per period (such as 10 units per hour). The time between arrivals is the interarrival time (such as an average of one every six minutes). Unscheduled arrival is more common than scheduled arrival rate. Usually, when dealing with waiting line problems, it is assumed that the time between arrivals is exponentially distributed and the number of arrivals per time unit is Poisson distributed.

Waiting Line / Queue

A queue is a line (or buffer or inventory) feeding a number of servers (Edward, 2003). The characteristics of a queue depend on rules and regulations that are termed as Queue Discipline. The common queue disciplines are: priority System, Emergency (Preemptive Priority) System, Last-Come, First-Served (LCFS), First-Come, First-Served (FCFS), Service-in-Random-Order, Random and Alphabetically.

Server

The service is rendered by a *server*, which can be a person, group, machine, or a person machine combination. The time that one particular server takes to complete a customer's service is termed as Service Time.

Exit

The point through which the customers leave the system after getting service is called exit. Here the customers may be satisfied or dissatisfied reinforcing the next demand for the service. However, exit only makes an impact on the queue if the population is finite.

Cost

According to (Kristofer et al, 2004), there are two types of cost involved in Queuing System; The Facility Cost and the Cost of Waiting Customers. The Facility cost includes cost of construction, operation, maintenance & repair, and other costs. For example, insurance, taxes, rental and other fixed costs. The cost of waiting Customers includes Loss of revenue, Will Cost, and Unquenchable Cost.

2.4: Cost and Number of Employees in Providing Efficient Services

Most of the reviewed studies focus on how to reduce either perceived waiting time by using a cognitive psychology approach or actual waiting time by using a management science (MS) and operations research (OR) approach (Kimes et al, 2003). These research studies offered good suggestions that management can apply to manage waiting time, however, they did not present clearly how these reduced perceived or actual waiting times would influence customer satisfaction or evaluation of service quality. A better understanding of relationships among service quality, customer satisfaction, and waiting time is important because, unless customer's value decreased waiting time, it is hard to increase profit. Service quality is an important issue in the hospitality industry. To become competitive, the hospitality industry needs to be aware of service quality as a device to improve organizational achievement (Kimes and Wirtz 2003).

Minimizing total cost is quite difficult to estimate. Primarily, the waiting cost consists of the lost profit from the lost business. The lost business may occur immediately or in the future, because the customer judges the queue to be too long and does not join the queue or the customers is sufficiently irritated that he/she does not come again. This kind of waiting cost is hard to estimate (Hiller and Lieberman, 2000).

Zhou and Soman (2003) in their study found that during peak times firms, increase using contingent workforce in their services. The further say that if you add more servers in the services systems, of course, the average queue length and waiting time will reduce, that is, the balking loss and the reneging loss will reduce, but the service cost will increase.

On the other hand, if you use fewer servers in a service system, you reduce the service cost, but the balking loss and the renegeing loss will increase.

2.4.1: Linking Customer Satisfaction with Performance

The relationships we study are part of a framework referred to as the service-profit chain (this concept was developed by Heskett et al. 2004). In this framework there are certain attributes of the dining experience that affect customer satisfaction. Next, higher customer satisfaction should lead to increased probability of repeat purchase, which in turn should result in greater food outlets sales. In this section, we review earlier work that measured the customer satisfaction and performance links in the food outlets sector.

The empirical literature on this topic with regard to restaurants dates from the past twenty years. A few studies were conducted in the late 1980s and the 1990s focusing mostly on attributes of the dining experience that determine customer satisfaction (Knutson 1988; Davis and Vollmann 1990; Dube, Renaghan, and Miller 1994; and Kivela, Inbakaran, and Reece 2000). More recently, however, researchers started addressing the links between customer satisfaction and performance, emphasizing the way satisfaction affects customers' repeat purchases (examples of recent contributions include Sulek and Hensley 2004; Soderlund and Ohman 2005; and Cheng 2005).

2.4.2: Service Quality, Customer Satisfaction, and Customer Value

Service quality, customer satisfaction and customer value all represent separate, but related, aspects of service that act as important drivers of customer retention and positive behavioral intentions. For example, improvements in service quality have been shown to increase favorable behavioral intentions and decrease unfavorable intentions (Zeithaml et al. 1996). Prior research has also shown that customer satisfaction is positively associated with customer retention; repurchase intent, word of mouth behavior, and usage levels (Perkins-Munn et al. 2005).

Similarly, customer value has been identified as a strong driver of customer retention (Varki and Colgate, 2001). Given their potential to positively influence retention and behavioral intentions, it is important that service operators understand the potential impact of service encounter pace when considering the implementation of duration reduction strategies.

While making decisions for the number of servers needed in the service system to meet time varying demand, the balking probabilities are needed to estimate the amount of the lost business in more practical considerations for the managers Liao, (2006).

2.4.3: Factors that Influence the Length of Time Customers Spend Waiting in Line

According to (Kocas, 2000) checkout service time is the time from when a customer is ready for services and enters or joins the queue until when the customer receives service and obtains the receipt for payment of goods purchased. A wait for service is defined as the time that a customer is ready to receive service until the time the service commences (Taylor 1994). The length of time this service takes varies from situation to situation and from store to store. Studies indicate that the causes and effects of these situations are numerous and are analyzed based on their varied circumstances.

A shopper feels that he or she is in charge when shopping or making selection of items to be purchased. The shopper starts to feel the loss of control of his time at the point of joining the queue to pay for purchases. Consumers expect store management to have in place an adequate checkout system to expedite checkout processes. Customers who cannot immediately access a server experience a costly wait if they choose to stay or not to stay in line (Kocas, 2000). The traditional approach, especially in the operations research literature, has been to treat this wait time to be of economic nature. Baker (1986) equates the value of time to its opportunity cost. A typical assessment of opportunity cost is the wage rate, which suggests a linear economic cost to waiting time. Normally, consumers naturally tend to react with psychological feelings when confronted with situations beyond their control. When consumers wait in line in grocery stores, they

experience unpleasant feelings due to the fact that they, psychologically, feel restricted and do not have much control over the time they have to wait to be checked out.

2.5: Customer's Perceptions on the Model or System of waiting

Many researchers have explored the underlying factors that result in customer satisfaction. Knutson (1988) discussed principles that managers should follow to meet or exceed customer expectations, such as employee greeting, restaurant atmosphere, speed of service, and convenience. Other studies have identified numerous factors that influence customer satisfaction with a dining experience, including waiting time, quality of service, responsiveness of front-line employees, menu variety, food prices, food quality, food-quality consistency, ambience of the facilities, and convenience (Davis et al, 1990; Dube et al, 1994; Kivela, et al, 2000; Sulek et al, 2004; Iglesias et al, 2004; and Andaleeb et al, 2006).

2.5.1: Customer Satisfaction and Repeat-Purchase Intentions

Determining satisfaction is not sufficient, however, because one needs also to establish the link between satisfaction and repeat purchases, which are an important source of restaurants' profits. Thus, studies have addressed the links between customer satisfaction with various restaurant attributes and repeat-purchase intentions Sulek and Hensley 2004; Soderlund and Ohman 2005; and Cheng 2005). While these studies often find strong links, the importance of a particular attribute varies according to the type of restaurant and the type of customer (Cheng 2005).

Food quality is the critical attribute influencing repeat-purchase intentions in full-service restaurants, while waiting time is the most important attribute in quick-service restaurants (research focusing on full-service restaurants includes Sulek and Hensley (2004) and Clark and Wood (1998); and Davis and Vollmann (1990). When Kivela, Inbakaran, and Reece (2000) conducted an extensive survey of diners of various restaurants, they found

that first and last impressions have the greatest impact on repeat-purchase intentions, followed by excellence in service and food quality. This literature concludes that different classes of restaurant businesses should implement different managerial strategies to compete and succeed (Cheng 2005).

2.6: Revenue Management

Revenue management is the science of maximizing revenue by means of variable pricing and duration controls. It has been widely adopted in the airline, hotel and rental car industries but has only gained attention in the restaurant industry in the past ten years. Companies using revenue management have reported revenue increases of 2 to 5 percent

Revenue management is activated by the following two strategic levers: duration control and pricing. Duration management requires control and knowledge of when customers arrive, how long they stay, and when the table becomes available for the next party. If meal duration can be reduced during busy periods, more customers can be served and revenue can be increased. At the same time, however, duration control must be approached carefully because rushing customers may impair their satisfaction. The duration of a meal, which includes the entire time that the table is in use, can be managed by controlling guest arrival, meal duration, and table turnover, (Kimes and Chase 1998; Kimes et al. 1998 Hanks, 1992 Carroll et al, 1995 Noland et al, 1992).

Managing guest arrivals requires the ability to predict when customers will arrive. Restaurants can manage arrivals both internally (by means that do not directly involve customers) and externally (by mechanism that do directly involve customers). Common internal arrival-management strategies include improving the accuracy of arrival forecasts, tightly managing the customers' waiting times, developing overbooking policies that maximize table use but minimize delayed or denied seating, and setting strategy for how and where parties should be seated. External arrival techniques include reminding customers of their reservations by phone or e-mail, or requiring deposits or guarantees on reservations.

Turnover management involves reducing the amount of time between the end of one party's meal and the beginning of the next. Anything that can be done to reduce turnover time and speed the process (either by notifying buyers that it is time to clear the table or letting hosts and hostesses know that the table is ready) should increase revenue during busy periods.

While price management is extremely important to the success of revenue management, technology can be applied to better manage the duration of customer's meals, increase revenue, and increase customer satisfaction. The applications of revenue management (Gallego et al, 2004) introduce the concept of flexible products for revenue management. They define a flexible product as a 'menu' of two or more alternative, typically substitute, products offered by a constrained supplier using a sales or booking process. In this context, products include not only physical products but also service offerings. Researchers have applied revenue management models in a wide variety of industries where suppliers offer flexible products. Airlines, hotels and rental car industries represent three major traditional applications of revenue management. These industries share some similar characteristics. All of their products are perishable, the demand for their products vary significantly over time, and they have large fixed costs while variable costs are small in the short run. Because of revenue management's success in these industries, researchers and practitioners have begun trying to adopt it in a wide range of miscellaneous industries such as restaurants, casinos, cargo, Internet services and apartment renting. These industries share some similar characteristics with the traditional industries. Some of these practices have acquired great success. In fact, all service providers can take advantage of revenue management theory. Just as Berman (2005) says, revenue management is an effective mechanism to allocate a service provider's relatively fixed capacity and to provide discounts on a much broader scale.

2.7: The Importance of Queuing Management

Restaurants, like other service-oriented industries, function in an increasingly competitive environment. Speed of service has been shown to provide businesses a competitive advantage in the marketplace (Davis MM, Heineke J 1994). In addition; the literature reveals several studies documenting customer dissatisfaction with long waiting times and indicates that this is a pervasive problem in restaurant services and a common source of anxiety and dissatisfaction among customers and, in many cases, restaurant managers (Pierce II RA, Rogers EM, Sharp MH, et al. 1990)

Speed of delivery is being emphasized increasingly and can be partly attributed to increased competition and the value a customer places on his or her time. We live in a society that expects film development and eyeglasses to be ready in an hour or less.

2.7.1: Queuing Applications in Service Industries

Queuing management has been applied very successfully in many service-oriented industries. L. L. Bean, a large telemarketer and mail-order catalog house for high-quality sporting goods and apparel, used queuing theory to optimize staffing levels resulting in an estimated \$500,000 per year savings (Andrews B, Parsons H 1997).

Queuing models have also been used to plan staffing levels in an outpatient hospital laboratory department and a centralized appointment department in Lourdes Hospital in Binghamton, New York. Queuing models were used to identify an optimal configuration of capacity and staffing levels for both departments. The lengthy delays in answering telephone calls in the centralized appointments department were completely eliminated by rearranging work shifts of current employees (Khan MR, Callahan BB 1993).

Queuing theory has been used extensively in the banking industry to increase business by careful placement of merchandising materials while at the same time alleviating both the actual and perceived amount of time a customer spends waiting in line (Wayne CB,

DiSotto K 1994). Finally, queuing theory has been applied to computer simulation models to help with business decisions and problems (Proctor RA1994).

2.7.2: Managing Waiting Time in the Food Service Industry

While enhancing the waiting environment uses cognitive psychological disciplines to improve customer satisfaction related with perceived waiting time, a second approach uses management science and operations management disciplines to reduce actual waiting time. Scheduling, simulation, forecasting, and process design are frequently used methodologies to reduce actual waiting time. Since waiting time is considered to be a key factor for customer satisfaction, fast food restaurants aggressively use these applications to reduce waiting time. In 1978 Burger King introduced specialty sandwiches. By using a simulation model, they found that a new sandwich would cause a service delay of eight seconds, which would cause a \$39 million loss in sales capacity for Burger King. Burger King applied simulation modeling to determine the optimal distance between the order station and the drive-through window to minimize customer waiting time, to project the number of workers needed, and where they should be placed in the restaurant (Swart and Donno 1981).

Similarly, Hueter and Swart (1998) used an integrated set of operations research models in Taco Bell, by applying a forecasting model for predicting customer arrivals or demands, a simulation model for determining optimal labor requirements, and an integer programming model for scheduling and allocating employees to minimize labor cost. Hueter and Swart observed when customers would likely leave a waiting line because they perceived the waiting time to be excessive and found that after actual waiting time exceeded five minutes, customers' perceived waiting time increased exponentially. They decided that a three-minute average time in a queue was an optimal level of waiting since only 2.5% of customers that wait will leave the line.

2.7.3: Addressing Waiting Time Problem for Better Service

The process of determining a method of managing queues and choosing between the cashier operated system and the electronic self operated system play a major role in the managerial strategic decision making process. According to Jacob (2004), managers should not overlook the effects of other methods of managing queues that deal with the store's environmental queuing problems. Research indicates that literature in operations research dealing with queuing methods of waiting line techniques has improved the way managers implement checkout systems, Smith (1999).

2.8: Review of Previous Studies

Reducing customer waiting time has been an important topic of study in disciplines such as management science, operations research, and operations management. The focus of these studies have been bench marked for the reduction of actual customer waiting time through modeling various queuing disciplines and optimizing service-queue operations (Murdick 1990). Another stream of research examines the waiting line problem from a psychological perspective. It suggests that customer service experience is affected not only by the actual waiting time but also by the perceived waiting time.

Hornik (1984) explored the relationship between perceived and actual waiting times with different types of waiting lines in various service outlets, including a supermarket, a department store, and a bank. He found that customers tended to overestimate actual waiting time across different types of lines. Personal characteristics such as enjoying shopping and frequency of using a service did not change their perception of waiting.

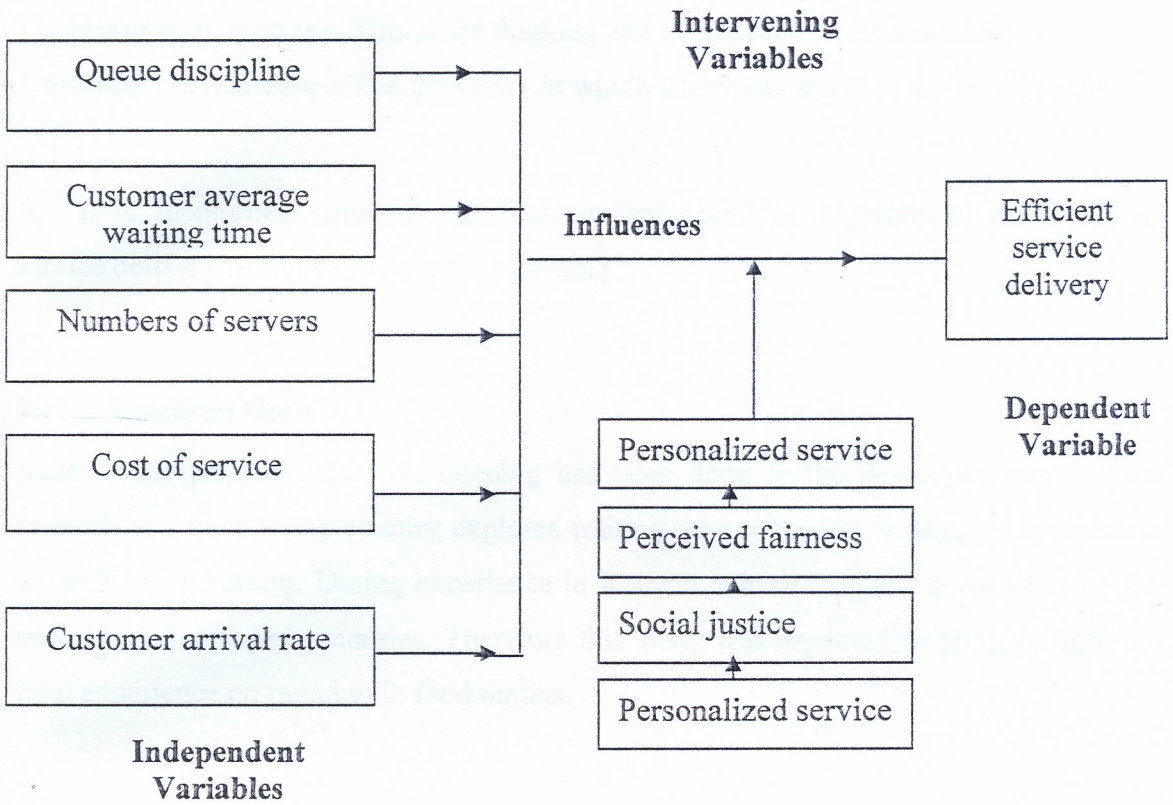
Maister (1985) contended that both customer perception and expectation about a service operation play a role in determining customer satisfaction. In a study of bank branches, Katz et al. found that perceived waiting time and "reasonable" waiting time increased as actual waiting time increased. Their study also showed that overall satisfaction decreased as perceived and actual waiting times increased.

Research has suggested that there is a linear relationship between perceived time and actual time (Rule *et al.* 1970, Allan 1979, Hornik 1984). In fact, Hornik (1984) found that individuals tend to overestimate waiting time. This is consistent with Cottle's (1976) research where it was found that subjects have a tendency to overestimate passive durations (such as waiting) and underestimate active durations of time. Antonides *et al.* (2002), however, found a non-linear relationship between perceived and actual waiting time. They also found that information about the expected waiting time significantly reduced the overestimation of waiting time, although it increased the negative effect of perceived waiting time on wait evaluations.

2.9: Conceptual Framework

This study was guided by the analysis of various variables that are deemed to be the factors impacting on the effective and efficient service delivery of food outlets in Nairobi. Some of these factors, as shown in figure 1, include average waiting time, role of managers in efficient services, customer perceptions and customer's arrival rate as independent variables. These independent variables are proposed to have impact on efficient service delivery (the dependent variable) in food outlets. The measures of this impact are the level of sales, level of profits and attraction and retention of customers. The conceptual framework shows the interrelationships between the above variables that can be accepted or rejected as to their impact on the effective improvement of restaurant services

Fig 2.1: Conceptual Framework



Source: (Researcher 2010)

The conceptual framework elaborates the relationship between the dependent variable which is the variable the researcher wishes to explain and independent variable. The dependent variable in this study is the efficient restaurant service delivery. The relationship between dependent and independent variable is influenced by the intervening variables which is the link or mechanism between them.

Queue discipline – This are the rules that determine the order in which arrivals are serviced.

Customer average waiting time – the total elapsed time between issuance of a customer order and satisfaction of that order.

Number of servers – The population of personnel offering service in the food outlets

Cost of service – the setting of a price for a service based on the costs incurred in providing it

Customer perceptions – This is the thinking and expectation of the customer

Customer arrival rate – The frequency at which customers arrive at the service point.

All afore mentioned constitute the independent variables. Operational efficiency of service delivery becomes a dependent variable.

2.10: Research Gaps

Most of the prior research on queuing has been done in the developed world. This research in a developing country explores waiting time reduction techniques application in the Kenyan setting. Dining experience in Kenyan culture may not necessarily be the same as in developed countries. Therefore this study was expected to bring to light the local experience on queuing in food outlets.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1: Introduction

This chapter describes the research design and methodology that was employed in the study. It includes the research design, target population, census techniques, data collection, analysis and presentation.

3.2: Research Design

The study employed a descriptive research design to explore the various aspects of the factors affecting queuing systems in food outlets. Descriptive surveys according to Neuman (2000) provide a detailed, highly accurate picture and can locate new data to confirm or contradict findings among other advantages. Through descriptive surveys views and suggestions of improvement are accommodated.

3.3: Target Population

This refers to all the members of the real or hypothetical set of people, events or objects to which the researcher wishes to generalize the results of the research study (Borg and Gall, 1983). The target population for this study was all the restaurants in the Nairobi Central Business District (NCBD) Appendix v. The 2010 Telkom Nairobi Directory yellow pages list 199 entries under the “restaurants” heading. Out of these 67 restaurants are situated in NCBD. Against each restaurant, the name and landline telephone numbers are indicated. The street names have been used to pick out the restaurants located in the NCBD. The NCBD in this study is the area bounded by Uhuru Highway, Haileselasie Avenue, Race Course Road, River Road and University Way (Appendix V).

3.4: Census Techniques

The study adopted a census technique. Census is a systematic collection, recording analysis and reporting of data on the entire number of a group of people or object to be studied for purposes of a research probe (Sharma, 1988). The study drew a list of restaurants within the Nairobi Central Business District (NCBD) appendix v which is currently at 67 according to the 2010 Telkom Nairobi Directory yellow pages. Since this study was a census all elements of the population were included.

3.5: Data Collection Procedure

This section presents the data collection methods and instruments, development of the research instruments, and administration of the instrument. Both primary and secondary data was collected. Primary data was collected using a questionnaire which was administered by the interviewer while secondary data was obtained from library and journal sources to cross check the data obtained from the survey.

3.5.1: Development of Research Instrument

The instrument that was used in this study was the questionnaire. In developing the questionnaire items, the closed ended and open-ended format was used. The questionnaire was in simple non technical language. For the closed ended items on the questionnaire the respondent was simply required to rank the answers by marking on the appropriate box. Responses were measured on a likert scale, for example 1 = Strongly Disagree 2= Disagree 3=Undecided 4= Agree 5=Strongly Agree.

3.5.2: Administration of Research Instrument

The questionnaire was administered by the researcher to ensure the sampled respondents were the ones supplying the data. This in return ensured a good response rate of the questionnaire.

The questionnaire was administered to the managers and assistant managers/ supervisors of each restaurant. This was a census study involving all 67 restaurants within the Nairobi Central Business District (NCBD). Two copies of the questionnaire were administered for each restaurant giving a total of 134 (67*2). The 67 restaurants are indicated in appendix VI.

3.6: Data Analysis

Descriptive statistics which help to present quantitative data from a study in a simpler and sensible way were used. They help to simplify large amounts of data to a manageable form and include measures of distribution, central tendency and dispersion.

Coding categories were developed as a way of organizing qualitative data collected according to particular research questions. This involved: (a) going through the data and numbering them sequentially; (b) carefully searching through the data for regularities and patterns related to the research questions which the study intended to answer; and (c) writing down words and phrases to represent regularities and patterns. The words and phrases were the coding categories and were used as means of sorting out the descriptive data so that material bearing on a given research question could be physically separated from the other data.

After data collection, all questionnaires were checked for completeness. The computer enabled statistical package for social sciences (SPSS) was used to generate various frequencies such as percentage distribution frequencies, raw count frequencies and grouped data frequency distribution. Median, mean and mode was used to analyze the results while tables, graphs and pie charts were used for data presentation.

CHAPTER FOUR

4.0 DATA ANALYSIS INTERPRETATION AND PRESENTATION

4.1 Introduction

This chapter presents the analysis of the major findings of the research and subsequent discussions. It is based on the five specific research questions which focus on the effects of queue discipline, average waiting time, and number of servers, cost of service and the arrival rate of customers on the efficiency of service in food outlets in Nairobi.

Out of the targeted 134 respondents 119 filled and returned the questionnaire, giving the study a response rate of 89%.

4.2 Demographic Information of the Respondents

The study found it important to establish the demographic information of the respondents because it forms the basis under which the researcher can rightly judge their responses. These effects are embedded on the general information of the respondent. The demographic information of the respondents included gender, respondent's cadre and working experience.

4.2.1 Gender of the Respondents

With development and modernization gender has turned out to be an important factor in all studies. As a result it was necessary for the study to establish the gender of the respondents. From the study findings it emerged that majority (64%) of the respondent managers and assistants were male compared to 36% who were female.

Table 4.1 Gender of the Respondents

Sex	Frequency	Percent
Male	76	64.2
Female	43	35.8
Total	119	100.0

This implies that there are more male employees in the food outlets within the Nairobi central business district than there are females.

4.2.2 Respondents Positions in the Food Outlet

As mentioned earlier, the research study sought respondents' information that would help in rightly judging the respondents' responses. It was therefore important to get data on the positions held by the respondents. Majority (36%) of the respondents were assistant managers, 28% were cashiers with 25% being food outlet managers while a mere 10% were outlet supervisors.

Table 4.2 Respondent's Cadre

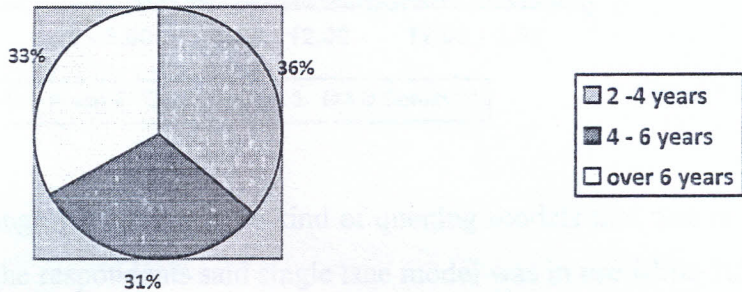
Positions held	Frequency	Percent
Manager	30	25.0
Cashier	34	28.3
Assistant managers	42	35.8
Supervisor	13	10.8
Total	119	100.0

4.2.3 Working Experience in Food Outlets

There was the need to get data in order to further establish the experience the respondents in the food outlets. This is because experience is a key component in provision of

efficient services in an organization. Most respondents (36%) had working experience of 2 – 4 years working in food outlets with 33% having worked in food outlets for over 6 years while 31% had been working in food outlets for between 4 and 6 years.

Fig 4.1 Working Experience in Food Outlets

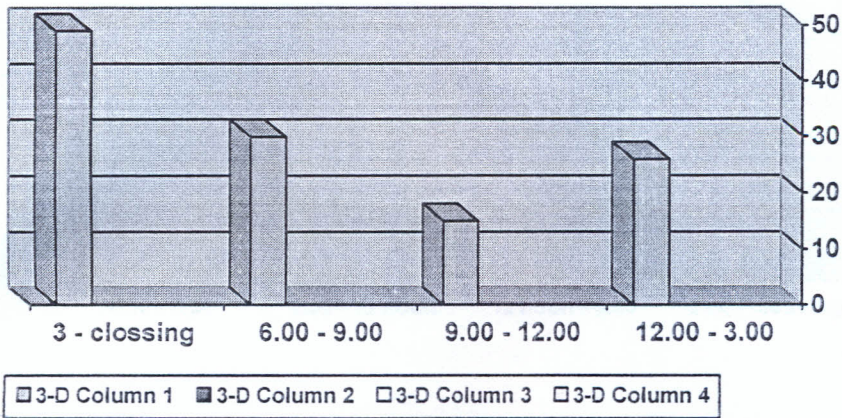


This is an indication that the respondents in the study had enough working experience in food outlets to facilitate efficient services for food outlets by eradicating waiting time lengths.

4.3 Queue Discipline

The study sought to establish the extent to which the queue discipline affected effective service delivery in the food outlets. To achieve this, the researcher sought to know from the respondents the time of day the food outlets experienced the slowest and fastest of service delivery. According to the findings 41% of the study population found 3pm – to closing-time the time that service delivery was slowest with 25% finding 6.00 am – 9.00 am as when services were slowest. A further 13% responded that services were slowest between 9.00 and 12.00 noon while 21% said that services were slowest between 12.00 and 3.00 pm.

Fig 4.2 Times of Slowest Service in the Food Outlets

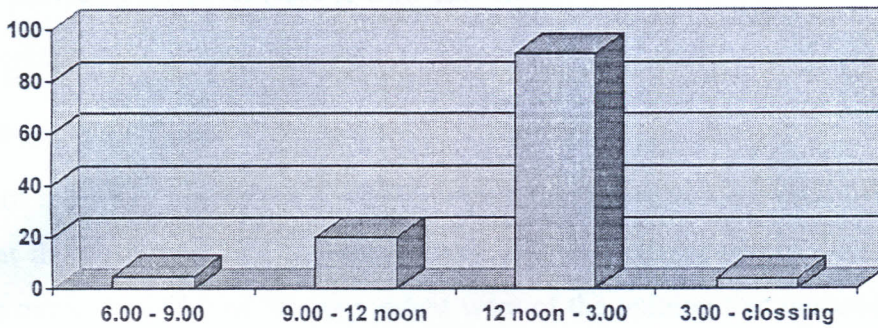


The researcher further sought to establish the kind of queuing models that was in use in the food outlets. 46% of the respondents said single lane model was in use while 20% had multiple lane models, with 12% were of the opinion that a one by one model was used. 22% of the respondents did not respond to the question on models of lane in use.

The study also sought to establish the time of the day that the food outlets experienced the faster services. From the findings it emerges that 76% of the study respondents were of the opinion that food outlets offered the fastest services between 12.00 noon and 3.00 pm compared with 17% who said that the fastest services were offered as from 9.00am to 12.00 noon with 4% indicating 6.00am to 9.00am while a mere 3% cited fast service to be offered as from 3.00 till closing time.

These findings were unexpected since ordinarily service should be slowest during the peak period. But this can be explained by the fact that during peak periods food outlets staff concentrate on service having earlier cleared food preparation work.

Figure 4.3 Fastest Service in the Food Outlets



4.3.1 Customer service

The researcher sought to establish the effects of the waiter service in efficient customer service delivery. The respondents were asked if they offered quick service to the customers. It emerged that 80% were in agreement that they provided quick services to their customers with 20% being in disagreement that they provided quick services to customers.

Respondents were asked whether management ensured waiters and waitresses took customers orders correctly in a bid to give good service. 92% of them said management ensured that they did so.

The researcher also sought to find out whether customers orders returns were followed up to establish reasons for cancellation. 95% of the respondents said they do a follow up.

Table 4.3 Service to Customers

Food outlets provide quick services to customers	Frequency	Percent
Disagree	8	6.7
Undecided	16	13.3
Agree	80	66.7
Strongly agree	15	13.3
Total	119	100.0

According to the findings it shows that food outlets in the central business district believe they are providing quick services to their customers.

4.4 Average Wait Time

As one of the study objectives it was important that the researcher establish the average time that the customers had to wait in queues before getting served. According to the findings majority (74%) of the respondent were of the opinion that customers spent less than five minutes waiting in queues with 13% saying that the customers did not wait in lines while another 9% found the waiting time of customers in queues to be between 5 – 10 minutes.

Table 4.4 Waiting Time in Lines

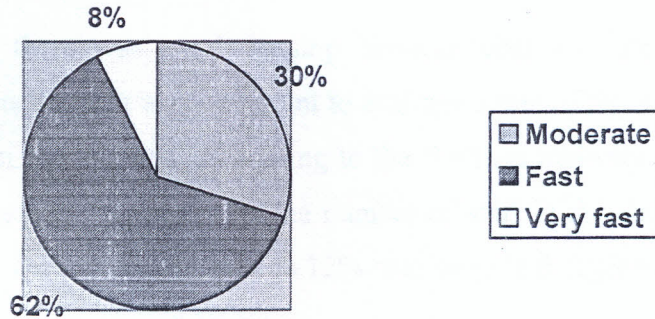
Time spent in waiting lines	Frequency	Percent
There is no waiting for customers	15	12.5
Less than five minutes	89	74.2
5-10 minutes	10	9.2
More than 10 minutes	5	4.2
Total	119	100.0

Only 4% of the study respondents had to wait in queues for more than 10 minutes before they got served. This shows that though food outlet customers are made to wait in line in most food outlets, the wait is minimal

Asked to show how they would rate the speed of service provision after the customers had placed their orders, majority (62%) of the respondents rated the provision of service as fast with 30% finding the services to be of moderate pace while 7% cited the services as very fast.

The findings indicate that customers are generally happy with this aspect of service delivery.

Fig 4.4 Customer Service Provision



4.5 Number of Servers

It was important for the study to establish the effect of the number of servers on the efficiency of service in food outlets. To achieve this researcher sought to first know whether there was a relationship between cost and number of staff. From the findings it was noted that a significant majority (64%) were in agreement that there was a relationship with 16% being strongly in agreement. According to 6% of the respondents there was no relationship between cost and number of servers while 14% were undecided to whether or not there was a relationship between cost and number of staff.

Table 4.5 Cost and Number of Staff

Cost and number of staff are related	Frequency	Percent
Disagree	7	5.8
Undecided	17	14.2
Agree	76	64.2
Strongly agree	19	15.8
Total	119	100.0

These findings in table 4.5 are an indication that cost and numbers of staff go hand in hand when it comes to food outlet service efficiency achievement.

Having established that there was a relationship between cost and the numbers of employees the food outlets hired, it was important to evaluate some of the aspects of cost and employee numbers in food outlets. According to the findings majority (62%) of the respondents were in agreement that the more the number of staff in the food outlets the higher the running cost of the outlet compared to 12% who were in disagreement.

A further 41% of the respondents disagreed that for maximization of profits the number of employees should be lowered against 36% who thought by reducing the number of employees profit maximization could be attained.

Table 4.6 Cost and Number of Staff in Food Outlets

Aspects	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
The more the staff the expensive the running cost	5	4.2	9	7.5	8	6.7	57	47.5	18	15.8
For maximized profits employee numbers should be lowered	25	21.7	23	19.2	15	12.5	14	11.7	17	14.2
The more the staff the better the service hence increased profits	18	15.0	20	16.7	14	12.5	16	13.3	43	35.8

On the other hand asked whether by having more staff service would be enhanced thus increasing profits 32% of the respondents were in disagreement with 13% being undecided on whether or not increased number of staff would better services and

eventually increasing profits while most 49% acknowledged that with more staff the services would be better hence increasing profits. The findings in table 4.6 are a clear indication that in one way or the other the number of staff and cost are interrelated.

4.6 Cost in Providing Efficient Service

Respondents were asked if management should employ more staff even if prices were to be slightly increased to cover extra cost. 70% of the respondents disagreed with this suggestion.

The study further sought to find out whether management ensured that waiters and waitresses took customers orders correctly. According to the findings (97%) of the respondents were in agreement that managers should ensure that the orders were taken correctly from the customers by waiters and waitresses compared to a mere 3% who were in disagreement.

Table 4.7 Customers Orders

Customers orders taken correctly	Frequency	Percent
Strongly disagree	3	2.5
Agree	48	40.0
Strongly agree	68	57.5
Total	119	100.0

The researcher also sought to find out which aspect of service was slow and thus would need management focus. 65% of the respondents indicated the slowest service aspect to be the time from when a customer is ready to give an order to the time the food is delivered.

The researcher sought to establish from the respondents whether they agreed that management should employ more staff and increase food item prices in order to cover the extra cost. 79% of the respondents disagreed while 21% agreed.

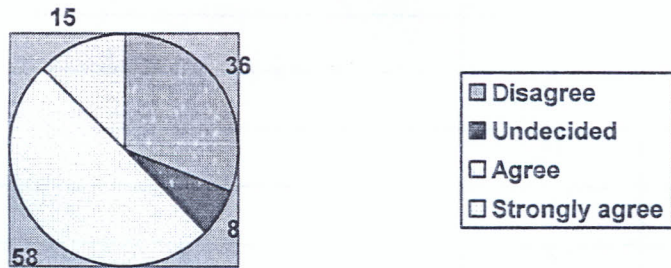
Table 4.8 Prices

Increase prices to cover extra cost	Frequency	Percent
Did not respond	3	2.5
Strongly disagree	11	9.2
Disagree	72	60.8
Undecided	8	6.7
Agree	12	10.0
Strongly agree	13	10.8
Total	119	100.0

This is an implication that the management of food outlets cares more for the customer’s welfare than how to recover any extra cost incurred in providing services in the food outlets.

The respondents were further asked to indicate if the food outlets managers deployed additional servers during peak time to ensure quality services were rendered to the customers. From the findings it emerged that 36% of the respondent were in disagreement that additional man power was employed at peak hours with 8% being undecided while majority 58% acknowledged that additional employees were deployed during peak hours to ensure that service rendered were efficient.

Fig 4.5 Deploy of Additional Servers at Peak Time



The researcher sought to find out the queuing systems that were in use in the food outlets under study. From the findings it emerged that most (46%) of the respondents deployed single lane models with 20% making use of multiple lane models.

Table 4.9 Queuing Models

Queuing models in food outlets	Frequency	Percent
Didn't respond	26	21.7
Single lane models	55	45.8
Multiple lanes model	24	20.0
One by one	13	11.7
No queue, table orders	1	.8
Total	119	100.0

When asked to show what they perceived were the reasons for the waiting lines being long in the food outlets, most (36%) cited the long waiting lines as a result of slow man power in the food outlets, 27% perceived the long lines to be lack of enough servers as the reason for long lines with 26% suggested the long waiting lines to be caused by lack of trained servers while 3% were of the opinion that having non motivated servers resulted to long waiting lines in food outlets.

Table 4.10 Waiting Lines

Reasons for long lines	Frequency	Percentage
Lack of enough servers	32	26.7
Slow man power	43	35.8
Lack of trained servers	31	25.8
Demotivated servers	4	3.3
Lack of coordination	2	1.7

The respondents were asked to indicate the aspects of services rendered that they perceived to be fastest. A majority (63%) of the respondents found the fastest services rendered to be invoice and bill delivery with 37% indicating time of entry and waiter availability as the fastest service offered while 25% found the time the waiter takes to take an order as the fastest of services offered in the food outlets. The study further established that order taking and food delivery was the fastest service offered as indicated by 21% with 9% of the respondents finding payment and change.

Table 4.11 (a) Fastest Services

Fastest services	Frequency	Percentage
Time of entry to waiter availability	44	36.7
Time the waiter takes to take an order	31	25.8
From order taking to food delivery	24	20.8
Invoice/bill delivery	76	63.3
Payment to receiving change	11	9.2

With the study having established the opinion of the respondents on the fastest services that were offered by the food outlets, getting to know the slowest services offered was equally important, and according to the study results most (33%) were of the opinion that the time taken by the waiter to take the order was the slowest service offered by food outlets with (32%) and (20%) suggesting that order taking to food delivery and invoice delivery as the slowest services respectively.

Table 4.11 (b) Slowest Services

Slowest services	Frequency	Percentage
Time the waiter takes to take an order	40	33.3
From order taking to food delivery	39	32.5
Invoice/bill delivery	24	20.0
Payment to receiving change	10	8.3

4.7 Customer's Arrival Rate

In investigating the effects of customer arrival rates on the services offered by the food outlets the study sought to know from the respondents what the average rate of customer arrivals into the food outlet during peak time was. From the findings majority of the respondents (66%) found the average rate of customer arrivals to the food outlets to be between 3 – 5 customers a minute with a further 24% rating the customer arrivals at 2 customers every minute while 10% were of the opinion that there were 5 – 10 customers arriving in the food outlet every minute.

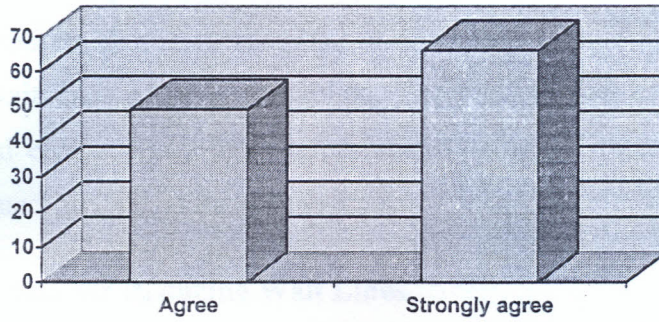
Table 4.12 Average Rate of Customer Arrival

Average arrival rate in peak period	Frequency	Percent
Two for every minute	28	24.2
Between 3-5 in a minute	79	65.8
Between 5-10 in a minute	12	10.0
Total	119	100.0

These findings are an indication that food outlets engage in a stream of activities during the peak periods of the day given the high number of customers flocking the outlets per minute.

The respondents were further called upon to show whether customers order returns were followed up to establish possible reasons for cancellation of the order. From the findings majority of the respondents (95%) were in agreement that a follow up on customer order cancellation was done and reasons behind the order cancellation addressed.

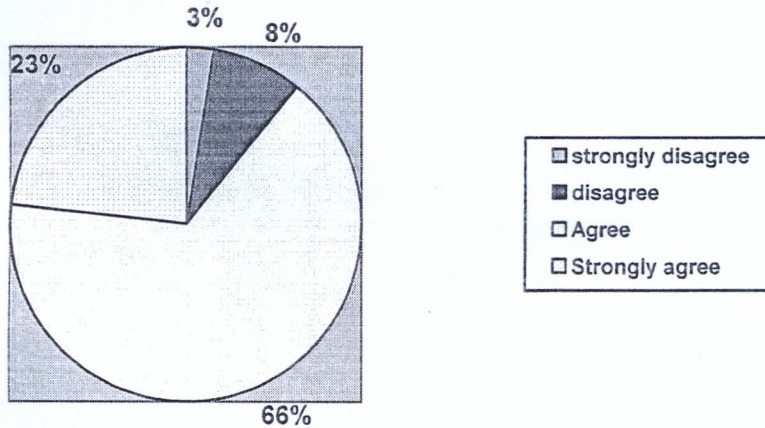
Fig 4.6 Whether Order Returns Are Followed Up



The study having acknowledged that order returns were followed up, it was thus very important that the researcher established whether other customer complaints and queries were recorded and investigated. Majority of the respondents (91%) were in agreement that customer's complaints were recorded compared to a mere (11%) who were in disagreement that complaints were recorded and investigated.

This indicates that food outlets in NCBD are already addressing a key area of service delivery that could lead to customer dissatisfaction is ignored.

Fig 4.7 Whether Customer Complaints Are Recorded and Investigated



At the end of the questionnaire the respondents were asked to highlight some of the suggestions they perceived were needed to reduce customer waiting lines in food outlets.

According to the findings of the study 66% of the respondents were in suggestion that increased servers speed at peak time would significantly reduce wait time in food outlets 46% were of the opinion that if coordination of all departments in food outlets could be effectively done wait lines could be controlled. The study further established that if the food outlets would ensure ready food before customer arrival there would be reduced wait time as indicated by 28% of the respondents.

Table 4.13 Suggestion for Reducing Wait Lines

Suggestions for reducing waiting lines	Frequency	Percentage
Increase number of servers	43	35.8
Increase servers speed in peak hours	79	65.8
Correct order taking	42	35.8
Ensuring ready food before customer arrival	34	28.3
Coordination of all food outlet departments	55	45.8
Hiring trained servers	13	11.7

CHAPTER FIVE

5.0 SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of the major findings, conclusions based on those findings and appropriate recommendations.

5.2. Summary

The summaries are based on the five specific research questions as well as the five research objectives of the study in the same order.

5.2.1 Effects of Queue Discipline in Effective Service

Queuing discipline in this study involves the rules that determine the order in which arrivals in food outlets are serviced. It's a discipline that is widely used in operations management in association to customer satisfaction. The study established that 66% of the respondents applied first in first serve model. This is very important and agrees with the findings of Sasser, et al (1989) who noted that the feeling that somebody has successfully "cut in front" of you causes even the most patient customer to become furious. Great care to equitable treatment in services sector is vital.

5.2.2 Average Wait Time in Lines before Service

Wait time is the total elapsed time between when customer is ready to place an order to the satisfaction of that order. According to (Taylor 1994), wait for service is defined as the time that a customer is ready to receive service until the time the service commences. It was established in the study that customers waited for less than five minutes waiting in queues before getting service as pointed out by 74% of the respondent with only 9% citing the longest waiting customers to be spending between 5 – 10 minutes before getting served. It could be concluded from the findings of the study that the waiting time in lines before service was approximately 5 minutes. Hillier and Lieberman (2000)

addressed the issue of waiting time and associated cost but concluded that waiting cost was hard to quantify or estimate noting that it involved both the immediate lost business and future businesses. They said businesses are lost if customer judges the queue too long and does not join it or the customer is sufficiently irritated that he/she does not come again.

5.2.3 Number of Servers and Efficiency of Service

A better understanding of relationships among service quality, customer satisfaction, and waiting time is important because, unless customer's value decreased waiting time, it is hard to increase profit (Kimes and Wirtz 2003). The number of servers and cost of services in the efficiency of service provision in the hospitality industry is of significant importance. According to the research findings 64% of the respondents were in acknowledgement that there was a relationship between cost of service and number of staff employed in a food outlet. It was further noted that as an aspect of cost and employee population the more the number of staff in the food outlets the more the running cost of the outlet according to 62% of the respondents with another 41% associating the cost of service and number of servers as profit determinants.

According to 61% of the respondents additional servers were deployed during peak times. This concurs with findings from Liao (2006) who found out that while making decision in the number of servers needed in the service system to meet time – varying demand it was important to estimate amount of lost businesses if customers balk or renege due to long queues.

5.2.4 Cost in Providing Efficient Service

The cost of efficient service is attained by setting of a price for a service based on the costs incurred in providing it. In relation to the study the cost of managing the food outlets translated to the benefits and profits from sales, according to 92% of the respondents. The research findings concur with earlier studies by Heskett et al, (2004) that customer satisfaction should lead to increased probability of repeat purchase, which

in turn should result in greater food outlets sales. The study sentiments are further echoed in a study by Sulek and Hensley (2004), whereby cost of efficient service in the hospitality industry established the link between satisfaction and repeat purchases, which are an important source of restaurants' profits.

Zhou and Soman (2003) suggest the use of a system that minimizes total cost, noting that if you add more servers to the service systems you decrease queue length and waiting time. That is you reduce balking loss and renege loss but service cost will increase. In the same breath if you use fewer servers in the service systems you reduce cost but balking loss and renege loss will increase.

5.2.5 Customer's Arrival Rate and Its Impacts to Services Delivery

Arrival means how customers arrive at the business houses and service areas to take services. Hueter and Swart (1998) used an integrated set of operations research models in Taco Bell, by applying a forecasting model for predicting customer arrivals or demands, a simulation model for determining optimal labour requirements, and an integer programming model for scheduling and allocating employees to minimize labour cost.

High customer arrival rate during the peak times makes it important for management to plan early so that at the peak time all resources are concentrated on the actual service delivery.

5.3 Conclusions

Based on the major findings of the study the following conclusions can be made about the effects of waiting time lengths on efficiency of service in food outlets in Nairobi.

This study established that the rule of first come first served is well respected in food outlets in Nairobi. This in turn promotes positive customer perceptions and thus satisfaction with provision of services.

The average waiting time that the customer spends on the queue matters very much and from the study it can be concluded that in most food outlets within Nairobi Central Business District (NCBD) an average of 5 minutes wait time was experienced.

It was noted that in order to provide efficient services in the food outlets the number of servers was an important aspects for the food outlet management to look at. According to the findings it was established that increasing the number of servers especially during peak hours was core to efficient service delivery.

As found in the study managing the cost of service provision is very important in that it provides a balance in the running of the food outlets to avoid losses. The study therefore concludes that key issue in waiting line is to provide a compromise between good service (by less service time) and less cost in running the service points.

An important issue as observed from the study within the food outlets in the Nairobi Central Business District in waiting line problem is to decide the best level of service that the outlets should provide in relation to customer arrival rates. From the finding it was noted that it is thus very important to understand the customer arrival pattern. Management should be alert during peak periods due to high numbers of arrivals and resulting complaints during this period.

5.4 Recommendations

The following are the recommendations based on the findings of the study.

- 1) The food outlets should develop rules and procedures that are customer friendly to ensure a positive attitude while waiting in the lines.
- 2) The management of food outlets within the Nairobi central business district should work towards reducing the average waiting time of 5 minutes established in the study to ensure that customers can walk in and get service immediately by increasing service counters and servers.

- 3) There is need for food outlets to deploy a contingent workforce that can be in charge of customer coming to the outlet at peak hours to ensure the speed service is always kept at par like other times of the day.
- 4) The food outlets should develop a system that is cost effective to both the management and customers to ensure profits at the end of the day and customer satisfaction after services.

5.5 Recommendations for further study

The researcher therefore recommends a new research based on the external customers to gain their insight on waiting time lengths in food outlets as this study was based on the “insider” view.

Secondly the researcher recommends further research on the waiting time lengths in non food service sectors such as in the matatu sector or waiting for medical services in Kenya public hospitals especially in the rural areas where queues are quite long.

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APPENDIX I: QUESTIONNAIRE

QUESTIONNAIRE FOR FOOD OUTLETS MANAGEMENT QUESTIONNAIRE ON THE ANALYSIS OF WAITING TIME LENGTHS ON EFFICIENCY OF SERVICE IN FOOD OUTLETS IN NAIROBI

1. Please indicate your gender

Male Female

2. What is your position/ status in the food outlet?

Manager Cashier Waiter

Any other please indicate _____

3. Working experience in the food outlet

Less than 2 years 2 – 4 years 4 – 6 years Over 6 years

4. What time of the day do you experience the slowest of service in the food outlet?

6.00 – 9.00 9.00 – 12.00 12 – 3.00 3– closing time

5. What time of the day do you experience the fastest service in the food outlet?

6.00 – 9.00 9.00 – 12.00 12 – 3.00 3– closing time

6. We offer quick service to your customers?

Strongly Disagree Disagree Undecided Agree Strongly Agree

7. Customers are encouraged to register any dissatisfaction with our services

Strongly Disagree Disagree Undecided Agree Strongly Agree

8. How long do customers spend in waiting lines

There is no waiting for customers Less than five minutes

5 – 10 minutes More than 10 minutes

9. How would you rate the speed of service provision after customers have placed an order?

Very slow Slow Moderate Fast Very fast

10. There is a relationship between cost and number of staff?

Strongly Disagree Disagree Undecided Agree Strongly Agree

11. If yes to above, what is your take on the following statements?

Key: Strongly Disagree (SD) -1; Disagree (D)-2; Undecided (U) - 3
Agree (A) - 4; Strongly Agree (SA) - 5

Relationship between cost and no of employees	SD	D	U	A	SA
The more the staff the expensive the running cost					
For maximized profits employee numbers should be lowered					
The more the staff the better the service hence increased profits					

12. Does the cost of managing the food outlets translate to the benefits and profits made from sales

Strongly Disagree Disagree Undecided Agree Strongly Agree

13. Management should employ more staff even if prices will be slightly increased to cover extra cost

Strongly Disagree Disagree Undecided Agree Strongly Agree

14. Food outlets deploy additional servers during peak time?

Strongly Disagree Disagree Undecided Agree Strongly Agree

15. Management ensures waiters and waitresses take customer orders correctly

Strongly Disagree Disagree Undecided Agree Strongly Agree

16. What do you think of the waiting in the food outlets?

Time wasting Customer controller Customer attraction tactic

17. What kind of queuing models are in use in the food outlets?

Single lane models Multiple lanes model Any other please indicate _____

18. What do you perceive is the reason for long waiting in the food outlets?

Lack of enough servers Slow man power Lack of trained servers

Demotivated servers Any other _____

19. What aspects of service do you find fastest?

The time of entry to waiter availability

The time the waiter takes to take an order

From order taking to food delivery

Invoice/ bill delivery

Payment to receiving change

Any other _____

20. Which aspects of service do you find slowest?

The time of entry to waiter availability

The time the waiter takes to take an order

From order taking to food delivery

Invoice/ bill delivery

Payment to receiving change

Any other _____

21. What is the average rate of customer arrivals into the food outlet at peak periods?

Two for every minute Between 3 – 5 in a minute 5 – 10 in a minute

More than 10 minute

22. Customer order returns are followed up, to find reasons for cancellation

Strongly Disagree Disagree Undecided Agree Strongly Agree

23. Customers complaint issues are recorded and investigated

Strongly Disagree Disagree Undecided Agree Strongly Agree

24. What would you suggest needs to be done to reduce customer waiting lines in food outlets?

APPENDIX II: FOOD OUTLETS IN NAIROBI CENTRAL BUSINESS DISTRICT (NCBD).

	Food outlets	Street
1	Alaska restaurant	Standard Street
2	Antonio's Grill	Kaunda Street
3	Athusi Bar And Restaurant	Ukwala Road
4	Beneve Café	Standard Street
5	Bon Appetite Café	City Hall Way
6	Burger Land Fast Foods	Moi Avenue
7	Calypso Restaurant	Kaunda Street
8	Cappuccino Café	Mama Ngina Street
9	Caprice Café	Moi Avenue
10	City Fries	Muranga Road
11	Crystal Restaurant	River Road
12	Dalyn Restaurant	Monrovia Street
13	Debonair Steers Pizza	Muindi Mbingu Street
14	Discovery Coffee Shop	Koinange Street
15	Dorman's Coffee House	Mama Ngina Street
16	Dove Cage Restaurant	Moktar Daddha Street
17	Eateries	Moi Avenue
18	Eight to Eight Choma Zone	Standard Street
19	The Fern	Loita Street
20	Fiesta Restaurant	Koinange Street
21	Fish and Chicken Bar	Moktar Daddha Street
22	Fresh and Friendly Fast Foods	Tom Mboya Street
23	Gato Steak And Chips	Race Course Road
24	Generation Grill	Moi Avenue
25	Green Corner Restaurant	Nkuruma Road
26	Hoggers Fast Foods	Haileselasie Avenue
27	Hooters eatery	Kaunda Street
28	Horizon Quality Snacks	Moktar Daddha Street
29	Hunters Grill Restaurant	Moi Avenue
30	Innscore Fast Foods	Kenyatta Avenue
31	Jazz Restaurant	Moi Avenue
32	Kahawa Coffee House	Kaunda Street
33	Kengeles Restaurant	Koinange Street
34	Lahorias Hotel And Bar	Tsavo Road
35	Lavarinis Restaurant	Moi Avenue
36	Level One Pub And Restaurant	Moi Avenue
37	Mandy's Restaurant	Koinange Street
38	Mega Fries Foods	Tom Mboya Street
39	Millennium Fast Foods	Moi Avenue
40	Java Coffee House	Koinange Street

41	New Tumuthure Restaurant	Tubman Road
42	Pasara Café	Kaunda Street
43	Picadily Circus Restaurant	Tsavo Road
44	Pizza Harvest	Monrovia Street
45	PorterHouse Restaurant	Mama Ngina Street
46	Professional Centre Cuisine	Parliament Road
47	Red Ribbon Fast Foods	Tom mboya Street
48	Rosette Restaurant	Haileselasie Avenue
49	Sausage Palace	Taveta Road
50	Seasons Restaurant	Aga Khan Walk
51	Shooters Restaurant	Wabera Street
52	Six Flags Restaurant	Koinange Street
53	Sanford Fish and Chips	Moi Avenue
54	Southern Fried Chicken	Banda Street
55	Stavrose restaurant	Banda Street
56	Steers Restaurant	Muidi Mbingu Street
57	Tamarind Restaurant	Harambee Avenue
58	The Mug Coffee Culture	Kaunda Street
59	Tin Tin Restaurant	Harambee Avenue
60	Tinto Restaurant	Haileselasie Avenue
61	Tratorria Restaurant	Wabera Street
62	Twigs Restaurant	Nkurumah Road
63	Vesba Eating House	Moi Avenue
64	Walkers Restaurant	Aga Khan Walk
65	Walkers Fast Foods	Aga Khan Walk
66	Wimpy Fast Foods	Tom Mboya Street
67	Wimpy Fresh Foods	Kenyatta Avenue

NAIROBI CENTRAL BUSINESS DISTRICT

