

**INBOUND LOGISTICS PRACTICES AND SUPPLY CHAIN
PERFORMANCE OF MOBILE PHONE OPERATORS IN KENYA**

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DECLARATION

This research project is my original work and has not been presented to any other institution. No section of this project may be reproduced or transmitted in any form or by any means, without permission from the author or that of the University of Nairobi.

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

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DEDICATION

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ABBREVIATIONS AND ACRONYMS

ANOVA:	Analysis of Variance Approach
CAK:	Communication Authority of Kenya
HR:	Human Resources
JIT:	Just-In-Time (JIT)
KEMSA:	Kenya Medical Supplies Agency
MMS:	Multimedia Massage Service
NGO:	Non-governmental Organization
RFID:	Radio Frequency Identification
SC:	Supply Chain
SCM:	Supply Chain Management
SCOR:	Supply Chain Operations Reference
SKU:	Stock-Keeping Unit
SMS:	Short Message Service
VMI:	Vendor-Managed Inventory

ABSTRACT

The study sought to establish the relationship between inbound logistics and supply chain performance of the mobile phone operators in Kenya. The study looked into inbound logistics practices and Supply chain performance by collecting primary data through use of structured and semi-structured questionnaire. It proved that there is a relationship between inbound logistics practices and supply chain performance of the mobile phone providers in Kenya. All the four mobile phone firms surveyed have adopted inbound logistics practices of transportation, inventory control and warehousing. The study found out that the importance of any of these inbound logistics activities in either transportation, inventory control or warehousing was not dependent on the mobile phone company under study, and thus the importance of these practices is over emphasized across all the four mobile phone telecommunication companies in Kenya. The study concludes that inbound logistics practices were statistically significant to supply chain performance parameters such as; cost, good or service speed of delivery, supply chain reliability and customer satisfaction. Therefore for a SC to be efficient so must be the inbound logistics. Mobile phone companies in Kenya have therefore no choice but optimize their inbound logistics operations as part of their strategy to gain or retain their competitive advantage. The gains operators realized from implementation of inbound logistics outweighed the challenges faced in implantation of inbound logistics practices. The study only focused on inbound logistics practices and supply chain performance of the mobile phone operators in Kenya, future studies should consider expanding their scope to include outbound logistics as well and to other organizations like the Non-governmental organizations (NGOs) for instance. It will be insightful to see whether similar findings can be realized while using quantitative measures.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Today's businesses are challenged with growing heights of global competition; customer's push for value of their money and high stakeholder's expectations on investment returns. Gattorna (2003), notes that firms are now pursuing supply chain management (SCM) as a competitive advantage tactic. Firms in a supply chain (SC) relate, transact, and partner on different levels; from product design and development to product delivery. Through SCM, a firm pursues value creation from timely product delivery, cost management, inventory control and customer service (Beamon, 1999). They do so individually or through synergies formed with other firms to increase customer service and revenues. By understanding SC capabilities, firms exploit operational efficiency and maintain a competitive advantage (Gattorna, 2003).

Beamon (1998) observes that the ever-changing business dynamics have influenced the operations and objectives of SC systems by increasing focus on inbound activities like customer service levels, shorter cycle times, increased product quality and services, low costs, co-ordinated movement and flexibility of product to meet customer needs. Firms pursue operational excellence through collaborations and knowledge sharing with fellow SC members (Hoek, 2008)

Inbound logistics forms an integral part of a SCM. According to Mentzer (2001), in several organizations SCM is a key competency, particularly inbound logistics to support company operations. This is because its impact on services and products delivery to end consumer.

According to Brar and Saini (2001) to achieve SC efficiency companies must be keen on their inbound logistics operations. Inbound logistics is the beginning point of all supply activities in a firm with an impact on subsequent SC activities. A disruption on inbound logistics flow may halt production lines for lack materials leading to lost business opportunities. Firms must, therefore, integrate inbound logistics in their SC plans for material sourcing and end product delivery.

1.1.1 Inbound Logistics Practices

According to Shyam (2012) inbound logistics is a process concerned with movement of materials or finished inventory from supplier to the purchasing organization. It supports business efficiency through delivery of materials, spares and products necessary for daily operations. Baker and Rushton (2008) note that inbound logistics practices involve collection and transportation of inbound shipments, inventory management, and warehousing. These activities are a major focus areas for SC cost savings, inventory optimization, and customer service.

Coyle (2011), observes that inbound transportation is a business enabler that supports the transfer of products' ownership. As firms move goods from source to the place of use they enjoy utilities of place and time. According to Branch (2009) firms can choose one or combine several modes of transport to effectively move materials for scheduled production. Good transportation facilitates SC efficiency by delivering goods to the ultimate customer securely in an economical way. Inbound transportation should plan for expected lead times to best manage delivery timelines. Baker (2010) states that organizations should have shipment visibility while managing inbound transportation. They should also balance the compromise between imports charges and savings made at the destination. This means a keen focus on landed costs,

customs clearance, shipments lead times and inventory holding costs. SC performance is impacted by transport costs, speed and product delivery consistency. For great performance firms must move materials in the right order, right quantity, right quality and right time (Bowersox, 2010).

According to Karaduman and Udeh (2015), warehousing has two primary flows: the inbound logistics where goods from suppliers are received and stored and outbound logistics where goods are retrieved and dispatched to end customers. SCM relies on inbound logistics to avail inventory into the warehouse to fulfil customer orders. Inbound warehousing includes goods inspection, receiving, and storing activities. In this regard, therefore, warehouses primarily facilitate coordinated receipt of inbound shipments into an organization. Warehousing supports inventory management by holding stocks for business operations. Gibson (2013) notes that vendors can manage inventory in their clients warehouse through information system integration. Vendor-managed inventory (VMI) ensures sufficient supplies as the supplier is responsible for replenishment based on inventory availability in the warehouse.

According to Wild, (2002) inventory management is about specifying the size and placement of stock (items or resource for organizational use). Inventory is managed at different locations of a SC to ensure uninterrupted operations in a firm. Coyle (2009) notes that management of material happens not only in the stores but also while in on transit. A firm will engage in inventory management to ensure goods are available at the correct quantities, quality and at the accurate time. This ensures that they deliver optimal service at controlled costs (Reid and Sanders, 2007).

1.1.2 Supply Chain Performance

Housman (2004) defines SC performance as a gauge to SC operations in terms of supply chain's activities to meet ultimate purchaser's needs, including timely delivery of goods and availability of crucial inventory in a responsive manner. Heightened competition among firms posed by globalization, firms can drive value through effective SCM. Gattorna (2003), notes that firms should look at whole SC performance as opposed to improving particular functions like logistics while neglecting upstream and downstream effects. According to Kurien and Qureshi(2011), the SC Operations Reference (SCOR) model approach promotes for a number of supply chain performance measures. SCOR looks into cost, time, quality and flexibility.

Huan (2004) notes that these measures will be arrived by auditing firm's SC processes such as: product delivery, lead time, SC responsiveness, production flexibility, total logistic management cost, inventory days of supply and asset turns. By evaluating these metrics, SC performance measures can, therefore, be narrowed to cost, speed, reliability and customer satisfaction perspectives (Beamon, 1999). Ultimately these performance measures will help firms assess their competitive position and work towards operational efficiency with a view to exploiting potential operational success (Stock and Lambert, 2000).

SC performance measuring helps firms in several ways. First the measurements directly guide actions of operations staff hence indirectly influence performance; secondly some key measures help in keeping a firm on track in achieving its SC enhancement objectives; thirdly they support fact-based decision making based on outputs of performance measures against objectives; fourthly they communicate SC

requirements for monitoring, continuous improvements and change management in companies; and lastly they motivate better supplier performance (Monczka, 2011). Firms that have achieved service leadership as well as cost leadership manage an efficient SC in terms of flexibility, customer service and are cost effective (Barrow, 2013)

1.1.3 Mobile Phone Operators in Kenya

Mobile phones were initially offered in Kenyan market in 1992. Fast market growth gained momentum when Kenya Communication Act was enacted in 1998. This paved way for the introduction of competition in the cellular mobile industry (Loice, 2014). According to Communication Authority of Kenya (2015), there are four licensed Mobile phone service operators in Kenya. These are Safaricom Limited, Telkom Kenya (Orange), Airtel Networks Limited and Finserve Africa Limited (Equitel). Safaricom is the Market leader with a Market share of 67.1%, followed by Airtel with 20.2%, Telkom Kenya (Orange) 10.8%, and Finserve Africa Limited (Equitel) 1.9%.

Communication Authority of Kenya (2015) identified several products that these companies offer to their customers. These include Mobile Money transfer, Voice Calls, Roaming services, Short Message Service (SMS), Multimedia Message Service (MMS) and data. The industry's mobile money transfer service has a 27.7 million subscriptions and agent base of 126,622 supporting convenient mobile banking and indirect employment in the sector. The enactment of the Kenya Communications Act, 1998 led to the liberalization of the mobile telephony sector creating a competitive environment for interested operators. The sector has since experienced continued growth in both technology and customer base Communication Authority of Kenya (2015) Communications Authority of Kenya (CAK) regulates the sector and it is

responsible for policy development and implementation. It licenses operators and monitors the industry performance as per the Kenya Information and Communications Act, 1998 and the Kenya Communications Regulations, 2001.

1.2 Statement of the Problem

Mobile phone operators have witnessed unprecedented growth since 1999 when the first company became operational. In the fifteen years the sector has grown in customer base to over thirty million subscribers and four operators. This lucrative sector has not only impacted the Kenyan economy in terms of faster mobile money transfers, connection of people and businesses, employment opportunities and huge contribution to exchequer that has seen Safaricom become the biggest tax payer in Kenya. (Oteri, Kibet and Edward, 2015). Though a constant growth was observed in the earlier years, this has currently slowed down as the sector matures (GSMA, 2009). Operators are now facing pressure to remain profitable hence the need to find ways to drive their operational efficiency and effectiveness. Inbound logistics is being looked at as a top way for optimal operations by organizations.

According to Stratton (2014) inbound logistics management enables companies to manage supply chain exceptions in an optimal way. Firms are able to collaborate with each other as one company's inbound logistics feeds into another firm's out bound logistics. Organizations in a supply chain must, therefore, synchronize their operations for good performance. Inbound logistics activities relating to the movement of materials and products from the supplier to the purchasing organization such as transportation and inventory management are value creation processes that give organizations competitive advantage (Mentzer, 2001).

Mae et al. (2012) carried out a study on the effect of altering lead-time on inbound logistics performance in an international supply chain. It was concluded that costs efficiency and flexibility have to balance for effective supply chain management. Delfmann and Gehring (2003) concluded that the right utilization of information technology will help achieve great logistics performance by reducing manual operations. Jambulingam and Dodangeh (2013) did a study on Logistics Performance; a case of medium-size manufacturing organization in East Asia. The study concluded that competitive firms must consistently evaluate their logistics and SC performance for economical operation in the existing environment. They noted that logistics and supply chain optimal performance was critical to any firm's success. Puravankara (2007) conducted a study on strategic analysis of the Coca-Cola Company. The study found out that failure to reduce storage and inventory cost in inbound logistics operations led to a competitive disadvantage to the firm.

In Kenya, a study by Osoro (2015) on factors affecting performance of SC systems in the petroleum industries found that current trends such as timeliness forecasting, proactive stock level management, IT, just in time delivery and e-procurement hindered SC performance if not adopted. However, from these studies, little is known about how inbound logistics practices directly or indirectly influence SC performance. In addition, a majority of these studies were carried out in developed representing a geographical gap in research. Mobile phone communication sector is unique since a majority of studies on SCM focus on manufacturing and retail enterprises. This study, consequently, sought to close the existing knowledge gap by providing empirical evidence on inbound logistics practices and their relationship with SC performance in the mobile phone sector by answering the question: what is the effect of inbound logistics practices on SC performance of mobile phone operators in Kenya?

1.3 Research Objectives

The overall objective of the study was to determine the relationship between inbound logistics practices and SC performance of mobile phone operators in Kenya.

Specifically the study sought to:

- i) To identify key inbound logistics practices within the mobile phone operators in Kenya.
- ii) To determine the challenges faced in the implementation of inbound logistics practices by the mobile phone operators in Kenya.
- iii) To determine the effects of inbound logistics practices on SC performance of mobile phone operators in Kenya

1.4 Value of the Study

The study will offer insights to the mobile phone operator's managements on how to better improve their SC performance through inbound logistics. Findings of this study enable firms in logistics business appreciate the challenges and success factors that accrue from good inbound logistics practices.

The study will be beneficial to the CAK and national government policy makers as it will enable them formulate policies aligned with prerequisites for overall mobile phone sector competitive performance. The findings of the study will contribute to the existing body of knowledge. It will assist other researchers in determining which area of SCM and mobile phone industry to focus on in future researches.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter will consist of the theoretical review, inbound logistics practices, factors in implementation of inbound logistics practices, the empirical review, conceptual framework, and the knowledge gaps.

2.2 Theoretical Literature Review

In theoretical review the section will identify existing theories relevant to inbound logistics practices and SC management. It attempts to reveal the link if any between inbound logistics practices and inbound logistics as a foundation of the study.

2.2.1 Theory of Constraints

Theory of constraints (TOC) is a system that views the organization or units in an organization as being limited in achieving more of its objectives by at least one constraint (Bushong and Talbott 1999). According to Davies, Mabin and Balderstone (2005) firms will always have one constraint. TOC aims to maximize profit by ensuring that the limiting factor is utilized more efficiently.

The theory assumes that organizations can be assessed and organized by three measures namely: throughput, inventory and operational expense. It seeks to maximize throughput and minimize operating expenses for administration, sales and labour (Bushong and Talbott 1999). According to Ehie and Sheu (2005) inventory is the total cash a firm invests in purchasing things it aims to sell while operational expense is all the money a company utilizes to turn inventory into throughput. Throughput on the other hand is the speed at which the system yields money from sales.

TOC approach enables focus on possible elements that impede efficiency and aim of exploiting the flow of full value-adding operations, these constraints could lie anywhere in the SC (Krajewski and Ritzman, 2007). As such inbound logistics may become an impeding factor if not effectively managed and firms need to ensure operational efficiency through it (Rushton, Croucher & Baker 2006). By so doing firms will address challenges of stock outs, long delivery lead times, reduced inventory holding costs hence optimal SC performance (Benton, 2007).

2.2.2 Resource-Based View

According to Wernerfelt (1984) resource based theory considers organizations as bundles of resources that can be controlled and managed in a manner to make the firms to be competitive. Firms managed this way can also have increased net value and increased benefits enhanced at the same costs in comparison with other players in the industry.

The theory assumes that firms can access different resources that can give them competitive edge and that some of these resources cannot be exchanged in the factor markets and are hard to build or imitate (Barney & Clark, 2007). The theory lays emphasis on firm's resources as its key determinant to its excellence performance and competitiveness (Cool, Almeida Costa and Derrick, 2002).

Firms can use their resources to increase efficiency through reduction of operation bills and grow customers' will-to-pay for the company's goods and services. When an organization transfer efficacy gain to its clients it gains a competitive position as compared to others in the same market (Van Fleet and Cory, 2002) Through inbound logistics firms can acquire physical, human, insights, information and collaborative

resources and merge them to create unique and firm specific capacities in the way they deliver products to customers (Karia and Wong, 2009).

2.3 Inbound Logistics Practices

According to Harrington (2008) focus on logistics and inbound logistics planning give firms an opportunity for substantial savings and attains SC reliability. Even though there is no standard definition of inbound logistics, three significant inbound logistics practices can be identified. These are transportation, inventory control, and warehousing (Baker *et al.*, 2008).

2.3.1 Transportation

The ability to transport goods from the supplier to the user is a critical activity in the inbound logistics process. It creates both place and time utilities to a buyer and contributes to inbound logistics performance in terms of cost, speed and delivery consistency (Lambert, 2005). Balancing these factors contributes to SC efficiency (Bowersox 2010). With reference to PF Collins International Trade Services (2003) transport practices are; Freight Consolidations, Customs clearance/compliance, tracking(Track and trace), and forwarder management.

Shipments can be consolidated by combining more than one order to form larger quantities per shipment. Consolidation of inventory aims to attain economies of scale for less transport cost per unit. However, consolidation should not happen at the expense of scheduled transport, reliability and timely delivery (Ulku, 2009).

Procedures at a country's entry points relating to customs compliance can increase transactional costs. Clearance efficiency determines speed and predictability of inventory delivery. Proper documentation enables faster customs clearance reducing its impact on global sourcing lead times (Zamora-Torres, 2013).Electronic platforms

allows submission of information to government agencies online cutting on clerical efforts (Hanouz, Geiger and Doherty,2014).

According to Helo (2011), firms track and trace shipments by collecting and managing information on product's location across the SC, aiding detection and mitigation of transport exemptions to minimize losses and interruptions. Dukare, Patil and Rane (2015) indicates that real-time-tracking provide cargo traceability and delivery visibility.

In Freight forwarding transport intermediaries improve operational efficiency and enhance service levels through their industry knowledge and skills. Most freight forwarders offer related services such as warehousing,less-than-truckload transport, express parcel services and multimodal transport arrangements (Asian Development Bank, 2012).

2.3.2 Inventory Control

According to Jay and Barry (2006) inventory control ensures sufficient inventory to meet rising demand in a firm guarding against disruption from stock outs. It reduces excess inventory, ensures adequate capacities and improved customer service through products availability (Cheung and Lee, 2002). According to Kwon and Suh, (2004) customer orders are fulfilled in a responsive and flexible way. This is through inventory control practices as; control of inventory levels, costs, lead times and accuracy (Axsater, 2006).

Inventory levels are a key aspect for firms that strive to match supply and demand to avoid overstocking. Automated creation of new supply orders regulates firm's inventory levels (Jacobs, 2010).Inventory can also be controlled by fixing time periods or quantity levels upon which to order to avoid risk of stocking out (Jacobs,

2013). Holding inventory is costly and for firms to be competitive the levels must be at optimum levels (Adeyemi, 2010).

Berman et al (2006) identified inventory cost as a major element of total SCM cost. Firms control inventory movement and holding costs for SC efficiency. Inventory cost is incurred in several ways; as an asset on balance sheets it attracts taxation, insurance premiums, obsolescent and storage costs in the form of rent or lease. Firms must balance on money held in form of inventory and money required for daily operations (Goldsby et al., 2005).

Reduction of replenishment lead times is vital when controlling inventory. Firms hold more safety stock when there is demand uncertainty and unreliable lead times. This increases their cost of stock holding and lessens customer service, hence to shorten lead time collaboration and timely information sharing is of importance to SC partners (Chopra, 2004).

Firms attain inventory accuracy by matching physical count with inventory records in terms of quantity and location as per inventory data in the system. Cycle counting ensures timely identification, correction of discrepancies, and maintenance of optimum stock levels. Periodical reviews and tracking of items also eradicate inventory errors (Jacobs, 2013).

2.3.3 Warehousing

According Ramaa (2012) organizations link material flows from suppliers and buyers through warehousing. They pursue warehouse efficiency to enhanced customer service. Order fulfilment and inventory management are determined by warehousing activities. Typically warehouse operations include: receiving, inspection, put away (transfer), and order picking.

Receiving of goods begins shortly after they are delivered in the warehouse. Activities at this stage include unloading, inspecting for correct quantity and sufficient quality and inspection records updated as per the new delivery (Koster et al., 2006). Incoming goods can be sort directly to outbound transport vehicles for distribution otherwise known as cross docking. This process saves organizations money through elimination of activities of put way of items as stock in the warehouse (Stephan and Boysen, 2011).

Once goods have been received they are moved to their respective storage location in the warehouse, this activity is known as put away ready for order picking or transfer (Frazelle, 2001). Order picking involves bunching and scheduling customer orders, picking of items from storage locations then releasing the same for order fulfilment. It is guided by the uniqueness or characteristics of an item or stock-keeping unit (SKU) (Koster et al., 2006).It can be done as full pallets, cartons or broken into specific units. Picking can be done in either article or order variants. When picking by article, numerous purchaser orders are concurrently picked while picking by order one buyer's order is processed at any given time (Koster et al., 2006).

2.4 Challenges in Implementation of Inbound Logistics Practices

Behrends (2009) observes that there are developments that are changing the way firms move products from source to the organizations. For instance; Fluctuations in fuel prices, need for inter modal logistic concepts and smaller shipment sizes are posing new challenges to firms. This is complex and run from increased freight volumes to environmental concerns.

According to Blecker and Ringle (2014) without collaboration among key actors in logistics the ability to utilize existing synergies to address arising challenges in inbound logistics is not maximized. Successful firms in the industry owe their achievements on their cooperation with other relevant entities which includes government bodies, private stakeholders, customers, and technology developers, etc. Huge financial investment has become a barrier to efficient logistics operations (Yu, 2011). Budget restrictions for many firms limit their expenditure on the intended strategy and hence often change with economic changes, consequently impacting on their inbound logistics operations (Blecker et al., 2014).

Inbound logistics practices are reliant on existing infrastructure like warehouse building, terminuses, highways, communication networks and energy supply amenities that need long-term investment from both governments and private sector. They also involve long lead-times to develop and there after maintenance investments over time which determine the quality of entire logistics operations (Blecker et al., 2014).

2.5 Empirical Literature Review and Knowledge Gaps

In the modern SCM firms are forming an environment of co-existence opposed to competition (Bechtel & Jayaram, 1997). Different forms of literatures see this as a result of looking into SCM management from different viewpoints such as logistics, operations management, supply management and marketing (Croom et al., 2000). Inbound Logistics is now been recognized as an important link in business and as such a source of market differentiation (Bowersox et al. (2002). Bowersox (2010) notes that firms are now sourcing their materials globally to benefit from value of low cost countries of manufacture. Inbound logistics as link between suppliers and buying

firms is becoming a considerable issue as evident from works of different scholars.

The table below provide the theoretical back ground for this research in an attempt to identify existing studies and knowledge gabs therein.

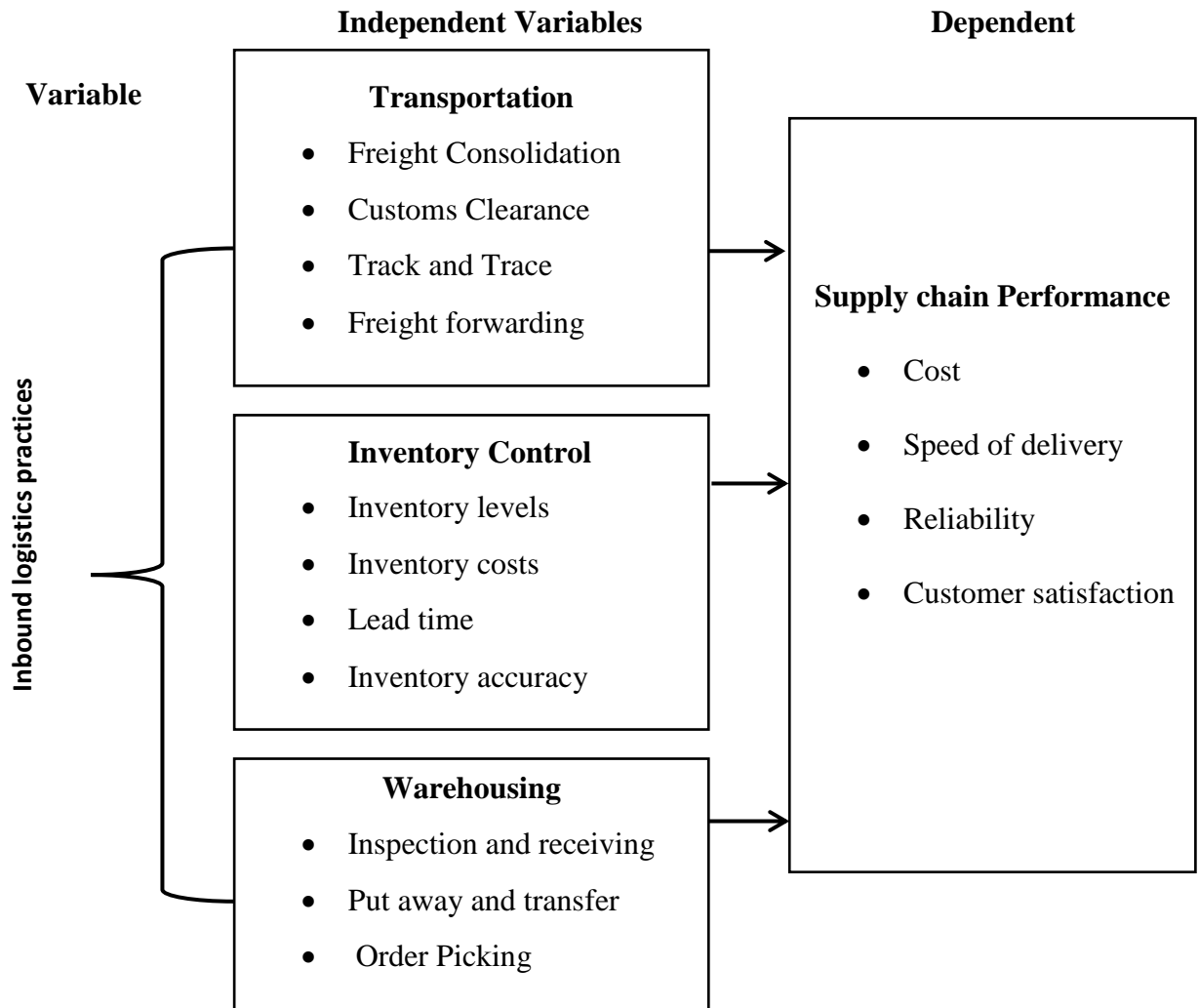
Author(s)	Study	Major findings	Shortcomings and Knowledge gap(s)
Kusoncum and Chaikanha, (2012)	Inbound Logistics Models for Thai Sugar industry	<ul style="list-style-type: none"> a) Different firms with similar inbound logistics chain will be at different efficiency levels depending on their management. b) Inbound logistics pattern impacted the management system of inbound operations 	<ul style="list-style-type: none"> a)The study focused on processing firms only b) The study only base on Thai firms. c) The study it not address the connection found in inbound logistics and performance of a supply chain.
Ohno and Mae, (2012)	Impact of altering lead-time on the performance of inbound logistics in an international supply chain- Based on a case study within Volvo Powertrain Corporation	<ul style="list-style-type: none"> a) Study revealed that changes in delivery lead times affect the costs of ownership and flexibility in service delivery. Reduction of lead times positively impacted these factors b) Total acquisition cost was dependent on purchasing and logistics activities and not directly related to lead time reduction 	<ul style="list-style-type: none"> a)The study focused on a manufacturing firm only b) Study failed to address the relationship of inbound logistics in supply chain performance.
Langat, (2013)	Application of inbound logistics management on performance of procurement at public bodies in Kenya: a case of Kenya Medical Supplies	<ul style="list-style-type: none"> a)Mode of transport impacted on delivery lead times b) Inbound transport services required regular and consistent evaluations. b) Manual inventory systems hindered optimization of customer service and increased inventory costs. 	<ul style="list-style-type: none"> a)Study only focused on public institutions b) Study failed to address the role of inbound logistics in performance of a SC.
Mwangi and Waweru, (2013).	Role of transportation in SC based on a case study of Safaricom Limited	<ul style="list-style-type: none"> a) Transportation is an integral part in supply chain. b) Cost of transportation impacted supply chain on large scale. c) Inbound transport delays compromised delivery of goods and services. 	<ul style="list-style-type: none"> a) The study only focused on one inbound logistics practice (transportation). b) The study a case of one company which may not reflect status in other firms.

Source: (Author, 2016)

2.6 Conceptual Framework

Drawing on different arguments and discussion above, the research provides a conceptual framework of inbound logistics practices and links it to SC performance as presented in figure 2.1.

Figure 2.1: Conceptual framework



Source: Author (2016)

From the framework shown above, the study underlined the existence of three factors of inbound logistics practices that determines SC performance i.e. transportation, inventory management, and warehousing. These form the basis for inbound logistics plan and a form part of the foundation for SC efficiency.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the methodology that was essential to accomplish the research objectives. It covers research design, target population, sampling, respondent selection, data collection and analysis procedures.

3.2 Research Design

This study adopted a descriptive survey design. The design sought to answer questions like what, who, and how of a phenomena in a study (Donald and Pamela, 2006). This was to gain insights on the current phenomena in relation to situations, processes and relationships (Salaria, 2012). By so doing the study specifically tried to ascertain the inbound logistics practices among Mobile Phone Operators in Kenya and their relationship with Supply Chain Performance. The study also sought to find out the key factors in the implementation of these practices.

3.3 Population of the Study

The population of interest in the study was the four mobile phone companies in Kenya (See Appendix II). A census survey was carried out due to the small number of mobile phone companies in Kenya. The respondents in the study comprised a total of 59 senior managers and mid-level managers concerned with making inbound logistics decisions across the four mobile phone companies in Kenya. The distribution of the respondents in the four mobile phone companies is as shown in Table 3.1.

Table 3.1: Population of the Study

Company Name	No. of Senior Managers	No. of Mid-level managers	Grand total
Safaricom	10	15	25
Airtel	7	10	17
Orange	4	7	11
Equitel	2	4	6
Grand Total	23	36	59

Source: (Safaricom HR, Airtel HR, Orange HR, Equitel HR, 2016)

3.4 Data Collection

The data collection process involved the use of a structured and semi-structured questionnaire. This was divided into four sections to address the three objectives of the study: section A contained questions on general profile of the respondents and the organization; section B contained questions on inbound logistics practices used by the mobile phone operators in Kenya; Section C contained questions on challenges faced by mobile phones companies on implementation of inbound logistics practices.; Section D contained questions on relationship between inbound logistics practices and supply chain performance of the mobile phone operators in Kenya. The questionnaires was administered through the technique of “drop and pick later” ,where the questionnaires were taken to the respondents and collected after two days allowing them enough time to fill comprehensively.

3.5 Data Analysis

The data collected was analysed using descriptive statistics to meet the first and the second objectives of the study. This involved the use of frequency tables and cross tabulations. To achieve the third objective of this study, inferential statistics was used. It involved estimation of parameters and further testing of statistical hypothesis using analysis of variance approach (ANOVA). In particular, multiple regression analysis

was done to determine the effect of inbound logistics practices on supply chain performance of mobile operators and the resulting variance. There was further correlation analysis to measure how strong the relationship between independent and dependent variables is.

Multiple regression model to be fitted is as below;

$$Y_i = \beta_0 + \beta_1 X_{i1} + \beta_2 X_{i2} + \beta_3 X_{i3} + \varepsilon_i$$

Where; Y_i is the outcome (supply chain performance), decomposed into 4 elements (cost, speed of delivery, reliability and customer satisfaction)

β_1 is the parameter estimate on the effect of transportation on SC performance with X_{i1} corresponding to the variable “Transportation”

β_2 is the parameter estimate on the effect of inventory control on SC performance with X_{i2} corresponding to the variable “Inventory control”

β_3 is the parameter estimate on the effect of warehousing on SC performance with X_{i3} corresponding to the variable “Warehousing”

ε_i is the error term arising from sampling.

A summary of how data collected will be analysed in Table 3.2.

Table 3.2: Data Analysis Approach

Objectives	Questionnaire	Description	Data analysis
General profile	Section 1	Summary of respondents and company profiles	Descriptive
Objective 1	Section 2	Key inbound logistics practices	Descriptive
Objective 2	Section 3	Challenges in implementation of inbound logistics practices	Descriptive
Objective 3	Section 4	Effects of inbound logistics practices on supply chain performance	Multiple linear regression

Source: (Author, 2016)

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSIONS

4.1 Introduction

This chapter presents findings and discussion of the results obtained from the survey. The general aim of this study was to determine the relationship between inbound logistics practices and supply chain performance of the mobile phone operators in Kenya. The approach to the analysis of the survey results was three-fold, we begin by identifying key inbound logistics practices of the mobile phone operators in Kenya, it then proceed to highlight major challenges that have hindered an efficient implementation of inbound logistics and finally, establish the relationship between inbound logistics practices and supply chain performance.

4.2 Exploratory Data Analysis

The survey targeted a population of 59 respondents from the four mobile phone companies in Kenya (Safaricom, Airtel, Equitel and Orange) consisting of senior managers and mid-level managers, who are largely tasked with key inbound logistics decision making. The final dataset comprised of observations obtained from a total of 54 respondents representing a 91% response rate drawn across all the four mobile phone companies. According to Mugenda and Mugenda (2003) the statistically significant response rate for analysis should be at least 50%, hence the response rate was sufficient to address the objectives of the study. In table 3 below, the distribution of the 54 responses is presented against target population from all the four mobile phone companies.

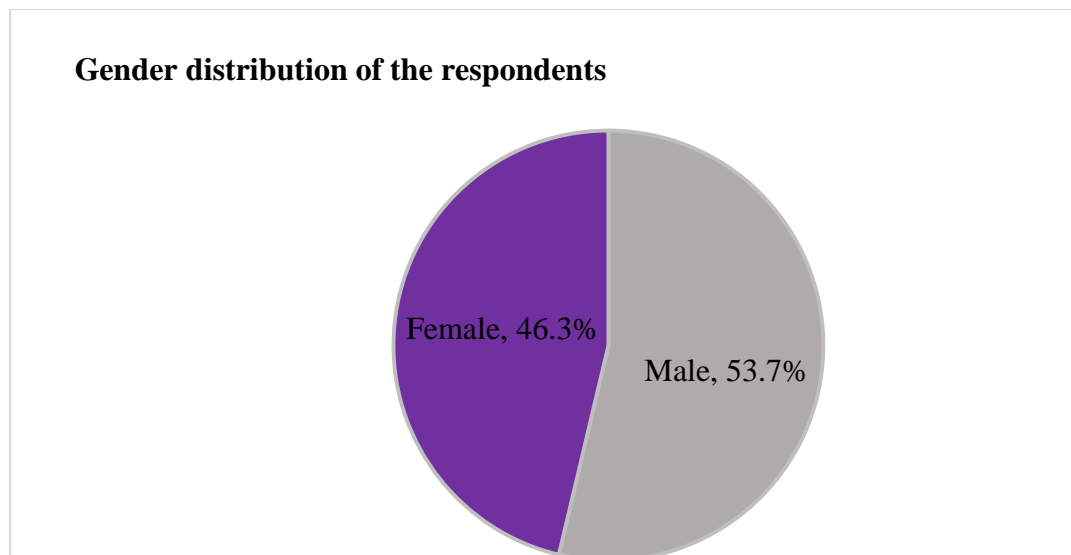
Table 4.1: Distribution of responses against target population.

Company	No of responses	Target population	Response Rate
Safaricom	23	25	92.00%
Airtel	16	17	94.12%
Orange	9	11	81.82%
Equitel	6	6	100.00%
Total	54	59	91.53%

Source: Research data (2016)

Further aggregation of the above numbers while taking into consideration gender revealed that there was an almost equal representation of either of the sex. Majority of the respondents in the study were males, at 53.7% and females at 46.3% (Figure 4.1). These findings are a good indication that the results and views herein expressed are gender sensitive and can be considered to be a representative of both genders.

Figure 4.1: Gender distribution of the respondents



Source: Research data (2016)

It's imperative to keenly look at the variables especially to access their internal consistency prior analysis of survey results. One of the most common strategies of measuring internal consistency of the variables of interest is the cronbach's coefficient alpha. Cronbach's alpha can be described as a function of the number of test items and the average inter-correlation among the items. Its computation involves comparing the score of every scale item by the total score for every observation from the survey respondents, and then relating it to the discrepancy for entire discrete item scores. In most social sciences, a reliability coefficient of 0.70 or higher is deemed acceptable. The value of the Cronbach's alpha was obtained as 0.784, suggesting that the items have a relatively high internal consistency.

In the next sections, we first identify the key inbound logistics practices within the four mobile phone companies, we further introduce and present the challenges encountered in successful implementation of inbound logistics, and finally, the relationship amid inbound logistics practices and SC performance.

4.3 Inbound Logistics Practices in Mobile Phone Sector in Kenya

The performance of an organization is dependent on the practices and operational policies in place. For an organization to do well and efficiently, the practices and activities it carries out are vital. Supply chain performance is tagged to the activities carried out within its various sections. One of the major supply chain sections in almost any industry is inbound logistics, and it plays a major role on how successful a supply chain performs.

Motivated by this background knowledge, it was important in this study to find out the key inbound logistics practices within the four mobile phone companies in Kenya. The general classification of the inbound logistics practices was threefold, i.e.

transportation, inventory control and warehousing. These broad classifications informed the independent variables of the study from which target respondents were expected to indicate the importance of various inbound logistics related activities in transportation, inventory control and warehousing.

Results revealed that all the transportation related activities in inbound logistics are either very important or extremely important, with 81.5% of the respondents indicating that customs clearance is an extremely important transportation activity in inbound logistics, and 68.5% indicating that track and trace is an extremely important activity. For the inventory control practices, monitoring of inventory accuracies (68.5%) and inventory level optimization are some of the most important activities in inbound logistics. Goods inspection before receipting (72.2%) is an extremely important warehousing activity in inbound logistics. Table 4.2 below presents an overall summary of results for inbound logistics activities and their importance to the organization.

Table 4.2: Importance of Inbound Logistics to the Mobile Phone Companies

	Inbound logistics activities	Not important	Not sure	Important	Very important	Extremely important
Transportation	Freight consolidation	3.7%	0.0%	11.1%	27.8%	57.4%
	Customs clearance	0.0%	7.4%	1.9%	9.3%	81.5%
	Track and trace	0.0%	0.0%	5.6%	25.9%	68.5%
	Freight forwarding	0.0%	0.0%	24.1%	25.9%	50.0%
Inventory control practices	Inventory level optimization	0.0%	0.0%	14.8%	31.5%	53.7%
	Inventory cost reduction	3.7%	0.0%	29.6%	16.7%	50.0%
	Inventory lead time reduction	0.0%	0.0%	35.2%	25.9%	38.9%
	Inventory accuracies	0.0%	0.0%	22.2%	9.3%	68.5%
Warehousing practices	Inspection of goods before receipting	0.0%	0.0%	24.1%	3.7%	72.2%
	Inventory is put away	5.6%	1.9%	13.0%	38.9%	40.7%
	Automated picking systems	5.6%	9.3%	24.1%	29.6%	31.5%

Source: Research data (2016)

Further examination of the results through cross tabulations revealed that the importance of either of these inbound logistics activities in either transportation, inventory control or warehousing was not dependent on the mobile phone company under study, and thus the importance of these practices is over emphasized across all the four mobile phone companies in Kenya.

4.4 Challenges in Implementing Inbound Logistics Practices

This section, presents survey findings on the challenges the mobile phone companies have met in the successful implementation of inbound logistics. Target respondents were prompted to indicate their agreement levels to some of the major challenges their organizations have faced in implementation of inbound logistics. Given that targeted respondents were either senior managers or mid-level managers who running and implementation of inbound logistics on a daily basis, the researcher deemed it necessary to treat them as key informants to this very critical organizational element.

Overall results revealed 51.8% of the key informants indicated that there is in adequate support from management in enforcement of inbound logistics practices, which has proved a challenge in implementation of inbound logistics as expected. 44% indicated that the top management focus more on competition at the expense of enforcement of inbound logistics practices, while at least 42% of the respondents feel that existing organizational structure has undermined implementation of inbound logistics practices.

On the other hand, 53.7% of the respondents do not agree that organizational culture has hindered implementation of inbound logistics practices. Lack of training was also not a challenge in implementing inbound logistics, depicted from the 50% of the

respondents who do not agree that there are insufficient skills. We present summary results in table 4.3 below.

Table 4.3: Challenges mobile phone companies face in implementation of inbound logistics

Challenges in implementing inbound logistics	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
The top management focus more on competition at the expense of implantation of inbound logistics practices	13.0%	22.2%	20.4%	38.9%	5.6%
Inadequate resources has hindered implantation of inbound logistics practices	1.9%	24.1%	35.2%	29.6%	9.3%
Organizational structure which has undermined implementation inbound logistics practices	18.5%	20.4%	18.5%	14.8%	27.8%
Organizational culture has hindered implementation of inbound logistics practices	18.5%	35.2%	22.2%	18.5%	5.6%
Insufficient skills in inbound logistics practices has hindered its successful implementation	20.4%	29.6%	16.7%	20.4%	13.0%
Inadequate management support towards implantation of inbound logistics practices	5.6%	27.8%	14.8%	37.0%	14.8%

Source: Research data (2016)

Having looked at the overall results, we proceed further to refine the results at company level. This is informed by the fact that organizations face different form of challenges based on current leadership and structures in place, and as such not all challenges are cross cutting. To meet this, we performed a cross tabulation of agreement levels on challenges faced in implementing inbound logistics practices across the four mobile telecommunication companies.

Difference in opinions on some of these challenges was clearly manifested in the study. For instance, inadequate support from management, which was identified as a challenge earlier in the overall results, was strongly manifested in Safaricom Company (73.9%) and Airtel (50%). Only 11% in Orange mobile phone companies and 33% in Equitel agree or strongly agree that this has been a challenge

in implementing inbound logistics practices. Further, over emphasis on competition over implementation of inbound logistics practices is strongly exhibited in Safaricom (56.5%) and Orange (55.6%) telecommunications companies, with only 25% and 33.3% either agreeing or strongly agreeing in Airtel and Equitel respectively.

In summary, Major challenges identified in each of the organizations, informed by at least 50% of the respondents are summarized in table 4.4 below. Key informants from Equitel equally rated all the challenges at an average of 33% agreement levels, and thus there were no major outstanding challenge that the researcher can point out from the organization, as the most critical challenge. Table 4.4 below presents a summary of cross tabulation results for the key challenges in implementation of inbound logistics practices for each of the mobile phone companies.

Table 4.4: Cross tabulation of key challenges in implementation of inbound logistics practices

Company	Challenges in implementing inbound logistics	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Airtel	Inadequate management support towards implantation of inbound logistics practices	0.0%	37.5%	12.5%	18.8%	31.3%
	The top management focus more on competition at the expense of implantation of inbound logistics practices	0.0%	44.4%	0.0%	33.3%	22.2%
Orange	Inadequate resources has hindered implantation of inbound logistics practices	11.1%	0.0%	33.3%	44.4%	11.1%
	The top management focus more on competition at the expense of implantation of inbound logistics practices	0.0%	26.1%	17.4%	56.5%	0.0%
Safaricom	Organizational structure which has undermined implementation inbound logistics practices	17.4%	17.4%	13.0%	17.4%	34.8%
	Inadequate management support towards implantation of inbound logistics practices	0.0%	17.4%	8.7%	60.9%	13.0%

Source: Research data (2016)

4.5 Inbound Logistics Practices and Supply Chain Performance

This section leads to the main objective of this study, that is to find out the relationship between inbound logistics practices and supply chain performance. Supply chain performance is evaluated within the context of cost, speed of delivery, reliability and customer satisfaction. We used a multiple regression model to assess how various inbound logistics practices affect supply chain performance.

Multiple regression is basically an extension of simple linear regression, used when we wish to study more about the relationship among numerous independent variables and a dependent variable. In this study, four sets of regression analyses were performed to establish effects of inbound logistics practices on cost, speed of delivery, reliability and customer satisfaction. In each of these models, we evaluate the effect of inbound logistics activities performed in transportation, inventory control and warehousing.

Coefficient of determination, (R^2) was used to form goodness of fit for the fitted model. R^2 indicates the proportion of variance accounted for by the explanatory variables in a model. To establish the significance of inbound logistics activities on supply chain performance, the interpretation was based on the p-values, evaluated at $\alpha=0.05$ level of significance. The following sub sections presents results for the multiple regression models fitted.

4.5.1 Effect of Inbound Logistics Practices on Supply Chain Cost

Cost is a major pointer of the of a SC performance. The implication therefore is that cost optimization is very important while maintaining high operational efficiency levels and customer satisfaction in supply chain. The activities performed in inbound logistics could have a direct effect on cost. This formed the basis and need in this

study to scientifically evaluate how such inbound logistics activities relate to supply chain costs. Table 4.5 below presents model summary for the goodness of fit statistics.

Table 4.5: Model summary for effect of inbound logistics on supply chain cost

R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
0.822	.675	.497	0.934	2.124

Source: Research data (2016)

R^2 value was obtained as 0.675, an indication that inbound logistics activities entered in the model explained 67.5% of the variation. In linear regression, we assume that there exists no auto correlation in the residuals obtained from regression analysis. To test this assumption, we used the Durbin Watson test statistic. The statistic is usually amid 0 and 4, where a value of 2 shows lack of auto-correlation. Values nearing 0 shows a positive autocorrelation and values towards 4 show a negative autocorrelation. For this particular model, we obtained a Durbin Watson value of 2.124 which is very close to 2 and therefore our assumption of no auto correlations has not been violated.

In table 4.6 below, we present analysis of variance (ANOVA) results for the overall test of significance (omnibus tests) of inbound logistics activities on supply chain cost. The p-values are estimated from an ANOVA based F distribution.

Table 4.6: ANOVA Test for Overall Significance

	Sum of Squares	df.	Mean Square	F	Sig.
Regression	4.130	10	0.413	8.929	0.000
Residual	1.989	43	0.046		
Total	6.119	53			

Source: Research data (2016)

The hypothesis under test was;

H_0 : Inbound logistics practices have no significant effect on supply chain cost

H_1 : Inbound logistics practices have a significant effect on supply chain cost

Based on the p-value obtained which was less than 0.05, we conclude that overall, inbound logistics activities in transportation, inventory control and warehousing have a statistical significant effect on SC costs.

Finally in table 4.7, we provide individual parameter estimates for the model coefficients. We observe that all the transportation activities, namely freight forwarding, customs clearance, track and trace as well as freight forwarding are statistically significant. Inventory costs and inventory lead time are statistically significant but inventory levels and accuracy have no significant effect on supply chain costs. Under warehousing, only inspection and receiving is statistically significant.

Table 4.7: Parameter estimates for the model coefficients

Inbound logistics practices	Parameter	Estimate	Std. Error	Sig.
	Constant	32.514	6.813	0.000
Transportation	Freight consolidation	14.659	4.249	0.002
	Customs clearance	6.561	3.021	0.009
	Track and trace	-4.289	0.986	0.000
	Freight forwarding	11.297	6.015	0.000
Inventory control	Inventory levels	-1.602	3.775	0.089
	Inventory costs	15.170	5.026	0.000
	Lead time	8.027	0.478	0.000
	Inventory accuracy	1.785	5.873	0.762
Warehousing	Inspection and receiving	4.204	2.194	0.002
	Put away and transfer	0.944	5.279	0.085
	Automated order picking	1.047	3.255	0.071

Source: Research data (2016)

4.5.2 Effect of Inbound Logistics Practices on Delivery Speed

The study sought to establish which, if any, of the inbound logistics practices elements have an effect on delivery speed of goods and services. Table 4.8 below presents model summary for the goodness of fit statistics.

Table 4.8: Model Summary for Effects of Inbound Practices on Delivery Speed

R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
0.870	.758	.558	1.307	1.992

Source: Research data (2016)

R^2 value was obtained as 0.758, an indication that inbound logistics practices entered in the model explained 75.8% of the variation. For this particular model, the Durbin-Watson value was 1.992, which is very close to 2 and therefore our assumption of no auto correlations has not been violated.

In table 4.9 below, we present analysis of variance (ANOVA) results for the overall test of significance (omnibus tests) of inbound logistics practices delivery speed. The p-values are estimated from an ANOVA based F distribution.

Table 4.9: ANOVA test for overall significance

	Sum of Squares	df.	Mean Square	F	Sig.
Regression	8.125	10	0.813	11.147	0.000
Residual	3.134	43	0.073		
Total	11.259	53			

Source: Research data (2016)

The hypothesis under test was;

H_0 : Inbound logistics practices have no significant effect on supply chain speed of delivery

H_1 : Inbound logistics practices have a significant effect on supply chain speed of delivery

Based on the p-value obtained which was less than 0.05, we conclude that overall, inbound logistics practices have a statistical significant effect on supply chain speed of delivery.

In table 4.10, we provide individual parameter estimates for the model coefficient. In this case, all activities in transportation are statistically significant, hence affecting on time delivery of goods and services. Inventory lead time and accuracy significantly affects speed of delivery, whereas in warehousing, order picking significantly affects speed of delivery.

Table 4.10: Parameter estimates for model coefficients

Inbound logistics practices	Parameter	Estimate	Std. Error	Sig.
	Constant	13.803	1.257	0.000
Transportation	Freight consolidation	5.047	0.258	0.000
	Customs clearance	9.056	0.115	0.000
	Track and trace	5.270	0.118	0.000
	Freight forwarding	2.156	0.568	0.015
Inventory control	Inventory levels	2.008	0.136	0.480
	Inventory costs	-0.478	0.109	0.091
	Lead time	6.70	0.175	0.000
	Inventory accuracy	4.015	0.143	0.002
Warehousing	Inspection and receiving	-14.015	0.163	0.078
	Put away and transfer	-3.800	0.112	0.586
	Automated order picking	3.952	0.006	0.001

Source: Research data (2016)

4.5.3 Effect of Inbound Logistics Practices on Reliability

In this section, it evaluate how inbound logistics practices affects reliability of a supply chain. Table 4.11 below presents model summary for the goodness of fit statistics.

Table 4.11: Model summary for effect of inbound practices on reliability

R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
0.781	.610	.449	2.185	1.721

Source: Research data (2016)

R^2 value was obtained as 0.610, an indication that inbound logistics practices entered in the model explained 61% of the variation. For this particular model, the Durbin-Watson value was 1.721, which is approaching 2 and therefore our assumption of no auto correlations has not been violated.

In table 4.12 below, we present analysis of variance (ANOVA) results for the overall test of significance (omnibus tests) of inbound logistics practices on reliability of supply chain performance. The p-values are estimated from an ANOVA based F distribution.

Table 4.12: ANOVA Test for Overall Significance

	Sum of Squares	df.	Mean Square	F	Sig.
Regression	3.558	10	0.356	2.941	0.012
Residual	5.202	43	0.121		
Total	8.759	53			

Source: Research data (2016)

The hypothesis under test was;

H_0 : Inbound logistics practices have no significant effect on reliability of supply chain

H_1 : Inbound logistics practices have a significant effect on reliability of supply chain

Based on the p-value obtained which was less than 0.05, we conclude that overall, inbound logistics practices broadly classified into transportation, inventory control and warehousing have a statistical significant effect on reliability of SC.

Transportation activities such as freight consolidation and customs clearance are statistically significant, therefore affecting reliability of supply chain. Further, inventory control activities such as close monitoring of inventory level, inventory lead time and accuracy were statistically significant, whereas inspection and receiving of goods and services as well as automated order picking were statistically significant under warehousing activities. In table 4.13 below, we provide individual parameter estimates for the model coefficient.

Table 4.13: Parameter estimates for model coefficients

Inbound logistics practices	Parameter	Estimate	Std. Error	Sig.
	Constant	1.458	0.215	0.008
Transportation	Freight consolidation	-9.120	0.665	0.000
	Customs clearance	7.261	0.100	0.000
	Track and trace	0.167	0.115	0.811
	Freight forwarding	-3.849	0.121	0.031
Inventory control	Inventory levels	8.703	0.095	0.000
	Inventory charges	1.469	0.055	0.150
	Lead time	-4.223	0.082	0.000
	Inventory accuracy	1.336	0.097	0.018
Warehousing	Inspection and receiving	6.015	0.148	0.004
	Put away and transfer	3.112	0.103	0.903
	Automated order picking	7.003	0.092	0.028

Source: Research data (2016)

4.5.4 Effect of Inbound Logistics Practices on Customer Satisfaction

Supply chain is tasked with the goal and responsibility of ensuring customer satisfaction. In every activity it undertakes, the value of its customer cannot be ignored, and is therefore a critical component in supply chain performance. This study

therefore sought to establish how such activities undertaken in inbound logistics affect the overall supply chain performance and customer satisfaction. Table 4.14 below presents model summary for the goodness of fit statistics.

Table 4.14: Model summary for effect of inbound practices on customer satisfaction

R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
0.943	.889	.655	0.158	2.003

Source: Research data (2016)

R^2 value was obtained as 0.889, an indication that inbound logistics practices entered in the model explained 88.9% of the variation. For this model, the Durbin-Watson value was 2.003, and therefore our assumption of no auto correlations has not been violated.

In table 4.15 below, we present analysis of variance (ANOVA) results for the overall test of significance (omnibus tests) of inbound logistics practices on customer satisfaction in a supply chain. The p-values are estimated from an ANOVA based F distribution.

Table 4.15: ANOVA test for overall significance

	Sum of Squares	df.	Mean Square	F	Sig.
Regression	6.890	10	0.689	13.063	0.000
Residual	2.268	43	0.053		
Total	9.158	53			

Source: Research data (2016)

The hypothesis under test was;

- H_0 : Inbound logistics practices have no significant effect on customer satisfaction
 H_1 : Inbound logistics practices have a significant effect on customer satisfaction

Based on the p-value obtained which was less than 0.05, we conclude that overall, practices undertaken in inbound logistics broadly classified into transportation, inventory control and warehousing have a statistical significant effect on customer satisfaction.

All the transportation activities were statistically significant, an indication that freight consolidation, customs clearance, track and trace as well as freight forwarding have an effect on customer satisfaction. Additionally, inventory control activities such as monitoring of inventory levels, costs and inventory lead time were statistically significant, and therefore have an effect on customer satisfaction. Warehousing activities such as inspection and receiving of goods and services as well as automated order picking affect customer satisfaction in a supply chain. In table 4.16 below, we provide individual parameter estimates for the model coefficient.

Table 4.16: Parameter Estimates for Model Coefficients

Inbound logistics practices	Parameter	Estimate	Std. Error	Sig.
	Constant	6.002	0.603	0.000
Transportation	Freight consolidation	-9.120	0.074	0.000
	Customs clearance	7.122	0.088	0.000
	Track and trace	2.262	0.091	0.032
	Freight forwarding	-3.733	0.093	0.000
Inventory control	Inventory levels	6.196	0.104	0.000
	Inventory costs	1.409	0.084	0.004
	Lead time	10.233	0.134	0.000
	Inventory accuracy	0.879	0.109	0.068
Warehousing	Inspection and receiving	4.175	0.125	0.000
	Put away and transfer	-0.956	0.008	0.086
	Automated order picking	8.881	0.050	0.000

Source: Research data (2016)

4.6 Regression Model Diagnostics

In model fitting and analysis, it is normal to draw some assumptions that inform the analysis and inference of a study. Performing model goodness-of-fit and diagnostic checks are vital in order to know the dependability of the analysis and subsequently, the inference based on the model output. Model diagnostics procedures involve both graphical methods and formal statistical tests.

In constructing our regression models, we performed and presented some of these diagnostics earlier. For instance, in our exploratory analysis, we introduced Cronbach's coefficient alpha as a measure of internal consistency, whose value was 0.784. Further, to measure goodness of fit statistics in a fitted regression model, we provided the coefficient of determination (R^2) for each of the fitted regression models. The value of R^2 is important as it helps explain how far the variation in dependent variable is actually expounded by the predictor variables.

To address and evaluate regression assumption of no auto correlations, we introduced Durbin Watson statistic for each of the fitted model. Durbin Watson tests the null hypothesis that the residuals are not linearly auto correlated, and only analyses linear auto correlation and only between immediate neighbours, usually referred to as first order effects. A value of 2 (or a value approaching 2) is an indication that regression assumption has not been violated. The value of this test statistic was also provided for in each of the fitted models, and conclusions were drawn that the assumption of no auto correlations has not been violated in the study.

4.7 Discussion of Findings

Results achieved from the study have close correlation with the discussions done on the literature review and also with the theoretical framework. The endeavour to implement key inbound logistics practices by mobile phone operators was evident. The ever changing and competitive business environment has pushed organizations to pursue supply chain efficiency as a strategy to gain a competitive advantage (Hoek, 2008). Mobile phone operators in Kenya have implemented key inbound logistics practices of transportation, inventory control and warehousing and do believe the same have a significant effect in the way their supply chains perform, hence the keen attention given to inbound logistics. This is consistent with resource based theory which considers organizations as bundles of resources that can be controlled and managed in a manner to make the firms to be competitive (Wernerfelt, 1984). Mobile phone companies were found to be deliberate in the management of inbound logistics as part of supply chain not only control costs but also achieve customer satisfaction. Mwangi and Waweru, (2013) in their study noted that cost of transportation impacted supply chains on large scale and inbound transport delays compromised delivery of goods and services. The mobile phone providers noted that all the transportation related activities in inbound logistics are either very important or extremely important. These practices will negatively affect the customer satisfaction; supply chain costs, supply chain reliability and speed of goods delivery if not managed efficiently. As such these practices can be a big constraints that ought to be exploited more efficiently to maximize their benefits to these firms as advocated by theory of constraints. Despite the challenges met in the implementation of inbound logistics practices by the mobile phone operators, great success had been noted owing to supportive organizational structures and culture found in these companies.

CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This research was carried out on inbound logistics practices and supply chain performance of mobile operators in Kenya. This chapter will represent the summary of the findings, Conclusions as observed from the study, recommendations and finally the limitations of the study and projects on further studies.

5.2 Summary of Findings

The study sought to achieve three objectives namely; to identify key inbound logistics practices within the mobile phone sector in Kenya; to determine the challenges confronted in the implementation of inbound logistics practices by the mobile phone operators Kenya and to determine the relationship between inbound logistics practices and SC performance in the mobile phone sector in Kenya.

The study reviewed that all mobile phone operators adopted transportation, inventory control and warehousing as their main inbound logistics practices. These practices were held as important across these organizations and were not dependent on specific operator under study thus their importance was emphasized in all the four firms.

The second Objective of the study is backed by the revelations by the findings that Mobile phone operators in Kenya faced some challenges when implementing inbound logistics practices. Major setbacks as found by the study include; adequate support from management in enforcement of inbound logistics practices. Top management were found to focus more on competition at the expense of enforcement of inbound logistics practices creating a hindrance to successful implantation of inbound logistics

practices. Existing organizational structures undermined implementation of inbound logistics practices.

Regarding the relationship between inbound logistics practices and SC performance the study sought to establish the effect of inbound logistics practices on SC performance indicators. Upon evaluation on how inbound logistics activities relate to supply chain costs, the study observed that all the transportation activities, namely freight forwarding, customs clearance, track and trace as well as freight forwarding were statistically significant.

Further Inventory costs and inventory lead time had a strong significant but inventory levels and accuracy has no significant effect on supply chain costs. While under warehousing, only inspection and receiving was statistically significant. The study also sought to establish which, if any, of the inbound logistics practices elements have an effect on delivery speed of goods and services. It was found that all activities in transportation were statistically significant, hence had effect on delivery time of goods and services. Inventory lead time and accuracy strongly affected speed of delivery, whereas in warehousing, order picking strongly affected speed of delivery.

Finally on effect of inbound logistics practices on reliability of SC, the study established that transportation activities such as freight consolidation and customs clearance were statistically significant, therefore affecting SC reliability. Further, inventory control activities such as close monitoring of inventory level, inventory lead time and accuracy were statistically significant, whereas inspection and receiving of goods and services as well as automated order picking were statistically significant under warehousing activities

5.3 Conclusion

From the results of the study as above the below conclusions were made.

Mobile phone operators in Kenya have adopted inbound logistics practices to a large extent with. Inbound logistics practices of transportation; inventory control and warehousing have significantly impact supply chain performance in terms of costs, speed of delivery, supply chain reliability, and customer satisfaction.

Despite a few challenges such insufficient management support, less focus on inbound logistics as compared to customer focus and non-supportive organizational structures, all the mobile operators in Kenya have largely implemented inbound logistics practices namely; transportation, inventory control and warehousing. The current success in implantation of inbound logistics practices was attributed to supporting organizational cultures and available skills.

5.4 Recommendations

From the research conclusions, below recommendations were arrived at:

For inbound logistics practices implemented by the mobile phone operators to be successful there must be full management support. This is not only because they are key decision makers but also because the control resources in their organizations. Top management must also balance customer focus and management of inbound logistics as the later contribute to customer satisfaction and may be counterproductive if not run prudently.

5.5 Limitations and Suggestions for Further Research

The researcher found it tasking to convince managers of these firms to participate in the study given their busy schedules to respond to questionnaires. Some of the respondents never returned their responses as required. Lastly the researcher had to travel long distance to take and later collect the questionnaires.

The study was based on mobile phone operators hence future studies could expand the scope to other industries as well. The study also used qualitative measures therefore future studies may consider quantitative measure if available hence may bring a new angle to the study. Finally it would be interesting to how inbound logistics have been used to achieve competitiveness for firms in any industry.

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APPENDICES

APPENDIX I: RESEARCH QUESTIONNAIRE

SECTION A: General Information

1. Gender (Please Choose from the following)

Male Female

2. What is your position in this organization?

- Supply chain manager
- Assistant Supply chain manager
- Supply chain officer
- Other (specify).....

3. How long has your organization been in operation?

- Less than 10 years
- More than 10 years

SECTION B: INBOUND LOGISTICS PRACTICES

4. Please indicate the extent to which you rate the importance of below inbound logistics activities in your organization.

1=not important, 2=not sure, 3= important, 4= very important 5=extremely important

No	Statement	1	2	3	4	5
	Transportation practices					
1	Freight consolidation					
2	Customs clearance					
3	Track and trace					
4	Freight forwarding					
	Inventory control practices					
1	Inventory levels Optimization					
2	Inventory cost reduction					
3	Inventory lead time reduction					
4	Inventory accuracies					
	Warehousing Practices					
1	Inspection of goods before receiving					
2	Inventory is put away upon sorting for correct transfer to respective locations in the warehouse					
3	Automated picking systems					

SECTION C: CHALLENGES IN IMPLEMENTING INBOUND LOGISTICS PRACTICES

5. Please indicate the challenges faced by your organization in implementation of inbound logistics practices. Please tick in the appropriate box using the following score, 5= strongly agree, 4=Agree, 3= neither agree nor disagree, 2= disagree, 1 = strongly disagree

		5	4	3	2	1
1	The top management focus more on competition at the expense of implantation of inbound logistics practices					
2	Inadequate resources has hindered implantation of inbound logistics practices					
3	Many layers in the organization structure in our organization has led to duplication of roles, which has undermined inbound logistics practices					
4	Cultural dynamism in our organization has made it hard to implement inbound logistics because the management is rigid in their way of running business					
5	Insufficient skills in inbound logistics practices has hindered its successful implementation					
6	Inadequate management support towards implantation of inbound logistics practices					

SECTION D: INBOUND LOGISTICS PRACTICES AND SUPPLY CHAIN PERFORMANCE

8. Which of the following do you consider most important indicators of supply chain performance in your organization?

Cost

Reliability

Delivery Speed

Customer satisfaction

9. Please state the impact of the below inbound logistics practice to your organization's supply chain performance. Please score as below:

Inbound logistics Practices	Very high	High	Low	Very Low	Not sure
Transportation					
Inventory control					
Warehousing					

Any other Please specify).....

10. Please indicate the extent to which you agree with the following statements in regard to the relationship between inbound logistics practices and supply chain performance of your organization. Please score as below: 1=Not at all, 2=Small extent, 3= Moderate extent, 4= Large extent 5=Very large extent

No	Statement	1	2	3	4	5
1	Inventory accuracy ensures supply chain reliability					
2	Tracking of shipments increases supply chain reliability					
3	Correct order picking enables supply chain reliability					
4	Inventory cost control leads to decreased supply chain management costs					
5	Freight consolidation has reduced transportation costs					
6	Transferring goods to their correct locations in the warehouse reduces operational costs					
7	Freight consolidation minimizes the number product deliveries					
8	Efficient customs clearance enables speedy delivery of goods					
9	Rate of order picking in the warehouse determines the speed of product delivery to the market.					
10	Shorter shipment lead times leads to speedy delivery of goods					
11	Correct order picking enables increased customer satisfaction					
12	Tracking shipments on transit has improve customer satisfaction					
13	Low inventory costs lead to improved customer satisfaction					

**APPENDIX II: LIST OF MOBILE PHONE COMPANIES IN
KENYA**

1. Airtel Networks Kenya Limited
2. Safaricom Limited
3. Telkom Kenya (Orange),
4. Finserve Africa Limited (Equitel)

Source: (Communication Authority of Kenya; August, 2016)