LEAD TIME MANAGEMENT AND CUSTOMER SATISFACTION IN THE TELECOMMUNICATION INDUSTRY IN KENYA

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DECLARATION

I, the undersigned, hereby declare that this is my original work and has not been presented to any institution or university other than University of Nairobi for academic credit. I further declare that I followed all the applicable ethical guidelines in conducting the research.

Signed: _____ Date:_____

JOB LOUIS MFWAYA

D61/60153/2011

Supervisor declaration

Supervisor

Signed: _____ Date:_____

DR. JAMES M. NJIHIA

DEDICATION

I dedicate this work to my family for their love, support, patience and encouragement gave me the will and determination to complete my post graduate studies.

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I extend my most sincere thanks to the following people and institutions for their kind assistance and tolerance without which this study would not have been successful: My supervisors also the chairman of the department Dr. James M. Njihia and my moderator Mr. Joel Lelei for their constructive guidance and support that has greatly enriched the results of this study. Their advice and encouragement gave me an inner strength that inspired me.

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My heart felt appreciation goes to my mother, who continues to inspire me, for teaching me the importance of education and hard work. I also thank my entire family for their unfailing support. To all my siblings you were a source of inspiration.

To all those who participated and supported me during the course of this study, and especially all the respondents, I say a 'big' 'Thank you'. God bless you all.

ABSTRACT

The main purpose of this study was to analyze the good lead time management of telecommunications companies in Kenya. The study adopted a cross section survey design. The target population was 59 companies located in Kenyan cities. The sample size was 4 mobile servers and 55 internet providers' human resource managers in the companies. Thirty nine human resource officers responded to the questionnaire.

The study found out that the companies offered multiservice networking, telecommunications, security solutions, ICT consultancy, managed infrastructure, project implementation, enterprise systems, business management, software and satellite and other products/services.

The study concluded that the companies good lead time management that is having multiple suppliers of various products and services, trying as much as possible to reduce variability, always having a smooth workflow in the organization, having proper queue control to avoid delays, expediting some processes to avoid delays, using multi modal transportation to avoid delays and offering warranty of the products/services for at least 12 months significantly affects customer satisfaction positively. These are the relationships that had a strong negative effect on customer satisfaction; Number of complaints, Repeat customers, Returned goods, Warranty claims, Customer feedback and After sale service.

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OPERATION DEFINITION OF TERMS

Customer satisfaction: Measure of how products and services supplied by a company meet or surpass customer expectation. Customer satisfaction is defined as "the number of customers, or percentage of total customers, whose reported experience with a firm, its products, or its services (ratings) exceeds specified satisfaction goal.

Lead Time: The amount of time that elapses between when a process starts and when it is completed. Lead time is examined closely in manufacturing, supply chain management and project management, as companies want to reduce the amount of time it takes to deliver products to the market. In business, lead time minimization is normally preferred.

ABBREVIATIONS AND SYNONYMS

CCK	Communications Commission of Kenya
FIFO	First In, First Out
FMC	Flexible Manufacturing Cells
FMS	Flexible Manufacturing Systems
ICT	Information and Communication Technology
MRP	Material Requirements Planning
MTTR	Mean Time To Repair
SPSS	Statistical Package for Social Sciences

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CHAPTER ONE: INTRODUCTION

1.1Background of the study

In the past decade, practitioners have focused on speed as the basis of competitive advantage (Stalk and Hout, 1990; Blackburn et al., 1992). Companies use three main strategies based on speed to attract customers: to serve customers as fast as possible; to encourage potential customers to get a delivery time ‘‘quote’’ prior to ordering, and to guarantee a uniform delivery lead time for all potential customers (So and Song, 1998). Many companies, specifically in the service and make-to-order manufacturing sectors, are adopting the third strategy of advertising a uniform delivery time for all customers within which they guarantee to satisfy most. While this strategy may attract many customers, there is a risk that demand may exceed the firm’s capacity to respond. This can lead to a penalty cost for the manufacturer or it might lead to a decrease in repeat business. With this strategy, it is important to have some internal mechanism in place to ensure that the promised delivery times are feasible and reliably met.

According to Blackburn *et al.,* (1992) today's customers around the globe demand aproduct as they want it, when they want it, and at the best possible price. In today's highly competitive global marketplace they are placing greater value on quality and delivery time. Providers of services similarly have begun to place more value on quality and delivery time and companies are trying to gain a competitive edge and improve profitability through cutting cost, increasing quality and improving delivery. However it is safe to say that the more competitive the industry, the more shortened lead times will help. In competitive industries, short lead time will differentiate a company from its competitors, leading to increase sales (Blackburn et al., 1992).

In the telecommunication industry, lead time management is very important since the sector is highly dependent on very recent technology which is capable of drastically reducing lead times. Customers are also highly informed and their demands and expectations are high. Customers want instant solutions when it comes to telecommunication services. It is therefore important for

telecommunication companies to effectively manage their lead times to achieve higher levels of customer satisfaction.

1.1.1 Lead Time Management

A more conventional definition of lead time in the supply chain management realm is the time from the moment the customer places an order (the moment you learn of the requirement) to the moment it is received by the customer. In the absence of finished goods or intermediate (work in progress) inventory, it is the time it takes to actually manufacture the order without any inventory other than raw materials. In the manufacturing environment, lead time has the same definition as that of Supply Chain Management, but it includes the time required to ship the parts from the supplier (PMI, 2008). The shipping time is included because the manufacturing company needs to know when the parts will be available for Material Requirements Planning (MRP). It is also possible for lead time to include the time it takes for a company to process and have the part ready for manufacturing once it has been received. The time it takes a company to unload a product from a truck, inspect it, and move it into storage is non-trivial. With tight manufacturing constraints or when a company is using Just In Time manufacturing it is important for supply chain to know how long their own internal processes take (PMI, 2008).

Total lead-time is made up of time devoted to processing orders, to procuring and manufacturing items, and to transporting items between the various stages of the supply chain. However, lead times can often be reduced if items are transported immediately after they are manufactured or arrive from suppliers (David Simchi et al., 2000). Lead-time typically includes two components: Information lead times (i.e., the time it takes to process an order) and Order lead times (i.e., the time it takes to produce and ship the item). Information lead time can be reduced by using very sophisticated and modern communication system while Order lead time can be reduced through efficient supply chain management (Simchi-Levi, David, 2000).

Alp and John (2003) assert that the best way to hedge a supply chain against random fluctuations in demand is through modification of leadtimes in the system dynamically. They argue that this can be done through having flexibility in the supply chain leadtimes by working with multiple

suppliers, using multiple transportation options, having the option to expedite certain processes, or having different possible routes for a unit to go through the supply chain.

Jader (2012) argues that reduction in lead time in service delivery is not a new concept. He asserts that the opportunity to reduce lead time in service delivery lies in the service process itself. The time it takes to provide a particular service to a customer is very significant. He further suggests that for an organization to be able to reduce lead time, it should include lead time reduction as a company strategy. This will enable the company to address lead time issues more efficiently.

1.1.2 Customer satisfaction

Customer satisfaction is the ability of an organization to meet the expectations of a customer. It differs depending on the situation and the product or service. A customer may be satisfied with a product or service, an experience, a purchase decision, a salesperson, store, service provider, or an attribute or any of these. Some researchers completely avoid "satisfaction" as a measurement objective because it is "too fuzzy an idea to serve as a meaningful benchmark." Instead, they focus on the customer's entire experience with an organization or service contact and the detailed assessment of that experience (Rodrigo, 1996). For example, reporting methods developed for health care patient surveys often ask customers to rate their providers and experiences in response to detailed questions such as, "How well did your physicians keep you informed?" These surveys provide "actionable" data that reveal obvious steps for improvement. Customer satisfaction is a highly personal assessment that is greatly influenced by individual expectations. Some definitions are based on the observation that customer satisfaction or dissatisfaction results from either the confirmation or disconfirmation of individual expectations regarding a service or product. To avoid difficulties stemming from the kaleidoscope of customer expectations and differences, some experts urge companies to "concentrate on a goal that's more closely linked to customer equity." Instead of asking whether customers are satisfied, they encourage companies to determine how customers hold them accountable (Rodrigo, 1996).

In the telecommunications industry, the quality of service is one of the major determinants of the customer satisfaction (Watson and Goodhue, 2002). Many researchers and experts mentioned that, service quality can be enhanced by using advanced information and communication technology (ICT). The relationship between expectation, perceived service quality and customers satisfaction have been investigated in a number of researches (Zeithaml, et al, 1988). It was found that, there is very strong relationship between quality of service and customer satisfaction (Parasuraman et al, 1985; 1988 ;). Increase in service quality can satisfy and develop attitudinal loyalty which ultimately retains valued customers (Nadiri, et al 2009). The higher level of perceived service quality results in increased customer satisfaction. When perceived service quality is less than expected service quality customer will be dissatisfied (Jain and Gupta, 2004). According to Cronin and Taylor (1992) satisfaction super ordinate to quality-that quality is one of the service dimensions factored in to customer satisfaction judgment.

1.1.3 Telecommunication Industry in Kenya

The challenges faced by the makers of telecommunications policy in Kenya are exceptionally demanding. To meet of economic needs, it will be necessary to expand the network, enhance service quality and features, and upgrade operational efficiency and productivity. Kenya has a rapidly expanding economy, but also has one of the world's highest population growth rates--by the year 2000 its population is expected to reach 38 million. Kenya will also need to invigorate agriculture and enhance the lives of those in its rural areas to stem the tide of migration into the towns. Five million new jobs will be needed in the urban areas if the country is to avoid massive unemployment and social unrest.

Moreover, successful export economies need the participation of global corporate leaders to set the pace for quality, technology, productivity, and innovation by implementing global "best practices." Their direct investment, though useful, is not as indispensable as their broader role as innovators, pace setters, and conduits for the transfer of technology and "best practices." In Kenya, these global companies directly and indirectly support hundreds of smaller companies and tens of thousands of employees. The operating methods of such global companies require

extensive use of both voice and data telecommunications, domestically as well as internationally. Experience shows that global companies will focus their management efforts and their investments where adequate telecommunications (as well as other preconditions for productive, effective operations) permit them to remain globally competitive

Mobile phone technology has reduced telecommunication costs in many parts of the developing world from prohibitive levels to amounts that are, in comparison, virtually trivial. Nowhere has this transformation been as acute as in sub-Saharan Africa, where networks of both fixed line communication and physical transportation infrastructure are often inadequate, unreliable, and dilapidated. While mobile phone calling rates remain high by world standards, the technology has allowed millions of Africans to leapfrog the landline en route to 21st century connectivity (Jack and Suri, 2010).

The adoption of mobile phones has occurred at perhaps the fastest rate and to the deepest level of any consumer level technology in history. The cumulative forces of this development are important thus making it difficult to compare directly across innovations. Thus notwithstanding, it is informative to note that mobile phones have been adopted more than five times as fast as fixed line telephone services, which took 100 years to reach 80 percent of country population in Kenya due to government bureaucracy since the corporation in charge was directly under government control (Jack and Suri, 2010).

In Kenya, the first mobile phone companies were publicly owned, and began operations in the mid 1990s on a small scale and mobile telephone services were expensive and strictly controlled by the government. Over time, mobile phones in Kenya have eclipsed landlines as the primary means of telecommunication: while the number of landlines had fallen from about 300,000 in 1999 to around 250,000 by 2008, mobile phone subscriptions had increased from virtually zero to nearly 17 million over the same time period. Assuming an individual has at most one cell phone, 47% of the population, or fully 83% of the population 15 years and older, have access to mobile phone technology (Jack and Suri, 2010)

Currently, the telecommunication industry in Kenya is dominated by four mobile telephone service providers and this eliminated the monopoly initially enjoyed by Safaricom limited. Other mobile telephone service providers include Yu, Airtel and Orange. There is a clear indication of replication in services and products offered by these companies. For example, all the four companies are offering mobile-based money transfer, a service initially started by Safaricom. If the Communications Commission of Kenya (CCK) licenses more operators in the future, then the competition may be stiffer than it is currently. (Elliot 1998).

There are fifty five internet service providers in Kenya. These include Access Kenya; Zuku; Kenya Data Networks; Airtel; Safaricom; and Wananchi Online These internet service providers have different speeds for their internet. For instance Wananchi online advertises internet speed of 8mbps while the actual is 1.97mbps. Safaricom too has advertised speeds of 7.2mbps while the actual lies between 0.68-3mbps (www.file-it-africa.com). Customer care is given to customers by ensuring there is fast internet speed by giving each customer an account and each account is managed with respect to connecting the customer to fast and stable internet speeds. Customer account management is used by the internet service providers to manage lead time.

These internet speeds can be equated to lead time since they determine how fast customers are able to access the information they want from the internet. In total there are fifty five registered internet service providers.

1.2 Statement of the Problem

The time it takes for a customer to receive a product or service is very critical in determining how satisfied that customer will be. The level of technology that exists in the world has made the service sector very dynamic hence customers require fast, effective and efficient services. If organizations can be able to maintain very short lead times, they can be assured of high levels of customer satisfaction which will in turn lead to customer loyalty.

There are a number of studies that have been conducted on lead time management. For instance Alp and John, 2003 conducted a study on dynamic lead time management in supply chains. The

study established that having some sort of exibility in leadtimes is a very commonly utilized method of managing uncertainty in supply chains. Miskelly (2009) also conducted a study on improving customer satisfaction with lean-six sigma. The study mentioned better lead time management as one of the ways of improving customer satisfaction. Another study was also carried out by Petri (2012) on the impact of customer order lead time-based decisions on the firm's ability to make money. The study established that lead time decisions impact on the company's ability to make more profits. Bosire et al. (2011) conducted a study on the impact of outsourcing on lead time and customer services among supermarkets in Nairobi. The study confirmed that outsourcing has a significant impact on lead time.

The studies available have not directly studied the effect of lead time management on customer satisfaction. This is evident from the studies that have been quoted above. The studies also have a bias focus on the manufacturing sector than the service sector. This leaves a gap of customer service and lead time in the service sector that needs to be filled. This study will therefore seek to address this gap by answering two important questions: What are the lead time management practices in the Kenya Telecommunication Companies and what is the relationship between lead time management practices and customer satisfaction?

1.3 Research Objectives

This study will seek to achieve the following two objectives:

i. To establish the lead time management practices in the Kenya Telecommunication industries.

ii. To determine the relationship between lead time management practices and customer satisfaction in the Kenya telecommunication industry.

1.4 Value of the study

The findings of this study will assist those in the academic realm. They will be able to get access to a pool of knowledge that can be important in their studies on lead time management and customer satisfaction.

The telecommunication companies in Kenya will also benefit from the findings of this study since they will get documented and substantiated findings on the effect of lead time management on customer satisfaction

Other companies especially in the service industry will be able to understand the significance of lead time management in improving the level of customer satisfaction. Supply chain practitioners will benefit from this study since it studies supply chain management in service sector.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter presents a review of studies that have been conducted on lead-time management. The researcher will look at an overview of lead time; factors influencing lead time; lead time management practices; the relationship between lead-time management and customer satisfaction. The chapter also provides a conceptual framework that explains the relationship between the dependent and independent variables in the study.

2.2 Lead Time Management

Nordas *et al.* (2006) indicates that Lead time is the amount of time between the placement of an order and the receipts of the goods ordered. It depends on the nature of the product e.g. whether it is made to order or if it is from the shelf product. Lead time also depends on planning and supply chain management, logistics services and of course distance to customers and suppliers. Long lead time does not need to be a problem if delivery is predictable and demand is stable. However, if there is uncertainty about future demand, long lead time is costly even when the customer knows exactly when the merchandise will arrive. If future demand has been underestimated, running out of stock has costs in terms of foregone sales and the possibility of losing customers. If future demand has been overestimated, excess supply must be sold at a discount. Furthermore, the longer the lead time and the more varieties of the product in question are on the market, the larger stocks are needed. It is also important to notice that competitiveness on lead time is not a static concept. When some firms are able to shorten lead time, others must follow in order to avoid punishment in terms of discounted prices or at worst exclusion from the bidding process. The latter can happen when a critical mass of suppliers is able to deliver just-in-time and the customer finds it safe to reduce inbound inventories to a couple of days or in some cases even a couple of hours (Nordas *et al.,*2006).

Bosire, Kongere, Ombati, and Nyaoga (2011) conducted a study on the impact of outsourcing on lead time and customer services in supermarkets in Nairobi. The study indicates that

supermarkets outsource several services such as; marketing and advertising, maintenance, fleet operation etc. The study also revealed the impact of outsourcing on lead time. It established that there is a positive correlation between outsourcing and lead time and those supermarkets that implement the variables manifest customer service management as a strategy to retain customers and remain competitive.

According to Hetzel (1988), forecast errors cause expediting to meet unexpected demand, and the disruption adds to queuing and missed deliveries. The entire supply chain becomes asynchronous with high lead time variability and rising safety stock needs. The cycle time grows even longer, thus forcing a longer forecast horizon and even less forecast accuracy. This type of feedback cycle can grow throughout the organization without a focused effort toward cycle time reduction. Gross and Soriano (1969) demonstrate that lead-time variation has a major impact on lot size and inventory costs. Furthermore, they indicate that an inventory system is more sensitive to lead-time variation than to demand variation. Variations in lead time can occur for purchased items and for those that are manufactured in-house. A major factor related to these variations is quality problems. Typically, either safety stock or safety lead time is utilized to cushion the impact of this variability. In either case, larger variability requires increased inventories. High lead-time variability is a major reason for a plant's inability to achieve inventory goals and to incur longer average throughput.

The development of service processes is treated with a lot of significance both in the public and private sector organizations since it affects the level of customer satisfaction. Most contemporary organizations face myriad challenges in efficient lead time management due to turbulent financial times. When a company experiences long lead times, there is a possibility of having high supply chain costs as well as poor quality of services being delivered. It is therefore important for organizations in the service industry to practice better lead time management practices in order to improve their quality and reduce supply chain costs (Henri & Janne, nd).

2.3 Factors Influencing Lead Time

According to Spitter *et al.,* (2003) the production dynamics and cost of inventory may play an important role in lead time variability. Spitter *et al* further indicates that waiting time is also a factor that can determine lead time variability. Waiting times are the times which elapse while jobs are queuing in front of machines. Zong (2008) also argues that in manufacturing systems there are many factors contributed to long production lead-times. Machine failure is one of those significant factors. When a machine breaks down, longer mean time to repair (MTTR) will cause lower machine availability. Thus, it will result in longer production lead-times.

Lead-time variability depends on all the operations that take place in a facility which intern depend on the equipment used and the decisions made. Variation of orders is also a factor that leads to lead time variability. Since all orders do not arrive at the same time, pickers may remain idle for some time. This decreases the utilization of order picking and affects the efficiency of the warehouse. Hence, while reducing the lead-time, the efficiency of the warehouse will not be 100%. Piroird and Dale (1998) identified that planning in a warehouse is one of the most important factors affecting lead-time variability. The other factors that affect lead-time are listing orders, order picking, sorting, packing and shipping.

The waiting time plays an important role in lead time variability. In this case it is important to consider the expected waiting time for a single server queue when using queuing theory where the service time and the inter-arrival time between the orders have a general distribution. When an order arrives and the server is busy, the order waits in a queue. When all earlier arrived orders are finished, the order is produced. In this case the first in, first out (FIFO) system is used. This therefore leads to variability in lead time (Kingman, 1962).

According to Spitter *et al*. (2003) the length of the optimal planned lead time of an item is dependent on the variation of the demand, the utilization rate of the resource the item is produced on, and the difference in the holding costs between this item and the end item it is used in. For the variation in the demand and the difference in holding costs it holds that if the value of one or both parameters increases, the optimal planned lead time becomes longer. For the utilization rate this characteristic only holds if the difference in holding cost between the item produced on the capacitated resource and the end items is large enough. The holding cost structure plays the leading role in the determination of the optimal planned lead time. Safety stocks can decrease by longer planned lead times if the variation in demand and/or the utilization rate is high, but this is only advantageous if the work-in-process costs do not increase too fast by long planned lead times.

2.4 Lead Time Management Practices

Alp and John (2003) assert that one way to hedge against random fluctuations of demand in supply chains is to keep inventories at various points in the chain. They further argue that the other option is to modify the lead times in the supply chain network dynamically. They suggest that the following lead time management practices will be able to result to better lead time management: Working with multiple suppliers, using multiple transportation options, having the option to expedite certain processes, smooth workflow, queue control and reducing variability.

2.4.1 Working with Multiple Suppliers

Using multiple suppliers allows companies to negotiate better deals with providers concerned about competition, and to establish comparison points between internal service organizations and outside suppliers. In traditional client / supplier relationships, the primary focus is generally on cost or price. Moreover, organizations often view the service provider with suspicion and a lack of trust exists between the two parties, which can jeopardize the success of the overall engagement (Christopher, 2000). When adopting a multi-sourcing model, the development of a ‘partnership’ relationship between client and supplier, based on trust and focused on mutual business outcomes, is the key to the success of the contract. This model requires organizations to

adopt a new attitude toward service providers as strategic partners – not just as vendors from whom goods and services are procured, but as business partners with experience, skills and assets that can be harnessed to create competitive advantage. Service providers, in turn, must be prepared to work to better align their services and contracts to their clients' unique needs. It is this relationship with multiple suppliers that enable an organization to provide products and services faster to its clients that managing lead time appropriately (Christopher, 2000).

2.4.2 Using Multiple Transport Options

Over the past decade the world has witnessed strategic considerable developments. The movement toward globalization and trade liberalization paralleled by the revolution in information and communications technologies is continually advancing and significantly altering existing markets and triggering a race for the future. Apparently a new economic era is materializing and driving more countries toward global economic integration. While partnering and forming alliances are companies' best response, regionalism is emerging as countries' powerful option in face of these ongoing global trends (Atallah, 2005). National borders are increasingly disappearing and trade barriers are dismantled. Progressively, these developments required changes in the type and quality of transport and logistics services and infrastructure. Therefore, new patterns of provision and management of transport have emerged. The massive growth in containerization which introduced the modern concept of Multimodal Transport has shifted the cargo delivery system from "port-to-port" to "door-to-door". This form of transportation assists organizations to be able to drastically reduce the lead times (Atallah, 2005).

2.4.3 Expediting Certain Processes

An organization needs to have in place a policy/procedure for supplier escalation. The policy should lay out when, how and who will be involved in the process and share this information with the supplier. Where suppliers do not achieve 100% on time delivery, lead time management becomes a problem in the organization and in this case expediting or rescheduling some of the

processes becomes a necessary evil. It is however important to note that a common sense approach can ensure that a bad situation doesn't become worse.

2.4.4 Smooth Workflow

The Just In Time concept in supply chain advocates for the need to having a smooth work flow in the organization in order to reduce inventories and lead times. This can be achieved by leveling work releases; leveling of work releases in order to maintain low workloads that are capable of maintaining shorter queues and shorter flow times. It is important to release work frequently in small amounts in order to create even workflow and in this way lead time variability is reduced (Hopp *et al.,* 1990). They further suggest that uniformity in workflow is very important since it eliminates setups between similar activities.

2.4.5 Queue Control

Supply chain management includes materials/supply management from the supplier of raw materials to ultimate product and also, network of organizations that are involved, through upstream and downstream stages, in the different processes and activities that produce value in the form of products and services in the hands of the consumer. Therefore a supply chain consists of all parties involved in satisfying a customer request. And also, the supply chain includes not only the manufacturer and suppliers, but also transporters, retailers, and even customers themselves (Teimoury *et al*., 2011). The supply chain activities constitute a mega process and various decisions are involved in their successful design and operation. Decisions regarding stocking and control of inventory of stocks are a common problem to all enterprises. Asset managers of large enterprises have the responsibility of determining the approximate inventory level in the form of components and finished goods to hold at each level of supply chain in order to guarantee specified end customer service levels. Given the size and complexity of the supply chain, a common problem for this asset manager is to know how to quantify the trade-off between service level and investment in inventory required to supporting these service levels. The problem is made even more difficult because the supply chains are highly dynamic

with uncertainty in demand, variability in processing times at each stage of the supply chain. With effective queue control and management, an organization is able to reduce the uncertainties that exist in the supply chain (Teimoury *et al.,* 2011).

2.4.6 Reducing Variability

Businesses today operate in a very tough environment that is constantly in flux . Customers have become increasingly demanding looking for better and innovative goods and services that are specifically customized to meet their unique needs. There is also an implicit requirement on the accuracy, timeliness, convenience, responsiveness, quality and reliability of the service offered to them. And all of this is desired at ever-lower prices. Simultaneously, the rapid pace of innovation has resulted in shorter product and technology cycles, leading to uncertainties in supply and demand. Variability is thus a major issue and variability reduction and business process synchronization are therefore acknowledged as key to achieving superior levels of performance in supply chain networks (Kane, 1986).

2.5 Customer Satisfaction

Customer satisfaction is a personal feeling of either pleasure or disappointment resulting from the evaluation of services provided by an organization to an individual in relation to expectations (Oliver, 1980; Leisen and Vance, 2001). Service providers frequently place a higher priority on customer satisfaction, because it has been seen as a prerequisite to customer retention. As a positive outcome of marketing activities, high customer satisfaction leads to repeat visitation to stores, repeat product purchases, and word-of-mouth promotion to friends (Anderson, Fornell and Lehmann, 1994; Bloemer and Kasper, 1995), while low customer satisfaction has been associated with complaining behavior (Zeithaml, Berry and Parasuraman, 1996). A satisfied customer often stays loyal longer, and is likely to patronise the firm in future [3]. Customer satisfaction can be conceptualized as either transaction-specific satisfaction or cumulative satisfaction (Boulding, Ajay, Richard, Valarie, 1993). Transaction-specific satisfaction is a customer's evaluation of her or his experience and reactions to a specific company encounter

(Cook and Thompson, 2000). Cumulative satisfaction refers to customers overall evaluation of patronage experience from inception to date (Tahir, Abu-Bakar, 2007).

2.6 Lead Time Management and Customer satisfaction

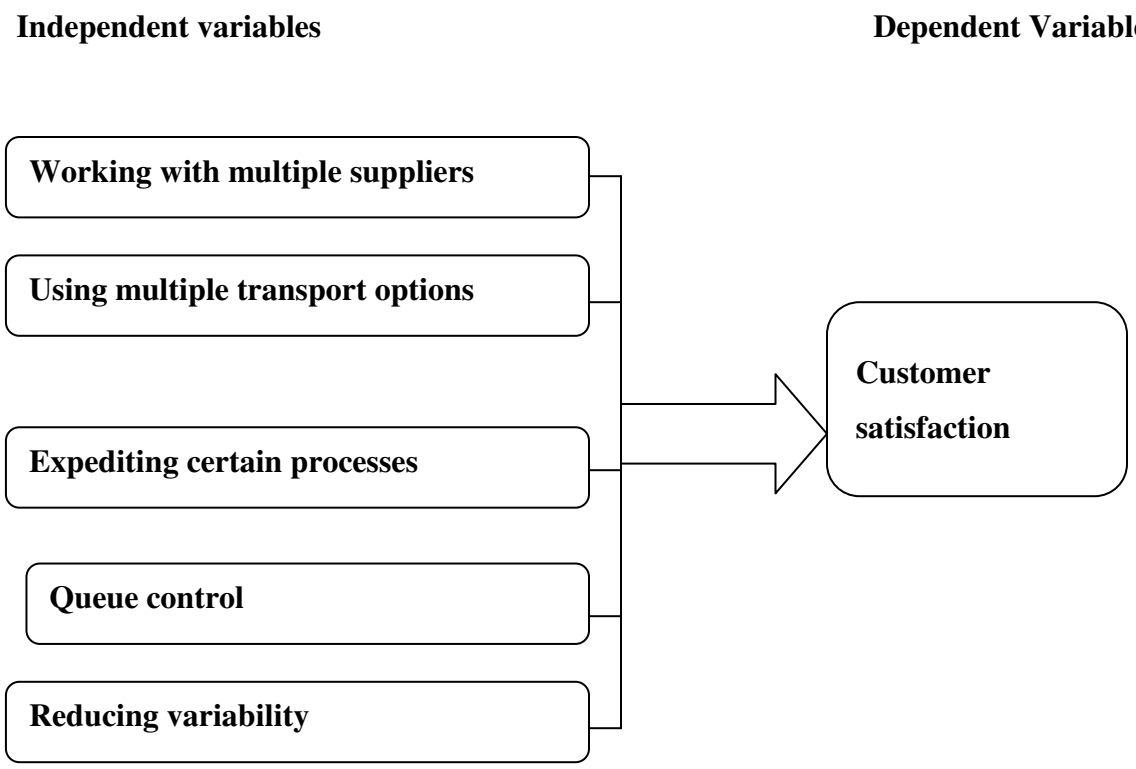
In today's global economy, businesses must realize that consumers are smarter and more sophisticated than ever; they have the resources to expect and demand high-quality products and services. In order to compete, companies have to provide superior service and quality in order to capture a reasonable market share and increase customer satisfaction. Price is no longer the only deciding factor on purchases; smarter consumers like reasonable prices but high quality products and services as well as reasonable lead times are important determinants of customer satisfaction (Kimberly, n d.).

According to Gunasekaran *et al.* (2001) customer satisfaction is the customer's reaction to the value received from the purchase or utilization of the offering. Customer satisfaction represents the customer's reaction to his or her perception of the value received as a result of using a particular product or service. That reaction will be influenced by the desired value (ideal standard) as well as by the perceived value of competitive offerings (industry norms, expectations based on use of competitor products). Thus customer satisfaction is influenced by the perception of the value delivered as well as by the perception of the value offered by competition. Today customers are from every corners of the world; the supply chain strategy should have focus towards satisfying the customers. Without satisfied customer, the whole exercise of applying the supply chain strategy could be costly and futile. For improving performance, supply chain metrics must be linked to customer satisfaction.

Agile supply chain requires minimum total lead-times defined as the time taken from a customer raising a request for a product or service until it is delivered (Christopher, 2000). Lead time reduction within the supplier-production-distribution chain is the mechanism for time based competition. Management of lead time can be competitive advantage that can enhance customer

satisfaction. Managing time may be the mirror image of managing quality, cost, innovation, and productivity. For reducing lead time it is essential to adopt Just in time philosophy and need of continuous improvement focus on issues i.e. flexible manufacturing cells (FMC) or flexible manufacturing systems (FMS), automation tools and efficient information technology tools (Christopher,2000).

2.7 Conceptual Framework



The above conceptual framework explains the relationship that exists between lead time management practices and customer satisfaction. The lead time management practices are the independent variables whereas customer satisfaction is the dependent variable.

2.8 Hypothesis

H_0 Lead time management has no effect on customer satisfaction in the telecommunication industry in Kenya.

H_1 Lead time management has an effect on customer satisfaction in the telecommunication industry in Kenya.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter gives the methodology that will be used to accomplish the already established research objectives and questions. Here the research design, target population, data collection, t, instrument validity and reliability test, data collection, and data analysis.

3.2 Research design

The design of this study will be a cross sectional descriptive survey. The design will be the most convenient since it will ensure that the data obtained will give appropriate answers to the research questions. A cross sectional descriptive survey will enable the researcher to examine the effect of lead time management on customer satisfaction in all the telecommunication companies operating in Kenya. It will also offer the opportunity for a logical structure of the inquiry into the problem of study.

3.3 Population and sampling

There are a total of fifty five registered internet service providers in Kenya which are licensed by CCK (Appendix II). These fifty nine internet service providers will form the target population of this study. This study will involve a census of all the four telecommunication companies in Kenya and fifty five registered internet service providers in Kenya.

3.4 Data Collection

Data collection will be done through a structured questionnaire from company managers and customers. The researcher will target senior managers from supply chain departments. In their absence the deputy manager or any other senior manager who actively engaged in outsourcing decisions for the company will respond to the questionnaire. The questionnaire will have three sections. Section A will deal with the profile of the company, section B will contain information

on the lead time management practices among the telecommunication companies and section C will seek data on the relationship between lead time management practices and customer satisfaction. The researcher will drop and pick questionnaires from the respondents once they are filled in.

3.5 Data analysis

The data collected will be analyzed using statistical package for social sciences (SPSS), and according to descriptive information following research questions. Percentages, means and frequency scores will be calculated. Descriptive statistical analysis will be employed in order to enable the researcher to summarize, organize, evaluate and interpret the numeric information. Qualitative data measuring personal feelings and attitudes will also be measured using inferential statistical methods according to the objectives. Regression analysis will be done to establish the relationship between lead time management practices and customer satisfaction.

The following regression equation will be used by the researcher to establish the relationship between customer satisfaction and lead-time management practices: $\mathbf{Cs = a + b_1L_1 + b_2 L_2 + b_3 L_3 + b_4 L_4 + b_5 L_5 + e.}$ Where Cs represents customer satisfaction as an independent variable; a is the Cs intercept when the value of L is zero; b_1 to b_5 represents the various weights attached to the lead time management practices while L1 to L_5 represents the lead time management practices: Working with Multiple Suppliers; Using Multiple Transport Options; Expediting Certain Processes; Queue Control and Reducing Variability respectively and e is the error term.

3.5.1 Instrument validity and Reliability Test

Validity concerns itself with establishing whether the research instrument is measuring what it is supposed to measure. To measure validity, the researcher will examine supply chain specialists through the instrument to assess the relevance of the content. The feedback will be included in the final questionnaire. A pilot study test will also be carried out on 10% cases drawn from the target population outside the study.

Reliability refers to the consistency of the scores obtained, that is, how consistent they are for each individual from one administration of an instrument to another. A reliable instrument, therefore, is the one that constantly produces the expected results when used more than once to collect data from two samples randomly drawn from the same population. To test for reliability of the questionnaire, the researcher will apply the test-retest technique. The same questionnaire will be administered to the same group within a time interval of two weeks. A reliability co-efficient will then be calculated to indicate the relationship between the two sets of scores obtained. Pearson's product moment formula will be used to calculate the correlation.

Pearson's coefficient of correlation r = $$\frac{\sum (xi - \bar{x})\quad (yi - \bar{y})}{\sqrt{\sum\ (xi - \bar{x})^2}\ \text{x}\ \sqrt{\sum\ (yi - \bar{y})^2}}$$

The result of -1.00 will indicate a strong negative correlation while 1.00 will indicate a perfect positive correlation.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This chapter presents the results of data analysis, presentation and discussion of findings after the data was collected from five registered internet service providers in Kenya. The results have been summarized and presented in form of tables, pie charts, bar graphs and narratives. Descriptive statistics were used to analyze some of the close-ended questions in the questionnaire.

This study aimed at achieving the following objectives: to establish the lead time management practices in the Kenya Telecommunication Companies and to determine the relationship between lead time management practices and customer satisfaction. The chapter will discuss each category of the study first and later correlate the findings of all the categories.

4.2 Response rate

The research had targeted 59 registered internet service providers in Kenya, hoping to get the required information from the selected companies. During questionnaire collection only 66.1% (39) of the administered questionnaires were filled. The summary of the return rate is as indicated on table 4.1.

Table 4.1: Response rate

Category	Study sample size	Returned	Percentage
Telecommunication companies in Kenya	4	1	1.7%
Registered internet service providers	55	38	64.4
Total	**59**	**39**	**66.1%**

4.3 Demographic information the companies

The statistics of all companies were combined by the researcher on one table to avoid numerous tables giving the same information.

Table 4.2 Demographic information of the three types of schools interviewed

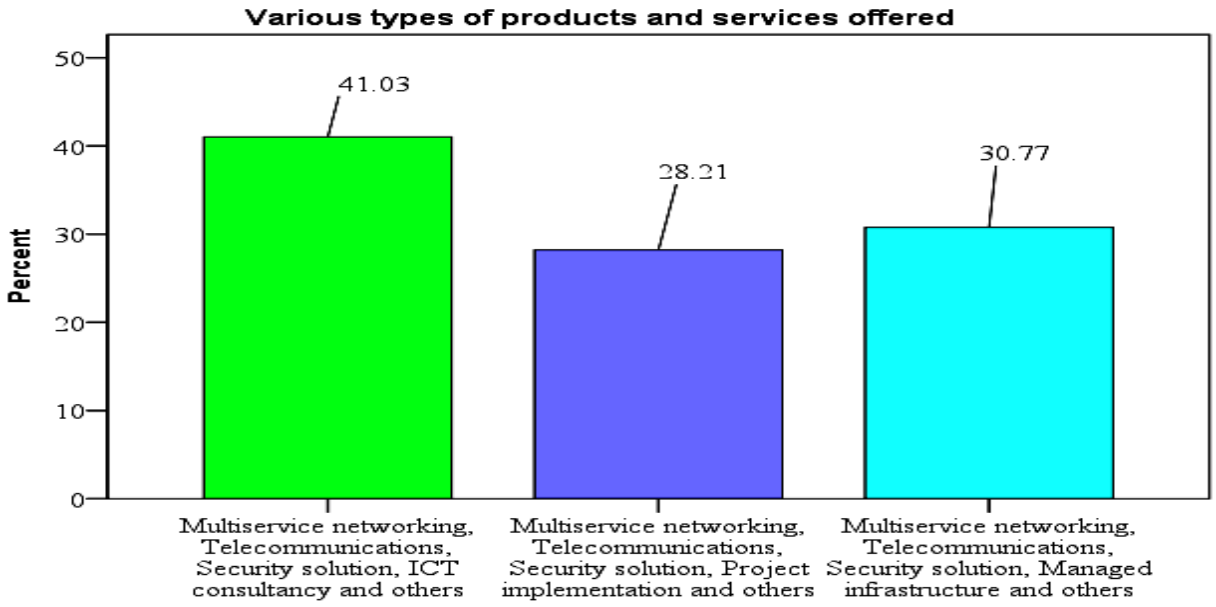
Category	Frequency	Percentage
Below 100	-	-
200-300	2	5.1
300-400	14	35.9
400-500	10	25.6
Above 500	13	33.3
Total	**39**	**100**

According to the summary on table 4.2 majority 14 (35.9%) of the interviewed companies indicated that they had employed 300-400 employees while 13 (33.3%) claimed they had employees more than 500. Meanwhile 10 (25.6%) and 2 (5.1%) had 200-300 and 400-500 respectively. None of the interviewed company indicated less employees than 100.

4.4 Various types of products and services offered by companies

To be able to analyze the differences in lead time management of different companies of the study the companies were requested to indicate various types of products/services that they offer their customers. The summary of the collected data is as indicated on figure 1.

Figure 1: Types of services



According to the findings on figure 1 it is indicated that majority 16 (41%) of the companies that were interviewed offered multiservice networking, telecommunications, security solutions, ICT consultancy and other products/services while 11 (28%) and 12 (31%) of them indicated multiservice networking, telecommunications, security solutions, project implementation and other and multiservice networking, telecommunications, security solutions, managed infrastructure and other products/services. The other products/services indicated were enterprise systems, software and satellite, business management.

4.5 Lead Time Management

Table 4.3: Company extent to the following statements

4.5.1 Rate of statements concerning the lead time management

	N	Mean	Std. Deviation
The company uses multimodal transportation to avoid delays	39	2.87	1.005
Some processes are expedited to avoid deays	39	2.85	1.065
The company tries as mush as possible to reduce variability	39	2.15	0.933
There is proper queue control to avoid delays	39	2.08	0.664
The company has multiple suppliers of various products and services	39	1.69	0.731

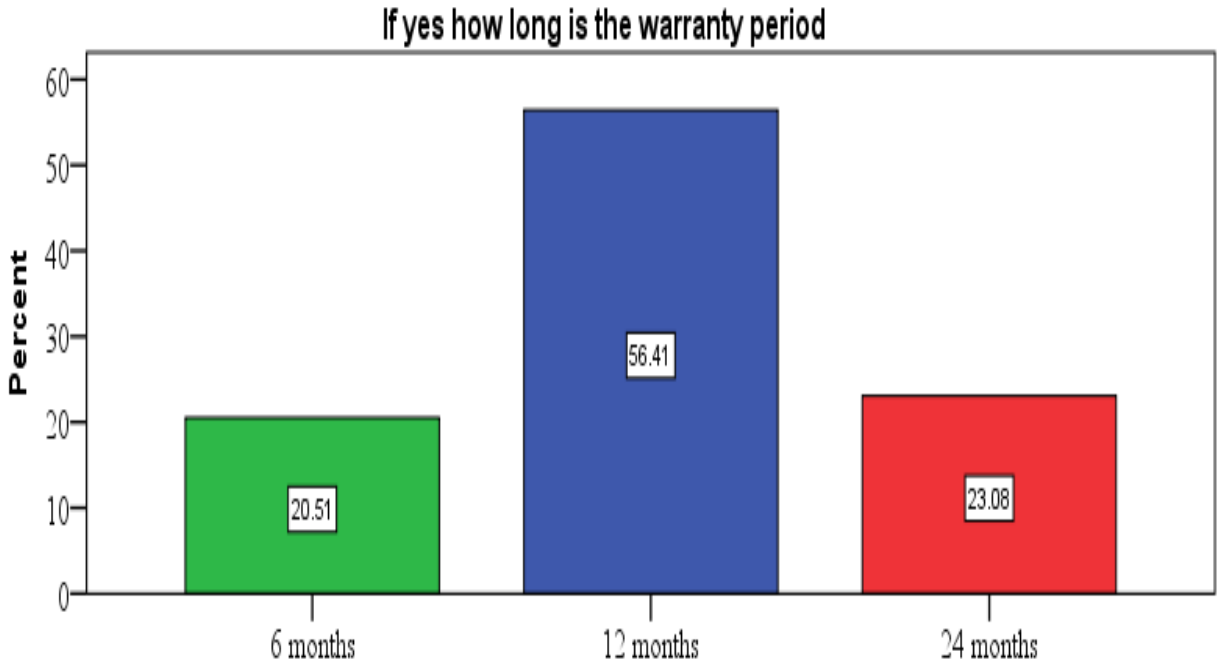
According to the summary on table 4.3, majority 39 strongly agreed to the statement that the company uses multimodal transportation to avoid delays (2.87) and some processes are expedited to avoid delays (2.85). Again in the same question on the statement that the company tries as much as possible to reduce variability majority strongly agreed indicating a mean of 2.15 as indicated on table 4.3 to the statements, there is proper queue control to avoid delays and the company has multiple suppliers of various products and services majority indicated agree and others strongly agreed too showing means of 2.08 and 1.69 respectively as shown on table 4.3.

4.5.2 Company offer of warranty of products/services

According to the interviewed companies they indicated that they offered warranty to their products/services.

4.5.3 The period a company guarantees its products/services warranty

Figure 2: Warranty period



According to indications on figure 2 where respondents were supposed to answer from 1=6 months, 2=12 months and 3=24 months majority 22 (56.41%) of the interviewed companies said that their warranty period for their products was of 2 months time. Others 9 (23.08%) and 8 (20.51%) were guaranteed for 24 months and 6 months respectively.

4.6 Customer satisfaction

4.6.1 Rate of customer service quality in terms of number of complaints

From the findings on table 4.4 where respondents from telecommunication companies in Kenya were requested to indicate 1= best 2= better 3= good 4 = bad 5= worse on customer service quality majority 16 (41.03%) of the interviewed companies indicated that they had bad number of complaints while 15 (38.46%) indicated that their complaints were better.

Table 4.4: Number of complains

	N	Mean	Std. Deviation
Warranty claims	39	4.23	0.777
Customer feedback	39	4.10	0.940
After sale service	39	4.03	0.843
Number of customer complaints	39	3.77	1.266
Repeat customers	39	2.90	1.119
Returned goods	39	2.64	0.959

According to table 4.4 majority of customers warranty claims were bad indicating a mean of 4.23 and customer feedback were bad giving a mean of 4.10 and after sale customers were bad giving a mean of 4.03. From the findings as indicated on table 4.4 large number of the companies indicated that they had the best in terms of repeat customers(mean 2.90). From the findings on

table 4.4 as summarized majority of companies said that they were good in terms of returned goods (mean 2.64). This study indicates that in terms of customers returning products/services offered majority of companies said that they were good since they do offer quality products/services to their customers with a guarantee.

4.7 Customer satisfaction

Table 4.5: Customer level of satisfaction

Description	Frequency	Percentage
Very high	6	15.4
High	15	38.5
Moderate	18	46.2
Total	**39**	**100.0**

From the findings as summarized on table 4.5 where the rating of level of customer satisfaction n telecommunication 1=Very low, 2=Low, 3=Moderate, 4=High and 5=Very high majority 18 (46.2%) of the interviewed Telecommunication companies indicated that their companies were moderate on customer satisfaction level. Meanwhile 15 (38.5%) out of the interviewed companies claimed that their company had a high customer satisfaction level compared to other companies while only 6 out of the interviewed indicated that the company had a very high level; of customer satisfaction.

4.8 The relationship between lead time management practices and customer satisfaction practices in Kenya telecommunications industry

The main objective of the study was to determine the relationship between lead time management practices on customer satisfaction practices. The respondents were asked to indicate the extent to extent they agreed with statements concerning the lead time management practices in their organization. The response was rated on a five point scale where = 1=strongly disagree 2=Disagree 3=Not certain 4=Agree 5=strongly agree.

The regression model was as follows:

$Y= c + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + e$

y = customer satisfaction

c = constant

β_1= Beta coefficients

X_1= supply of various products/services

X_2= reducing variability

X_3= queue control

X_4= expediting processes

$X_{5=}$ multi modal transporting

e= the standard error

The regression results are shown in tables.

Table 4.6 Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.471[a]	.222	.104	1.060

Table 4.3 Anova statistics

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	40.963	5	8.193	13.545	.000[b]
	Residual	19.960	33	.605		
	Total	60.923	38			

a. Dependent Variable: Number of customer complaints

b. Predictors: (Constant), The company uses multi modal transportation to avoid delays, There is proper queue control to avoid delays, The company tries as much as possible to reduce variability, the company has multiple suppliers of various products and services, Some processes are expedited to avoid delays

Table 4.4 Regression analysis on lead time management and customer satisfaction

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
(Constant)	3.961	1.099		3.604	.001	1.725	6.197
The company has multiple suppliers of various products and services	**-1.243**	**.213**	**-.718**	**-5.837**	**.000**	**-1.676**	**-.810**
The company tries as much as possible to reduce variability	**.485**	**.187**	**.358**	**2.596**	**.014**	**.105**	**.866**
There is proper queue control to avoid delays	-.126	.198	-.066	-.638	.528	-.528	.276
Some processes are expedited to avoid delays	-.029	.167	-.024	-.172	.865	-.368	.311
The company uses multi modal transportation to avoid delays	**.421**	**.144**	**.334**	**2.918**	**.006**	**.127**	**.715**

a. Dependent Variable: Number of customer complaints

The regression formula is as follows

$Y= 3.961 -1.243X_1+ 0.485X_2-0.126X_3-0.029X_4+ 0.421X_5 + 1.099$

From the formula above it shows that supply of various products/services, queue control, expediting processes has an inverse relationship to customer satisfaction.

From the model, the companies' customer satisfaction practice that significantly related with lead time management practice included working with multiple suppliers various products/services (t = -5.837, p = .000). Reducing Variability (t= 2.596, p= .014) was also statistically significant. Using multiple transport options was another statistically significant factor (t= 2.918, p= .006). Having proper queue control to avoid delays (t=-.638, p=.528) and expediting processes some processes (t=-.172, p=.865) didn't have significant.

From the findings we clearly find that for an inter providing company to fully practice lead time management, it is therefore highly recommended to seek to know the various practices that indicates customer dissatisfaction to be to reduce them and increase profitability in terms of retaining customers.

CHAPTER FIVE:

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This section summarizes the findings of the study and presents conclusions, recommendations and the suggestions for further research.

5.1 Summary

The main purpose of this study was to analyze the lead time management and customer satisfaction in the telecommunication industry in Kenya. The findings of the study were presented in accordance with the research questions. Research objectives formulated were:

To establish the lead time management practices in the Kenya Telecommunication Companies

To determine the relationship between lead time management practices and customer satisfaction.

The study adopted a cross sectional descriptive survey research design. Thirty nine supply chain managers of sampled companies participated in the study. A questionnaire was used to collect data and the response rate was 69.5%. The study found that 35.9% of the companies had between 300 and 400 employees, 33.3% had more than 500, 25.6% between 200 and 300 and 5.1% had employed between 400 and 500 while none of the interviewed company indicated less employees than 100.

According to the findings on figure 1 it is indicated that majority the study also found that 41% of the companies were offered multiservice networking, telecommunications, security solutions, ICT consultancy and other products/services while 28% and 31% of them indicated multiservice networking, telecommunications, security solutions, project implementation and other and

multiservice networking, telecommunications, security solutions, managed infrastructure and other products/services. The other products/services indicated were enterprise systems, software and satellite, business management.

From the findings of this study it clearly indicates that there is a statistically significant strong positive relationship between repetition of customers and warranty claims in telecommunication companies in Kenya. Though In the same study there was realizing that there was a weak negative relationship between after sale and number of complaints in a telecommunication company.

5.2 Key findings

From the findings of this study majority of telecommunication companies in Kenya agreed that their companies tried as much as possible to reduce variability, the companies also agreed that they keenly followed their customer queues and made sure that there was proper queue control to avoid delays that could lead to customer dissatisfaction. Majority of the telecommunication companies also expedited some processes to avoid delays and made sure their companies were satisfied.

For this study's findings it is clearly realized that there is a positive significant relationship between lead time management practices and customer satisfaction. Majority of the companies have indicated that having proper queue control in a telecommunication it increases profitability and customer satisfaction where every customer is valued and considered in service delivery.

Christopher, (2000) says working with multiple suppliers creates a between the providers and clients leading to organization to providing products and services faster to its clients that managing lead time appropriately. Therefore, it is for the Internet providers in Kenya to greatly mange their leadtime to be able to improve their customer satisfaction to reduce number of complaints. . Kane (1996) concludes that variability is a major issue and variability reduction and

business process synchronization are therefore acknowledged as key to achieving superior levels of performance in supply chain networks. Internet providers in Kenya to relate their customer satisfaction they need to put more energy in reducing variability where they will therefore reduce number of complaints from the customers regarding either services or products. Atallah, (2005) says that change of transport system from "port-to-port" to "door-to-door" assists organizations to be able to drastically reduce the lead times. Telecommunication companies in Kenya are advised through the study's findings to adopt the new transport system in place to compete with international companies to avoid numerous numbers of complaints from their customers. From the findings we clearly find that for an internet providing company to fully practice lead time management, it is therefore highly recommended to seek to know the various practices that indicates customer dissatisfaction to be able to reduce them and increase profitability in terms of retaining customers.

Also the companies' human resource managers that were interviewed indicated that their companies used multi modal transportation which they thought s one of ways to increase customer satisfaction and increase in productivity.

5.3 Limitations of study

The study was limited to only five lead time practices that affected customer satisfaction. Other practices that had an ompact on customer satisfaction were not studied hence limiting the study to five practices.

5.4 Conclusion

The study concluded that the companies good lead time management that is having multiple suppliers of various products and services, trying as much as possible to reduce variability, always having a smooth workflow in the organization, having proper queue control to avoid delays, expediting some processes to avoid delays, using multi modal transportation to avoid delays and offering warranty of the products/services for at least 12 months significantly affects customer satisfaction positively. These are the relationships that had a strong negative effect on customer satisfaction; number of complaints, repeat customers, returned goods, warranty claims, customer feedback and after sale service.

5.6 Recommendations

Based on the findings of the study there is need to for institutions of higher learning in Kenya to link with telecommunications companies in Kenya and identify gaps in the knowledge, values, skills and attitudes of their graduates. This will help in tailoring programmes that will ensure that Kenyan graduates can compete for positions in the companies located in Kenya. The CEOs and other organization managers should strive to ensure good lead time management and good customer satisfaction with the telecommunication industries. This will ensure that the organization environment is conducive for economic growth resulting to higher productivity in investment. In an environment that is well managed, owners of companies will be more comfortable employing people from colleges as a way of safeguarding their investments.

5.7 Suggestions for further research

Based on the findings of the study, further research has been recommended on more lead time practices that affect customer satisfaction other than the ones identified in the study. Other areas of further research on supply chain strategies that telecommunication companies can adopt to increase customer satidfaction.

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APPENDICES

Appendix I: Research Questionnaire

Introduction

This research questionnaire is has been prepared to collect data on the effect of lead time management on customer satisfaction in the telecommunication industry in Kenya. The data collected will be treated with a very high degree of confidentiality.

SECTION A: COMPANY PROFILE

Company Name……..

Year of incorporation…….

Number of employees……

Kindly indicate the various types of products and services offered by your company

1. **…….**
2. **……**
3. **…….**
4. **…….**
5. **……**
6. **…….**
7. **…….**
8. **…….**

9. …….

10. ……..

SECTION B: LEAD TIME MANAGEMENT PRACTICES

Kindly state the extent to which you agree with the following statements concerning the lead time management practices in your organization.

Use the scale of: 1= Strongly agree 2= Agree 3= Not certain 4 Disagree 5 Strongly disagree

NO.	LEAD TIME MANAGEMENT PRACTICE	1	2	3	4	5
1	The company has multiple suppliers of various products and services					
2	The company tries as much as possible to reduce variability					
3	There is always a smooth workflow in the organization					
4	There is proper queue control to avoid delays					
5	Some processes are expedited to avoid delays					
6	The company uses multi modal transportation to avoid delays					
7	Do you offer warranty of the products/services YES NO If yes, how long is the warranty period? 6 months 12 months 24 months					

SECTION B: CUSTOMER SATISFACTION

Kindly rate your company on the following on customer service quality.

Use the scale of: 1= worse 2= bad 3= good 4 = better 5=best

NO.	RELATIONSHIP	1	2	3	4	5
1	Number of complaints					
2	Repeat customers					
3	Returned goods					
4	Warranty claims					
5	Customer feedback					
6	After sale service					

How can you rate the level of customer satisfaction in your organization?

☐ Very high ☐ High ☐ Moderate ☐ ow ☐ ery low

Thanks for your cooperation

Appendix II

List of Internet service providers in Kenya.

Adtel Phone Co. Ltd	. Iphone Global Ltd
Africa Online	. Jamii Telecommunications Limited
Afsat Communications Kenya Limited	. Karibu Telecom Limited
Airtouch Connections Limited	. Kasnet Internet Services Limited
Aja Limited	. Kenya Data Networks Limited
Alldean Satellite Networks (Kenya) Limited	. Kinde Engineering Works Limited
Attain Enterprise Solutions Limited	. Lantech (Africa) Limited
Boss Communications Company	. Lyle Kenya Limited
Commcarrier Satellite Services Limited	. Nairobinet K Limited
. Comtec Hosting Solutions Limited	. Next Generation Networks Telecommunications (EA)
. Convegzed Information Services Limited	. Ninewinds Communications Limited
. Databit Limited	. Nirali Enterprises Limited
. Econet Wireless Kenya Limited	. Octopus Ict Solutions Limited
. Fanaka Online Limited	. Porting Access (k) Limited
. Finnet Communications Limited	. Pwani Telecoms Limited
. Fourth Generation Networks Ltd	. Rasmilink
. Frontier Informatics Limited	. Sat Africa Limited
. Gateway Telecommunications (Kenya)Limited	. Sea Submarine Communications Limited
. Geda Limited	. Servtel Communications Limited

. Gelati Limited . Hotego Networks Limited . Indigo Telecom Limited . Industrial Technology Trading Company Limited . Instaconnect Limited . Intergrat Limited	. Sovaya Communications Limited . Speedial Connections Limited . Swift Global (K) Limited . Toucan Network Limited . Tracer Limited . Tuseme Africa Limied . UUNET Kenya Limited . Uvacorp Technologies Limited . VirtualSat Limited . VOIP Pro(K) Ltd . Xtranet Communications Limited

Table 1.

Source Communication Commission of Kenya 2013